Service quality influencing online education service satisfaction of Shandong Foreign Affairs Vocational University students

ABSTRACT

Driven by the "Internet Plus Education" strategy and the COVID-19 pandemic, Chinese university online education has become normalized, but faces challenges like limited interaction and delayed feedback. Taking students from Shandong Foreign Affairs Vocational University (Jinan Campus) as subjects, this study constructs an evaluation framework based on the SERVQUAL model, collects 370 valid questionnaires and conducts relevant tests to identify key factors affecting student satisfaction. It provides scientific support for university online platform optimization, promotes higher education digital transformation and improves student learning experiences.

Keyword: Online Education Service Quality, Student Satisfaction, SERVQUAL Model, Influencing Factors, Vocational College Students

INTRODUCTION

In recent years, university online education has developed rapidly. China's 13th Five-Year Plan for National Education Development (Ministry of Education of the People's Republic of China, 2017) proposed developing "Internet + Education". UNESCO (2021) advocates OER for online content sharing, and OEC (2023) shows 35% of U.S. university students took online courses in 2023. Cao(2023) notes COVID-19 promoted China's "suspending classes without suspending learning" policy. Zhou(2022) highlights online education's advantages and changes. This study uses the SERVQUAL model (Parasuraman, 1988), addressing the scarcity of empirical research on application-

oriented universities (Wang, 2022) by taking Shandong Foreign Affairs Vocational University as the subject, to explore online education service quality's impact on student satisfaction and provide practical guidelines.

Research objectives

The objective of this study is to examine how service quality factors, namely, tangibility, reliability, responsiveness, guarantee and empathy, influencing online education service satisfaction.

Literature review

SERVQUAL Model

The SERVQUAL model, proposed by Parasuraman, Zeithaml & Berry (1988), includes five dimensions and 22 indicators. This study adapts it to build an evaluation framework for Shandong Foreign Affairs Vocational University, adapting the five dimensions to online contexts and distinguishing perceived and expected services. Six related studies all adopt the SERVQUAL model (Parasuraman et al., 1988), using questionnaires and statistical tests, with common findings of expectation-perception satisfaction gaps and SERVQUAL-based evaluation systems, but differences in research objects and key findings (Jiang Xinhai, 2024; Huang Qiong, 2024). These studies verify SERVQUAL's applicability and provide references for this research.
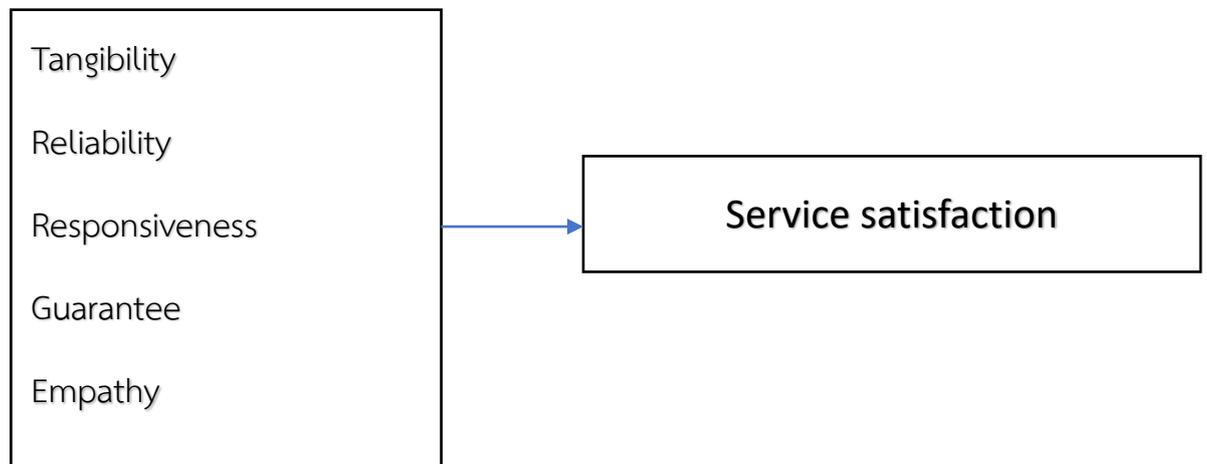
Theoretical framework

| Tangibility |
| Reliability |
| Responsiveness |
| Guarantee |
| Empathy |

→ **Service satisfaction**

Figure 1 Research framework

Research methodology

This study targeted 3,850 2025-cohort full-time students at Shandong Foreign Affairs Vocational University (Jinan Campus). Using Yamane's (1967) formula (95% confidence level, e=0.05), the final sample was 382 after 3% invalid response adjustment, selected via stratified random sampling. Primary data (370 valid questionnaires, 96.8% recovery) were collected via Wenjuanxing (Dec 2024–Jan 2025) with quality control; secondary data from literature and university sources. SPSS was used for analysis: data preprocessing, descriptive statistics, validity tests (meeting Hair et al., 2010 standards), Pearson correlation, and stepwise regression with multicollinearity/autocorrelation checks.

Results

Table 1 Basic information statistics

name	option	frequency	percentage%
Your major category	Natural Science (Science, Engineering, Medicine, Agriculture	146	39.459
	Humanities and social sciences (literature, history, philosophy, management, economics, law, education, arts	224	60.54
Your grade:	First grade	83	22.43
	Second grade	73	19.73
	Grade 3	113	30.54
	Grade 4	101	27.29
Have you participated in the school's online education course in the past year:	Participated	284	76.75
	Not participated	86	23.24
The average weekly time you participate in online education is	Under 2 hours	114	30.81
	3 to 8 hours	128	34.59

about:	9 to 14 hours	75	20.27
	More than 14 hours	53	14.32
The average online education time in the last week is about:	Under 2 hours	188	50.81
	3 to 8 hours	84	22.70
	9 to 14 hours	57	15.40
	More than 14 hours	41	11.08
Your gender:	Male	179	48.37
	Female	191	51.62

students (science, engineering, medicine, agriculture), while 224 (60.54%) majored in humanities and social sciences (literature, history, philosophy, management, economics, law, education, arts), with the latter group accounting for a larger share.

Table 2 Correlation analysis

	The tangible responsibility	reactive mode	Guarantee	Empathy	Value
The tangible	1				
responsibility	0.443***	1			
reactive mode	0.390***	0.453***	1		
Guarantee	0.350***	0.447***	0.422***	1	
Empathy	0.415***	0.447***	0.419***	0.462***	1
Value	0.410***	0.449***	0.499***	0.416***	0.448***	1

The correlation analysis was conducted using the Pearson correlation coefficient to examine the relationships among "The tangible", "responsibility", "reactive mode", "Guarantee", "Empathy", and "Value". All pairs of variables exhibited significant positive correlations at the 0.001 level. The correlation coefficients ranged from 0.350 (between "Guarantee" and "The tangible") to 0.499 (between "Value" and "reactive mode").

Table 3 Regression analysis(n=370)

	Non-standardized coefficients		Standardized coefficients	t	p	VIF	R^2	Adj R^2	F
	B	Standard error	Beta						
Constant	0.068	0.223		0.304	0.762				
The tangible	0.162	0.059	0.135	2.747	0.006	1.395			
responsibility	0.158	0.057	0.145	2.794	0.005	1.562	0.374	0.365	F(5,370)=43.439,p=0.000
reactive mode	0.308	0.059	0.263	5.261	0.000	1.453			
Guarantee	0.138	0.059	0.118	2.340	0.020	1.470			
Empathy	0.174	0.055	0.163	3.195	0.002	1.515			

a Dependent： Value

D-W： 1.938

Based on 370 valid samples, the regression model is defined as: Satisfaction = 0.068 + 0.162Tangible + 0.158Reliability (excluding non-significant coefficients). The adjusted R^2 = 0.365, indicating that the five dimensions of online education service quality explain 36.5% of the variation in service satisfaction.

Multicollinearity diagnostics show all VIF values < 5, with no multicollinearity issues; the Durbin-Watson statistic is close to 2, ruling out autocorrelation. The model passes the F-test (F = 43.439, p = 0.000 < 0.001), confirming overall model significance.

All core variables exert significant positive effects on satisfaction: Tangibility (B = 0.162, t = 2.747, p < 0.01), Reliability (B = 0.158, t = 2.794, p < 0.01), Responsiveness (B = 0.308, t = 5.261, p < 0.001), Assurance (B = 0.138, t = 2.340, p < 0.05), and Empathy (B = 0.174, t = 3.195, p < 0.01). Among them, Responsiveness has the strongest positive impact on service satisfaction.

Table 4 Results of the hypothesis test

Hypothesis	Result
H1a The tangible nature of online education affects students' perceived service quality	Accepted
H1b The reliability of online education affects students' perceived service quality	Accepted
H1c Responsiveness of online education affects students' perceived service quality	Accepted
H1d The guaranteed nature of online education affects students' perceived service quality	Accepted
H1e The empathy of online education affects students' perceived service quality	Accepted

Discussion and conclusion

This study constructs a college online education service quality evaluation system by integrating the SERVQUAL model with higher education digital transformation and online teaching characteristics, exploring core influencing factors via questionnaires and empirical analysis. Findings show responsiveness has the most significant positive impact on learning value, followed by empathy, tangibility, reliability and assurance (all positively correlated). The study verifies SERVQUAL's applicability in university online education, noting responsiveness is dominant for applied vocational college students. Empathy is notable, while tangibility and assurance are foundational, clarifying each dimension's influence on student satisfaction.

Recommendation

Based on the research findings, this study puts forward targeted suggestions for universities to improve the quality of online education services: 1.Strengthen platform response mechanisms: Introduce intelligent customer service and set up a dedicated student service team to improve response speed and efficiency, and establish a feedback tracking system to ensure all

student issues are properly addressed. 2. Enhance teacher-student interaction: Encourage diverse interaction modes such as live online classes, online discussions and group collaborations, and build an interactive feedback mechanism to guarantee students receive timely guidance.3.Focus on personalized services: Analyze students' learning characteristics with big data and AI, and provide customized learning paths and resource recommendations. 4. Optimize the online education platform: Collect feedback from students and teachers to continuously improve platform functions and interface design, and elevate user experience. 5.Strengthen teacher training: Organize regular training and excellent case sharing to enhance teachers' digital literacy and online teaching capabilities. 6.Build a comprehensive quality monitoring system: Regularly assess teaching quality and students' learning outcomes, and establish a feedback mechanism for continuous improvement.

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