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The Influential Factors Determining Satisfaction, Loyalty and Learning Performance Of Chinese Art Students in Chengdu

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Abstract

Purpose: This study uses Tencent Conferences for online learning in Chengdu to explore the factors influencing Chinese art student satisfaction, loyalty, and learning performance. The conceptual framework contains service quality, perceived usefulness, perceived ease of use, image, satisfaction, loyalty, and learning performance. **Research design, data, and methodology:** Quantitative method was applied using online questionnaires to 500 participants. The Item-Objective Congruence (IOC) and pilot test (n=30) of Cronbach's Alpha were used to verify the validity and reliability of all scale items of variables. The researcher used Confirmatory Factor Analysis (CFA) and Structural Equation Modeling (SEM) to analyze the collected data to obtain the model's goodness of fit and test the hypotheses. **Results:** The results confirm that all relationships have significant effects. Service quality, perceived usefulness, perceived ease of use, and image can determine student satisfaction. Student satisfaction and image significantly influence student loyalty. Furthermore, student satisfaction has the strongest influence on student loyalty. **Conclusions:** This research suggested that educators and workers of Tencent Conference learning platform institutions should focus on the platform's positive image and strengthen the service quality, which can improve students' satisfaction to achieve the ultimate goal of improving students' loyalty and learning performance.

Keywords : Online Learning, Image, Satisfaction, Loyalty, Learning Performance

JEL Classification Code: E44, F31, F37, G15

1. Introduction

At the beginning of 2020, the sudden outbreak of the epidemic not only had a significant impact on people's lives and production but also brought a severe test to the field of education, and higher education also faced great challenges. Online teaching at all levels was an emergency response to the COVID-19 epidemic (Adedoyin & Soykan, 2020). Although online teaching has not changed the nature of professional education in colleges and universities, it has indeed brought great challenges to the teaching and management of colleges and universities (Akuratiya & Meddage, 2020). With the rapid development of information, people use mobile phones very frequently. Therefore, many online learning platforms have also extended the function of using mobile phones for online education (Shuck et al., 2016). Although the large-scale promotion of online teaching in colleges and universities was an emergency in a special

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period, it would play a positive role in promoting the reform of higher education teaching methods and the optimization of teaching models. The flexibility and convenience of online teaching also fit the learning habits of contemporary college students (Bawanti & Arifani, 2021).

Under the epidemic, teachers' teaching environments and students' learning environments changed greatly. Although the scale of online teaching has expanded, and the number of people using Tencent Conference for online learning has also increased rapidly, many things could be improved compared with traditional offline teaching. On the one hand, it was difficult for teachers to grasp students' learning status in real-time. There was a "lag" phenomenon in learning supervision and error correction. On the other hand, a learning environment and a "fragmented" learning style made it difficult for students to focus on learning. Their initiative and enthusiasm for learning were greatly reduced. In a practical sense, this study could help students better understand online learning through the evaluation and investigation of online learning so that students could get better education quality. Theoretically, this study comprehensively analyzed the disadvantages of online learning by investigating the feedback information of students' use of Tencent Conference online learning and then providing suggestions for optimizing online learning to promote the development of online education in the later stage.

With the development of information technology, the mixed teaching mode combining online and offline has been developed rapidly. The mixed teaching mode had changed the traditional instillation teaching mode. People's demand for online education is increasing daily, which gives full play to online education and gradually presents its importance. Regardless of online education or offline classroom, students' learning experiences came first. In the spring semester of 2020, during the outbreak of the epidemic, all offline courses of art colleges and universities were converted to online courses. This study focused on the online learning experience of Chinese art college students in Chengdu during COVID-19. It was necessary, through data investigation and analysis, to explore students' satisfaction, loyalty, and learning performance with online learning using Tencent Conference.

2. Literature Review

2.1 Service Quality

Service quality is regarded as the sum of the characteristics of a product or service, which are related to the capability to meet a given demand (Haksever et al., 2000). Juran (1988) introduced the early concept of service quality to meet users' requirements. However, Zeithaml (1988) described service quality as the advantage or superiority of providing a service. As for higher education, the quality of services was especially significant. Positive sensing of service quality positively impacted student satisfaction, which was an accepted truth (Alves & Raposo, 2010). Wang and Lin (2012) proposed that system quality extremely affected applicants' perception of the usefulness of mobile services. Dagger et al. (2007) showed that customer satisfaction depended on the service quality that they perceived. It was stated that service quality influenced the purpose of information system reuse by perceiving value and applicant satisfaction (Wang & Liao, 2008). Hence, the first hypothesis is indicated:

H1: Service quality has a significant influence on student satisfaction.

2.2 Perceived Usefulness

Perceived usefulness is the extent to which a man assumes that applying a specific system would improve his/her execution at work (Davis, 1989), which was one of the main reasons for clarifying the user's adoption of a specific kind of system in the technology acceptance model TAM as well (Davis et al., 1989). In the IS research, perceived usefulness was considered an impacted determinant of the number of systems and technology applications (Gamal Aboelmaged, 2010). Perceived usefulness could influence users' willingness or reaction to the product or service. Perceived usefulness directly affected users' willingness to use online banking (Hoehle et al., 2012; Jabnoun & Hassan Al-Tamimi, 2003). Thong et al. (2002) used the Technology Acceptance Model (TAM) to test the impact of usefulness and ease of use on digital library systems. Wen et al. (2011) acknowledged that perceived usefulness was a decisive factor in application satisfaction. According to Joo (2010), previous research showed a high connection between perceived usefulness and satisfaction. Therefore, a hypothesis is set:

H2: Perceived usefulness has a significant influence on student satisfaction.

2.3 Perceived Ease of Use

Perceive ease of use refers to the extent to which a man asserts that applying a specific system would require no physical or mental attempt (Davis, 1989). Perceived ease of use was defined as the extent to which a person asserted that using a specific system would be effortless (Ajzen & Fishbein, 1977). Davis (1989) showed that perceived ease of use influenced students' acceptance of online learning. Some researchers said that people who thought studying on the Internet was entertaining could trust that applying e-learning systems was easy and handy (Roca & Gagne, 2008; Yeung

& Jordan, 2007). Technology use satisfaction was the degree of satisfaction with their interaction with technology (DeLone & McLean, 2003). Numerous studies also found a strong link between perceived ease of use and satisfaction to determine a hypothesis:

H3: Perceived ease of use has a significant influence on student satisfaction.

2.4 Image

Haedrich (1993) noted image as the mental character contour of an organization constructed by a person. The psychological representation of an actual thing moves at the position of it (Palacio et al., 2002). Kuo and Ye (2009) believed that if a student had a good impression of an institution, then he/she would assess its services of it more positively. An affirmative corporate image directly affects customer satisfaction in the banking industry. Thus, customer satisfaction could enhance the bank's image (Onyancha, 2013).

Recently, some academics highlighted the relationship between enterprise brand and customer satisfaction, and customer satisfaction was extremely connected to image (Osman et al., 2015). In some research, it was demonstrated that image impacted loyalty. In the condition of higher education, Alves and Raposo (2007) proved that image became an important crucial factor of student loyalty. It had been observed that image greatly impacted customer loyalty because this was the primary section to attract customers to present positive reflections (Aydin & Ozer, 2005; Narteh, 2013). Then, two hypotheses are proposed:

H4: Image has a significant influence on student satisfaction.

H6: Image has a significant influence on loyalty.

2.5 Students Satisfaction

Customer satisfaction was the total assessment of a company's post-purchase behavior or service usage (Fornell, 1992). Satisfaction was a condition that a man or woman perceived after experiencing performance or results that met his or her demand (Arif & Ilyas, 2013; Kotler & Clarke, 1987). Kaldenberg et al. (1998) studied course quality, non-course events, and other university-associated elements as determinants of student satisfaction. When users use smartphones, their satisfaction with device properties and other assessments would extraordinarily affect users' satisfaction with smartphones (Ha & Park, 2013; Kim et al., 2016; Zhong et al., 2022).

According to Helgesen and Nesset (2011), customer loyalty was generally considered the direct result of their satisfaction. It had been observed that image greatly impacted customer loyalty because this was the primary section to attract customers to present positive reflections (Aydin & Ozer, 2005; Narteh, 2013). Freeze et al. (2010) presented that students with higher usage/satisfaction might undertake that e-learning systems could increase the learning experience (contribute to their outcoming and behavior in a classroom). Based on the above assumptions, this study develops the following hypotheses:

H5: Student satisfaction has significant influence on loyalty.

H7: Student satisfaction has a significant influence on learning performance.

2.6 Loyalty

Kim et al. (2004) defined customer loyalty as a unite of positive customer attitude and repurchase performance. In addition, student loyalty consists of attitude and performance as well (Hennig-Thurau et al., 2001). The attitude part could be divided into three sections, including cognitive, emotional, and associative factors. In contrast, the performance part could be understood as connected to the student's decision on their mobility choices (Helgesen & Nesset, 2011). Loyal students could positively influence the quality of teaching through engagement and promise (Helgesen & Nesset, 2011). Loyal students could participate in study activities by coming up with innovative research opinions or joining to collect data for the research program (Hennig-Thurau et al., 2001).

2.7 Learning Performance

Student performance was derived from final exam scores. Swanson and Holton (2001) believed that performance was one of the final aims in the field of HRD (human resource development). In education, team performance was asserted as the quantity and quality of communication in the classroom (Payton et al., 2012). Educators were required to determine the former sights and influences of the interrelationships between technology, satisfaction, and student performance, which were significant determinants of whether the system failed or succeeded (Gebauer et al., 2010; Snead et al., 2015; Wang & Liao, 2008). Technology and a well-prepared study condition stimulated students' participation and enthusiasm, thereby creating a way for higher academic performance (Kangas et al., 2017).

3. Research Methods and Materials

3.1 Research Framework

This study aims to investigate students' satisfaction, loyalty, and learning performance using Tencent Conference for online learning. Some sections of each previous framework in the following research were used to organize

the structure of the final conceptual framework. The first framework of the research was produced by Teeroovengadum et al. (2016), which offered the study of an image in terms of student satisfaction and loyalty. The second framework of the research was composed by Salimon et al. (2021), which provided the study of perceived usefulness and perceived ease of use in terms of satisfaction. The last research framework was constructed by Yuce et al. (2019), which presented the study of service quality, satisfaction, and learning performance. As a result, a conceptual framework is demonstrated in Figure 1.

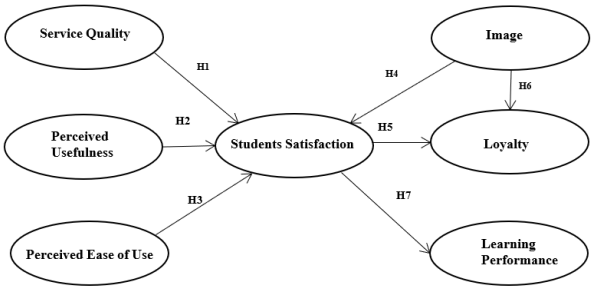

Figure 1: Conceptual Framework

H1: Service quality has a significant influence on student satisfaction.
H2: Perceived usefulness has a significant influence on student satisfaction.
H3: Perceived ease of use has a significant influence on student satisfaction.
H4: Image has a significant influence on student satisfaction.
H5: Student satisfaction has significant influence on loyalty.
H6: Image has a significant influence on loyalty.
H7: Student satisfaction has a significant influence on learning performance.

3.2 Research Methodology

The research methodology of this research mainly focuses on a quantitative approach. Before the data collection process, The Item-Objective Congruence (IOC) and pilot test of Cronbach's Alpha were used to verify the validity and reliability of all scale items of variables. The data were collected using online questionnaires to 500 participants. The survey consists of three parts which are screening questions, measuring items with a 5-point Likert scale, and a demographic profile. The researcher used Confirmatory Factor Analysis (CFA) and Structural Equation Modeling (SEM) to analyze the collected data to obtain the model's goodness of fit and test the hypotheses.

For validity and reliability test, the index of item-objective congruence (IOC) is to recruit the experts assigning each objective a score of 1(or explicitly measured), -1(obviously not measured), or 0 (to measure the degree to which the content area was unclear). Consequently, all scale items passed at a score rating from three experts equal to or above 0.6. Cronbach's alpha coefficient reliability test was used to examine a pilot test (n=30). As a result, all constructs show internal consistency with above 0.7 (George & Mallery, 2003), which are very good (>0.8) and excellent (> 0.9) values. The results are service quality (0.962), perceived usefulness (0.923), perceived ease of use (0.944), image (0.890), satisfaction (0.953), loyalty (0.964), and learning performance (0.956).

3.3 Population and Sample Size

The target population is Chinese art second to fourth-year students using Tencent Conferences for online learning at Sichuan University of Media and Communications (SUMC), Chengdu**,** China. MacCallum et al. (1999) assumed that SEM is to conduct a minimum sample size of 100 or 200. For a more rigorous national impact assessment, the research collects 500 samples of this research.

3.4 Sampling Technique

This study employs judgmental, stratified random, and convenience sampling techniques. The judgmental sampling was to select second to fourth-year Chinese art students using Tencent Conferences for online learning at Sichuan University of Media and Communications (SUMC), Chengdu, China. The stratified random sampling was used to proportionate 500 respondents, as shown in Table 1. Convenience sampling was to distribute an online questionnaire to the target group via WeChat and other online media.

Table 1: Sample Units and Sample Size

Year of Study	Number of Students	Sample Unit
Sophomore	2,019	166
Junior	2,020	166
Senior	2,041	168
Total	**6,080**	**500**

Source: Constructed by author.

4. Results and Discussion

4.1 Demographic Information

The demographic results from 500 questionnaires are demonstrated in Table 2. 48 percent are male, whereas 52 percent are female. The year of the study shows that sophomores and juniors are 33.2 percent, while seniors are 33.6 percent. 62.2 percent of respondents have been using

Tencent Conference for online learning for 1-2 years, and 37.8 percent of those have used the system for more than two years.

Table 2: Demographic Profile

Demographic Characteristics (N=500)		Frequency	Percentage
Gender	Male	240	48%
	Female	260	52%
Year of Study	Sophomore	166	33.2%
	Junior	166	33.2%
	Senior	168	33.6%
Time of Using Tencent Conference for online learning	1-2 years	311	62.2%
	More than 2 years	189	37.8%

4.2 Confirmatory Factor Analysis (CFA)

CFA can be used to confirm convergent validity in SEM. The results in Table 3 were acceptable for a variable to have factor loading values above 0.4 (Comrey & Lee, 1992). Generally, the p-value should be less than 0.05, and the t-value should be greater than 1.98 (Ojong et al., 2014). The CR value of 0.7 was also acceptable, and the AVE value of each construction was required to exceed 0.50 (Fornell & Larcker, 1981).

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
Service Quality	Lwoga (2013)	5	0.901	0.652-0.859	0.896	0.636
Perceived Usefulness	Davis (1989)	5	0.920	0.766-0.879	0.922	0.703
Perceived Ease of Use	Davis (1989)	4	0.934	0.813 -0.935	0.925	0.756
Image	Etemad-Sajadi and Rizzuto (2013)	4	0.933	0.833 -0.922	0.932	0.774
Student Satisfaction	Ali et al. (2016)	7	0.947	0.775-0.904	0.935	0.743
Loyalty	Etemad-Sajadi and Rizzuto (2013)	4	0.949	0.883-0.930	0.949	0.823
Learning Performance	Ali et al. (2016)	4	0.934	0.828-0.909	0.935	0.782

The measurement model and its measured relevant index value results are demonstrated in Table 4. Before the modification, the values of GFI and AGFI did not meet the requirements of standard values, so the measurement model could be modified to meet the standard model fitting degree. These data results demonstrated that the fitting degree of the modified measurement model had the goodness of fit, and all index values meet the requirements. The data results were CMIN/df=1334.415/468 or 2.851, GFI=0.864, CFI=0.949, RMSEA=0.061, TLI=0.943, AGFI=0.836 and NFI=0.924.

Table 4: Goodness of Fit for Measurement Model

Fit Index	Acceptable Criteria	Statistical Values before adjustment	Statistical Values after adjustment
CMIN/df	< 5.00 (Awang, 2012)	1933.33 / 474 or 4.079	1334.415/468 or 2.851
GFI	≥ 0.85 (Joreskog & Sorbom, 1984)	0.803	0.864
CFI	≥ 0.90 (Hair et al., 2006)	0.915	0.949
RMSEA	≤ 0.08 (Browne & Cudeck, 1993)	0.079	0.061
TLI	≥ 0.90 (Hair et al., 2006)	0.905	0.943
AGFI	≥ 0.80 (Tabachnick & Fidell, 2007)	0.766	0.836
NFI	≥ 0.90 (Arbuckle, 1995)	0.890	0.924
Model Summary		**Not in harmony with empirical data**	**In harmony with empirical data**

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

Discriminant validity was the degree to which a potential variable differed from other potential variables. Table 5 reflects the test results of discriminant validity. The value of the AVE square root of all variables on the diagonal was greater than the correlation values among the corresponding variable and other variables. Therefore, these data supported the discriminant validity of the measurement model.

Table 5: Discriminant Validity

	SQ	PU	PE	IM	SA	LO	LP
SQ	**0.797**						
PU	0.659	**0.838**					
PE	0.621	0.701	**0.869**				
IM	0.570	0.606	0.662	**0.880**			
SA	0.741	0.762	0.767	0.762	**0.862**		
LO	0.583	0.539	0.618	0.646	0.688	**0.907**	
LP	0.449	0.388	0.416	0.409	0.489	0.482	**0.884**

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

4.3 Structural Equation Model (SEM)

The fitness of the structural equation model was tested by applying the goodness-of-fit index. According to Table 6, the values before modifying GFI, RMSEA, and AGFI did not meet the requirements or reach the acceptable index. The

structural model was modified by measuring the error among each scale item in the study. The acceptable values show that CMIN/df=1366.801/475 or 2.877, GFI=0.858, CFI=0.948, RMSEA=0.061, TLI=0.942, AGFI=0.833, and NFI=0.922.

Table 6: Goodness of Fit for Structural Model

Fit Index	Acceptable Criteria	Statistical Values before adjustment	Statistical Values after adjustment
CMIN/df	< 5.00 (Awang, 2012)	2958.182/488 or 6.062	1366.801/475 or 2.877
GFI	≥ 0.85 (Joreskog & Sorbom, 1984)	0.720	0.858
CFI	≥ 0.90 (Hair et al., 2006)	0.855	0.948
RMSEA	≤ 0.08 (Browne & Cudeck, 1993).	0.101	0.061
TLI	≥ 0.90 (Hair et al., 2006)	0.844	0.942
AGFI	≥ 0.80 (Tabachnick & Fidell, 2007)	0.678	0.833
NFI	≥ 0.90 (Arbuckle, 1995)	0.832	0.922
Model Summary		**Not in harmony with empirical data**	**In harmony with empirical data**

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

4.4 Research Hypothesis Testing Result

As of Table 7, all of the proposed research hypothesis were supported measued by standardized path coefficient (β) values and t-value. The significant degree is also verified by p<0.001.

Table 7: Hypothesis Results of the Structural Equation Modeling

Hypothesis	(β)	t-value	Result
H1: SQ → SA	0.247	6.188***	Supported
H2: PU → SA	0.231	5.748***	Supported
H3: PE → SA	0.239	5.762***	Supported
H4: IM → SA	0.354	9.595***	Supported
H5: SA→ LO	0.512	7.664***	Supported
H6: IM → LO	0.266	4.066***	Supported
H7: SA → LP	0.526	11.711***	Supported

Note: *** p<0.001
Source: Created by the author

According to the research data, student satisfaction had the strongest influence on their learning performance in H7, with the value of standardized coefficients at 0.526 and the value of -value at 11.711. The data results indicated that the hypothesis of this study was consistent with the views of Iaffaldano and Muchinsky (1985), Riketta (2008), and Andreassi et al. (2014) that satisfaction was positively correlated with performance.

The following strong connection was between student satisfaction and loyalty, which showed student satisfaction significantly influenced loyalty with the value of standardized coefficients at 0.512 and the value of T-value at 7.664 in H5. The research results were consistent with the views of Arif and Ilyas (2013) and Chong and Ahmed (2012) that student satisfaction positively affected loyalty.

Next, an image significantly influenced student satisfaction, with the value of standardized coefficients at about 0.354 and the value of the T-value at 9.595 in H4. This research result was supported by previous studies (Masserini et al., 2018; Osman et al., 2015).

Not only that, but loyalty was also significantly influenced by an image with the value of standardized coefficients of about 0.266 and the value of T-value at 4.066 in H6. This was consistent with the research results of Alves and Raposo (2007), Aydin and Ozer (2005), and Narteh (2013), that image played a great role in loyalty.

Besides, service quality significantly influenced student satisfaction, with the value of standardized coefficients at about 0.247 and the value of T-value at 6.188 in H1. Dagger et al. (2007), Wang and Liao (2008), and Hsu et al. (2008) have also shown that service quality has a significant impact on satisfaction.

Immediately after that, perceived ease of use significantly influenced student satisfaction, with the value of standardized coefficients at about 0.239 and the value of T-value at 5.762 in H3. Previous studies strongly supported this result (Hong et al., 2006; Thong et al., 2006).

Finally, perceived usefulness significantly influenced student satisfaction, with the value of standardized coefficients at about 0.231 and the value of T-value at 5.748 in H2. Chen et al. (2009) and Cenfetelli et al. (2005) emphasized that there was a positive influence between perceived usefulness and satisfaction.

5. Conclusion and Recommendation

5.1 Conclusion and Discussion

This study explores factors influencing Chinese art students' satisfaction, loyalty, and learning performance using Tencent Conferences for online learning in Chengdu. The researcher used Confirmatory Factor Analysis (CFA) and Structural Equation Modeling (SEM) to analyze the collected data to obtain the model's goodness of fit and test the hypotheses. The results confirm that all relationships have significant effects. Service quality, perceived usefulness, perceived ease of use, and image can determine student satisfaction. Student satisfaction and image

significantly influence student loyalty. Furthermore, student satisfaction has the strongest influence on student loyalty.

H1 showed an important positive correlation between service quality and student satisfaction, as shown in previous studies (Dagger et al., 2007; Hsu et al., 2008; Wang & Liao, 2008). When students have doubts or problems, the quality of service would directly affect the degree of satisfaction of students. H2 showed that there was also an important effect between perceived usefulness and student satisfaction. Chen et al. (2009) and Cenfetelli et al. (2005) also confirmed that perceived usefulness was an indispensable part of student satisfaction with the platform. H3 proved that the ease of use of online learning platforms would improve student satisfaction. Similar results had been reported in the previous research literature (Hong et al., 2006; Thong et al., 2006).

H4 proved that image was the most significant factor affecting student satisfaction. That was the highest positive image of the platform and the higher the satisfaction of students. Osman et al. (2015) and Masserini et al. (2018) also found similar results. H5 believed that student satisfaction positively impacted loyalty, which was also supported by data. This was consistent with Arif and Ilyas (2013) and Chong and Ahmed's (2012) findings. H6 showed that image and loyalty had a positive impact. That was, the higher the positive image of the platform, the stronger the loyalty to the platform. The views of Alves and Raposo (2007), Aydin and Ozer (2005), and Narteh (2013) also confirmed the results of this study in a different way. H7 confirmed that student satisfaction was considered an important predictor of academic performance. Iaffaldano and Muchinsky (1985), Riketta (2008), and Andreassi et al. (2014) also had similar results, showing a positive correlation between student satisfaction and learning performance.

5.2 Recommendation

In this study, the image was the most significant factor affecting students' satisfaction. Therefore, it was necessary to enhance students' impression of using Tencent Conference for e-learning. Furthermore, satisfaction was the decisive factor affecting student loyalty and learning performance. This meant that the more satisfied students were with using Tencent Conference for online learning, the better they would perform in their studies. This would also significantly influence their decision to continue using the platform or recommend it to others in the future. Not only that, in the work of higher education, workers in higher education institutions (senior managers, platform developers, marketers, and so on) also need to consider the service quality, perceived usefulness, and perceived easiness of students in the learning platform. In other words, paying attention to the service quality of the platform, simplifying the complicated operation of its use, strengthening the usefulness of obtaining learning materials, and actively dealing with students' doubts about the use of the platform or related problems were important measures to improve student satisfaction effectively. After obtaining higher student satisfaction, educators and workers in higher education institutions could gain students' more focused learning performance and loyalty. All these helped to strengthen teachers' interaction and communication through students' learning performance, developed perfect teaching plans, and stimulated students' positive learning attitude.

5.3 Limitation and Further Study

The researcher put forward some research directions for further research. First, the research object selected in this study was university students from Chengdu, China, but the sample size and scope of the study needed to be increased. Therefore, in future studies, it was necessary to increase the sample size and broaden the scope of research to fill in the data acquisition limitations. Second, to obtain more reliable research results, it was significant to conduct more or other variables to determine students' online learning experience. In addition, various types of learning platforms were emerging with the rise of online learning, such as MOOCs. This study only focused on the quantitative method; Hence, a future study can extend to qualitative approach such as interview and focus group.

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