



An Empirical Study on Service Quality and Students' satisfaction and Loyalty of Higher Vocational Education in China

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Abstract: The satisfaction of students with the quality of education services in higher vocational colleges is an important basis for improving the quality of education services in higher vocational colleges. Based on a review of relevant research and theoretical analysis both domestically and internationally, and based on the characteristics of higher vocational education, a conceptual model of student satisfaction with education service quality in higher vocational colleges is constructed through logical inference. Develop a quality measurement scale for vocational college uniforms, and extract five factors through factor analysis: tangibility, reliability, responsiveness, assurance, and empathy. The overall scale passed the tests of reliability and validity. Finally, through regression analysis, the relationship between service quality, student satisfaction, and student loyalty in vocational colleges is obtained as follows: ① The tangibility, reliability, assurance, and responsiveness of service quality in vocational colleges have a positive impact on student satisfaction; ② Student satisfaction has a positive impact on student loyalty; ③ The service quality of vocational colleges will affect student loyalty through the mediating effect of student satisfaction.

Keywords: Higher vocational colleges; Quality of educational services; Student satisfaction; Student loyalty.

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1. Introduction

The evaluation of the quality of education services in higher vocational colleges is one of the important means to improve the quality of education services in higher vocational colleges. According to the guidance of the National Medium - and Long Term Education Reform and Development Plan (2010-2020), which aims to carry out education quality evaluation activities with the participation of the government, schools, parents, and various sectors of society, the future development direction of education service quality evaluation in higher vocational colleges in China will inevitably be a diversified evaluation model with social participation. Students are the most important element in the evaluation of educational service quality, and they are the most influential element in the evaluation of educational service quality. Student satisfaction should be the most important evaluation indicator in educational service quality.

Therefore, this study takes students as the evaluation subject of satisfaction with the quality of education services in higher vocational colleges, follows the law of equal growth between vocational education and learning, and constructs a model of student satisfaction with the quality of education services in higher

vocational colleges. This helps to promote a more comprehensive and perfect evaluation system for the quality of education services in higher vocational colleges, thereby promoting the improvement of the quality of education services in higher vocational colleges, and ultimately enhancing the core competitiveness of higher vocational colleges.

2. Theoretical Overview of the Main Concepts

This study provides an in-depth review of relevant literature on service quality, satisfaction, loyalty, and their relationships, and based on this, establishes hypotheses for this study.

2.1 Service quality

Numerous scholars have defined service quality. Parasuraman et al (1985) . believe that service quality is the gap between consumer expectations of a service and their actual perception after receiving the service. This definition is widely used. Kasper et al. defined service quality as the degree to which the service itself, the service process, and the service organization work together to meet the expectations of service users.

Higher education is seen as a service, as it possesses all the characteristics of service, including invisibility, heterogeneity, inseparability, and perishability. Therefore, the definition of service quality also applies to higher education. The evaluation of the quality of higher education services is based on whether the services delivered by higher education institutions can meet the needs and expectations of students, parents, and society.

The most widely accepted and widely used measurement of service quality in academia is the five dimensions of service quality proposed by Parasuraman et al. in 1988, which are Tangible, Reliability, Responsiveness, Assurance, and Empathy, and the Service Quality Measurement Scale (SERVQUAL) has been developed. This model measures the gap between consumer expectations and perceptions in the five dimensions mentioned above, that is, measuring consumer expectations and perceptions of services separately, and then calculating the gap to obtain the level of service quality.

After the proposal of the SERVQUAL scale, service quality was often measured in this way. It was not until Cronin and Taylor reviewed the measurement of service quality in the authoritative Journal of Marketing in 1992 that they pointed out that measuring consumer expectations is not related to measuring service quality levels, and it can confuse the results of measuring service quality. Service quality should only be measured by measuring consumer perception, known as SERVPERF. Therefore, based on the views of Cronin and Taylor, this article only measures service quality by measuring perception.

In the past, scholars often used the SERVQUAL scale to measure the quality of university services or educational services. However, the SERVQUAL scale takes four commonly used service companies, namely banks, credit card companies, futures exchanges, and home appliance repair departments, as samples for discussion. The developers of the scale divide the service industry into "high contact services, medium contact services, and low contact services based on their level of service exposure." This classification itself has its limitations, and the attributes of service quality that are valued vary for different industries. Tangibility is more important for banks than for other industries. The industry where responsiveness is least important to banks and reliability is most valued is home appliance maintenance. Moreover, higher education institutions are non-profit organizations, and students cannot be equated with general consumers. Therefore, it is questionable whether using the SERVQUAL scale is suitable for measuring the quality of university services, and using this scale to measure university quality cannot reflect the importance of different service attributes in universities.

Ruby (2019) uses the SERVQUAL scale as a basis to measure student satisfaction, but it only focuses on some services including credit records, enrollment, employment services, and financial assistance, and cannot effectively measure the service quality of universities.

According to literature review, there is limited research on the quality of university services, and it is necessary to explore in depth the differences between university service quality and general industry service quality, and find better methods and tools to measure university service quality.

2.2 Student satisfaction

The concept of customer satisfaction was first introduced into the field of marketing by Cardozo (1921). He suggested that customer satisfaction would increase repurchase behavior. Customer satisfaction is an immediate response of customers to the value of a product in a specific usage situation, and it is also the result of comparing consumer expectations for a certain service with the actual service results provided by the service provider. And college student satisfaction specifically refers to the emotional reactions and experiences of college students towards their academic life. Scholars have different opinions on the measurement of customer satisfaction, which can be roughly divided into two methods: overall and multi item measurement. Due to the focus on exploring the variable of university service quality, this study regards it as the core variable, and customer satisfaction appears as the outcome variable of university service quality. Therefore, this study adopts a holistic approach to measure customer satisfaction, in order to complement the framework of this study. It is believed that customer satisfaction is the overall attitude of customers after consumption. Student satisfaction is defined as the overall feeling of students towards university services. The student satisfaction questionnaire refers to the scale used by Hong Caizhen and measures student satisfaction from a single dimension.

2.3 Student loyalty

Loyalty refers to the repeated purchase behavior of customers towards the same brand or its series of products or services.

Regarding the measurement of loyalty, Parasuraman et al. believe that the dimensions of loyalty include liking the company to others, recommending the company to those who inquire, encouraging family and friends to consume at the company, prioritizing the choice of the company when making purchases, and frequently visiting the company. Griffin (2019) believes that the dimensions of customer loyalty include frequent repeat purchases, willingness to purchase various products or services provided by the company, willingness to establish a good reputation for the company, and immunity to promotional activities of other companies.

For the measurement of student loyalty, Robert et al. (2007) believe that the measurement of student loyalty is basically consistent with the measurement of general consumer loyalty. This study chose the following dimensions to measure student loyalty: ① stay in existing schools to continue completing courses; ② Choose your school to continue your education or join an alumni association; ③ Willing to actively encourage family and friends to come and enroll. This study also refers to these three points to measure student loyalty.

3. Methodology

This paper selects students of Jiangsu higher vocational colleges as the research object, and analyzes it from five dimensions: assurance, compassion, reliability; independent variables are responsibility and tangible. Students' loyalty is the influencing factor, and student satisfaction is the intermediate variable. This study explores the service quality of vocational schools to students' satisfaction and loyalty to vocational schools from five aspects. Based on the above analysis, the initial analytical framework for forming a relationship in the study is shown below.

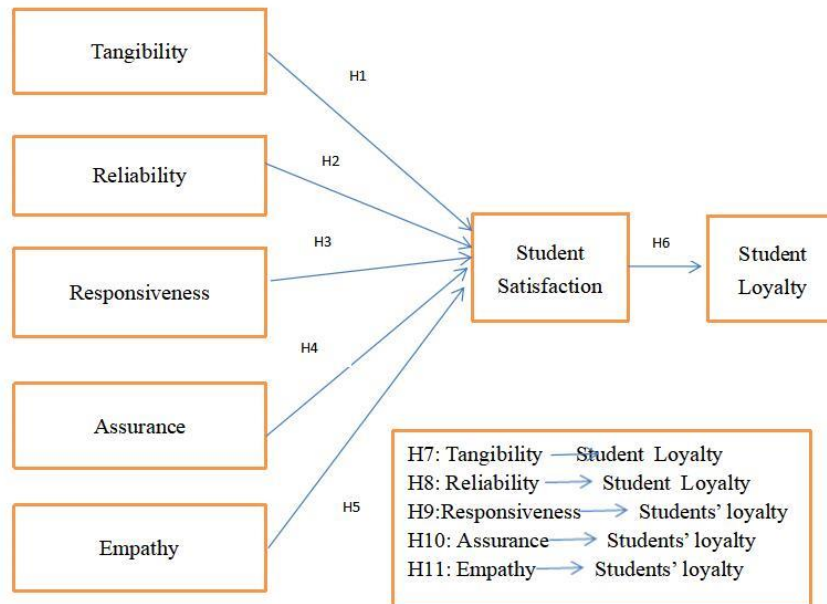


Figure 1 : Conceptual Framework

Considering the above conceptual framework, the following hypotheses can be formulated.

H1 : Tangibility has a positive impact on students' satisfaction.

H2 : Reliability has a positive impact on students' satisfaction.

H3 : Responsibility has a positive impact on students' satisfaction.

H4: Assurance has a positive impact on students' satisfaction.

H5: Empathy has a positive impact on students' satisfaction.

H6: Tangibility has a positive impact on students' loyalty.

H7: Reliability has a positive impact on students' loyalty.

H8: Responsibility has a positive impact on students' loyalty.

H9: Assurance has a positive impact on students' loyalty.

H10: Empathy has a positive effect on students' loyalty.

H11: Students' satisfaction has a positive impact on students' loyalty.

In 2023, there were 167 full-time colleges in Jiangsu, of which 90 were vocational colleges. The Annual Report of Higher Vocational Education of Jiangsu Province (2018) mentioned that there are 67 public institutions and 23 private institutions in 90 higher vocational colleges, totaling 620,000 students. Since this study started in 2023, the sample of this study includes 620,000 students from 90 Higher Vocational Colleges in Jiangsu Province. The sampling frame of this study is all the college students of Higher Vocational Education in Jiangsu from freshmen to juniors study in school. This research mainly investigates the satisfaction and loyalty of college students who are receiving higher vocational education. Therefore, every college student in Jiangsu Province belongs to the sample of investigation. In this study, non-probability sampling design or simple random sampling were used.

4. Discussion and Synopsis of the Main Research Outcomes

This study used wxj.cn/ to distribute questionnaires through the internet. The questionnaire would be distributed from March 1, 2023 to October 1, 2023, taking a total of 7 months. 1811 questionnaires were collected, of which 265 invalid questionnaires were excluded, yielding 1546 valid questionnaires, with an effective rate of 85.37%.

4.1 Exploratory Factor Analysis

In addition to the reliability of the preliminary analysis data, the reliability of the final data is critical to guarantee the correctness of the final data analysis results. The results show that the convergence and identification validity of each variable are achieved by factor analysis. The correlation between variables shall be within 0.3 and 0.9, and the overall variance of each statement shall exceed 50% (Cohen et al., 2003). Based on previous studies on subjective assessments and extensive research experience, we can see the degree of simplification of the factors listed in the table below. (Kaiser, 1974).

Table 1: KMO and Bartlett's Test

Kaiser-Meyer-Olkin Measure of Sampling Adequacy.		0.942
Approx. Chi-Square		46255.747
Bartlett's Test of Sphericity	df	528
	Sig.	0.000

The validity was testified using KMO and Bartlett's test, shown in the table above: the KMO value is 0.942, greater than 0.9; Bartlett's spherical test, with an approximate chi-square value of 46255.747, a degree of freedom of 528, and a probability of significance of 0.000, which is less than 0.001, indicating that the validity structure of the data is very good and is suitable for factor analysis.

4.2 Mediating effects

Table 2: Mediating Effect

Mediating effect		XE	XD	XC	XB	XA	MA
Students' satisfaction	Direct effect	0.008	0.327***	0.214***	0.288***	0.231***	
	Indirect effect						
	Total effect	0.008	0.327***	0.214***	0.288***	0.231***	
Students' loyalty	Direct effect	0.280***	0.107***	0.115***	0.251***	0.068**	0.264***
	Indirect effect	0.002	0.086***	0.056***	0.076***	0.061***	
	Total effect	0.282***	0.193***	0.171***	0.327***	0.129***	0.264***

*P<0.1, **P<0.01, ***P<0.001

The table above tests the role of students' satisfaction as a mediating variable between empathy, assurance, responsiveness, reliability, tangibles and students' loyalty. The table above tells that the direct effect of empathy on students' satisfaction is 0.008 with a significance of 0.728 ($p > 0.1$), therefore it is judged that the direct effect of empathy on students' satisfaction is not significant. There was no indirect effect between empathy and students' satisfaction. The direct effect of empathy on students' loyalty was significant ($p < 0.001$) at 0.280 and the indirect effect was 0.002 but not significant ($p = 0.728 > 0.1$). The total effect of empathy on students' loyalty was significant ($p < 0.001$) at 0.282 and the direct effect of students' satisfaction on loyalty was significant ($p < 0.001$) at 0.264. The mediating effect of students' satisfaction between empathy and loyalty was thus judged to be insignificant.

The direct effect of assurance on students' satisfaction was significant ($p < 0.001$) at 0.327, with no indirect effect and a significant total effect ($p < 0.001$) at 0.327. The direct effect of assurance on students' loyalty was significant ($p < 0.001$) at 0.107. The indirect effect was significant ($p < 0.001$) at 0.086 and a significant total effect ($p < 0.001$) was 0.193. The direct effect of students' satisfaction on loyalty was significant ($p < 0.001$) at 0.264. Therefore, it was judged that there was a mediating effect of students' satisfaction between assurance and loyalty, and it was partially mediated.

The direct effect of responsiveness on students' satisfaction was significant ($p < 0.001$) at 0.214 with no indirect effect and the total effect was significant ($p < 0.001$) at 0.214. The direct effect of responsiveness on students' loyalty was significant ($p < 0.001$) at 0.115. the indirect effect was significant ($p < 0.001$) at 0.056 and the total effect was significant ($p < 0.001$) was 0.171. The direct effect of students' satisfaction on loyalty was significant ($p < 0.001$) at 0.264. Therefore, it was judged that there was a mediating effect of students' satisfaction between responsiveness and loyalty, and it was partially mediated.

The direct effect of reliability on students' satisfaction was significant ($p < 0.001$) at 0.288 with no indirect effect and the total effect was significant ($p < 0.001$) at 0.288. The direct effect of reliability on students' loyalty was significant ($p < 0.001$) at 0.251. the indirect effect was significant ($p < 0.001$) at 0.076 and the total effect was significant ($p < 0.001$) was 0.327 . The direct effect of students' satisfaction on loyalty was significant ($p < 0.001$) at 0.264. Therefore, it was judged that there was a mediating effect of students' satisfaction between reliability and loyalty, and it was partially mediated.

The direct effect of tangibles on students' satisfaction was significant ($p < 0.001$) at 0.231, with no indirect effect and a significant total effect ($p < 0.001$) at 0.231. The direct effect of tangibles on students' loyalty was significant ($p < 0.01$) at 0.068. The indirect effect was significant ($p < 0.001$) at 0.061 and a significant total effect ($p < 0.001$) at 0.129. was 0.129 . The direct effect of students' satisfaction on loyalty was significant ($p < 0.001$) at 0.264. Therefore, it was judged that there was a mediating effect between students' satisfaction on tangibles and loyalty, and that it was partially mediated.

4.3 Hypotheses Testing

Table 3 : Path analysis

	Path		Standardized Estimate	S.E.	C.R.	P	Results
Students' satisfaction	<--	Tangibles	0.231	0.03	9.966	***	Support
Students' satisfaction	<--	Reliability	0.288	0.028	10.949	***	Support
Students' satisfaction	<--	Responsiveness	0.214	0.029	9.187	***	Support
Students' satisfaction	<--	Assurance	0.327	0.026	13.853	***	Support
Students' satisfaction	<--	Empathy	0.008	0.022	0.34	0.734	Not Support
Students' loyalty	<--	Students' satisfaction	0.264	0.028	8.737	***	Support
Students' loyalty	<--	Tangibles	0.068	0.028	2.942	0.003	Support
Students' loyalty	<--	Reliability	0.251	0.026	9.298	***	Support
Students' loyalty	<--	Responsiveness	0.115	0.027	4.935	***	Support
Students' loyalty	<--	Assurance	0.107	0.024	4.484	***	Support
Students' loyalty	<--	Empathy	0.28	0.02	12.328	***	Support

CMIN/DF=2.973, DF=474, CMIN=1409.255, RMR=0.022, GFI=0.945, AGFI=0.935, CFI=0.980, TLI=0.977, NFI=0.970, RMSEA=0.036

The table above informs the hypothesis testing results among the variables in the structural equation model. CMIN/DF=2.973 (CMIN/DF<3), DF=474, CMIN=1409.255, RMR of 0.022 (RMR<0.05), GFI value of 0.945, AGFI value of 0.935, CFI value of 0.980, TLI value of 0.977, NFI 0.970 (CFI,TLI,IFI,NFI,AGFI all had values above 0.9) RMSEA value was 0.036 (RMSEA<0.1). All indicators are in line with the recommendations given by the scholar Bentler.

Tangibles, reliability, responsiveness and assurance all had a significant and positive effect on students' satisfaction, with standardized path coefficients of 0.231, 0.288, 0.214 and 0.327 respectively. with assurance having the highest standardized path coefficient on Students' satisfaction. The positive effect of empathy on Students' satisfaction had a significant p-value of 0.734, which was greater than 0.05, and therefore the positive effect of empathy on students' satisfaction was judged to be insignificant.

The positive effect of students' satisfaction on loyalty was significant ($p < 0.05$) with a standardized path coefficient of 0.264.

Assurance, empathy, reliability, responsiveness, and tangibles all had significant and positive effects on students' loyalty with standardized path coefficients of 0.068, 0.251, 0.115 0.107 and 0.280 in that order. with empathy having the highest path coefficient value on students' loyalty and Tangibles the lowest.

Table 4 : Hypotheses Testing Summary

H(x)	Hypothesis	Finding
1	Tangibility has a positive impact on students' satisfaction.	Supported
H2	Reliability has a positive impact on students' satisfaction.	Supported
H3	Responsibility has a positive impact on students' satisfaction	Supported
H4	Assurance has a positive impact on students' satisfaction	Supported
H5	Empathy has a positive impact on students' satisfaction	NOT Supported
H6	Tangibility has a positive impact on students' loyalty	Supported
H7	Reliability has a positive impact on students' loyalty	Supported
H8	Responsibility has a positive impact on students' loyalty.	Supported
H9	Assurance has a positive impact on students' loyalty.	Supported
H10	Empathy has a positive effect on students' loyalty.	Supported
H11	Students' satisfaction has a positive impact on students' loyalty.	Supported

5. Limitations, Implications, and Further Directions of Research

5.1 Establishing a long-term mechanism for evaluating student satisfaction

Student satisfaction is closely related to educational quality, and student satisfaction assessment can serve as an effective means of quality monitoring. Establishing a long-term evaluation mechanism is of great significance in ensuring the quality of higher education and enhancing the brand value of higher education.

- (1) Ensure regular evaluation. Conditional universities can conduct it once a year.
- (2) To establish a dedicated database to analyze student satisfaction over a period of time, understand changes in student satisfaction, and make immediate adjustments.
- (3) In order to ensure the fairness of the evaluation, some educational intermediaries need to implement the evaluation.
- (4) To publicly disclose the evaluation results and accept public supervision. The purpose of publicly evaluating the results is to provide the public with a basic judgment of various higher education institutions; Secondly, it can stimulate some schools to improve service quality.

5.2 Improving the Quality of Higher Education Services from the Perspective of Student Needs

The stakeholder theory holds that the best way for a company to achieve long-term survival and prosperity is to consider all its important stakeholders and meet their needs. Universities are a consortium of stakeholders, and students have already accounted for a significant proportion of their funding sources. Students invest in material and human capital consumption services, becoming core stakeholders in higher education. They have the power to invest in education and which universities they want to pursue.

According to utility theory, when deciding what to produce, enterprises first need to consider how much utility the product can bring to consumers. To achieve long-term and sustainable development, a university not only needs to understand the quality of educational services required by current students, but also needs to cultivate students who can adapt to the future development of society. Only in this way can it understand the needs of students and the changes in social demand for talents, and timely provide higher education service quality that meets these changing needs.

Therefore, universities provide educational services that meet the needs of students in order to ensure the quality of higher education services and run schools that satisfy the people.

5.3 Legislation to safeguard the rights of students as students

In the market economy system where consumer sovereignty is prominent, the legal relationship between universities and students has shifted from a special power relationship to an education contract relationship. This transformation of the relationship means that the rights of education consumers must be respected and their rights protected. Universities produce and operate higher education services by receiving investment from the state and students. They are producers and operators of education services, while students provide tuition fees to obtain education services provided by universities. They are consumers of education services, and consumer rights are an important component of human rights. According to the Consumer Rights Protection Law and relevant laws in China, consumers enjoy the legitimate rights granted to them by law in the process of purchasing, using goods or receiving services. The relationship between universities and students is a legal contractual relationship between serving and being served. As direct consumers, according to the relevant provisions of the Consumer Rights Protection Law, students have the right to be informed in accordance with the law (such as the right to know about the reputation, major, curriculum, employment of graduates, etc.), the right to choose (such as the right to choose their own school, major, teachers, etc.), the right to fair trade (such as the right to obtain fair trade conditions such as quality assurance of educational services and reasonable tuition fees), and the right to claim compensation (such as the right to receive compensation in accordance with the law if students receive substandard or inferior educational services that cause significant losses to them).

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