Determinants of Student Loyalty: A Case Study of Chongqing University of Arts and Sciences

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Abstract

Purpose: This study investigated the influence of five independent variables, student satisfaction, image, commitment, service quality, and university sustainability practices, on the dependent variable, student loyalty. It also assessed differences between pre- and post-strategic plan implementations. **Research design, data and methodology:** A mixed-methods approach was adopted. Instrument validity was confirmed using the Index of Item-Objective Congruence (IOC), and reliability was ensured through a pilot test with Cronbach's Alpha. Data obtained from a purposive sample of 80 teachers were analyzed using multiple linear regression (MLR) to test the relationships between variables. Based on the results, a 16-week strategic plan was implemented across the university, with its impact assessed using a paired-sample t-test. **Results:** MLR results showed that all five variables had a significant positive effect on student loyalty ($p < 0.05$), with image ($\beta = 0.298$) and student satisfaction ($\beta = 0.294$) having the strongest impact. The paired-sample t-test revealed significant improvements across all variables, including loyalty, after the strategic plan. **Conclusions:** This study contributes to the understanding of loyalty-building in higher education by demonstrating that targeted improvements in satisfaction, image, commitment, service quality, and sustainability enhance loyalty. The findings provide actionable insights for improving student retention through targeted institutional development.

Keywords: Student Loyalty, Student Satisfaction, Image, University Sustainability Practices, Strategic Plan

JEL Classification Code: A22, D91, I23, O30

1. Introduction

In recent years, a growing concern within the global education sector has been the steady decline in student enrollment, a trend that spans all educational levels. Research by Bound et al. (2010) indicates that although college enrollment has increased, completion rates, particularly among students in less selective public universities and community colleges, have not kept pace. This issue is not confined to one region; developed countries such as the United States have experienced similar patterns. For example, NPR reports that the COVID-19 pandemic triggered an unprecedented drop in public school enrollment, disrupting the higher education pipeline (Kamenetz et al.,

2020). In China, the pandemic's economic fallout and increasing uncertainty regarding educational returns have caused families to re-evaluate the cost-benefit of pursuing higher education (Fu et al., 2022).

Within this broader context, regional universities such as Chongqing University of Arts and Sciences face unique challenges in attracting and retaining students. However, the existing literature offers limited insight into the specific factors influencing student loyalty in such institutions, particularly in Chinese or Asian contexts. While prior studies often focus on urban or elite universities, there is a lack of empirical research addressing how institutional factors such as service quality, university image, and sustainability practices contribute to loyalty in regional

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settings.

This study addresses these gaps by investigating five key drivers of student loyalty: student satisfaction, institutional image, commitment, service quality, and university sustainability practices. Although the concept of student loyalty has gained attention globally due to its impact on retention and institutional success, sustainability practices remain an underexplored dimension in loyalty research. By focusing on Chongqing University of Arts and Sciences, this study not only contributes to the local body of knowledge but also offers policy implications for similarly positioned institutions across China and Asia. Ultimately, understanding the mechanisms that drive student loyalty can help universities formulate strategic interventions to enhance retention, ensure long-term engagement, and remain competitive in an evolving educational landscape.

2. Literature Review

2.1 Satisfaction (SS)

Student satisfaction refers to the level of joy and contentment that students feel regarding their educational experiences. It encompasses factors such as the quality of teaching, the relevance of the curriculum, the facilities on campus, the support services available, and the overall learning environment (Ma, 1995). According to several researchers (Hemsley-Brown & Oplatka, 2006; Kuo et al., 2013), student satisfaction is a critical factor influencing student loyalty within educational contexts. By addressing student satisfaction as a key determinant of loyalty, institutions can cultivate a supportive and engaging educational environment that fosters long-term student commitment and academic success (Guo & Xue, 2012). Consequently, the following hypothesis is formulated:

H1: Student satisfaction has a significant impact on student loyalty.

2.2 Image (I)

Image is a mental representation or perception of an individual, organization, product, or brand that is formed through direct experience, communication, and social interaction (Keller, 1993). It includes beliefs, attitudes, and emotions associated with the entity, which influences how others perceive and evaluate it. Image plays a crucial role in influencing behavior, attitudes, and decision-making processes in various situations. Managing organizational image involves maintaining consistency in communication, delivering on promises, and engaging with stakeholders to build a positive reputation (Zhang & Li, 2006). Research shows that students' perceptions of university image significantly influence their admission decisions, academic satisfaction, and likelihood of remaining loyal to the institution (Balmer & Greyser, 2003). A good and favorable university image can foster student trust, pride, and emotional attachment, which are key elements of student loyalty (Kotler & Keller, 2015). Consequently, the following hypothesis is formulated:

H2: Image has a significant impact on student loyalty.

2.3 Commitment (C)

Commitment is a state of mind or attitude characterized by dedication, loyalty, and adherence to a particular goal, cause, relationship, or organization (Gollwitzer & Oettingen, 2014). Student commitment fosters a sense of belonging and trust, which are essential components of student loyalty (Sang et al., 2019). The relationship between student commitment and student loyalty is multifaceted and interconnected. High levels of student commitment help foster loyalty to the university. When students feel committed to their institution, they are more likely to feel a sense of pride and identification with the institution's mission and values (Guo & Xue, 2012). Committed students are positive about their educational experience and are more satisfied with their overall academic journey (Kuo et al., 2013). Consequently, the following hypothesis is formulated:

H3: Commitment has a significant impact on student loyalty.

2.4 Service Quality (SQ)

Service quality is a critical concept in marketing and business management, encompassing the overall evaluation of a service's performance based on customer expectations (Wang et al., 2006). The SERVQUAL model is a valuable tool in higher education for evaluating the quality of services offered to students and identifying areas that require improvement (Parasuraman et al., 1985). The level of service quality is intricately linked to customer satisfaction and loyalty. If an educational institution consistently delivers high-quality services, it can increase student satisfaction, retention, positive word-of-mouth, and enhance its brand image (Ji & Huang, 2015). Consequently, the following hypothesis is formulated:

H4: Service quality has a significant impact on student loyalty.

2.5 University Sustainability Practices (USP)

University sustainability practices refer to the various efforts made by institutions to operate in environmentally and socially responsible ways. These efforts often include

offering sustainability-related courses, reducing energy consumption and waste on campus, engaging students and staff in green activities, and publicly sharing their progress on sustainability goals (Leal et al., 2018). Such practices help shape a university's identity and reflect its commitment to future-oriented values.

Wals and Jickling (2002) emphasize that education should not only transfer knowledge but also prepare students to take part in sustainable development. When students are exposed to sustainability themes through academic content or real-life campus projects, they are more likely to develop a deeper sense of responsibility and connection to their university. Similarly, Guo and Xue (2012) found that students respond positively to clear environmental goals and active involvement opportunities, which enhance their overall satisfaction and sense of engagement.

Lee and Kim (2020) further explain that sustainability efforts strengthen a university's image as a socially responsible institution. Students often view these efforts as signs of trustworthiness and ethical leadership, which can lead to stronger emotional attachment and loyalty. In this way, university sustainability practices not only support global sustainability goals but also play a key role in shaping how students feel about their institution. Based on these insights, this study proposes the following hypothesis:

H5: University sustainability practices have a significant impact on student loyalty.

2.6 Student Loyalty (SL)

Student loyalty is defined as the commitment and attachment students feel toward their university, often resulting in continued enrollment, advocacy, and positive recommendations (Lee & Kim, 2020). It plays a pivotal role in the success of higher education institutions, influencing retention rates, student satisfaction, and the institution's reputation. Student satisfaction has been shown to directly influence loyalty. When students are satisfied with the services, academic programs, and campus environment, their likelihood of staying at the institution and recommending it to others increases (Guo & Xue, 2012). Institutional image is another significant factor; students' perceptions of the university's reputation, ethics, and values contribute to their emotional attachment and loyalty to the institution (Balmer & Greyser, 2003). Commitment, the emotional and psychological attachment to the university, strengthens loyalty by increasing students' identification with the university's goals and values (Sang et al., 2019). Service quality also plays a key role in shaping loyalty. Institutions providing high-quality academic services and student support foster greater trust and satisfaction, which, in turn, enhances loyalty (Ji & Huang, 2015). Also, university sustainability practices have become increasingly

influential in cultivating loyalty, as students perceive institutions with strong sustainability efforts as more socially responsible, which enhances their loyalty to the institution (Lee & Kim, 2020).

3. Research Methods and Materials

3.1 Research Framework

This study draws upon four theoretical models, Barusman (2014), Todea et al. (2022), Annamdevula and Bellamkonda (2016), and Doan (2021) to construct a comprehensive framework linking student satisfaction, image, commitment, service quality, and university sustainability practices to student loyalty. These models were selected for their relevance to higher education and their focus on service quality, satisfaction, and institutional value as key drivers of loyalty.

Barusman (2014) and Annamdevula and Bellamkonda (2016) emphasize service quality and satisfaction as core influences on student loyalty, offering insights into how operational performance shapes student perceptions. Todea et al. (2022) add the dimension of institutional image, showing that students' emotional and cognitive evaluations also play a role in loyalty development. Doan (2021) introduces sustainability practices, addressing a gap in earlier models by highlighting their growing importance to students' sense of institutional trust and alignment with social values. This integrated framework is particularly suitable for understanding loyalty drivers in regional Chinese universities, such as Chongqing University of Arts and Sciences. As shown in Figure 1, this integrated framework positions the five independent variables as predictors of student loyalty, forming the basis for hypothesis testing and strategic intervention.
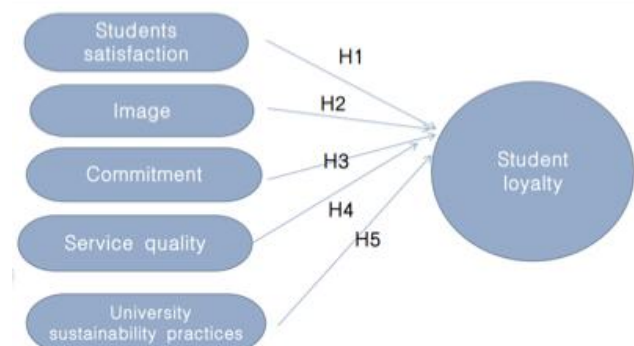
Figure 1: Conceptual Framework

3.2 Research Methodology

In the pre-strategic plan stage, this study employed a mixed-methods approach (qualitative and quantitative) to identify current challenges and areas needing improvement. A purposive sample of 80 participants was surveyed to test the conceptual framework. This sample size was considered appropriate for exploratory analysis using multiple linear regression, as it exceeds the commonly cited minimum ratio of 10 respondents per predictor variable, ensuring adequate statistical power (Green, 1991). Hypotheses were tested with a significance threshold of $p < 0.05$, and only supported hypotheses were retained for further analysis.

Based on these results, pre-strategic plan surveys were conducted with 15 students to assess perceptions of the proposed strategic initiatives. A 16-week strategic plan was then implemented across all faculties and students at Chongqing University of Arts and Sciences. After implementation, post-strategic plan surveys were administered to the same group of 15 students, and five of them were also interviewed to gather qualitative feedback on their experiences with the plan.

To evaluate the effectiveness of the intervention, a paired-sample t-test was conducted to compare pre- and post-strategic plan results. Jamovi software was used for all statistical analyses. The validity of the instrument was confirmed through the Index of Item-Objective Congruence (IOC), with expert ratings of +1 (Congruent), 0 (Questionable), or -1 (Incongruent); all items were deemed valid. The final 64-item questionnaire was distributed via Wenjuanxing, and Cronbach's alpha was used to confirm reliability. Multiple linear regression was again used to explore the relationships between the independent and dependent variables.

The study acknowledges limitations related to the small post-intervention sample size, which may affect the generalizability of the findings. All participants were informed of the research purpose, and participation was voluntary. Confidentiality and anonymity were assured, and ethical approval was obtained from the university's research ethics committee prior to data collection.

3.3 Research Population, Sample Size, and Sampling Procedures

3.3.1 Research Population

The research population for this study consisted of students from various disciplines and majors at Chongqing University of Arts and Sciences (CUAS), including English, Spanish, French, mathematics, social sciences, computer science, and other programs. 80 valid responses from different majors were obtained for the analysis of the influences on student loyalty.

3.3.2 Sample Size

The researcher implemented a pilot test survey with 30 randomly selected students and verified its reliability. Afterward, the researcher identified CUAS students as the research population and collected 80 valid responses. The researcher then conducted an analysis using multiple linear regression to identify the relationships between the independent and dependent variables. Finally, the researcher selected all teachers and the principal to be involved in the strategic plan stage.

3.3.3 Sampling Procedure

The researcher conducted several sampling procedures, which are as follows:

Sampling 1: Pilot Survey and Pilot Test

The researcher randomly selected 30 students, asking them to fill out the survey questionnaire and provide feedback for the pilot survey and pilot test.

Sampling 2: Pre-survey

The researcher sampled 80 CUAS students from different majors and programs for the pre-survey by distributing the survey questionnaire through the online questionnaire app, Wenjuanxing. Afterward, the researcher reviewed all responses and confirmed that 80 responses were valid.

Sampling 3: Preliminary Diagnosis

The researcher randomly selected and sampled 15 students who voluntarily participated to implement the strategic plan.

3.4 Research Instruments

3.4.1 Questionnaire Design

The researcher designed the survey questionnaire using the following three steps:

Step 1: Identifying the questionnaire source from five published articles (Alcaide-Pulido et al., 2022; Bruner, 2009; Dennis et al., 2017; Larrán & Andrades, 2015; McMullan, 2005; Mowday et al., 1979).

Step 2: Adjusting and presenting the survey questionnaires within the context of Chinese university students.

Step 3: Implementing the Index of Item-Objective Congruence (IOC).

3.4.2 Questionnaire Components

The survey questionnaire items were composed of the following three parts:

Part 1: Screening questions. This section contained screening questions to filter out individuals who did not meet the research population criteria.

Part 2: Basic information questions. This section included questions to collect demographic information from

the research population, such as gender, age, birthplace, and other relevant details.

Part 3: Pre-survey questions. This section contained questions to assess the current levels of the independent and dependent variables in the research population.

3.4.3 IOC Results

For the purpose of this study, a panel of five specialists was assembled to assess the items created for the questionnaire. The panel consisted of three professors specializing in education from Chongqing University of Arts and Sciences, as well as two professionals holding doctorates in education from the Education Bureau of Chongqing. In this study, a score of over 0.67 for each question was deemed acceptable.

3.4.4 Reliability and Validity

The researcher implemented a pilot survey with 30 students, randomly selecting them and asking them to fill out the survey questionnaire and provide feedback. Afterward, the researcher applied Cronbach's Alpha, a commonly used reliability metric in the fields of social and organizational sciences (Bonett & Wright, 2014). All items in this research passed the reliability test, with results exceeding 0.7, a benchmark value commonly used by analysts. A Cronbach's Alpha higher than this value indicates that the measure for the variable is reliable. Therefore, the table below demonstrates the approved results.

Table 1: Pilot Test Result

Variable	Source of Questionnaire (Measurement Indicator)	No. of Items	Cronbach's Alpha	Strength of Association
SS	Bruner (2009)	8	0.942	Excellent
I	Alcaide-Pulido et al. (2022)	6	0.942	Excellent
C	Mowday et al. (1979)	6	0.873	Good
SQ	Dennis et al. (2017)	10	0.958	Excellent
USP	Larrán and Andrades (2015)	12	0.945	Excellent
SL	McMullan (2005)	10	0.854	Good

4. Results and Discussion

4.1 Demographic Profile

The demographic information of the entire research population (n=80) is shown in Table 2. The respondents consist of full-time Chinese students in the academic year of 2023 at Chongqing University of Arts and Sciences. Their ages ranged from 18 to 22, 45 percent were female, and 55 percent were male. They were from four ethnic groups: Han,

Yi, Bai, and Miao. Additionally, 36.2 percent were locals of Chongqing, while 63.8 percent were non-locals.

Table 2: Demographic Information

Entire Research Population (n=80)		Frequency	Percentage
Gender	Female	36	45.0
	Male	44	55.0
Age	18	15	18.7
	19	11	13.8
	20	16	20.0
	21	20	25.0
	22	18	22.5
Birthplace	Local (Chongqing)	29	36.2
	Non-Local	51	63.8
Ethnicity	Han	70	87.5
	Yi	5	6.2
	Bai	3	3.8
	Miao	2	2.5

4.2 Multiple Linear Regression

At the pre-strategic plan stage, multiple linear regression was utilized to examine the relationships between variables. The results were affirmative, demonstrating that all independent factors had a causal link with the dependent variable. The standardized coefficients were found to be positive, indicating a positive correlation between each independent variable and the dependent variable, which was student loyalty. In addition, 55.8% of the variability in student loyalty was explained by the model. The study also assessed the variance inflation factor (VIF) to evaluate the presence of multicollinearity across the five independent variables. Given that all VIF values were below 5, it can be concluded that there is no multicollinearity among the five variables (Hair et al., 1995).

Table 3: The Multiple Linear Regression of Five Independent Variables on Student Loyalty

Variable	Standardized Coefficients Beta Value	t-value	p-value	VIF	R^2
Student Satisfaction	0.294	2.958	0.004*	1.142	0.558
Image	0.298	3.065	0.002*	1.262	
Commitment	0.267	3.172	0.003*	1.264	
Service Quality	0.196	2.265	0.001*	1.156	
University Sustainability Practices	0.274	3.053	0.001*	1.186	
Dependent Variable: Student Loyalty					

Note: p-value <0.05*

Based on the analysis of standardized coefficients, it can be concluded that, after conducting the multiple linear regression, the test results were as follows: H1: Student satisfaction has a significant impact on student loyalty (β = 0.294, p < 0.004); H2: Image has a significant impact on

student loyalty (β = 0.298, p < 0.002); H3: Commitment has a significant impact on student loyalty (β = 0.267, p < 0.003); H4: Service quality has a significant impact on student loyalty (β = 0.196, p < 0.001); and H5: University sustainability practices have a significant impact on student loyalty (β = 0.274, p < 0.001). Afterward, the strategic plan was implemented to follow the hypotheses outlined above.

H6: There is a significant difference between current situation- and expected situation-strategic plan for student loyalty

H7: There is a significant difference between current situation- and expected situation-strategic plan for student satisfaction

H8: There is a significant difference between current situation- and expected situation-strategic plan for image

H9: There is a significant difference between current situation- and expected situation-strategic plan for commitment

H10: There is a significant difference between current situation- and expected situation-strategic plan for service quality

H11: There is a significant difference between current situation- and expected situation-strategic plan for university sustainability practices

4.3 Strategic Plan Implementation Stage

The independent variables—student satisfaction, image, commitment, service quality, and university sustainability practices—were all variables that could be manipulated to intervene and make a difference, as hypothesized previously. The current research designed and adopted multiple strategies for both faculty and students to influence student satisfaction, image, commitment, service quality, and university sustainability practices, which were consequently hypothesized to influence student loyalty.

Table 4: Implementation of Strategic Plan

No.	Time and Duration	Implementation Keywords
1	Week 1	Mission and vision definition
		Stakeholder Identification
		SWOT analysis
2	Week 1-8	Goal Setting
3	Week 1-8	Implementation plan
4	Week 9-12	Adjustment and improvement of Strategic Plan
5	Week 13-15	Plan Results and Sustainability
6	Week 16	Interview/questionnaire

4.4 Results Comparison between Pre-SP and Post-SP

The researcher implemented a paired-sample t-test analysis on all six variables to identify whether there were any differences in student loyalty between the pre-strategic plan and post-strategic plan phases. The results below illustrate the paired-sample t-test analysis for the six variables:

Table 5: Paired-sample T-test Results

Variable		Mean	SD	SE	t-value	p-value
Student Satisfaction	Pre-SP	3.42	0.887	0.10	-5.75	0.000
	Post-SP	4.14	0.684	0.08		
Image	Pre-SP	3.09	0.919	0.10	-8.62	0.000
	Post-SP	4.21	0.712	0.08		
Commitment	Pre-SP	3.00	1.081	0.12	-8.41	0.000
	Post-SP	4.20	0.678	0.08		
Service Quality	Pre-SP	2.95	1.039	0.12	-8.65	0.000
	Post-SP	4.16	0.698	0.08		
University Sustainability Practices	Pre-SP	3.01	1.065	0.12	-8.49	0.000
	Post-SP	4.21	0.681	0.08		
Student Loyalty	Pre-SP	3.57	0.878	0.10	-4.79	0.000
	Post-SP	4.17	0.695	0.08		

The results in Table 5, comparing the Current Situation Strategic Plan and the Expected Situation Strategic Plan from the paired-sample t-test analysis, can be summarized as follows:

There was a significant difference in student satisfaction between the pre-strategic plan (M = 3.42, SD = 0.887) and post-strategic plan (M = 4.14, SD = 0.684) conditions; t(79) = -5.75, p = 0.000 (< 0.05), and the mean difference was 0.72. This increased suggesting that students perceived improvements in their academic experience after the strategic initiatives were applied.

There was a significant difference in image between the pre-strategic plan (M = 3.09, SD = 0.919) and post-strategic plan (M = 4.21, SD = 0.712) conditions; t(79) = -8.62, p = 0.000 (< 0.05), and the mean difference was 1.12, reflecting enhanced perceptions of the university's reputation and attractiveness.

There was a significant difference in commitment between the pre-strategic plan (M = 3.00, SD = 1.081) and post-strategic plan (M = 4.20, SD = 0.678) conditions; t(79) = -8.41, p = 0.000 (< 0.05), and the mean difference was 1.20, indicating stronger emotional and psychological ties between students and the university.

There was a significant difference in service quality between the pre-strategic plan (M = 2.95, SD = 1.039) and post-strategic plan (M = 4.16, SD = 0.698) conditions; t(79) = -8.65, p ≤ 0.000 (< 0.05), and the mean difference was 1.21. This greatest improvement suggesting that students noticed notable enhancements in how services were

delivered.

There was a significant difference in university sustainability practices between the pre-strategic plan (M = 3.01, SD = 1.065) and post-strategic plan (M = 4.21, SD = 0.681) conditions; t(79) = -8.49, p = 0.000 (< 0.05), and the mean difference was 1.20, showing that the university's efforts in promoting sustainability were positively received.

There was a significant difference in student loyalty between the pre-strategic plan (M = 3.57, SD = 0.878) and post-strategic plan (M = 4.17, SD = 0.695) conditions; t(79) = -4.79, p ≤ 0.000 (< 0.05), and the mean difference was 0.60, demonstrating that the improvements across the five independent variables contributed to a stronger overall commitment to the university.

5. Conclusions and Recommendation

5.1 Discussion

The results of this study provide meaningful insights into what drives student loyalty at Chongqing University of Arts and Sciences. The multiple linear regression analysis showed that all five factors, student satisfaction, institutional image, commitment, service quality, and university sustainability practices, had a significant and positive effect on student loyalty. Together, these variables explained 55.8% of the variation in student loyalty, which is a strong indication of the model's predictive power.

Among the predictors, institutional image and student satisfaction had the greatest influence. This finding supports earlier research (e.g., Kotler & Keller, 2015; Kuo et al., 2013), which emphasized that when students have a positive perception of their university and are satisfied with their experience, they are more likely to stay loyal. A strong image creates emotional attachment and trust, while satisfaction reflects the quality of their daily academic and campus life.

Interestingly, university sustainability practices emerged as the third most influential factor. This highlights a shift in student values, today's students increasingly view sustainability as an indicator of institutional responsibility and ethical leadership. This supports findings by Lee and Kim (2020) and adds new value to the existing literature by demonstrating that sustainability can directly influence loyalty, not just reputation.

Commitment and service quality also had significant, though comparatively smaller, impacts on loyalty. Commitment reflects how emotionally invested students feel in the university's mission and values, echoing the views of Sang et al. (2019). Meanwhile, service quality remains a vital operational factor, students expect efficient, supportive services, and when these expectations are met,

trust and satisfaction improve.

This study not only confirms the relevance of widely accepted loyalty drivers but also contributes new insights by integrating sustainability practices into the loyalty framework. It shows that both practical experiences (like service and satisfaction) and institutional values (like image and sustainability) matter when students decide whether to remain loyal. For institutions looking to improve student retention, this research offers a well-rounded and evidence-based model for action.

5.1 Conclusions

This study examined the impact of student satisfaction, institutional image, commitment, service quality, and university sustainability practices on student loyalty at Chongqing University of Arts and Sciences. Using a validated 64-item instrument and a purposive sample of 80 respondents, the study applied multiple linear regression to test the relationships between variables. The results showed that all five predictors significantly contributed to student loyalty, with image and satisfaction having the strongest effects.

These findings confirm previous research while adding new insights, particularly around the emerging importance of sustainability practices. In addition, post-strategic plan analysis using paired-sample t-tests showed significant improvements across all variables, validating the effectiveness of the intervention strategies.

Theoretically, this study strengthens the multidimensional framework of student loyalty by integrating both traditional service quality constructs and modern institutional values such as sustainability. Practically, it provides a structured roadmap for higher education institutions—especially regional universities—to enhance student engagement and retention in measurable ways.

5.3 Recommendations

Based on the findings of this study, several practical recommendations can guide higher education institutions in strengthening student loyalty. Since institutional image emerged as the most influential factor, universities should focus on consistently promoting a positive and credible image. This can be achieved through strategic communication, highlighting student achievements, academic excellence, and community engagement. A strong and well-maintained institutional image helps build student trust, pride, and long-term emotional connection.

Student satisfaction also plays a vital role in fostering loyalty. Institutions should continuously evaluate and improve the quality of teaching, learning resources, and the

overall student experience. Establishing feedback mechanisms and acting on student concerns in a timely and visible manner can contribute to higher satisfaction levels. In addition, enhancing service quality, particularly in areas such as career support, academic advising, and administrative services is essential. Personalized support, skill-building workshops, and stronger connections with industry can help students feel more supported and prepared for their future careers.

The study also highlights the importance of university sustainability practices, which significantly influence students' perception of institutional integrity and social responsibility. Institutions are encouraged to integrate sustainability into academic programs, operational policies, and student-led initiatives. Publicly sharing progress on environmental goals and involving students in sustainability projects can further strengthen institutional loyalty.

To enhance student commitment, universities should redesign orientation programs to better connect students with the institution's mission, values, and long-term vision. Ongoing efforts to build community such as mentoring, engagement activities, and collaborative events can foster a greater sense of belonging and strengthen students' identification with the institution.

By investing in these five key areas, image, satisfaction, service quality, sustainability, and commitment, universities can improve student experiences and cultivate loyalty. These efforts are essential not only for boosting student retention but also for building a resilient, engaged academic community in an increasingly competitive higher education landscape.

5.4 Limitation and Further Study

Further investigation is needed to address the limitations of this research. The study has two main drawbacks. First, it relied primarily on self-reported questionnaires for data collection. Factors such as student satisfaction with e-learning, involvement, interactions, digital literacy, perceived quality, and cognitive absorption were all self-reported, which can be influenced by social norms, personal ethics, or individual biases. This makes it impossible to fully eliminate bias from self-reported data, which limits the findings.

Second, the study used only questionnaires and interviews with university students from a single institution, Harbin University in Harbin, China. While the sample was selected using rigorous methods, the findings may not be applicable to other populations or institutions in different geographic areas of China or globally, as each institution has its own unique context and characteristics.

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