Factors Affecting Student Satisfaction and Loyalty: A Case Study of Xihua University

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Abstract

Purpose: The purpose of this study is to determine factors influencing student satisfaction and loyalty in higher education, using Xihua University in Chengdu, Sichuan province, China as a case study. The conceptual framework proposed the causal relationship between seven variables, including administration, facility, teaching quality, academic support, satisfaction, image and loyalty. **Research design, data and methodology:** The researcher applied quantitative method, distributing questionnaires to 500 students in Xihua university in Chengdu. The sampling techniques include judgmental sampling, stratified random and convenience sampling. The Structural Equation Model (SEM) and Confirmatory Factor Analysis (CFA) were used for the data analysis including model fit, reliability, and validity of the constructs. **Results:** The results explicated that satisfaction presented strongest impact on loyalty and image had a strong influence on satisfaction and loyalty. In addition, facility, teaching quality and academic support had an impact on satisfaction. Nonetheless, the relationship between administration and satisfaction was not significant. **Conclusions:** The research findings have met research objectives. Therefore, it is recommended that the management executives and academic portioners of higher education institutions should pay attention to raise the level of administration, facilities, teaching quality, academic support and image to improve student satisfaction and loyalty.
Keywords: Teaching Quality, Academic Support, Satisfaction, Loyalty, Higher Education.

JEL Classification Code : E44, F31, F37, G15

1. Introduction[1]

Higher education is an important foundation for the development of a country and a key factor for its modernization and development. Higher education plays a huge function in talent cultivation, scientific research, social service, cultural inheritance and innovation, and is a powerful driving force for sustainable social development (Gu, 2007).

Since the middle of the 20th century, in the context of the multiploidization of the world and economic globalization, the comprehensive strength of countries around the world has increased, and higher education in the world has also developed rapidly, represented by countries such as Canada, Australia, Japan and Korea, where higher education has been popularized and undergone great changes (Gu, 2007; Wu & Liu, 2011; Bie & Kang, 2019).

Looking at China, since the "reform and opening up" in 1978, Chinese higher education has also undergone great changes. Numerous new higher education institutions have been built, enrollment has been expanded, and the enrollment rate of higher education has increased

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significantly. In 1978, the gross enrollment rate of higher education was less than 5%, and in 2019, the gross enrollment rate of higher education reached 50%. The growth in the number of general higher education schools and students has accelerated, and higher education has moved from elitism to mass and universalization (Liu, 2021). People's needs for higher education possibilities are still being met, and the country is producing more high-quality talents. This is a good indicator for China's higher education development since it shows that educational institutions still hit market demands (Ding & Yan, 2012). However, with the rapid development of society and the spread of education, it has increased enrollment and more schools have expanded students' choices and raised the pressure on university enrollment. In addition, the economic pressure from the cost of education, the fierce market competition among universities, and the change of development model are all issues that bring new challenges to the development of higher education (Bie & Kang, 2019).

Therefore, each university is looking for ways to promote continuous development of itself. Evaluating schools, improving services and enhancing curriculum are based on the student's satisfaction are the measurements that most institutions have been using. In addition, in recent years, the concept of customer satisfaction has begun to be extended to the field of education. Considering higher education, it is not only a public utility but also a service industry, incorporating education into the market. Schools as the main body providing educational products and students as the object of choosing and receiving educational products, and the goodness of a product are needed to be measured in terms of satisfaction of its customers. Therefore, students can be measured in terms of educational satisfaction. Finally, the quality of higher education is not only related to the personal growth of students, but also crucial to the development of schools. By measuring students' satisfaction, we can understand the current problems of schools, which is conducive to further improving the quality of education, and improvement of the overall comprehensive strength of universities (Liu, 2021).

A large number of scholars have conducted studies on student satisfaction. Sahney et al. (2004) pointed out that education as a service industry is subjected to relevant methods to measure the quality of its services and the satisfaction of its main targets. According to Aldridge and Rewley (1998), a good educational environment and settings provides students with greater learning chances, and students satisfaction has a significant impact on their academic achievement. The overall development strength, school environment, and educational quality have all become essential factors in attracting and maintaining students at various higher education institutions (Sahney et al., 2004). In addition, the market economy is oriented to consumer demand; therefore, it is important for schools to identify the importance of students' needs. Many scholars have stated that education, as a service industry, emphasizing students' needs and expectations (Cheng & Tam, 1997). According to Hodgkinson and Kelly (2007), higher education provides educational services and should meet the expectations and requirements of stakeholders. In order to encourage success, Okunoye et al. (2008) claimed that, in the face of intense competition, higher education institutions should do their utmost to meet the demands and expectations of their stakeholders.

Therefore, in today's competitive education market, higher education institutions must stabilize their students by establishing a stable relationship with them, clarifying their needs, and focusing on student satisfaction and loyalty. At the same time, student evaluations are used to clarify the problems of the school, so that continuous improvements can be made to strengthen the internal development of the school and gain an advantage in future competition.

2. Literature Review

2.1. Administration

When it comes to university administration, some scholars believed that the administration of the university has a significant impact on the full performance of the university's functions and role (Gruber et al., 2010; Tsinidou et al., 2010). Annamdevula and Bellamkonda (2012) made a five-dimensional model to assess the higher education sector's service quality. The value of the university courses, the quality of general administration, the academic atmosphere and assistance, the university's infrastructure, and other services which were all taken into consideration.

The connection between administration and satisfaction has been researched by a number of academics. Daniel et al. (2017) evaluated whether students agree with the university's administrative services, and the findings revealed a favorable and promising trend. Marzo et al. (2005) found that college and university administration had a significant impact on student satisfaction. Furthermore, according to Nadiri et al. (2009), there is a clear link between the administrative agency of the school and the quality of student satisfaction. Furthermore, Malik et al. (2010) found that administrators' personal characteristics, such as cooperation, communication, kindness, and flexibility, had a direct impact on student satisfaction with institutions. Therefore, following hypothesis is formulated:

H_1: Administration has a significant impact on satisfaction of students in higher education of China.

2.2. Facility

Facilities are generally referred to tangible physical goods and assets, including buildings, facilities and equipment, sites (Bin-Baba, 2002). In college, it includes library, dormitory, playground, laboratory, teaching building, cultural square, parking lot and so on (Aldridge & Rowley, 1998; Yusoff et al., 2015). Securing school facilities is an important foundation for school development (Kärnä et al., 2015). Jenssen et al. (2010) also expressed the material condition of colleges assumed a specific part in expanding student's learning, opening doors to career and improving their learning effectiveness. It is because good facilities can provide good physical conditions and security for students to learn. When students choose different schools, they value the level of school facilities (Lewis, 2000). Price et al. (2003) investigated whether facilities influence UK university students' choices of university, and the results showed that it was a more important factor in students' choices of university.

The connection between facilities and satisfaction has been researched by a number of academic studies. According to Yusoff et al. (2015), university facilities get an impact on student satisfaction. This viewpoint was shared by Kärnä and Julin (2015), as well as Hanssen and Solvoll (2015). Furthermore, a survey of Norwegian universities found that one of the elements determining student satisfaction is the level of university facilities (Hanssen & Solvoll, 2015). Hence, H2 is set:

H$_2$: Facility has a significant impact on satisfaction of students in higher education of China.

2.3. Teaching Quality

Teaching, according to Bechard and Gregoire (2005), is an intentional, planned, and ordered environment aiming at achieving teaching goals and duties. Sykes et al. (2010) thought it is a multifaceted activity including numerous aspects including the teacher, student, classroom activities and so on.

Many academics pointed to teaching as a key factor in determining the quality of a university education. Schneider and Bowen (1995) believed that high-quality teaching should be at the heart of a university's mission, since it was also the university's most significant position, and it had a direct impact on people's perceptions of the school's overall excellence. According to Wang et al. (2013), while evaluating a university's educational quality, the focus is mainly on the teaching method and the performance of teaching impacts. People's assessments of school service quality focus on teaching effectiveness, with instruction mostly based on students' perceptions of professors'

teaching results (Marsh & Roche, 1997).

The link between teaching and satisfaction has been explored by a number of researchers. Through data analysis of a higher education survey, Wiers-Jensenn et al. (2002) discovered a clear link between teaching quality and student satisfaction. Furthermore, Douglas et al. (2006) investigated the satisfaction of American university students, and the findings revealed that teaching and learning were the most influential elements. Alhudaithy (2014) found that the value of programs, the personal traits of teaching personnel, and the physical environment have a substantial impact on student happiness in many universities. Hence, the following hypothesis is proposed:

H$_3$: Teaching quality has a significant impact on satisfaction of students in higher education of China.

2.4. Academic support

According to Sharif and Kassim (2012), academic is linked to student learning, it entails providing a positive environment for students to study, as well as providing strong academic personnel, abundant academic equipment, and high-quality academic environment. Serenko (2011) said numerous elements were engaged, including disciplinary construction, teaching staff level, physical ambient conditions , and the school's supportive services for student learning.

Many researchers have looked into the link between academic support and satisfaction. In a study of a Palestinian university, Kanan and Baker (2006) discovered that the quantity and quality of academic studies had a significant effect on student satisfaction. Yusoff et al. (2015) discovered that the standard of academic personnel and their academic practices had a significant impact on student satisfaction. This assertion was eventually backed up by several studies (Douglas et al., 2006; Kärnä & Julin, 2015). Furthermore, according to Alhudaithy (2014), the quality of classes, the personal traits of teachers, and the academic environment all have an impact on student satisfaction in many universities. Accordingly, the following hypothesis is developed:

H$_4$: Academic support has a significant impact on satisfaction of students in higher education of China.

2.5. Satisfaction

Satisfaction is viewed in various ways by different researchers. In their article on marketing, Spreng and Singh (1993) described it as people's attitudes regarding the items and services they are offered. It can also be defined as people's sense of the difference between what they wanted and what they really got (Kunanusorn & Puttawong, 2015).

It was described by Oliver (1981) as a customer's personal evaluation of whether a need had been met. In articles studying higher education, Elliott and Healy (2001) considered it was tied to the service experience that students were given in school, rather than a lengthy emotional attachment. According to Elliott and Shin (2002), it is defined as a student's personal evaluation of the results and experiences gained in school, it is about whether the student's expectations and demands were met. Beltyukova and Fox (2002) also put forward the view that higher education institutions should take student satisfaction to be a significant factor in evaluating student progress.

The connection between satisfaction and loyalty has been investigated by many scholars. Greater and greater people discovered that enhancing customer satisfaction was useful to enhancing customer loyalty, according to an article on marketing (Fornell, 1992). Oliver (1999) also stated that a company's grasp of customer satisfaction was crucial to maintaining customer loyalty. In general, Bitner (1990) argued that satisfaction was a component that influenced loyalty . Furthermore, study by Bloemer and Ruyter (1997) indicated that satisfaction has a clear effect on loyalty. Gronholdt et al. (2000) also discovered a link between satisfaction and loyalty. This assertion was backed up by research in higher education. Through studies, several empirical researchers discovered that student satisfaction had a significant influence on student loyalty (Alves & Raposo, 2007 ; Brown & Mazzarol, 2009; Chong & Ahmed, 2012; Clemes et al.,2013). Based on literatures, a hypothesis is proposed:

H5: Satisfaction has a significant impact on loyalty of students in higher education of China.

2.6. Image

According to Barich and Kotler (1991), image is a common perception and attitude toward an item that persists in customers' brains for a long period as long as they know it. In the educational background, the image of a university in the minds of students was considered as a specific impression and opinion of a university in accordance with their own experience in the school (Cassel & Eklo, 2001). Arpan et al. (2003) reminded out that image and reputation are often used interchangeably.

The connection of image and satisfaction has been researched by a number of academics. Bloemer and Ruyter (1997) discovered by study that image has a clear effect on satisfaction, and satisfaction has a direct effect on loyalty, implying that image has an indirect effect on loyalty. According to Cassel and Eklo (2001), image was typically viewed as the most essential aspect impacting student satisfaction levels. Furthermore, Alves and Raposo (2010)

did a survey of university students in Portugal and discovered that the image of the university influenced student satisfaction and loyalty. Thereby, a hypothesis is obtained.

H6: Image has a significant impact on satisfaction of students in higher education of China.

2.7. Loyalty

In the market environment, Customer loyalty is defined as repeated purchase of products of the same brand in the market (Tellis, 1988). It described how people like to frequently buy a product of a company in the long term (Lovelock & Wirtz, 2007). Scholars have conducted extensive research into determining student loyalty, which refers to people's proclivity to engage in particular actions, as well as positive praise and recommendations to the institution (Clemes et al., 2013). In higher education, student loyalty usually entails providing the university a positive review, promoting the school to others, and agreeing to return to the same school at some point (Dado et al., 2012). Student loyalty entailed an emotional attitude and a desire to behave in a certain way, similar to consumer loyalty (Hennig-Thurau et al., 2001).

The connection among image and loyalty has been researched by several academics. According to Andreassen and Lindestad (1998), there is a link between loyalty and image. Furthermore, Nguyen and LeBlanc (2001) discovered that the school's image had an effect on student loyalty through a research of Canadian business school students. According to following research, university image is a direct or indirect factor determining student satisfaction and loyalty, according to Alves and Raposo (2007). Supported these statements, a hypothesis is proposed:

H7: Image has a significant impact on loyalty of students in higher education of China.

3. Research Methods and Materials

3.1. Research Framework

The conceptual framework is developed from studying previous research frameworks. It is adapted from four theoretical models. Firstly, Marzo et al. (2005) studied a new management element for universities, satisfaction with the offered courses. Secondly, the research of Fernandes et al. (2013) studied student satisfaction and loyalty in the higher education sector of United Arab Emirates. The third research was explored from Sriyalatha and Torii (2019) who conducted the research of the impact of loyalty on the student satisfaction in higher education, using a structural equation

modeling analysis. The fourth research was explored from Teeroovengadum et al. (2019) who studied a research of higher education service quality, student satisfaction and loyalty. The conceptual framework of this study is proposed in Figure 1.
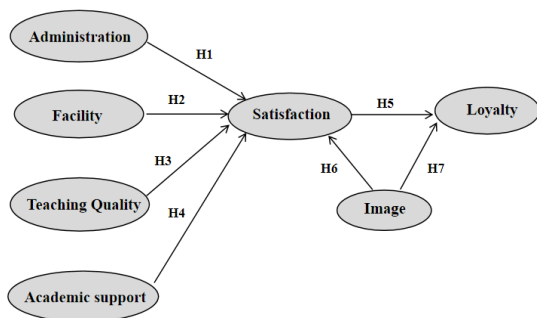

Figure 1: Conceptual Framework

This research aims to investigate factors affecting student satisfaction (SA) and loyalty (LO) in higher education institutions of China, including administration (AD), facility (FA), teaching quality (TQ), academic support (AS) and image (IM). Additionally, the study examines the causal relationship between each variable to disclose these factors influencing satisfaction and loyalty. From the conceptual framework, the hypotheses are:

H_1: Administration has a significant impact on satisfaction of students in higher education of China.

H_2: Facility has a significant impact on satisfaction of students in higher education of China.

H_3: Teaching quality has a significant impact on satisfaction of students in higher education of China.

H_4: Academic support has a significant impact on satisfaction of students in higher education of China.

H_5: Satisfaction has a significant impact on loyalty of students in higher education of China.

H_6: Image has a significant impact on satisfaction of students in higher education of China.

H_7: Image has a significant impact on loyalty of students in higher education of China.

3.2. Methodology

The researcher applied probability sampling for quantitative approach with questionnaire that was distributed online and paper-based to the target group of students in three schools of Xihua University located in Chengdu, Sichuan, province, China. The data have been collected and analyzed for factors affecting student satisfaction and loyalty with higher education institution. The survey has three parts. Firstly, the screening questions is used to select the interviewees who fit the research. Secondly, for the study of

all seven hypotheses, a 5-point Likert scale was used to evaluate seven proposed variables, ranging from strong disagreement (1) to strong agreement (5). Lastly, demographic questions are gender, grade, age, academic performance, and hometown. For pilot testing, the expert rating of index of item–objective congruence (IOC) and pilot test for 30 respondents has been tested with Cronbach's Alpha approach and all items were acceptable at the value of 0.7 (Taber, 2018).

After the validity and reliability test, the questionnaire was distributed to the target respondents. Firstly, the researcher analyzed the collected data through SPSS and AMOS. Then, the convergence accuracy and validity were tested using Confirmatory Factor Analysis (CFA). To confirm the model's validity and reliability, the model fit measurement was generated using the overall test of given data. Finally, the relationship and effect of variables were investigated using the Structural Equation Model (SEM).

3.3. Population and Sample Size

The target population of this study are Chinese students, who studying in higher education institution located in Chengdu, Sichuan, province, China. According to Kawulich (2005), it is critical to gather an adequate number of samples from the target population when doing research. The survey was given to 600 respondents. After the data screening process, 500 responses were used in this study.

3.4. Sampling Technique

The researcher used nonprobability sampling, using judgmental sampling to select three schools of Xihua University located in Chengdu, Sichuan, province, China. Then, the stratified random sampling was applied to use student number in total of 769 in Table 1. Finally, the researcher used convenience sampling to distribute the questionnaire online and offline.

Table 1: Population and Sample Size by School

Name of school	Number of students	Number of sample size
School of Management	222	145
School of Electrical Engineering and Electronic Information	348	226
School of Science	199	129
Total	**769**	**500**

Source: Created by the author

The data have been collected approximately four months from July to October 2021. The researcher has

conducted data screening to ensure the qualified target group who are student in higher education institution located in Chengdu, Sichuan province, China. Researcher made online questionnaire through survey software named Questionnaire Star, and used social media including QQ, WeChat and e-mail for circulations. Offline questionnaires were made through contacting the directors of target schools, establishing student groups, and organizing students to for face-to-face meeting to complete the questionnaire.

4. Result and Discussion

4.1 Demographic Profile Summary

The profile of demographic targets 500 participants and is concluded in Table 2. the results showed that the gender group of males accounted for 46.8% and females accounted for 53.2%. For age, almost all respondents were between 18-25 years old with 97.2%, following group were under 18 years old with 2.4%, and over 25 years old with 0.4%. According to statistics of the respondents' hometown, 65.8% of the respondents were from outside Sichuan, and 34.2% were from Sichuan. From the analysis of academic information, freshman students accounted for 15.8%, sophomore students 14.2%, junior students 26.8%, and senior students 43.2%. In addition, 10.6% of the respondents had excellent academic performance, 38% of the respondents had good academic performance, 42.6% of the respondents had medium academic performance, and 8.8% of the respondents had poor academic performance.

Table 2: Demographic Profile

Demographic and Behavior Data (n=500)		Frequency	Percentage
Gender	Male	234	46.8%
	Female	266	53.2%
Age	Under 18	12	2.4%
	18 to 25	486	97.2%

	Over 25	2	0.4%
Hometown	Outside Sichuan	329	65.8%
	Inside Sichuan	171	34.2%
Year of Study	Freshman	79	15.8%
	Sophomore year	71	14.2%
	Junior year	134	26.8%
	Senior year	216	43.2%
Academic Performance	Excellent (GPA 4.0)	53	10.6%
	Good (GPA 3.0)	190	38%
	Medium (GPA 2.0)	213	42.6%
	Poor (GPA 1.0)	44	8.8%

Source: Constructed by author

4.2 Confirmatory Factor Analysis (CFA)

This research used Confirmatory Factor Analysis (CFA). All items in each variable are significant and represent factor loading to test discriminant validity. The significance of factor loading of each item and acceptable values indicate the goodness of fit (Hair et al., 2006). Factor loadings are larger than 0.5, p-value less than 0.5, the construct dependability is better than 0.8 (Fornell & Larcker, 1981) in Table 3.

According to Table 4, the square root of average variance retrieved shows that all correlations are bigger than the corresponding correlation values for that variable. CMIN/DF, GFI, AGFI, NFI, CFI, TLI and RMSEA are also employed as model fit indicators in CFA testing. Table 4 shows that both convergent validity and discriminant validity of this study are greater than acceptable values. As a result, convergent validity and discriminant validity are guaranteed. Furthermore, the findings of the model measurement provided discriminant validity and a validation to evaluate the validity of later structural model estimate.

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
Administration (AD)	Subrahmanyam et al. (2017)	4	0.853	0.662—0.856	0.855	0.597
Facility (FA)	Weerasinghe et al. (2017)	5	0.874	0.716—0.787	0.874	0.582
Teaching Quality (TQ)	Subrahmanyam et al. (2017)	5	0.915	0.765—0.888	0.916	0.687
Academic Support (AS)	Martirosyan et al. (2014)	5	0.887	0.741—0.848	0.888	0.614
Image (IM)	Teeroovengadum et al. (2019)	3	0.809	0.736—0.783	0.809	0.586
Satisfaction (SA)	Ali et al. (2016)	3	0.859	0.772—0.859	0.859	0.670
Loyalty (LO)	Teeroovengadum et al. (2019)	3	0.879	0.809—0.890	0.881	0.711

Note: CR = Composite Reliability, AVE = Average Variance Extracted
Source: Constructed by author

Table 4: Discriminant Validity

	AD	FA	TQ	AS	IM	SA	LO
AD	**0.772**						
FA	0.267	**0.762**					
TQ	0.434	0.430	**0.828**				
AS	0.387	0.376	0.638	**0.783**			
IM	0.212	0.226	0.271	0.296	**0.765**		
SA	0.312	0.347	0.435	0.452	0.473	**0.818**	
LO	0.321	0.414	0.479	0.428	0.370	0.453	**0.843**

Source: Constructed by author

Table 5: Goodness of Fit for Confirmatory Factor Analysis

Index	Acceptable Values	Values
CMIN/DF	< 5.00 (Awang, 2012)	689.527/329 Or 2.096
GFI	≥ 0.85 (Sica & Ghisi, 2007)	0.910
AGFI	≥ 0.80 (Sica & Ghisi, 2007)	0.888
NFI	≥ 0.80 (Wu & Wang, 2006)	0.920
CFI	≥ 0.80 (Bentler, 1990)	0.957
TLI	≥ 0.80 (Sharma et al., 2005)	0.950
RMSEA	< 0.08 (Pedroso et al., 2016)	0.047
Model summary		**Acceptable Model Fit**

Remark: CMIN/DF = The ratio of the chi-square value to degree of freedom, GFI = goodness-of-fit index, AGFI = adjusted goodness-of-fit index, NFI= Normal Fit Index, CFI = comparative fit index, RMSEA = root mean square error of approximation.
Source: Constructed by author

4.3 Structural Equation Model (SEM)

The goodness of fit indices for Structural Equation Model (SEM) is measured as demonstrated in Table 5. The model fit measurement should not be over 5 for Chi-square/degrees-of-freedom (CMIN/DF) ratio, GFI should be higher than 0.85, AGFI, NFI, CFI, TLI should be higher than 0.8, RMSEA should not be over 0.08. The calculation in SEM and adjusting the model by using SPSS,AMOS version 26, the results of fit index were presented good fit which are (CMIN/DF) = 2.45, Goodness-of-Fit Index (GFI) = 0.895, Adjusted Goodness-of-Fit Index (AGFI) = 0.873, Normal Fit Index (NFI) = 0.905, Comparative Fit Index (CFI) = 0.941, Tucker- Lewis index (TLI) = 0.934, Root Mean Square Error of Approximation (RMSEA) = 0.054.

Table 6: Goodness of Fit for Structural Equation Model

Index	Acceptable Values	Values
CMIN/DF	< 5.00 (Awang, 2012)	825.651/337 Or 2.450
GFI	≥ 0.85 (Sica & Ghisi, 2007)	0.895
AGFI	≥ 0.80 (Sica & Ghisi, 2007)	0.873
NFI	≥ 0.80 (Wu & Wang, 2006)	0.905
CFI	≥ 0.80 (Bentler, 1990)	0.941
TLI	≥ 0.80 (Sharma et al., 2005)	0.934
RMSEA	< 0.08 (Pedroso et. al., 2016)	0.054
Model summary		**Acceptable Model Fit**

Source: Constructed by author

4.4 Research Hypothesis Testing Result

The research model is calculated as significance of each variable from its regression weights and R^2 variances. The result from Table 6 postulated that all hypotheses were supported with a significance at p = 0.05. Satisfaction has the strongest influence on loyalty at 0.454, image has an influence on satisfaction at 0.416, academic support has an influence on satisfaction at 0.226, teaching quality has an influence on satisfaction at 0.177, facility has an influence on satisfaction at 0.158, image has an influence on loyalty at 0.148, and administration has no significance on satisfaction at 0.077.

Table 7: Hypotheses Testing Result of the Structural Model

Hypothesis	Standardized path coefficient (β)	t-value	Testing result
H₁: AD→SA	0.077	1.518	Not Supported
H₂: FA→SA	0.158	3.100*	Supported
H₃: TQ→SA	0.177	2.603*	Supported
H₄: AS→SA	0.226	3.449*	Supported
H₅: SA→LO	0.454	8.166*	Supported
H₆: IM→SA	0.416	8.264*	Supported
H₇: IM→LO	0.148	2.759*	Supported

Note: ***=p-value<0.05, **=p-value<0.1 *=p-value<0.5
Source: Constructed by author

The result from Table 7 can be refined that:
H₁ shows no significant relationship among administration and satisfaction, revealing the standard coefficient value of 0.077 in the structural pathway. H₂ has proven that facility has a certain effect on student satisfaction, revealing the standard coefficient value of 0.158 in the structural pathway. H₃ has proven that teaching quality has a significant impact on the satisfaction, revealing the standard coefficient value of 0.177 in the structural pathway. H₄ has proven that academic support has a significant impact on satisfaction, revealing the standard coefficient value of 0.226 in the structural pathway. H₅ has proven that satisfaction has an obvious impact on loyalty, revealing the standard coefficient value of 0.454 in the structural pathway. H₆ has proven that image has an obvious impact on satisfaction, revealing the standard coefficient value of 0.416 in the structural pathway. H₇ has proven that image has significant impact on student loyalty, revealing the standard coefficient value of 0.148 in the structural pathway.

5. Conclusion and Recommendation

5.1 Conclusion

This paper was to investigate factors affecting student satisfaction and loyalty in higher education institution in Chengdu, Sichuan province, China. The hypotheses were proposed as the conceptual framework to investigate how administration, facility, teaching quality academic support, image have a significant impact on student satisfaction and loyalty. The questionnaires were developed and given to the target sample of students in Xihua University located in Chengdu, Sichuan, province, China. The data analysis was taken to explore factors affecting student satisfaction and loyalty in higher education institution. Confirmatory Factor Analysis (CFA) were carried out to measure and test for validity and reliability of the conceptual model. Hence, the influential factors that have impact on student satisfaction and loyalty were analyzed by the application of Structural Equation Model (SEM).

The research described the findings as follows. Firstly, in terms of loyalty, satisfaction had the strongest influence on loyalty. The previous literature of Gronholdt et al. (2000) confirmed the relationship of satisfaction and loyalty. Students' satisfaction with the university can increase their sense of identity and support for this school. Secondly, the image showed as an influencer of loyalty. This supports the image of the university in the minds of students that is, students' attitudes and impressions of the school, and indeed affect students' value judgments and emotional attitudes towards the school. In addition, in terms of satisfaction, image had the strongest influence on satisfaction. Alves and Raposo (2010) supported the result of analysis that a good university image can comprehensively improve the impression and value of the school in the minds of students, thereby to enhancing the level of student's satisfaction with the school.

Thirdly, the influence of facility on satisfaction was found supported. Student's cafeterias, libraries, social area, computer centers, lecture rooms, and other facilities and equipment are closely related to student life services which directly affect students' satisfaction with the school, because these can enhance the quality of student life at school. Fourthly, the influence of academic support on satisfaction was significant. The relationship of academic support and loyalty was also confirmed by previous literature of (Douglas et al., 2006; García-Aracil, 2009; Wilkins & Balakrishnan, 2013; Kärnä & Julin, 2015). The academic environment, the guidance for students to study professional courses, academic resources and vice versa affect the judgment of student's satisfaction with the school. Next, the relationship between teaching quality and satisfaction was supported. Teachers' comprehensive quality, teaching level,

teaching environment, teaching service and so on directly affect students' feelings of studying in the university, and thus affect their value judgments of the school.

Nevertheless, there is no significant relationship between administration and satisfaction. It can be concluded that facility, teaching quality, academic support, image have impact on student satisfaction and loyalty which contradicted with previous studies (Daniel et al., 2017; Marzo et al., 2005; Nadiri et al., 2009; Malik et al., 2010). It can be assumed that the quality of general administration, atmosphere and assistance, infrastructure, and other services are not as important as other factors. In summary, the objectives of the study are fulfilled that facility, teaching quality, academic support, image are factors affecting student satisfaction and loyalty with higher education institution in Chengdu, Sichuan province, China.

5.2 Recommendation

The researcher discovered factors affecting student satisfaction and loyalty with higher education institution in Chengdu, Sichuan province ,China which are facility, teaching quality, academic support, image. Therefore, the following aspects are suggested to improve student satisfaction and loyalty. Firstly, image as the biggest influencing factor of student satisfaction and loyalty, school should pay attention to school reputation and image. Factors such as campus culture, academic atmosphere, and teaching level all affect the image of the school in the minds of students. Therefore, it is necessary to make full use of word and picture, especially in the new era, to use various channels such as online new media to enhance the image of the school.

Secondly, school improve its hardware facility and campus hardware strength, it is necessary to ensure advanced teaching facilities and high standard of campus equipment to provide complete facilities and equipment for students to study, such as library, computer center, lecture rooms, multimedia classroom etc. In addition, it is necessary to meet the needs of student life and services, ensure adequate service facilities, such as social area, student's cafeterias, sports facilities, and recreational facilities. Thirdly, school should provide academic support for students, university should be committed to scientific research and academic development. Campus should create a strong academic atmosphere, set up scientific teaching program, embed practical curriculum arrangement, provide students with a platform for academic exchange and sufficient academic guidance, and continuously improve the quality of higher education development to meet the needs of students.

Fourthly, school should improve the teaching level of the school by creating a good teaching atmosphere,

formulating scientific teaching plan, ensuring sufficient teaching staff, and strengthening teachers' professional ability. Teachers should be approachable and fair to give continuous teaching feedback, and preserve overall teaching quality. Lastly, although there is no significant relationship between administration and satisfaction, academic management should still attach importance to management, in order to enhance their comprehensive strength. School administrators could use scientific administration concept to formulate reasonable administration plan. Administrative personnel should improve their comprehensive quality, ensure good work ability and work quality, and be accurate, efficient and approachable when providing administrative service to students, so as to improve service quality, leading to student satisfaction and loyalty.

5.3 Limitation and Future Research

The limitation of the study is that the population and sample used specifically students of Xihua University located in Chengdu, Sichuan province, China. There is a possibility for the different analysis results when investigating different university's size, nature, culture or countries. Further research can be the study of other constructs that potentially influences student satisfaction and loyalty such as university's service quality, scale, humanities, geographical location, school environment and campus culture. In addition, the future study can be extended to the overall development of universities. Through the analysis of university factors, further study should conduct factors affecting the development of the university, and improve the service quality and development level of the university as a whole.

References

Aldridge, S., & Rewley, J. (1998). Measuring Customer Satisfaction in Higher Education. Quality, *Assurance in Education, 6*(4).

Alhudaithy, A. I. (2014). The effect of the service quality provided by Saudi universities on students' satisfaction: a marketing approach. *Journal of Administrative and Economic Sciences, 7*(2), 45-76.

Ali, F., Zhou, Y., Hussain, K., Nair, P. K., & Ragavan, N. A. (2016). Does higher education service quality affect student satisfaction, image, and loyalty? *Quality Assurance in Education, 24*(1), 70-94.

Alves, H., & Raposo, M. (2007). Conceptual model of student satisfaction in higher education. *Total Quality Management and Business Excellence, 18*(5), 571-588.

Alves, H., & Raposo, M. (2010). The influence of university image on student behavior. *International Journal of Educational Management, 24*(1), 73-85.

Arpan, L. M., Raney, A. A., & Zivnuska, S. (2003). A cognitive approach to understanding university image. *Corporate Communications: An International Journal, 8*(2), 97-113.

Andreassen, T., & Lindestad, B. (1998). Customer Loyalty and Complex Services. The Impact of Corporate Image on Quality, Customer Satisfaction and Loyalty for Customers with Varying Degrees of Service Expertise. *International Journal of Service Industry Management, 9*(1), 7-23.

Annamdevula, S., & Bellamkonda, R. S. (2012). Development of HiEdQUAL for measuring service quality in Indian higher education sector. *International Journal of Innovation, Management and Technology, 3*(4), 412-416.

Awang, Z. (2012). *A Handbook on SEM Structural Equation Modelling: SEM Using AMOS Graphic* (5th ed.). Universiti Teknologi Mara Kelantan.

Barich, H., & Kotler, A. (1991). Framework for marketing image management. *Sloan Management Review, 94,* 94-104.

Bechard, J. P., & Gregoire, D. (2005). Entrepreneurship education research revisited: the case of higher education. Academy of Management, *Learning & Education, 4*(1), 22-43.

Beltyukova, S. A., & Fox, C. M. (2002). Student satisfaction as a measure of student development: towards a universal metric. *Journal of College Student Development, 43*(2),161-172.

Bentler, P. M. (1990). Comparative fit indexes in structural models. *Psychological Bulletin, 107*(2), 238–246. https://doi.org/10.1037/0033-2909.107.2.238

Bie, G., & Kang. M. (2019). How did China's higher education reach the world. *Tsinghua journal of education, 40*(5).

Bin Baba, M. (2002). *Termed-quality, value and risk management, the decision-making tool for more efficient facilities management* [Paper presentation]. Conference on Property and Facilities Management, Asia Business Forum, Kuala Lumpur.

Bitner, M. J. (1990). Evaluating service encounters: the effects of physical surroundings and employee responses. *Journal of Marketing, 54*(2), 69-83.

Bloemer, J. & Ruyter, K. (1997). On the relationship between store image, store satisfaction and store loyalty. *European Journal of Marketing, 32,* 499-513.

Brown, R. M., & Mazzarol, T. W. (2009). The importance of institutional image to student satisfaction and loyalty within higher education. *Higher Education, 57*(1), 81-95.

Cassel, C., & Eklo, F. (2001). Modelling customer satisfaction and loyalty on aggregate levels – experience from the ECSI pilot study. *Total Quality Management, 12*(7/8), 307-301.

Cheng, Y. C., & Tam, M. M. (1997). Multi-models of quality in education. *Quality Assurance in Education ,5*(1), 22-31. https://doi.org/10.1108/09684889710156558

Chong, Y. S., & Ahmed, P. K. (2012). An empirical investigation of students' motivational impact upon university service quality perception: a self- determination perspective. *Quality in Higher Education, 18*(1), 37-41.

Clemes, M. D., Cohen, D. A., & Wang, Y. (2013). Understanding Chinese university students' experiences: an empirical analysis. Asia pacific. *Journal of Marketing and Logistics, 25*(3), 391-427.

Dado, J., Taborecka-Petrovicova, J., Cuzovic, S., & Rajic, T. (2012). An empirical examination of the relationships between service quality, Satisfaction and behavioral intentions in higher education setting. *Serbian Journal of Management, 7*(2), 203-218.

Daniel, D., Liben, G., & Adugna, A. (2017). Assessment of students' satisfaction: a case study of Dire Dawa University, Ethiopia. *Journal of Education and Practice. 8*(4),111-120.

Ding, X., & Yan, L. (2012). Changes in the Degree of Equalization in Opportunities for Entering Higher Education in China. *Chinese Education & Society, 45*(1), 22-30. https://doi.org/10.2753/CED1061-1932450103

Douglas, J., Douglas, A., & Barnes, B. (2006). Measuring student satisfaction at a UK university. *Quality Assurance in Education, 14*(3),251-267.

Elliott, K., & Healy, M. (2001). Key factors influencing student satisfaction related to recruitment and retention. *Journal of Marketing for Higher Education, 10*(4), 1-11.

Elliott, K., & Shin, D. (2002). Student satisfaction: an alternative approach to assessing this   important concept. *Journal of Higher Education Policy and Management, 24*(2), 97-109.

Fernandes, C., Ross, K., & Meraj, M. (2013). Understanding student satisfaction and loyalty in the UAEHE sector. *International Journal of Educational Management, 27*(6), 613-630.

Fornell, C. (1992). A national customer satisfaction barometer: the Swedish experience. *Journal of Marketing, 56*(1), 1-18.

Fornell, C., & Larcker, D. F. (1981). Evaluating structural equation models with unobservable variables and measurement error. *Journal of marketing research, 18*(1), 39-50.

García-Aracil, A. (2009). European Graduates' Level of Satisfaction with Higher Education. *Higher Education, 57,* 1-21.https://doi.org/10.1007/s10734-008-9121-9

Gruber, T., Fuß, S., Voss, R., & Gläser-Zikuda, M. (2010). Examining student satisfaction with higher education services: Using a new measurement tool. *International Journal of Public Sector Management, 23*(2), 105-123.

Gu, M. (2007). The basic trend and experience of the development of higher education in the world. *Journal of Beijing Normal University (Social Science Edition), 1*(5).

Gronholdt, L., Martensen, A., & Kristensen, K. (2000). The relationship between customer satisfaction and loyalty: cross-industry differences. *Total Quality Management, 11*(4/6), 509-514.

Hair, J. F., Black, W. C., Babin, B. J., Anderson, R. E., & Tatham, R. L. (2006). *Multivariate data analysis* (Vol. 6). Pearson Prentice Hall.

Hanssen, T. E. S., & Solvoll, G. (2015). The importance of university facilities for student satisfaction at a Norwegian university. *Facilities, 33*(3/4),744-759.

Hodgkinson, M., & Kelly, M. (2007). Quality management ad enhancement processes in UK business schools: a review. *Quality Assurance in Education,15*(1),77-91.

Hennig-Thurau, T., Langer, M. F., & Hansen, U. (2001). Modeling and managing student loyalty. *Journal of Services Research, 3*(4), 331-344.

Jenssen, J. W., Stensaker, B., & Grogaard, J. B. (2010). Student satisfaction: towards an empirical decomposition of the concept. *Quality in higher Education, 8*(2), 183-195.

Kanan, H. M., & Baker, A. M. (2006). Student satisfaction with an educational administration preparation program. *Journal of Educational Administration, 44*(2), 159 -169.

Kärnä, S., & Julin, P. (2015). A framework for measuring student and staff satisfaction with university campus facilities. *Quality*

Assurance in Education, 23(1), 47-66. https://doi.org/10.1108/QAE-10-2013-0041

Kawulich, B. B. (2005) Participant Observation as a Data Collection Method. *Qualitative Social Research, 6,* 43.

Kunanusorn, A., & Puttawong, D. D. (2015). The mediating effect of satisfaction on student loyalty to higher education institution. *European Scientific Journal, 1,* 449-463

Lewis, M. (2000). *Where Children Learn: Facilities Conditions and Student Test Performance in Milwaukee Public Schools.* Council of Educational Facility Planners International, Scottsdale.

Liu, B. (2021). Class Differences and Educational Equity under the Background of China's Higher Education Entering the Stage of Universalization. *Journal of Beijing university of technology (social sciences edition), 21*(3).

Lovelock, C., & Wirtz, J. (2007). *Services Marketing: People, Technology, Strategy.* Prentice Hall.

Malik, M. E., Danish, R. Q., & Usman, A. (2010). The impact of service quality on students' satisfaction in higher education institutes of Punjab. *Journal of Management Research, 2*(2),1-11.

Marsh, H. W., & Roche, L.A. (1997). Making students' evaluations of teaching effectiveness effective. *American Psychologist, 52*(11), 1187-1197.

Martirosyan, N. M., Saxon, D. P., & Wanjohi, R. (2014). Student Satisfaction and Academic Performance in Armenian Higher Education. *American International Journal of Contemporary Research, 4*(2), 1-5.

Marzo, M., Navarro, Iglesias, M. P., & Torres, P. V. (2005). A new management element for universities: satisfaction with the offered courses. *International Journal of Educational Management, 19*(6), 505-526.

Nadiri, H., Kandampully, J., & Hussain, K. (2009). Students' perceptions of service quality in higher education. *Total Quality Management, 20*(5),523-535.

Nguyen, N., & LeBlanc, G. (2001). Image and reputation of higher education institutions in students' retention decisions. *International Journal of Educational Management, 15*(6), 303-311.

Okunoye, A, Frolick, M., & Crable, E. (2008). Stakeholder in influence and ERP implementation in higher education. *Journal of information Technology Case and Application Research,10*(3), 72-84.

Oliver, R. L. (1981). Measurement and evaluation of satisfaction processes in retail settings. *Journal of Retailing, 57*(3), 25-48.

Oliver, R. L. (1999). Whence consumer loyalty? *The Journal of Marketing, 63*(2), 33-44.

Pedroso, R., Zanetello, L., Guimaraes, L., Pettenon, M., Goncalves, V., Scherer, J., Kessler, F., & Pechansky, F. (2016). Confirmatory factor analysis (CFA) of the crack use relapse scale (CURS). *Archives of Clinical Psychiatry, 43*(3), 37-40.

Price, I., Matzdorf, F., Smith, L., & Agahi, H. (2003). The impact of facilities on student choice of university. *Facilities, 21*(10), 212.

Sahney, S., Banwer, D. K., & Karunes, S. (2004). Conceptualizing total quality management in higher education. *The TQM Magazine, 16*(2), 145-149.

Schneider, B., & Bowen, D. E. (1995). *Winning the Service Game.* Harvard Business School Press.

Serenko, A. (2011). Student satisfaction with Canadian music programmes: the application of the American customer satisfaction model in higher education. *Assessment & Evaluation in Higher Education, 36*(3),281-299.

Sharma, G. P., Verma, R. C., & Pathare, P. (2005). Mathematical modeling of infrared radiation thin layer drying of onion slices. *Journal of Food Engineering, 71*(3), 282–286.

Sharif, K., & Kassim, N. M. (2012). Non-academic service quality: comparative analysis of studentsand faculty as users. *Journal of Marketing for Higher Education, 22*(1), 35-54.

Sica, C., & Ghisi, M. (2007). The Italian versions of the Beck Anxiety Inventory and the Beck Depression Inventory-II: Psychometric properties and discriminant power. In M. A. Lange (Ed.), *Leading-edge psychological tests and testing research* (pp. 27–50). Nova Science Publishers.

Spreng, R. A. & Singh, A. K. (1993). An empirical assessment of the SERVQUAL scale and the relationship between service quality and satisfaction. *Enhancing Knowledge Development in Marketing, 4*(1), 1-6.

Sriyalatha, K., & Torii, H. (2019). The impact of loyalty on the student satisfaction in higher education A structural equation modeling analysis. *Higher Education Evaluation and Development,13*(2), 82-96.

Subrahmanyam, M., Tang, D., & Wang, S. (2017). Credit Default Swaps, Exacting Creditors and Corporate Liquidity Management. *Journal of Financial Economics, 124*(2), https://doi.org/10.1016/j.jfineco.2017.02.001

Sykes, G., Bird, T., & Kennedy, M. (2010). Teacher education: its problems and some prospects. *Journal of Teacher Education, 61*(5), 464-476.

Taber, K. S. (2018). The Use of Cronbach's Alpha When Developing and Reporting Research Instruments in Science Education. *Research in Science Education, 48,* 1273–1296. https://doi.org/10.1007/s11165-016-9602-2

Teeroovengadum, V., Nunkoo, R., Gronroos, C., Kamalanabhan, T. J., & Seebaluck, A. (2019). Higher education service quality, student satisfaction and loyalty: Validating the HESQUAL scale and testing an improved structural model. *Quality Assurance in Education, 27*(4), 427-445. https://doi.org/10.1108/QAE-01-2019-0003

Tellis, G. J. (1988). The price elasticity of selective demand: a meta-analysis of econometric models of sales. *Journal of Marketing Research, 25*(4), 331-341.

Tsinidou, M., Gerogiannis, V., & Fitsilis, P. (2010). Evaluation of the factors that determine quality in higher education: An empirical study. *Quality Assurance in Education, 18*(3), https://doi.org/10.1108/09684881011058669

Wang, L., Jin, X., Shi, Y., & Cao, L. (2013). An evaluation of quality of university education based on multidimensional time series analysis. *World Transactions on Engineering and Technology Education, 11*(4),553-558.

Weerasinghe, S., Lalitha, R., & Fernando, S. (2017). Students' Satisfaction in Higher Education Literature Review. *American Journal of Educational Research, 5*(5), 533-539. https://doi.org/10.12691/education-5-5-9

Wiers-Jensenn, J., Stensaker, B., & GrøGaard, J. B. (2002). Student satisfaction: towards an empirical deconstruction of the concept. *Quality in Higher Education, 8*(2), 183-195.

Wilkins, S., & Balakrishnan, S. M. (2013). Assessing student satisfaction in transnational higher education. *International Journal of Educational Management, 27*(2), 143-156. https://doi.org/10.1108/09513541311297568

Wu, Y., & Liu, Z. (2011). The trend of the world's high-end development of higher education and my country's countermeasures. *China Higher Education Research, 1.*

Wu, J. H., & Wang, Y. M. (2006) Measuring KMS Success: A Respecification of the DeLone and McLean's Model. *Journal of Information & Management, 43,* 728-739. http://dx.doi.org/10.1016/j.im.2006.05.002

Yusoff, M., & McLeay, F., & Woodruffe-Burton, H. (2015). Dimensions driving business student satisfaction in higher education. *Quality Assurance in Education, 23*(1), 86 -104.