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Determinants of Postgraduate Students of Fine Arts' Satisfaction and Performance of e-Learning in Chengdu Region of China

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Abstract

Purpose: The purpose of this study is to investigate the determinants of e-learning satisfaction and performance of fine arts' postgraduate students in five universities in Chengdu, China. The conceptual framework proposed causal relationships between self-efficacy, perceived usefulness, perceived ease of use, compatibility, task-technology fit, satisfaction, and performance. **Research design, data, and methods:** The researchers used quantitative methods to distributing questionnaires to 500 respondents via offline and online channels. Judgmental, quota and convenience samplings were employed to collect the data. Before the large-scale data collection, Item Objective Congruence (IOC) Index was applied confirm content validity, and Cronbach's Alpha reliability test was used to approve all constructs in a pilot test of 30 participants. The data were analyzed by confirmatory factor analysis and structural equation modeling to verify the goodness of fit of the model and to confirm the causal relationships between variables for hypotheses testing. **Results:** Perceived ease of use significant affected satisfaction and perceived usefulness. The relationship between self-efficacy, perceived ease of use and perceived usefulness was supported. Compatibility and task-technology fit significantly affected student satisfaction. Furthermore, satisfaction is a predictor of performance. **Conclusion:** This study recommends that the office of academic affairs in higher education should improve e-learning system to enhance student satisfaction and performance.

Keywords: Online Education, Compatibility, Task-Technology Fit, Satisfaction, Performance.

JEL Classification Code: E44, F31, F37, G15

1. Introduction

In recent years, online education has grown rapidly in China, with the market size of approximately 423 billion yuan in 2020, increased 21.97% from 346.8 billion yuan in 2019. Among the composition of China's online education market, universities have the highest share in online education, accounting half of China's online education market (Ministry of Education, 2020). Secondly, Chinese

government departments have developed various policies to promote a reform of the online teaching system, curriculums, and talent development programs. These policies demonstrate the country's commitment to modernizing online education and the importance of doing so. Furthermore, the quality of online education has become one of the main concerns in recent years, which made up its huge influence in China.

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After more than 20 years of construction and development, online education in Chinese universities has made great strides in recent years, especially after the large-scale online teaching phase during the COVID-19. Major universities have been increasing their resources and efforts to build e-learning. In addition, due to China's special epidemic prevention policies, the COVID-19 epidemic had been prolonged in various regions of China as in the first half of year 2022, resulting in large-scale online education still being conducted in some regions or schools (Ministry of Education, 2020).

However, in terms of operation and scholarly investigation at the university level, online education in China is still in its infancy. Chinese university-level online teaching and learning management and assessment systems are still in the development phase. The main manifestations are that there is not much difference between online and offline education management, and there is some ambiguity in the efficiency of online education (Wang et al., 2020). Additionally, there are numerous issues on how the majority of university professors view instructional strategies and online courses' design (Zhang & Du, 2020). The lines between hybrid and online education are blurred, the online teaching component of hybrid education is undervalued, and the online teaching process prioritizes external forms over internal content (Sun, 2019).

E-learning is primarily understood as a new paradigm for online learning based on information technology (Moore et al., 2011). As the epidemic has led to a surge in the number of students learning online, more satisfied learners are more likely to agree that online learning systems have improved their learning experience (Islam et al., 2018). Student satisfaction is an important indicator of the quality of learning experiences (Yukselturk & Yildirim, 2008). According to Bali and Liu (2018), analysis of student satisfaction and performance is an important measure to find solutions that educational administrators and other practitioners are seeking to understand how e-learning can produce better outcomes. Therefore, it is important to study the factors that would influence art students' satisfaction and performance in e-learning. This study can be useful to the office of academic affairs in higher education for the improvement of e-learning system to enhance student satisfaction and performance.

1.1 Objectives of this Research

a) To determine for significant effects between perceived usefulness, perceived ease of use, self-efficacy, task-technology fit, compatibility, satisfaction, and performance.

b) To provide recommendations to e-learning providers and universities for the improvement of online education to gain higher student satisfaction and performance.

1.2 Research Questions

a) What is the significant effect between significant effects between perceived usefulness, perceived ease of use, self-efficacy, task-technology fit, compatibility, satisfaction, and performance?

b) How can e-learning providers and universities improve online education to gain higher student satisfaction and performance?

1.3 Significance of the Study

Chinese universities have transformed to large-scale online education due to China's policies to prevent the spread of the epidemic. In addition, there are still many problems with large-scale online education deployment at universities that directly affect student satisfaction and performance. Preliminarily, some elements of the study's findings are beneficial to government in education departments in formulating online education policies and to the future development of online education in the arts curriculum in China. Accordingly, the results of this study will contribute to the management of online teaching and learning at relevant public universities and improve teaching quality to some extent.

2. Literature Review

2.1 Perceived Ease of Use

Perceived ease of use (PEOU) is defined as a person's belief that using a particular technology is simple, and it also shows the degree to which one is convinced that adopting a particular system is effortless. In other words, PEOU is known as "the extent to which a person can use a system without expending physical or mental energy" (Davis, 1989). It is also believed that it would be more efficient to utilize the services of the target system. Likewise, PEOU can be identified as the extent to which the technology can be easily used (Nagy, 2018). In this study, PEOU is a degree in which college students using online educational technology and find it is efficient and easier (Neo et al., 2015). Furthermore, perceived ease of use affects perceived usefulness (Ifinedo, 2017) which can be interpreted that the easier the system is to use, the more useful it is (Igarria et al., 1995). Furthermore, PEOU depends on users' satisfaction in deciding to use a system technology, which PEOU has a direct impact on satisfaction (Hong et al., 2006). Accordingly, this research hypothesizes the followings:

H1: Perceived ease of use has a significant effect on satisfaction of postgraduate students in using e-learning.

H2: Perceived ease of use has a significant effect on

perceived usefulness of postgraduate students in using e-learning.

2.2 Perceived Usefulness

Perceived usefulness (PU) is generally agreed that online learning methods are more beneficial and effective for learners (Cheng, 2019). Through Davis (1989) study, PU refers to the degree to which a person trusts a system and believes that it will improve one's performance. In addition, PU refers to the degree to which people hope to gain operational or strategic advantages using information systems (Bhattacharjee, 2001; Gao et al., 2022). It is the level to which a student confirms that a specific education system can promote his or her learning performance (Huang & Liaw, 2018). Davis (1989) believed that PU had a direct causal relationship with user satisfaction. In addition, studies based on the expectation confirmation theory (ECT) show that PU has a direct impact on satisfaction (Susanto et al., 2016; Yuan et al., 2016). Hence, the following hypothesis is derived:

H3: Perceived usefulness has a significant effect on satisfaction of postgraduate students in using e-learning.

2.3 Self-Efficacy

Self-efficacy (SE) refers to students' belief that they can learn better with an online learning course (Shen et al., 2013). Students' SE in web-based learning could be defined as their capacity to execute learning activities with the assistance of the e-learning system or technology (Abbad, 2010). Self-efficacy reflects a student's faith to which he or she is equipped with the capability for the execution of a learning task and obtain the achievement (Huang & Liaw, 2018). SE has been considered as vital factor in online learning of higher education (Aldholay et al., 2020). According to Abdullah and Ward (2016), SE is the most frequently used external element in the applied TAM in education, and self-efficacy has been identified to have a direct influence on PU for a certain number of literatures (Lee et al., 2014; Rezaei et al., 2008). In addition, SE was discovered to be a key driver of PEOU by Agarwal and Karahanna (2000). Thereby, hypotheses are developed:

H4: Self-efficacy has a significant effect on perceived usefulness of postgraduate students in using e-learning.

H5: Self-efficacy has a significant effect on perceived ease of use of postgraduate students in using e-learning.

2.4 Compatibility

Compatibility is the degree to which an invention is compatible with the current values of potential adopters, their prior experiences, and their existing requirements

(Rogers, 1995). Compatibility relates to the amount to which a new technology is implemented in the workplace, which is like the findings of earlier research that it pertains to how technological adoption is compatible with what people really do (Payton et al., 2011). In addition, compatibility has been introduced as a new exogenous variable to the two previously mentioned exogenous variables in this study (PU and PEOU). Compatibility implies the extent to which technology is deemed compliant with current user practices. In short, compatibility means the extent to which the technology is compatible with current user practices (Ifinedo, 2017). Islam (2013) showed that students who often use e-learning systems tends to have the high level of satisfaction because it meets their learning needs. Thus, H6 is indicated:

H6: Compatibility has a significant effect on satisfaction of students of postgraduate students in using e-learning.

2.5 Task-Technology Fit

Task-technology fit (TTF) is defined as the ability of information technology /information system in supporting tasks (Larsen et al., 2009). As defined by Goodhue and Thompson (1995), TTF is the degree to which the employment of an e-learning system assists a student in performing the learning activities to meet his or her academic goals. The extent to which a technology assists an individual in performing his or her portfolio of tasks can be explained that a task is broadly defined as the action of an individual to transform input into output, and technology is defined as the tool that an individual employs in order to complete the task. There have been many studies investigating the positive impact of TTF construction on information system success factors, such as influence on performance and satisfaction (Cheng, 2019). Consequently, a hypothesis is proposed:

H7: Task-technology fit has a significant effect on satisfaction of postgraduate students in using e-learning.

2.6 Satisfaction

User satisfaction means that a user feels satisfied with the speed of the system, the quality, number of functions and design (Lin & Wang, 2012). Satisfaction is the most important factor in determining the success of new system acceptance, user satisfaction has been widely used in the field of information systems measurement for quite some time (DeLone & McLean, 2016). User satisfaction refers to Internet users' contentment with their decision to use the Internet as well as the extent to which their expectations are met (Hok et al., 2021; Isaac et al., 2017). In addition, A study by Aldholay et al. (2020) found that user satisfaction has a significant impact on performance impact. Generally,

satisfaction has been recognized as a key indicator of the success or failure of any information system (Brown et al., 2002). Based on above assumptions, a hypothesis is developed:

H8: Satisfaction has a significant effect on performance of postgraduate students in using e-learning.

2.7 Performance

Performance refers to an individual's ability to complete a specific set of activities, with higher performance implying increased efficiency, effectiveness, and quality of the completed activities (Goodhue & Thompson, 1995). In other words, how much online learning improves student performance in terms of saving educational resources, increasing learning efficiency, and speeding up the acquisition of information is termed as performance (Isaac et al., 2017). According to Hashim et al. (2011), learners' performance is the degree to which students think using e-technology will be advantageous. Student performance is also formed as achievement, assessment results, grades that has been generalized in various studies (Schneider & Preckel, 2017)

3. Conceptual Framework

The conceptual framework was constructed based on the previous literatures of three major fundamental theories as illustrated in Figure 1. Firstly, the technology acceptance model (TAM) is an information systems theory that models how users come to accept and use a technology (Davis, 1989). Next, the expectation confirmation theory (ECT) is a cognitive theory which seeks to explain post-purchase or post-adoption satisfaction as a function of expectations (Anderson & Sullivan, 1993). Lastly, the information systems (IS) success model theory which seeks to provide a comprehensive understanding of IS success by identifying, describing, and explaining the relationships among critical dimensions of technology attributes (DeLone & McLean, 2003).

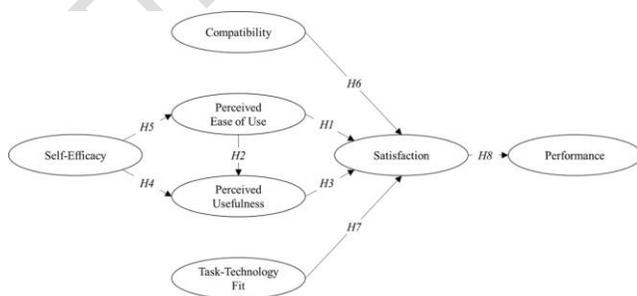


Figure 1: Conceptual Framework

H1: Perceived ease of use has a significant effect on satisfaction of postgraduate students in using e-learning.

H2: Perceived ease of use has a significant effect on perceived usefulness of postgraduate students in using e-learning.

H3: Perceived usefulness has a significant effect on satisfaction of postgraduate students in using e-learning.

H4: Self-efficacy has a significant effect on perceived usefulness of postgraduate students in using e-learning.

H5: Self-efficacy has a significant effect on perceived ease of use of postgraduate students in using e-learning.

H6: Compatibility has a significant effect on satisfaction of postgraduate students in using e-learning.

H7: Task-technology fit has a significant effect on satisfaction of postgraduate students in using e-learning.

H8: Satisfaction has a significant effect on performance of postgraduate students in using e-learning.

4. Research Methods and Materials

4.1 Research Methodology

The researchers administered a quantitative survey via questionnaires distributed online and offline to postgraduate students in fine arts who have at least one month of e-learning experience at five universities in Chengdu. The survey consists of three primary sections which are screening questions, a five-point Likert scale measure, and demographic information. Prior to the distribution of 500 questionnaires, the Item-Objective Congruence (IOC) was tested by three experts with all scores above 0.6. The internal consistency reliability of each construct was tested with 30 samples to ensure reliability and consistency for the research instrument with reliability scores indicating that all values of 0.70 or above were acceptable (Nunnally & Bernstein, 1994). The researchers analyzed the data of 500 participants through SPSS, and AMOS software. The construct validity (convergent and discriminant validity) and model fit were verified by Confirmatory Factor Analysis (CFA). To demonstrate significant effects among the variables, structural equation modeling (SEM) was performed.

4.2 Population and Sample Size

In this study, the five colleges and universities in Chengdu with the largest number of graduate students in fine arts were a target population. The researchers used a statistical calculator to calculate the minimum sample size of 425 (Soper, 2022). The researchers collect 500 valid samples to obtain appropriate statistical results.

4.3 Sampling Techniques

The researchers executed nonprobability sampling techniques. Initially, the researchers conducted judgmental sampling by selecting 690 fine arts students who have at least one month of online learning experience from five universities in Chengdu, China. In addition, a quota sampling was distributed to 500 students as shown in Table 1. Convenience sampling was to distribute the survey online and offline to the target group.

Table 1: Sample Units and Sample Size

Target University	Sampling Units	First Stage Sample Size	Proportional Secondary Stage Sample Size
Sichuan Conservatory of Music	First Year	79	57
	Second Year	78	57
	Third Year	54	39
Chengdu University	First Year	60	43
	Second Year	45	33
	Third Year	37	27
Sichuan Normal University	First Year	57	41
	Second Year	55	40
	Third Year	52	38
Sichuan University	First Year	30	22
	Second Year	28	20
	Third Year	20	14
Southwest Minzu University	First Year	34	25
	Second Year	31	22
	Third Year	30	22
Total		690	500

Source: Created by the author.

5. Results and Discussion

5.1 Demographic Information

Demographical profile of 500 participants were targeted and summarized in Table 2. 30.60% of the students are from Sichuan Conservatory of Music, 20.60% are from Chengdu University, 23.8% are from Sichuan Normal University, 11.20% are from Sichuan University, and 13.80% are from Southwest Minzu University. Male respondents accounted for 23.80%, and female respondents accounted for 66.20%. In terms of the academic year, 37.60% of the respondents are the first-year graduate students, 34.40% are the second-year graduate students, and 28.00% are the third-year graduate students. In addition, 34.20% of the students choose oil painting, 31.40% choose Chinese painting, 9.40% choose printmaking, 25% of the students majored in other fine arts.

Table 2: Demographic Characteristics of Respondents

Demographic and General Data (N=500)		Frequency	Percentage
University	Sichuan Conservatory of Music	153	30.60%
	Chengdu University	103	20.60%
	Sichuan Normal University	119	23.80%
	Sichuan University	56	11.20%
	Southwest Minzu University	69	13.80%
Gender	Male	119	23.80%
	Female	381	66.20%
Year of Study	First Year	188	37.60%
	Second Year	172	34.40%
	Third Year	140	28%
Major Direction	Oil Painting	171	34.20%
	Chinese Painting	157	31.40%
	Printmaking	47	9.40%
	Other fine arts	125	25%

Source: Created by the author.

5.2 Confirmatory Factor Analysis (CFA)

CFA is a key role in studying all potential variables in the measurement model (Alkhadim et al., 2019). According to SPSS AMOS program, analysis of 500 data yielded a degree of freedom (CMIN/DF) of 1.807, GFI was 0.918, AGFI was 0.899, CFI was 0.968, NFI was 0.931, and RMSEA was 0.041, showing all results have met the measurement model fit in Table 3. In addition, according to the statistical results summarized in Table 4, all Cronbach's Alpha values were greater than 0.80, factor loadings were greater than 0.30, t-values were greater than 1.98, p-values were less than 0.50, composite reliability (CR) was greater than 0.70, and average variance extracted (AVE) was greater than 0.50 (Sarmiento & Costa, 2019). Therefore, the model can assure convergent and discriminant validities of this study.

Table 3: Goodness-of-Fit for Measurement Model

Index	Acceptable Values	Source	Values
CMIN/DF	<3	Hair et al. (2010)	1.807
GFI	>0.90	Bagozzi and Yi (1988)	0.918
AGFI	>0.80	Filippini et al. (1998)	0.899
RMSEA	<0.05	Browne and Cudeck (1993)	0.041
CFI	>0.90	Hair et al. (2006)	0.968
NFI	>0.90	Arbuckle (1995)	0.931
TLI	>0.90	Hair et al. (2006)	0.963

Remark: CMIN/DF = The ratio of the chi-square value to degree of freedom, GFI = goodness-of-fit index, AGFI = adjusted goodness-of-fit index, RMSEA = root mean square error of approximation, CFI =

comparative fit index, NFI = normalized fit index, and TLI = Tucker-Lewis index.

Source: Constructed by author.

Table 4: Confirmatory Factor Analysis Result, Composite Reliability (CR) and Average Variance Extracted (AVE)

Latent Variables	Source of Questionnaire	No. of Items	Cronbach's Alpha	Factors Loading	CR	AVE
PEOU	Davis et al. (1989)	4	0.865	0.728-0.830	0.865	0.616
PU	Davis et al. (1989)	4	0.895	0.720-0.936	0.898	0.690
SE	Fokides (2017)	3	0.841	0.804-0.905	0.849	0.655
C	Moore and Benbasat (1991)	3	0.887	0.710-0.932	0.849	0.655
TTF	Larsen et al. (2009)	4	0.873	0.713-0.887	0.875	0.639
SAT	Aldholay et al. (2020)	3	0.868	0.793-0.889	0.869	0.689
P	Aldholay et al. (2020)	7	0.903	0.687-0.832	0.904	0.574

Source: Created by the author.

The convergent validity was approved when the value of CR is higher than AVE, and the AVE is equal or above 0.50 (Hair et al., 2006). Additionally, the values of the discriminant validity were examined and demonstrated in Table 5, which exceeded the critical point values. Accordingly, the convergent validity and the discriminant validity of this research were sufficient.

CFI	>0.90	0.940	0.961
NFI	>0.90	0.902	0.924
TLI	>0.90	0.933	0.957

Remark: CMIN/DF = The ratio of the chi-square value to degree of freedom, GFI = goodness-of-fit index, AGFI = adjusted goodness-of-fit index, RMSEA = root mean square error of approximation, CFI = comparative fit index, NFI = normalized fit index, and TLI = Tucker-Lewis index.

Source: Constructed by author.

Table 5: Discriminant Validity

	SE	C	PEOU	PU	TTF	SAT	P
SE	0.809						
C	0.273	0.860					
PEOU	0.256	0.297	0.784				
PU	0.385	0.269	0.425	0.830			
TTF	0.276	0.280	0.362	0.317	0.799		
SAT	0.213	0.294	0.319	0.347	0.390	0.830	
P	0.201	0.376	0.329	0.334	0.313	0.379	0.757

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

Source: Created by the author.

5.3 Structural Equation Model (SEM)

According to Watjatrakul (2013), SEM is a multivariate statistical analysis technique that combines factor analysis and multiple regression analysis. It was used to look at the structural links between the measured variables and the structures beneath them. Table 6 shows the structural model fit, including CMIN/DF, GFI, AGFI, RMSEA, CFI, NFI, and TLI.

Table 6: Goodness of Fit for Structural Model

Index	Acceptable Criterion	Before Adjustment	After Adjustment
CMIN/DF	<3.00	2.443	1.937
GFI	>0.90	0.885	0.914
AGFI	>0.80	0.864	0.897
RMSEA	<0.05	0.054	0.044

5.4 Research Hypothesis Testing Result

The research hypothesis testing results are determined by significance for each variable from the regression weights and R2 variances. Based on the results of each calculation shown in Table 7, the strongest effect showed between satisfaction and performance with a standardized path coefficient (β) of 0.992 (t-value = 7.050***), PEOU had an effect on SAT with β of 0.228 (t-value = 3.319***), PEOU had an effect on PU with β of 0.388 (t-value = 7.826***), PU affected satisfaction with β of 0.207 (t-value = 4.654***), SE affected PU with β of 0.386 (t-value = 5.731***), SE affected PEOU with β of 0.283 (t-value = 5.306***), C significantly affected SAT with β of 0.230 (t-value = 5.775***), and TTF affected SAT with β of 0.231 (t-value = 5.700***). Thus, all hypotheses were supported by significance with p-values less than 0.05.

Table 7: Hypothesis Results of the Structural Equation Modeling

Hypothesis	Standardized Coefficients (β)	t-value	Result
H1: PEOU→SAT	0.228	3.319***	Supported
H2: PEOU→PU	0.207	4.654***	Supported
H3: PU→SAT	0.388	7.826***	Supported
H4: SE→PU	0.386	5.731***	Supported
H5: SE→PEOU	0.283	5.306***	Supported
H6: C→SAT	0.230	5.775***	Supported

H7: TTF→SAT	0.231	5.700***	Supported
H8: SAT→P	0.992	7.050***	Supported

Source: Created by the author.

The results of H1 support the hypothesis that perceived ease of use has a significant effect on satisfaction with a standardized coefficient value of 0.228. Research has demonstrated that PEOU is the primary motivation for accepting IT as a means of predicting or measuring end-user satisfaction (Venkatesh & Davis, 2000).

H2 revealed that perceived ease of use is one of the important factors influencing perceived usefulness with a standardized coefficient value of 0.207. Vululleh (2018) has tested that perceived ease of use can contribute to students' positive evaluation of the perceived usefulness of the e-learning system.

H3 was confirmed that perceived usefulness is one of the key factors of satisfaction with a standardized path coefficient value of 0.388. According to Davis (1989), it was shown that the perceived usefulness of a particular system may be the most essential consideration of satisfied or unsatisfied feeling of users toward a system.

H4 was found that self-efficacy has a significant effect on perceived usefulness which is supported by the relevant statistical results, with a standardized coefficient value of 0.386. According to Abdullah and Ward (2016), self-efficacy is the most frequently used external element in the application of TAM in education, and self-efficacy has been identified as directly affecting the perceived usefulness of a various studies (Lee et al., 2014).

For H5, the results showed that self-efficacy effectively influenced perceived ease of use, with a representative standard coefficient value of 0.283. Kim et al. (2010) argued that self-efficacy can be specified as an innate motivation or personal characteristic and significantly influenced perceived ease of use.

The finding of H6 supported that compatibility significantly affects satisfaction with a standard coefficient value of 0.230. Islam (2013) postulated that students who used a more compatible e-learning system were more satisfied with the application because it met their learning needs.

H7 determined that task-technology fit affects satisfaction with a standard coefficient value of 0.231. Previous research confirmed that the more appropriate technology is for a particular task, the more likely it is to improve task outcomes (Cheng, 2019).

In H8, this study showed that satisfaction had the greatest impact on performance, describing a standard coefficient value of 0.992, which was the highest number among the results. According to Montesdioca and Maçada (2014), IT assessments based on user satisfaction and performance are commonly used to evaluate the success of information systems.

5.5 Direct, Indirect, and Total Effects

Three independent variables, three mediating variables, and one dependent variable were all presented in this study. Figure 2 presents a summary of the path diagram's results to explaining direct, indirect, and total effects.

Performance as the dependent variable in this study has a direct effect with satisfaction (0.992***). Indirect effect of variables on performance comes from PEOU (0.226***), PU (0.205***), TTF (0.229***), SE (0.121***) and compatibility (0.228***). The variation in performance can be explained by the independent variable of 25.3%.

In addition, four factors have a direct effect on satisfaction, they were PEOU (0.148***), PU (0.207***), TTF (0.231***) and compatibility (0.230***). Indirectly affecting the independent variables were SE (0.122***) and PEOU (0.080***). The change in satisfaction could be explained by the independent variables as 19.9%.

In addition, PU is another mediating variable in this study and two factors have a direct effect on, including PEOU (0.388***) and SE (0.276***). Indirect effect is SE (0.110***). The change in PU could be explained by the independent variable by 28.7%.

Finally, there was one factor that has a direct effect on PEOU which is SE (0.283***). The change in PEOU can be explained by the independent variable as 8%.

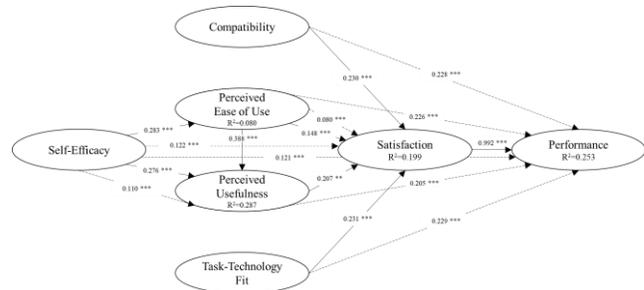


Figure 2: Path Diagram Analysis
 Note: *** p<0.001, ** p<0.01, * p<0.05
 Source: Created by the author

6. Conclusions and Recommendation

6.1 Conclusion

The objective of this academic exploration is to assess the different factors that influence the satisfaction and performance related to e-learning usage of art postgraduate students. The hypotheses were presented in a conceptual framework. The questionnaire was sent to 500 graduate students who have at least one month of online learning experience. The results were all significant, with the

strongest significant between the relationship of student satisfaction and performance. These results were consistent with previous research, where student performance increases due to higher student satisfaction with online learning (Montesdioca & Maçada, 2014). Both perceived ease of use and PU significantly influenced student satisfaction (Davis, 1989). In addition, perceived ease of use also significantly influenced perceived usefulness. This explains that students' perceived ease of use and usefulness are positively correlated when receiving learning technology (Lee et al., 2014). Furthermore, compatibility significantly affected satisfaction, which indicates that students who use an e-learning system with better compatibility are more satisfied with the application because it meets their learning needs (Islam, 2013). Additionally, task-technology fit significantly influenced satisfaction. The results demonstrate that the more appropriate the technology is for a specific task, the more likely it was to improve the task outcome (Cheng, 2019). Ultimately, self-efficacy also had a significant effect on perceived usefulness and perceived ease of use because the importance of self-efficacy is to determining student behavior as they have a direct impact on ease of use and usefulness (Nagy, 2018).

6.2 Recommendation

As a result of the effective control of coronavirus disease in China with 2019 and the benefits of large-scale online educational practices during the outbreak, many universities have enhanced the use of online instruction in blended education. In addition, with China's policies to prevent the spread of the outbreak, Chinese universities have transformed to large-scale online education again at any time. Although some educators are not well-adapt in using e-learning technology, they are gradually updated the online learning module to respond to unexpected situations.

First of all, this study emphasizes that the first direct factor affecting student satisfaction is task-technology fit. It is recommended that the corresponding faculty members should match the system to some extent with the requirements and interests of graduate students in the fine arts program, so that they can better match the learning model. Secondly, student satisfaction is driven by compatibility. Relevant administrators should avoid duplication of offline with online format such as teaching methods, duration and time arrangements to ensure the meeting of actual needs of students, their previous experience and their existing requirements as much as possible.

Thirdly, perceived ease of use is one of the important factors influencing perceived usefulness. Therefore, emphasis must be placed on promoting the ease of use and usefulness of online teaching and learning platforms. This

means that college students will be more willing to embrace online learning if they perceive it as a useful and easy-to-use way to improve their academic performance and if it meets their learning needs anytime, anywhere.

Next, self-efficacy significantly influenced perceived usefulness and perceived ease of use. Consequently, teachers should make full use of students' beliefs to convince them that they can perform their learning tasks, which is more conducive to their good performance. Lastly, the findings show that satisfaction had the most significant effect on performance, which implies that relevant administrators and teachers should pay more attention to relevant factors that affect students' satisfaction, as students who are satisfied with online learning are more willing to listen to classes and will strive to succeed their learning performance.

In conclusion, this study explains in detail some of the significant factors that influence college students' satisfaction with online education. Therefore, it is recommended to enhance these aspects in the design and reform of future online teaching and learning in art majors to achieve better student satisfaction and performance. For the more practical teaching and learning, the design of higher education lesson plans for art majors should take student satisfaction into full consideration to improve learning performance.

6.3 Limitation and Further Study

This study employed the specific sample group of art major postgraduate students from five universities in Chengdu, China. The future scholars could explore different regions or countries in the topic of student satisfaction and performance. Next, this study was scoped to investigating postgraduate students' satisfaction and performance. Therefore, other variables could be added for further examination such as attitude toward use, trust etc. Additionally, qualitative approach should be used in comparison with the quantitative result of this study.

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