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OPTIMIZATION OF ACADEMIC SERVICES BASED ON QUALITY FUNCTION DEPLOYMENT: AN INTEGRATION STUDY OF SERVQUAL METHOD AT GRAHA NUSANTARA UNIVERSITY

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ABSTRACT

This research is motivated by the need to improve academic service quality at Graha Nusantara University to meet student expectations and dynamic higher education industry demands. The study aims to analyze gaps between students' perceptions and expectations of academic services and develop innovative strategies through the integration of Quality Function Deployment (QFD) and SERVQUAL. The research employs a mixed-method approach with sequential explanatory design, conducted in 2024 involving 289 students as respondents selected through proportionate stratified random sampling from 1,038 population. Data collection utilized SERVQUAL dimension-based questionnaires and semi-structured interviews. The results identified eight service attributes with significant gaps, particularly in campus facilities (gap=-1.15), health services (gap=-1.11), and problem-solving training (gap=-1.01). Based on improvement ratio, enhancement priorities include facility cleanliness (1.59), health services (1.55), and problem-solving training (1.50). The research recommends improving cleaning systems, developing health facilities, modernizing laboratories, and implementing problem-based learning.

Keywords: Academic Services, Educational Innovation, Higher Education, Quality Function Deployment, SERVQUAL.

INTRODUCTION

In today's rapidly evolving era of globalization and information technology, the quality of higher education has emerged as a crucial factor in determining a university's competitiveness (Mutu, 2003; Widiansyah, 2018). Higher education institutions must continuously enhance their service quality to meet stakeholder expectations and navigate the increasingly competitive landscape of education. This imperative aligns with Noaman *et al.* (2017) assertion that the quality of higher education services significantly impacts both student satisfaction and institutional sustainability.

As a private higher education institution, Graha Nusantara University (UGN) faces the challenge of elevating its academic service quality to meet both evolving student expectations and dynamic labor market demands. Students, as the primary beneficiaries of educational services, express diverse needs and expectations regarding academic service quality (Amri, 2013; Sufiyyah, 2011). These expectations encompass various aspects including curriculum quality, teaching methods, supporting facilities, and other elements integral to their learning experience (Ali, Munir, Permana, & Kurniady, 2020; Noaman et al., 2017; Sunder M, 2016).

The dynamic nature of the educational industry necessitates adaptive and innovative strategies for quality planning and improvement (Kovalenko, Lomonosova and Rusnak, 2021). In this context, the Quality Function Deployment (QFD) model has proven effective in translating consumer needs and expectations into service design, particularly in academic services (Afriyadi, 2017; Hartanto, 2008; Indriya, 2018). QFD enables precise identification of student expectations and transforms them into measurable quality characteristics (Chan, 2010), thereby enabling universities to establish academic service quality standards that meet or exceed student expectations.

Furthermore, integrating SERVQUAL methodology with QFD provides a more comprehensive approach to analyzing and enhancing service quality. Abili et al. (2012) demonstrate how SERVQUAL helps identify gaps between service users' perceptions and expectations, while QFD translates these needs into implementable technical specifications. Previous research by Septiani et al. (2020) and Verriana and Anshori (2017) has validated this approach's effectiveness within Indonesia's higher education context.

However, previous studies have typically focused on gap analysis without providing concrete implementation solutions. This research addresses this limitation by not only identifying gaps between student perceptions and expectations but also developing implementable innovative strategies based on QFD analysis. This approach aligns with Raharjo et al.'s (2007) recommendations regarding the importance of systematic approaches to improving higher education quality.

The urgency of this research lies in its contribution to improving UGN's academic service quality, which in turn influences university reputation, student satisfaction, and learning outcomes. As Ali et al. (2020) highlight, academic service quality correlates positively with student satisfaction and institutional loyalty. Moreover, this research supports the achievement of Sustainable Development Goals (SDGs), particularly SDG 4 on Quality Education, by making practical contributions to higher education quality enhancement.

Based on this context, this research aims to analyze the gaps between student perceptions and expectations regarding academic services at UGN and develop innovative strategies based on QFD analysis to enhance academic service quality. Through the integration of QFD and SERVQUAL, this research seeks to generate practical, implementable recommendations for UGN to improve its academic services while contributing to the broader literature on quality management in Indonesian higher education.

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RESEARCH METHODS

This study adopted a mixed-methods approach, specifically using a sequential explanatory design that integrates quantitative and qualitative analyses to provide a comprehensive understanding of academic service quality. According to Creswell (2020), using a mixed-methods approach enables researchers to obtain richer and more nuanced data compared to a single-method approach. The sequential explanatory design was chosen for its structured process: first collecting and analyzing quantitative data, and then using those insights to inform a deeper qualitative investigation (Teddlie & Tashakkori in McCoy, 2015)

Table 1. Sample Distribution by Faculty

Faculty	Population (N)	Proportion	Sample (n)
Engineering	250	24.1%	70
Economics	230	22.2%	64
Education	220	21.2%	61
Social Politics	180	17.3%	50
Agriculture	158	15.2%	44
Total	1,038	100%	289

The research population comprised all active students at Graha Nusantara University across five faculties, totaling 1,038 students. Using Slovin's formula with a 5% margin of error and a 95% confidence level, the sample size was calculated at 289 students for the quantitative survey. To ensure proportional representation across faculties, a proportionate stratified random sampling technique was used, as recommended by Cohen et al. (2017).

Quantitative data were collected through a survey, using a questionnaire grounded in SERVQUAL dimensions (Parasuraman et al. in Mirzaei et al., 2019) and adapted to the higher education context. Researchers used an academic service instrument based on Setiawan's research Setiawan which had been tested for validity and reliability (Setiawan, Ikatrinasari, & Prabowo, 2023). The instrument measured five main dimensions: tangibles, reliability, responsiveness, assurance, and empathy, across 25 items rated on a 5-point Likert scale. Instrument validity was evaluated through content validity via expert judgment and construct validity via exploratory factor analysis, while reliability was assessed using Cronbach’s alpha, targeting a coefficient of >0.7 (Hair, Black, Babin, & Anderson, 2019).

Qualitative data collection involved semi-structured interviews with 15 students, selected through purposive sampling. Criteria for selecting participants were based on (Miles, Huberman, & Saldaña, 2018), who emphasized the importance of choosing participants with substantial experience of the phenomenon being studied. The interview protocol was informed by preliminary analysis of quantitative data, allowing for deeper exploration of significant findings.

The data analysis followed a two-stage process. First, SERVQUAL analysis was conducted to identify gaps between students' perceptions and expectations. This was followed by QFD analysis to translate student needs into actionable technical characteristics. As described by Tan & Pawitra (in Sui Pheng et al., 2016) combining SERVQUAL and QFD supports the creation of customer-oriented and effective service improvement strategies.

Finally, qualitative data were analyzed using thematic analysis, following the procedure outlined by Braun & Clarke (2019). This included familiarization with the data, initial coding, searching for themes, reviewing themes, defining and naming themes, and report writing. To enhance the credibility of findings, both data and method triangulation were applied, in line with Denzin's (2017) recommendations.

Table 2. Data Analysis Matrix

Data Type	Collection Method	Analysis Method	Output
Quantitative	Survey (n=289)	SERVQUAL & QFD	Gap Analysis & House of Quality
Qualitative	Interviews (n=15)	Thematic Analysis	In-depth Themes & Patterns
Integration	Triangulation	Mixed Analysis	Comprehensive Strategy

RESULTS AND DISCUSSION

Result

This study aimed to analyze the gap between students' perceptions and expectations of educational service quality at Graha Nusantara University and to develop innovative strategies based on Quality Function Deployment (QFD) and SERVQUAL analysis.

1. Student Needs Analysis

The data analysis revealed that, overall, students' expectations for academic services are generally higher than their perceptions of the services they currently receive. This finding indicates a significant gap in various aspects of educational services, highlighting areas for potential improvement.

Table 3. Student Needs Analysis

No.	Research Item	Perception Score (P)	Expectation Score (H)	GAP (P-H)	Q (Quality Improvement)
Learning Outcome Aspect					
1	Training to master technology in the field	2.93	3.00	-0.07	97.58
2	Practice-oriented education	3.06	2.93	0.13	104.37
3	Teaching adapts to modern techniques	2.97	3.05	-0.08	97.39
4	Curriculum design based on job market needs	3.06	2.94	0.11	103.88
5	Students are trained to solve problems	2.01	3.02	-1.01	66.44
Responsiveness Aspect					
6	Punctuality in starting and ending lectures	3.04	3.07	-0.02	99.32
7	Speed of service provided by staff	3.09	3.10	-0.01	99.78
8	Politeness and willingness of staff to help	3.06	3.08	-0.02	99.33
9	Simplicity of service procedures and policies	3.08	2.89	0.19	106.71
10	Responsiveness of academic advisors (PA) in handling student complaints	2.97	3.00	-0.02	99.19
Physical Facilities Aspect					
11	Laboratories equipped with	1.98	2.96	-0.98	66.78

No.	Research Item	Perception Score (P)	Expectation Score (H)	GAP (P-H)	Q (Quality Improvement)
Learning Outcome Aspect					
	modern facilities				
12	Availability of learning resources and equipment (e.g., projectors)	2.01	2.96	-0.95	67.84
13	Wi-Fi connectivity on campus	2.00	2.93	-0.93	68.12
14	Library provides complete and up-to-date books/journals/literature	2.00	2.93	-0.92	68.44
15	Campus facilities are clean and tidy	1.96	3.11	-1.15	63.14
16	Availability of suggestion boxes	2.05	2.97	-0.92	69.00
17	Availability of health services	2.01	3.12	-1.11	64.41
Personality Development Aspect					
18	Support for sports activities	2.90	3.08	-0.18	94.04
19	Knowledge improvement through field practice	2.97	3.05	-0.08	97.39
20	Support for extracurricular activities	2.84	3.07	-0.23	92.56
21	Recognition of outstanding students	2.99	3.06	-0.06	97.96
Academic Aspect					
22	Evaluation of learning each semester	2.88	3.00	-0.12	95.85
23	Competence of lecturers in their subjects	3.08	2.91	0.17	105.83
24	Lecturers deliver structured and scheduled lectures according to the syllabus	2.97	3.03	-0.06	97.94
25	Lecturers provide easily understood materials	2.93	3.02	-0.09	97.02

2. Compiling the Voice of Customer (WHATs)

In an effort to improve the quality of educational services at Graha Nusantara University (UGN), the first step taken is to compile a Voice of Customer, or WHATs, matrix. This approach integrates the Service Quality (SERVQUAL) and Quality Function Deployment (QFD) methods to ensure that any proposed improvements truly reflect the needs and expectations of students as the main users of educational services.

An analysis of the gap between the levels of student satisfaction and expectations serves as the basis for the Voice of Customer. Of the 25 educational service attributes evaluated, 8 priority areas were identified as requiring special attention:

a. Students are trained in problem-solving skills

This gap indicates that students feel the problem-solving skills training they currently

receive falls short of expectations. It suggests a need for improved learning methods that are more practical and based on real-world problems to enhance students' competence in addressing challenges in the workforce.

b. Laboratory equipped with modern facilities
Students expressed dissatisfaction with the existing laboratory facilities, particularly in terms of modernization and completeness of equipment. Procurement and renewal of laboratory facilities are needed to support learning processes that are relevant to the latest technological developments.

c. Completeness of learning resources and equipment (e.g., projectors, etc.)
The availability of complete learning resources, such as projectors and other learning aids, is also a highlighted issue. The lack of these facilities affects the comfort and effectiveness of the teaching and learning process.

d. Wi-Fi internet connectivity on campus
The quality and coverage of Wi-Fi connections on campus are considered inadequate by students. Improving internet services is a pressing need to support technology-based learning activities, especially in today's digital era.

e. The library provides complete and up-to-date books, journals, and other literature
Students expect the campus library to offer more relevant and current literature to support their research and studies. The availability of books, journals, and other digital resources should be increased to meet academic needs.

f. Campus facilities are clean and tidy
Campus cleanliness and tidiness are additional concerns for students. Cleaner and better-maintained campus facilities will create a more comfortable and conducive learning environment.

g. Availability of suggestion boxes
Students feel that there are insufficient channels to provide feedback or suggestions. Placing a more accessible suggestion box can encourage student participation in the service improvement process.

h. Availability of health services
Health services available on campus are considered insufficient. Improving health services, both in terms of accessibility and quality, is important to ensure student welfare.

Table 4. Priority Order of Educational Service Attributes

No.	Service Attribute	Importance Level	Priority Order
5	Students are trained in problem-solving skills	3.02	3
11	Laboratories are equipped with modern facilities	2.96	5
12	Availability of learning resources and equipment (e.g., projectors)	2.96	6
13	Wi-Fi connectivity on campus	2.93	7
14	The library provides complete and up-to-date books/journals/literature	2.93	8
15	Campus facilities are clean and tidy	3.11	2
16	Availability of suggestion boxes	2.97	4
17	Availability of health services	3.12	1

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Table 5. Gap in Educational Service Attributes

No.	Service Attribute	Customer Satisfaction	Received	Expected	GAP
5	Students are trained in problem-solving skills	2.01	3.02	-1.01	
11	Laboratories are equipped with modern facilities	1.98	2.96	-0.98	
12	Availability of learning resources and equipment (e.g., projectors)	2.01	2.96	-0.95	
13	Wi-Fi connectivity on campus	2.00	2.93	-0.93	
14	The library provides complete and up-to-date books/journals/literature	2.00	2.93	-0.92	
15	Campus facilities are clean and tidy	1.96	3.11	-1.15	
16	Availability of suggestion boxes	2.05	2.97	-0.92	
17	Availability of health services	2.01	3.12	-1.11	

3. Developing Technical Descriptors (HOWs)

The next step in improving the quality of educational services at Graha Nusantara University (UGN) is to develop Technical Descriptors or Responses (HOWs). Technical responses are the solutions provided by the university's management or deans to address the needs identified from the students through the Voice of Customer (WHATs) analysis. Based on the gap analysis results, strategies are devised for the university to implement to enhance service quality. The following is the framework for UGN to address the issues faced by students:

Table 6. Technical Response Matrix (HOWs)

Customer Requirement (What's)	Technical Response (How's)
Students are trained in problem-solving skills	1. Incorporate more case studies or problem-based projects into each course.
Laboratories are equipped with modern facilities	2. Upgrade laboratory equipment and software.
Availability of learning resources and tools (e.g., LCDs)	3. Procure the latest presentation tools (projectors, LCDs) and ensure they function properly.
Wi-Fi connectivity on campus	4. Expand Wi-Fi coverage and increase network capacity throughout the campus.
Library provides up-to-date books/journals	5. Add new book collections, subscribe to scholarly journals regularly, and provide online access.
Campus facilities are clean and tidy	6. Increase cleaning schedules and assign additional cleaning staff to high-traffic areas on campus.
Availability of suggestion boxes	7. Enhance accessibility to suggestion boxes, both physical and digital, and ensure timely follow-up responses.
Availability of health services	8. Improve on-campus health services or establish partnerships with nearby clinics.

Based on the GAP and Quality Improvement (Q) values, the top priorities for service

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improvement focus on the following areas:

a. Campus facilities are clean and tidy (GAP -1.15; Q = 63.14)
b. Availability of health services (GAP -1.11; Q = 64.41)
c. Training students in problem-solving skills (GAP -1.01; Q = 66.44)

These areas have been identified as critical for improvement due to the significant gaps between student expectations and current services, which strongly affect overall student satisfaction.

4. Developing Prioritized Customer Requirements

4.1 Importance Rating

The next step in enhancing educational service quality at Graha Nusantara University (UGN) involves developing a set of Prioritized Customer Requirements, focusing on the specific needs of students as identified by the Importance Rating. This rating, drawn from questionnaire responses, highlights the service attributes that students consider most essential. Each attribute is rated based on its importance from the students' perspective, as shown below:

Table 7. Importance Rating Matrix

No.	Service Attribute	Importance to Customer
17	Availability of health services	3.12
15	Campus facilities are clean and tidy	3.11
5	Students are trained in problem-solving skills	3.02
16	Availability of suggestion boxes	2.97
11	Laboratories are equipped with modern facilities	2.96
12	Availability of learning resources and tools (e.g., LCD)	2.96
13	Wi-Fi connectivity on campus	2.93
14	Library provides up-to-date books/journals	2.93

The goal represents the level of improvement that Graha Nusantara University (UGN) management plans to achieve to meet the expectations of students as the primary consumers. In this context, university management aims to make improvements that align with students' expectations regarding the quality of services they receive.

The gap analysis results indicate several areas of educational services that require improvement. The university management has set a goal for each service attribute to meet students' expectations, meaning the management intends to align service levels with students' expectations. Any aspect of service that shows a negative gap between perception and expectation will be improved to meet students' standards.

4.3. Improvement Ratio

The Improvement Ratio is an indicator used to assess how much the current services need to be improved to meet customer expectations. A higher Improvement Ratio indicates a greater gap between customer (student) expectations and the services they currently receive, requiring a larger improvement effort. The formula for calculating the Improvement Ratio is:

$$Improvment\ ratio = \frac{expectation\ score}{percepton\ score}$$

The Perception Score represents the current level of student satisfaction with the services provided, while the Expectation Score reflects what students expect from the service. The goal value is set as the performance target that the service provider (rectorate or dean's

office) must achieve to meet student expectations.

Table 8. Improvement Ratio

No.	Item	Importance Rating (H)	Perception Rating (P)	Improvement Ratio
5	Students trained in problem-solving skills	3.02	2.01	1.50
11	Laboratories equipped with modern facilities	2.96	1.98	1.49
12	Availability of learning resources and equipment (LCD, etc.)	2.96	2.01	1.47
13	Wi-Fi connectivity on campus	2.93	2.00	1.47
14	Library provides complete and up-to-date books/journals/literature	2.93	2.00	1.47
15	Clean and tidy campus facilities	3.11	1.96	1.59
16	Availability of suggestion boxes	2.97	2.05	1.45
17	Availability of health services	3.12	2.01	1.55

The Improvement Ratio for Campus Facilities Clean and Tidy (Improvement Ratio = 1.59) shows a significant gap between student expectations and their current perceptions. This means that a substantial improvement in campus cleanliness and tidiness is needed to meet student expectations. Additionally, Availability of Health Services (Improvement Ratio = 1.55) and Students' Problem-Solving Skills Training (Improvement Ratio = 1.50) also indicate a need for increased attention to these services. Therefore, management may focus improvement efforts on attributes with higher Improvement Ratios first, as they indicate the largest gaps between student expectations and perceptions. This approach will ensure that improvements made have a significant impact on student satisfaction.

Discussion

This study aims to measure the gap between the perceptions and expectations of Graha Nusantara University students regarding the quality of educational services by integrating the Service Quality (SERVQUAL) and Quality Function Deployment (QFD) methods. The analysis results revealed several significant gaps, particularly in the Physical Facilities and Learning Outcome dimensions, which require special attention to improve service quality.

1. GAP Analysis on Physical Facilities and Learning Outcome Aspects

Table 9. Key Gaps in Physical Facilities and Learning Outcomes

No.	Item	Perception Rating (P)	Expectation Rating (H)	GAP (P-H)	Improvement Ratio
5	Students trained in problem-solving skills	2.01	3.02	-1.01	1.50
11	Laboratories equipped with modern facilities	1.98	2.96	-0.98	1.49
12	Availability of learning resources and equipment (LCD, etc.)	2.01	2.96	-0.95	1.47
13	Wi-Fi connectivity on	2.00	2.93	-0.93	1.47

	campus				
14	Library provides complete and up-to-date books/journals/literature	2.00	2.93	-0.92	1.47
15	Clean and tidy campus facilities	1.96	3.11	-1.15	1.59
16	Availability of suggestion boxes	2.05	2.97	-0.92	1.45
17	Availability of health services	2.01	3.12	-1.11	1.55

As shown in Table 8, the largest gaps occur in the items Clean and Tidy Campus Facilities with a GAP of -1.15 and Students are Trained in Problem-Solving Skills with a GAP of -1.01. This finding indicates that while students' expectations of these services are high, their perception of reality is much lower.

The gap analysis on physical facilities and learning outcomes highlighted important findings. The largest gaps were identified in clean and tidy campus facilities (GAP -1.15) and the availability of health services (GAP -1.11), indicating a substantial discrepancy between students' expectations and the reality of services received. This result aligns with research by Semaun (2019) which asserts that physical facilities are a key determinant of satisfaction in higher education. Kärnä & Julin (2015) further supports this finding through his study, which shows that tangible aspects, such as physical facilities, directly impact perceptions of the institution's overall quality.

Student responsiveness and personal development aspects are also emphasized in this study. As stated by Grönroos (in Sibai et al., 2021), these two aspects play a vital role in higher education, which is reflected in students' demands for more comprehensive activities for talent and interest development. Dewi (2017) similarly found that the largest gaps often occur in technical services and facilities, as evidenced by significant GAPs in laboratory facilities and Wi-Fi infrastructure in this study.

Another interesting finding relates to technological infrastructure. The gaps in Wi-Fi connectivity (GAP -0.93) and modern laboratory facilities (GAP -0.98) reflect the challenges of adapting higher education to the digital era. Bahaf & Zohriah (2024) emphasize that technological infrastructure has evolved from a mere support facility to an integral component of modern learning. Modernized laboratories and improved connectivity are now essential for facilitating effective, technology-based learning.

The gap in problem-solving skills (GAP -1.01) indicates an urgent need for pedagogical reform. Rosário & Raimundo (2024) underscore the importance of problem-based learning approaches in preparing graduates for the complexities of the modern workforce. The shift from traditional learning models to more experiential and problem-based approaches is crucial. Based on the GAP results, improvements in physical facilities, such as laboratories, Wi-Fi, and health services, have great potential to enhance student perceptions. With a GAP of -1.01, it is clear that students feel their training in problem-solving skills falls short of their expectations. Additional training and a more comprehensive curriculum are expected to help close this gap.

2. Innovative Strategy Based on QFD Analysis

After analyzing student needs, this study developed technical descriptors to address the identified needs. Based on the QFD analysis, the following recommendations for innovative strategies can be implemented:

a. The results indicate that cleanliness and the availability of health services are two aspects highly expected by students. Therefore, the university should prioritize

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b. improving campus hygiene facilities and enhancing access to better, integrated health services.
c. A total of 67.84% of students rated the completeness of learning resources and equipment in the laboratory as low. Consequently, one innovative strategy is the modernization of laboratories with equipment aligned with the latest technological developments.
d. In the Learning Outcome dimension, problem-solving ability has the highest GAP (-1.01), indicating that students feel they do not receive sufficient training. Therefore, implementing problem-solving-based programs that are more interactive and relevant to the workforce is essential. This can be achieved through real case simulations or problem-based projects.
e. Wi-Fi internet connectivity also showed a significant GAP of -0.93. To support a better learning experience, the university needs to improve the quality and coverage of campus internet services.

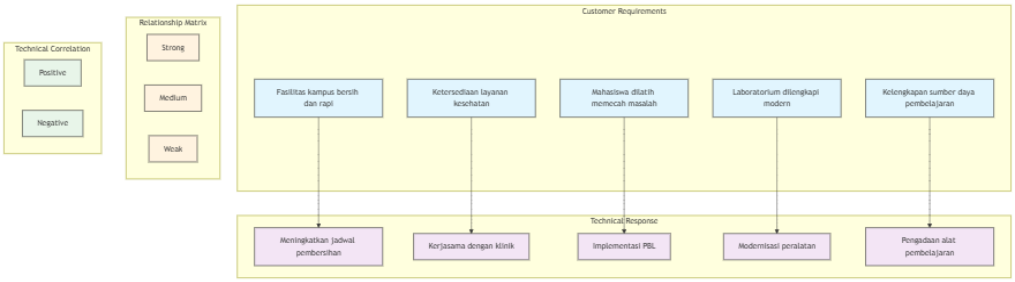

Figure 1. House of Quality (HoQ) Diagram

Based on the QFD analysis, this research resulted in several strategic recommendations that need to be implemented systematically. Top priority was given to improving campus cleanliness and health services, with improvement ratios of 1.59 and 1.55, respectively. Sahney (2019) emphasize the importance of a holistic approach to improving educational service quality, which includes not only academic aspects but also the physical and mental well-being of students.

This study makes a significant contribution to the higher education quality management literature by integrating SERVQUAL and QFD. The findings support the conceptual model of Quinn (in Fuchs et al., 2022) regarding the relationship between service quality and student satisfaction. Practically, this study provides a framework that can be adapted by other higher education institutions in their efforts to evaluate and enhance their service quality.

CLOSING

Based on the research findings and data analysis using the Service Quality (SERVQUAL) and Quality Function Deployment (QFD) methods, this study successfully identified a significant gap between student expectations and perceptions of academic service quality at Graha Nusantara University. Of the 25 service attributes studied, 8 attributes were found to show substantial negative gaps, indicating that the services perceived by students do not meet their expectations.

The largest gap was identified in the aspect of clean and tidy campus facilities, with a gap of -1.15, followed by the availability of health services with a gap of -1.11, and training in problem-solving skills with a gap of -1.01. The improvement ratio analysis further supports this finding, showing the highest values for cleanliness of campus facilities (1.59), health services (1.55), and problem-solving training (1.50). This indicates that these three aspects require the most urgent attention and improvement.

By integrating the SERVQUAL and QFD methods, this research produced a series of innovative strategies for improving service quality. These strategies include enhancing the campus cleaning system through additional schedules and personnel, developing healthcare facilities or partnerships with nearby clinics, and incorporating problem-based learning into the curriculum. Additionally, modernizing laboratory facilities, improving the quality of internet connections, and updating library collections are also part of the recommended improvements.

The comprehensive approach used in this study proved effective for identifying service gaps, prioritizing improvements, and developing technical responses that address student needs. The resulting service quality improvement model can not only be applied at Graha Nusantara University but also serve as a reference for other higher education institutions in their efforts to enhance academic service quality. Furthermore, implementing the recommendations from this research will contribute to achieving Sustainable Development Goal (SDG) 4 on Quality Education and support the increased competitiveness of higher education institutions in this increasingly competitive era.

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