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The Antecedents of Satisfaction and Loyalty of College Students Towards Online Learning in Chengdu, China, during COVID-19

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Abstract

Purpose: This paper aims to identify the key antecedents of satisfaction and loyalty of college students toward online learning in Chengdu, Sichuan province, China, during the current COVID-19 epidemic. A conceptual framework comprises perceived value, service quality, system quality, perceived usefulness, university reputation, trust, satisfaction, and loyalty. **Research design, data, and methodology:** This study uses the questionnaire as a survey tool to examine 500 students at Xihua University. The index of Item-Objective Congruence and Cronbach's Alpha reliability of the pilot test (n=50) was ensured before the data collection. The main statistical tool was applied Confirmatory Factor Analysis (CFA) and Structural Equation Modeling (SEM) to produce the data results and analysis. **Results:** The results show that all hypotheses are supported in this study. Perceived value, service quality, system quality, perceived usefulness, and university reputation significantly impact satisfaction. Trust and satisfaction significantly impact loyalty. **Conclusions:** Student loyalty is one of the challenges facing the long-term development of online learning. The research's results are of great value to the developers of online learning systems. The sustainable development of online learning is very important for higher education to diversify its education service and attract prospective students.

Keywords : Online Learning, Trust, Perceived Value, Satisfaction, Loyalty

JEL Classification Code: E44, F31, F37, G15

1. Introduction

With the rapid development of Internet technology, people's life has undergone earth-shaking changes. Informatization has changed people's way of life and work and greatly facilitated people. Relying on the development of Internet technology, traditional industries are glowing with new vitality. Since China formally connected to the Internet in 1994, the Internet has been combined with education (Yin, 2016). Nowadays, the development of the Internet differs from that of the past, and its impact on education cannot be compared with the past. The 4G Mobile Internet era brings people a new mobile education experience, and the arrival of the 5G era will make a breakthrough in Internet education. By December 2020, the number of net citizens in China had reached 989 million, with the Internet penetration rate reaching 70.4 percent (China Internet Network Information Center, 2021).

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In order to carry forward educational innovation, deepen educational reform, promote the application of modern information technology in teaching, and enjoy together high-grade teaching resources. In 2003, the construction of high-quality teaching courses and teaching reform projects in colleges and universities were launched by the Ministry of Education, including higher vocational colleges (Zheng et al., 2020). In 2008, MOOC, a new open curriculum model combining the Internet and education, was produced, which caused a sensation (Wang, 2013). It has the characteristics of openness, large scale, flexibility, and so on. The Internet plus education has been promoted to a new level and is regarded as a new generation of Internet Learning Revolution.

At the beginning of 2020, COVID-19 suddenly swept China. While the domestic outbreak is under control, the COVID-19 outbreak is growing rapidly worldwide. Economic, cultural, educational, and other global exchanges have been impeded. Due to the coming of the epidemic, online learning must fully cover the entire education field, including the previously limited university education. In this emergency rescue operation, due to the high cooperation between the government, schools, and enterprises, the advantages of flexible, useful, and efficient online learning have been fully demonstrated, and the timely development of teaching activities in schools at all levels during the epidemic has been effectively and timely guaranteed. Accordingly, this study's purpose was to fill the gap from previous research by identifying the key antecedents of satisfaction and loyalty of college students toward online learning in Chengdu, Sichuan province, China, under the background of the current COVID-19 epidemic.

2. Literature Review

2.1 Perceived Value

Ladhari and Morales (2008) showed that consumers are pleased to advise things with higher perceived service value to others. Whether or not to buy services depends on how consumers perceive their profit and pay on the cognitive level. Choi et al. (2004) defined perceived value as a high service value, and the quality of service they get surpasses the cost. Tam (2004) also supported that perceived value is an evaluation of consumers on what is paid on what is gained. According to Grönroos and Voima (2013), most definitions of perceived value are derived from the theory of fairness. They think the essence of perceived value is evaluating customers' value obtained from products or services. The evaluation is based on the monetary and non-monetary resources they spend purchasing products or services. Based on empirical studies, perceived value is the core influencing factor of consumer satisfaction. (Caruana, 2002; Choi et al., 2004; Cronin et al., 2000). The same is true in the telecommunications industry; value is a major factor that affects satisfaction (Lai et al., 2009). Customer satisfaction with Internet services is largely driven by their satisfaction, which has been proved in the study of Chiou (2004). Thus, the following hypothesis is indicated:

H1: Perceived value has a significant impact on satisfaction.

2.2 Service Quality

Service quality is related to satisfaction but not equal to satisfaction, which is the result of comparing expectation with performance perception (Parasuraman et al., 1988). The relationship between people's expectations and perception of service effect is mainly described by service quality (McAllister, 2001). After consumption, the whole subjective influence of consumers is defined as service quality (Bitner & Hubbert, 1994). Service quality and customer satisfaction's role were emphasized by Chang (2006). Oliver (1980) stated that outstanding service quality would produce satisfied customers, thus encouraging clients to consume more products. In addition, Ali and Raza (2017) reported that customer satisfaction would be improved when they abide by service quality in the service industry. Consequently, a hypothesis is proposed below:

H2: Service quality has a significant impact on satisfaction.

2.3 System Quality

Gorla et al. (2010) defined system quality as the quality of information processing that represents the system's quality, and its essential feature is the use of the most advanced technology. In the success model D&M IS, the above definition is interpreted as a measure of technical success. The informatization degree of user adaptation task is affected by quality, brought up by Zha et al. (2018). In IS environment, scholars have found that system quality can be used to predict user satisfaction, which is a powerful predictor (Petter & McLean, 2009; Urbach & Müller, 2012). System quality directly and actively affects user satisfaction (Daghan & Akkoyunlu, 2016; Veeramootoo et al., 2018). Based on the research of technical characteristics such as system characteristics and quality characteristics (Urbach & Müller, 2012). Lilien et al. (2004) believe that satisfaction is affected by system quality. According to the literature review, a hypothesis is stated:

H3: System quality has a significant impact on satisfaction.

2.4 Perceived Usefulness

Perceived usefulness of the technology can be referred to "what the upsides users will receive from using the system" (Zhong et al., 2022). Lau et al. (2016) defined perceived

usefulness, that is, users have faith that smartphones can help individuals improve their communication skills and manage personal activities, personal itineraries, and entertainment activities more efficiently. The degree to which people believe a product can improve their trading performance is defined as perceived usefulness (Chiu et al., 2009). As the most important factor affecting consumers' attitudes toward online shopping, perceived usefulness has become important in TAM behavior intention prediction (Celik, 2011). Shee and Wang (2008) posited that the success of electronic information services and users' attitudes depend on user satisfaction. For user satisfaction, Sun et al. (2008) ensured that online learners' satisfaction and perceived usefulness have a positive correlation. Thus, a hypothesis is established based on this evidence:

H4: Perceived usefulness has significantly impact on satisfaction.

2.5 University Reputation

Discussing an organization's reputation means that the person who owns a share in a business evaluates the company's ability to see whether it meets its expectations (Fombrun & Van Riel, 2003). Reputation represents a system that refers to the congregate emotional belief system of social group members (Bromley, 2002). In many universities, the reputation of positive energy is a beneficial indicator of university quality. Universities use it as a measure to influence students' choice of college (Nguyen & LeBlanc, 2001). University reputation is a structure that is more extensive than brand image. Therefore, it may have a stronger impact on students' satisfaction (De La Fuente Sabaté & De Quevedo Puente, 2003). Many aspects affect the cognition of brand image, such as "being world-class," "technical leadership," and "global presence," which affect the satisfaction of students (Mudambi et al., 1997). Thus, this study hypothesizes that:

H5: University reputation has significantly impact on satisfaction.

2.6 Trust

Trust in the business environment is regarded as a company that believes that the actions taken by another company will have dynamic effects on the company rather than undesired behaviors that bring passive consequences (Anderson & Narus, 1986). Morgan and Hunt (1994) emphasized the significance of trust, which they described as "confidence in the reliability and integrity of trading partners is the prerequisite for the existence of a trust." Trust comes from the confidence in having credible and deeply upright suppliers, expressed through consistency, ability, truthfulness, justice, accountability, assistance, and kindness (Chenet et al., 2010). Some studies on the relationship between superiors and subordinates found that trust affects job satisfaction to a certain extent (Brashear et al., 2003). According to the research results of Perry and Mankin (2007), there is a positive connection between two things in which organizational trust changes as job satisfaction. Customer loyalty is positively affected by satisfaction and trust (Liu et al., 2011). Based on the assumptions, the following hypothesis is proposed:

H6: Trust has a significant impact on loyalty.

2.7 Satisfaction

In marketing, customer satisfaction is a nuclear notion (Siddiqi, 2011). Kotler (2003) describes customer satisfaction (or dissatisfaction) as a feeling of pleasure (or disappointment) generated by a person who contrasts the perceived performance of a product with his or her previous expectations of the product's performance. Therefore, to achieve customer satisfaction, suppliers must understand customers' needs and meet them as much as possible (Harris & Harrington, 2000). Satisfaction has a powerful influence on the continued willingness to use information systems, as emphasized by (Limayem & Cheung, 2008). Satisfied customers usually show commitment and loyalty (Chen et al., 2016; Li et al., 2015). To explain the relationship between satisfaction, loyalty, and enterprise performance, Edvardsson et al. (2000) highlighted the logic of "Satisfaction Loyalty Performance." Accordingly, this study put forward a hypothesis:

H7: Satisfaction has a significant impact on loyalty.

2.8 Loyalty

Oliver (2010) pointed out that loyalty is a deep psychological commitment to buy back or revisit a service in the future, even if there are obstacles or obstacles, to achieve consumption purposes. In service and marketing research, customer loyalty is the crucial aspect to which shoppers and providers are relative (Jang et al., 2013). A statement that explains the meaning of customer loyalty can be summed up as follows: to maintain the relationship as the goal, the possibility of no change, active about public praise, positive attitude, buy again, perennial promise or any devotion of these parts (Davis-Sramek et al., 2008). Loyalty behavior stimulates customers to spend more time and participate more in the consumption process (Li et al., 2015; Zhang et al., 2014). Similarly, the features of customer loyalty behavior also enable customers to participate in and expense more on goods and services (Balter, 2008).

3. Research Methods and Materials

3.1 Research Framework

Based on Figure 1, a conceptual framework comprises perceived value, service quality, system quality, usefulness, university reputation, trust, satisfaction, and loyalty. Chang (2013) provided the exploring the determinants of e-learning systems' continuance in terms of system quality, information quality, service quality, perceived value, and satisfaction. Ifinedo (2017) studied perceived usefulness, ease of use, and satisfaction. Swati et al. (2019) examined student satisfaction and university reputation. Finally, Latif et al. (2021) conducted the research model of student loyalty regarding service quality, student satisfaction, and student trust.

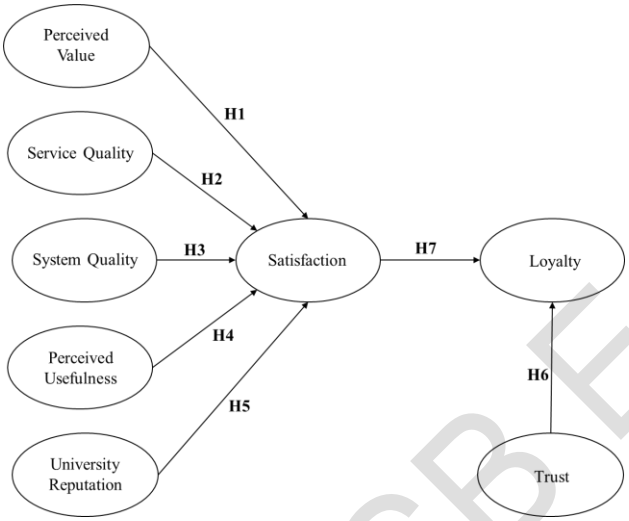

Figure 1: Conceptual Framework

H1: Perceived value has a significant impact on satisfaction.
H2: Service quality has a significant impact on satisfaction.
H3: System quality has a significant impact on satisfaction.
H4: Perceived usefulness has significantly impact on satisfaction.
H5: University reputation has significantly impact on satisfaction.
H6: Trust has a significant impact on loyalty.
H7: Satisfaction has significantly impact on loyalty.

3.2 Research Methodology

This study uses the questionnaire as a survey tool to examine 500 students at Xihua University. The questionnaire is designed into three parts; screening questions, measuring variables with the five-point Likert scale from strongly disagree (1) to strongly agree (5), and demographic information. The index of Item-Objective Congruence and Cronbach's Alpha reliability of the pilot test (n=50) was ensured before the data collection. The main statistical tool was applied Confirmatory Factor Analysis (CFA) and Structural Equation Modeling (SEM) to produce the data results and analysis.

The item-objective congruence (IOC) index results were scored by three experts and approved at a score of 0.60 or higher. Afterward, a pilot test of 50 respondents was conducted through Cronbach's Alpha coefficient values, which were approved at a score equal to 0.7 or higher (Taber, 2018). The CA's results are perceived value (0.838), service quality (0.860), system quality (0.877), perceived usefulness (0.971), university reputation (0.866), trust (0.911), satisfaction (0.920), and loyalty (0.914).

3.3 Population and Sample Size

The target population is 500 students at Xihua University who have been experiencing online learning during COVID-19. According to Soper (n.d.), the researchers put all the necessary information into the calculator, which are the expected results size (0.2), the expected statistical power level (0.8), the number of potential variables (8), the number of observed variables (31), and the probability standard (0.05). As a result, the recommended minimum sample size is 444. Therefore, in order to get better statistical results, the researchers intend to collect 500 samples.

3.4 Sampling Technique

The sampling technique of this study is judgmental, stratified random, and convenience sampling. Firstly, judgment sampling was to select students at Xihua University who have been experiencing online learning during COVID-19. Second, stratified random sampling was used to proportionate the number of undergraduates and postgraduates, as shown in Table 1. Lastly, convenient sampling was conducted by distributing the questionnaire online method during January to March 2023.

Table 1: Sample Units and Sample Size

University name	Grade Year	Population Size Total=38,000	Proportional Sample Size Total=500
Xihua University	Undergraduate	30,700	404
	Graduate	7,300	96

Source: Constructed by author

4. Results and Discussion

4.1 Demographic Information

The demographic results are shown in Table 2. Among all respondents, 309 (61.8 percent) were female, and 191 (38.2 percent) were male. For age, most respondents are 20 years old and below, accounting for 62.6 percent, followed by 21-25 years old at 19.6 percent, 31 years old and above at 6.8 percent, and 26-30 years old at 6.8 percent. In terms of programs, there are 404 undergraduate students, accounting for 80.8 percent, and 96 graduate students, accounting for 19.2 percent.

Table 2: Demographic Profile

Demographic and General Data (N=500)		Frequency	Percentage
Gender	Male	191	38.2
	Female	309	61.8
Age	20 years old and below	313	62.6
	21-25 years old	98	19.6
	26-30 years old	34	6.8
	31 years old and above	55	11.0
Program	Graduate	96	19.2
	Undergraduate	404	80.8

Source: Constructed by author

4.2 Confirmatory Factor Analysis (CFA)

Based on the CFA's results in Table 3, Cronbach's Alpha coefficient values were approved at a score equal to 0.7 or higher (Taber, 2018). The acceptable threshold for factor load is a value of 0.5 or above (Hair et al., 2010). Additionally, the Composite or construct reliability (CR) and Average variance extracted (AVE) are reported together to increase the accuracy of the reliability test results. The CR results of this study were all above the threshold. CR and AVE values of 0.7 or higher, respectively, and 0.4 or higher are acceptable (Fornell & Larcker, 1981). The composite reliability value ranges from 0.611 to 0.944. The AVE is also basically greater than 0.4, between 0.420 and 0.810.

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 value (PV)	Chang (2013)	3	0.716	0.731-0.890	0.611	0.442
Service quality (SVQ)	Xu et al. (2021)	4	0.795	0.598-0.765	0.799	0.501
System quality (STQ)	Cheng (2012)	4	0.729	0.627-0.741	0.741	0.489
Perceived usefulness (PU)	Salimon et al. (2017)	5	0.799	0.587-0.740	0.800	0.447
University reputation (UR)	Clemes et al. (2013)	3	0.881	0.770-0.983	0.891	0.734
Trust (T)	Aurier and Séré de Lanauze (2012)	4	0.763	0.578-0.813	0.776	0.469
Satisfaction (S)	Mouakket (2020)	4	0.947	0.743-0.975	0.944	0.810
Loyalty (L)	Ul Haq and Awan (2020)	4	0.779	0.603-0.762	0.741	0.420

This study used the goodness of fit index to evaluate the model fit. The fitting indexes selected in this study include Chi-square statistics (CMIN/df), the goodness of fit index (GFI), adjusted goodness of fit index (AGFI), normalized fitting index (NFI), comparative fitting index (CFI), Tucker-Lewis index (TLI) and approximate root mean square error (RMSEA). According to Table 4, the statistical values before adjustment were unacceptable model fit. Therefore, the acceptable fit values showed after the adjustment, where CMIN/DF=3.164, GFI=0.859, AGFI=0.828, NFI=0.863, CFI=0.901, TLI=0.887, and RMSEA=0.066.

Table 4: Goodness of Fit for Measurement Model

Index	Acceptable Values	Statistical Values Before Adjustment	Statistical Values After Adjustment
CMIN/DF	< 5.00 (Al-Mamary et al., 2015; Awang, 2012)	1365.671/406 or 3.364	1281.238/405 or 3.164
GFI	≥ 0.85 (Sica & Ghisi, 2007)	0.848	0.859
AGFI	≥ 0.80 (Sica & Ghisi, 2007)	0.815	0.828
NFI	≥ 0.80 (Wu & Wang, 2006)	0.854	0.863
CFI	≥ 0.80 (Bentler, 1990)	0.892	0.901
TLI	≥ 0.80 (Sharma et al., 2005)	0.876	0.887
RMSEA	< 0.08 (Pedroso et al., 2016)	0.069	0.066
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.

The validity of the discrimination is confirmed when the square root of AVE is greater than the coefficient of any correlated structure (Fornell & Larcker, 1981). As shown in Table 5, the square root of AVE for all structures on the diagonal is greater than the inter-scale correlation. Therefore, the discriminant validity is guaranteed.

Table 5: Discriminant Validity

	PV	SVQ	STQ	PU	UR	T	S	L
PV	**0.665**							
SVQ	0.286	**0.707**						
STQ	0.358	0.481	**0.699**					
PU	0.396	0.438	0.466	**0.668**				
UR	0.205	0.373	0.372	0.402	**0.857**			
T	0.479	0.334	0.349	0.470	0.340	**0.685**		
S	0.465	0.516	0.593	0.467	0.466	0.515	**0.900**	
L	0.385	0.413	0.473	0.504	0.413	0.559	0.628	**0.648**

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

4.3 Structural Equation Model (SEM)

Modification of the structural model was conducted through the structure between related measurement error items. According to the revised structural model, the goodness of fit index is recalculated, as shown in Table 6. The results of the statistical values are CMIN/DF=3.870, GFI=0.857, AGFI=0.804, NFI=0.859, CFI=0.892, TLI=0.863, and RMSEA=0.076. The fitting of the structural model was verified.

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 et al., 2015; Awang, 2012)	2155.365/370 or 5.825	1261.566/326 or 3.870
GFI	≥ 0.85 (Sica & Ghisi, 2007)	0.732	0.857
AGFI	≥ 0.80 (Sica & Ghisi, 2007)	0.715	0.804
NFI	≥ 0.80 (Wu & Wang, 2006)	0.758	0.859
CFI	≥ 0.80 (Bentler, 1990)	0.790	0.892
TLI	≥ 0.80 (Sharma et al., 2005)	0.770	0.863
RMSEA	< 0.08 (Pedroso et al., 2016)	0.098	0.076
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

The regression coefficient or standardized path coefficient measures the correlation between the independent and dependent variables proposed in the hypothesis. As shown in Table 7, all eight proposed assumptions were supported. Both satisfaction and trust largely influence loyalty to using online education. Satisfaction with online education is significantly driven by perceived value, service quality, system quality, perceived usefulness, and university reputation, respectively. Consequently, all hypotheses were considered significant at $p<0.05$.

Table 7: Hypothesis Results of the Structural Equation Modeling

Hypothesis	(β)	t-Value	Result
H1: PV→S	0.389	6.582*	Supported
H2: SVQ→S	0.253	5.610*	Supported
H3: STQ→S	0.377	6.462*	Supported
H4: PU→S	0.211	4.739*	Supported
H5: UR→S	0.283	7.004*	Supported
H6: T→L	0.406	6.327*	Supported
H7: S→L	0.678	8.245*	Supported

Note: * $p<0.05$
Source: Created by the author

Based on Table 7, the findings are discussed as follows:

The strongest influence on satisfaction is perceived value. The path relationship of perceived value has a standardized path coefficient of 0.389 and a t-value of 6.582 in H1. This finding is consistent with previous studies by Gorla et al. (2010) and Cronin et al. (2000), emphasizing that perceived value directly influences user satisfaction.

Secondly, system quality has a significant impact on satisfaction. The standardized path coefficient of H3 is 0.377, and the t-value is 6.462. This supports previous research by Gorla et al. (2010) and DeLone and McLean (2003) that system quality directly effects on user satisfaction.

Another important factor affecting satisfaction is the university's reputation, whose standardized path coefficient is 0.283 and t-value is 7.004 (H5). This supports previous studies by Mudambi et al. (1997), who emphasized that University reputation is a broader construct than brand image. Hence, it is more likely to influence students' satisfaction levels strongly.

In contrast, service quality also impacts satisfaction, with a standardized path coefficient of 0.253 and a t-value of 5.610 (H2). The research by Hosany and Martin (2012) agreed that Service quality has a key impact on satisfaction.

Perceived usefulness also has a significant impact on satisfaction. The standardized path coefficient of H4 is 0.211, and the t-value is 4.739. This supports previous studies by Shee and Wang (2008) that perceived usefulness is positively correlated with satisfaction in a learning environment.

When the standardized path coefficient is 0.406 and the t-value is 6.327, the impact of trust on loyalty is very significant, so H6 is valid. This finding is consistent with previous studies (Brashear et al., 2003; Perry & Mankin

(2007), who studied that in terms of student loyalty if students trust or find this learning style reliable, they will be loyal to it.

Satisfaction has a significant direct impact on loyalty, with a standardized path coefficient of 0.678 for H7 and a t-value of 8.245, which is consistent with the studies of Cronin et al. (2000). Satisfaction is influenced by perceived value, which should be a direct prerequisite for satisfaction. Satisfaction is an important factor in measuring the effectiveness and future use of e-learning. Gorla et al. (2010) explained that system quality, as the quality of online learning, can enhance student satisfaction with the use.

5. Conclusion and Recommendation

5.1 Conclusion and Discussion

Whether online learning can solve the problem of offline education and achieve long-term development, the quality of software equipment, the service quality of online learning, and students' experience are key indicators that affect students' satisfaction and loyalty. In addition, student loyalty is one of the challenges facing the long-term development of online learning. Thus, the findings of this study serve the purpose of identifying the key antecedents of satisfaction and loyalty of college students toward online learning in Chengdu, Sichuan province, China, during the current COVID-19 epidemic. Based on the data analysis of Confirmatory Factor Analysis (CFA) and Structural Equation Modeling (SEM), the results show that all hypotheses are supported in this study. Perceived value, service quality, system quality, perceived usefulness, and university reputation significantly impact satisfaction. Trust and satisfaction significantly impact loyalty.

Many studies confirmed that consumer satisfaction is significantly related to perceived value. (Caruana, 2002; Choi et al., 2004; Cronin et al., 2000; Lai et al., 2009). Service quality is related to satisfaction, comparing expectation with performance perception (McAllister, 2001). Sun et al. (2008) provided evidence that online learners' satisfaction and perceived usefulness have a positive correlation. Furthermore, the university's reputation builds a positive indicator of university quality that can determine students' satisfaction (Nguyen & LeBlanc, 2001). Due to trust directly affecting satisfaction (Brashear et al., 2003), it validated that student trust in online learning can predict satisfaction. Finally, the results of this study proved that customer satisfaction is an antecedent of loyalty (Siddiqi, 2011).

5.2 Recommendation

Overall, online learning can provide students with a flexible and convenient way to learn while offering universities a way to expand access to education. By investing in technology, training faculty, creating a sense of community, being flexible, and evaluating and improving their online learning programs, universities can ensure students have a positive and effective learning experience. Student satisfaction and loyalty have gained wide attention among scholars. While the domestic outbreak is under control, the COVID-19 outbreak is growing rapidly worldwide. Online learning has gained massive attention on how students can quickly adapt during the outbreak. Therefore, it can impose that the adoption rate would increase or decline. Future academic scholars could assess the satisfaction and loyalty of students to online learning after the decline of COVID-19.

For higher education institutes to enhance student satisfaction and loyalty, universities should invest in robust technology infrastructure and platforms that can support a smooth online learning experience. They should also provide students access to the necessary hardware and software to participate in online classes. Universities should train their faculty members to conduct effective online classes, use online learning tools and technology, and manage and engage students in the virtual classroom. This will help ensure that the quality of instruction is maintained and that students have a positive learning experience. Creating a sense of community among their online learners can be achieved by organizing virtual events and activities that allow students to interact with each other, participate in group projects, and engage in discussions.

Furthermore, Online learning should be designed to be flexible and adaptable to the needs of individual students. Universities should consider offering asynchronous learning options that allow students to access course materials and complete assignments at their own pace. Universities should regularly evaluate the effectiveness of their online learning programs and make improvements where necessary. This will ensure that students receive a high-quality education that meets their needs and prepares them for their future careers.

5.3 Limitation and Further Study

Some limitations can be further elaborated on in future studies. First, the sample group of this study is students at Xihua University. Therefore, future research should extend to other regions or countries. Second, the conceptual framework was scoped to some variables: perceived value, service quality, system quality, perceived usefulness, university reputation, trust, satisfaction, and loyalty. More

or other variables can be asserted in the next study, such as perceived ease of use, attitude, behavioral intention, etc. Last, the qualitative method is suggested to provide a clearer interpretation of the results.

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