



Application of Fuzzy Service Quality Method in Measuring Student Service Satisfaction Level

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Abstract

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University services can be evaluated based on the quality of performance provided by faculty, administrative staff, and supporting institutional structures. Ensuring student satisfaction and minimizing complaints related to campus facilities are essential in enhancing the quality of higher education. This study aims to develop a method for measuring student satisfaction with campus services at Indramayu State Polytechnic using the fuzzy SERVQUAL technique. Data were collected through a questionnaire distributed to 100 students from three majors: Engineering, Informatics, and Nursing. The instrument used was both valid, with a 5% significance level, and reliable, as shown by a Cronbach's alpha score of 0.746. Data analysis involved comparing the gap between students' perceptions and expectations across five service quality dimensions: tangibility, reliability, responsiveness, assurance, and empathy. The analysis revealed the largest gap in tangibility and the smallest in empathy. These findings indicate that while certain service aspects meet student expectations, others still require significant improvement. The results are expected to provide valuable input for the campus to enhance service quality and better align institutional performance with student needs. It is recommended that continuous evaluation and improvement efforts be implemented, particularly in the most critical service dimensions.

Keywords:

Fuzzy SERVQUAL; student satisfaction; higher education service quality; Indramayu State Polytechnic; service gap analysis.

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INTRODUCTION

One of the main factors that will increase progress in all aspects of the world is one related to education (Kayumov, 2021; Litvinenko, 2020; Nurfakhrurozi et al., 2024). In Indonesia, education is organized into multiple stages, with universities serving as the last level, according to Law No. 12 of 2012. As of 2020, Indonesia had a total of 4,604 higher education institutions (PDDikti Kemmibud 2020).

As a public service institution in the education sector, universities play a strategic role in nurturing and preparing students to become competent and high-



quality graduates (Aithal & Aithal, 2023; Zaakiyyah, 2024). Achieving this goal requires a strong focus on the quality of higher education (Averill & Major, 2020; Klačnja-Milićević & Ivanović, 2021). One approach to maintaining and improving quality is through the implementation of an internal quality assurance system (Ngoc et al., 2023; Papp, 2023). This system includes planning, implementation, evaluation, and the establishment of quality standards to ensure stakeholder satisfaction and the relevance of graduates' competencies (Naveed Bin Rais et al., 2021; Nurfakhrurozi et al., 2024; Prayudha et al., 2020).

In the era of global competition, universities must continuously improve their service quality to attain recognition as world-class institutions (Amzat et al., 2023; Oleksiyenko et al., 2021). University quality can be reflected through the performance of lecturers, administrative staff, and institutional effectiveness (Lenning et al., 2023; Muhsin et al., 2020; Seyfried & Pohlenz, 2020). Therefore, enhancing campus services plays a critical role in ensuring that students receive services that meet or exceed expectations, thereby contributing to overall student satisfaction (Bakhtiar et al., 2020; Wong & Chapman, 2023).

To improve the quality of university education, it is essential not only to focus on academic aspects but also to ensure the provision of adequate facilities and services that support student learning and development (Asiyai, 2022; Suleiman, 2023). Enhancing service quality contributes significantly to student satisfaction, which in turn reflects the university's overall performance (Latif et al., 2021; Oliso et al., 2024). Universities must be aware of the growing expectations of students regarding both academic and non-academic services (Kalim et al., 2022; Mehra et al., 2023). These include the availability of university choices, stable internet access, well-equipped computer laboratories, comfortable libraries, comprehensive book collections, safe and accessible transportation, and a wide range of student support services (Bueno, 2023; Sawamoto & Marshall, 2020). Therefore, measuring student satisfaction with these services becomes a critical step in maintaining and improving educational quality (Kanwar & Sanjeeva, 2022; Khan et al., 2022).

Several scholars from throughout the world have undertaken satisfaction analyses. One of the achievements was assessing satisfaction with e-learning services using fuzzy service analysis. Based on research from Prayudha et al. (2024), the Servqual (Gap) calculation as a whole, the results show that the gap value for graduate student satisfaction with the Bandung SPOT UPI service is -1.584 with a perception value of 7.695 and an expectation value of 9.279. The Fuzzy Service Quarter method was applied to evaluate the quality of outpatient services at Baktiya Health Center, resulting in a score of 5.5. The DEFLUZ certification findings were based on outpatient service quality expectations (Zakaria et al., 2020).

The *fuzzy service quality* approach has also proven effective in assessing student satisfaction, as demonstrated in a study at Campus STMIK Pelita Nusantara Medan. The results showed a negative gap value, indicating a mismatch between students' expectations and their perceptions of received services (Tafonao & Simanjorang, 2020). A comparable study at Indramayu State Polytechnic, the only polytechnic in the Kilebon III region, revealed challenges in meeting student service expectations, especially considering the enrollment of 1,229 students in the

2019/2020 academic year. These findings emphasize the importance of student satisfaction assessment as part of an institution's commitment to continuously improving service quality in higher education.

METHODS

Materials

This study was carried out at Indramayu State Polytechnic in West Java, Indonesia, utilizing an online database hosted on a virtual private server at <http://kpm.polindra.ac.id>. The integration of web-based technologies, which are adaptable to various systems, improves the efficiency and practicality of data collection. Fabric measurement as a survey for students at Indramayu State Polytechnic.

This study used a quantitative survey approach to assess student satisfaction with campus services at Indramayu State Polytechnic. The total population consisted of 1,229 active students enrolled in the 2019/2020 academic year. Due to time and resource constraints, a sample of 100 students was selected using purposive sampling. Respondents were drawn from three academic departments: Engineering, Informatics, and Nursing. These departments were chosen to represent a broad spectrum of disciplines, technical, technological, and health-related, ensuring diverse perspectives on the quality of services provided. The data collection was conducted in December 2024, providing a snapshot of student satisfaction during that period. The decision to survey 100 respondents was based on the feasibility of data collection and the need to conduct an initial assessment of student satisfaction, which is in line with practices in similar exploratory studies. The following are the main measurements employed in the survey:

Table 1. Questionnaire Measurement Tool

No.	Question Attributes
Tangible	
1	Security, cleanliness, and comfort of campus facilities
2	The highest standard of cleanliness, completeness, and comfort
3	Cleanliness, comfort, and completeness of the library
4	Ease of carrying out activities, completeness, comfort, and cleanliness
5	Accessibility, cleanliness, and comfort of the preparation room
6	Security, completeness, cleanliness, and comfort of the Student Activity Unit environment
7	Hotspot connections for internet access
8	Security, cleanliness, and comfort of the prayer room (mosque)
9	Security, cleanliness, comfort, and completeness of the break room during course intervals
10	Green space accessibility
11	Security, completeness, and comfort of campus operational vehicles
12	Cleanliness, completeness, and comfort of the restroom facilities
Reliability	
13	Learning process and curriculum
14	Lecturer qualifications and quality
15	Practicum climate and lecture environment

No.	Question Attributes
16	The material presented by the lecturer was clear and appropriate for display
17	Graduated class quality
Responsiveness	
18	Respect and adequacy in adoration
19	Service quality in facilitating smooth academic activities
20	Congruity, Exactness, and Precision of SIAKAD Period (Scholastic Data Framework)
Assurance	
21	Skills and information gained post-graduation
22	Workforce skill mastery
23	Security on campus
Empathy	
24	Activity in making a difference
25	Friendliness, politeness, and attitude in providing services
26	Effective communication between students and campus authorities

To assess service quality, clients received a written survey or a series of statements utilizing a Likert scale. Various types of Likert scales are commonly utilized, including:

Table 2. Likert scale

Scale	Perception	Expectation
1	Highly Dissatisfied	Very Insignificant
2	Dissatisfied	Slightly Insignificant
3	Moderately Satisfied	Fairly Important
4	Satisfied	Important
5	Extremely Satisfied	Highly Important

The Likert perception scale indicates respondents' satisfaction levels with the provided questions, whereas the Likert expectation scale evaluates their anticipated satisfaction with those same questions.

Methods

Service Quality (Servqual)

Service quality is determined by comparing consumer expectations with their perceptions of the service received. A widely utilized framework for measuring service quality is the SERVQUAL model, introduced by Parasuraman et al. (1985), which highlights the gaps between customer expectations and service performance. This model assesses service quality based on five key dimensions: tangibles, reliability, responsiveness, assurance, and empathy (Mbua, 2024). Table 3 outlines explanations for each of these criteria.

Table 3. Explanation of Servqual dimensions

Dimension	Explanation of dimensions
Tangible	The ability to present physical structures and amenities

Dimension	Explanation of dimensions
Reliability	The capacity to supply administrations as guaranteed precisely and reliably
Responsiveness	Readiness to assist and give quick and suitable benefit to clients
Assurance	The capacity of benefit suppliers to develop the believe of clients
Empathy	Grant individual consideration and get it the wants of clients

Fuzzy

Fluffy set hypothesis may be a scientific system utilized to speak to vulnerability, uncertainty, instability, need of data, and fractional truth (Mandavilli, 2023). Need of data, in issue fathoming is regularly found in different zones of life. Discourses on equivocalness have been ongoing since 1937, when a rationalist called Max Dark proposed his hypothesis on uncertainty. Convert the scale value into a fuzzy number based on the input variable for each feature (Memiş et al., 2021; Yang et al., 2021), as illustrated in Table 3. The subsequent steps outline the fuzzy SERVQUAL calculation process:

Step 1 : Decide the fluffy set for the etymological factors and estimation scale

In this stage, each respondent's esteem for each characteristic will be computed. Calculations are based on recognitions and aspirations. The computation is done using the taking after condition:

$$A_1 + A_2 = (a_1 + a_2, b_1 + b_2, c_1 + c_2) \tag{1}$$

Step 2: Decide the fluffy set for the etymological factors and estimation scale

In distinguishing client discernments and desires, etymological factors are utilized. The estimation scale utilized is as appeared in table 4.

Table 4. TFN Fuzzy Servqual

TFN	Perception	Expectation
	Highly	Extremely
1,1,2	Dissatisfied	Insignificant
1,2,3	Dissatisfied	Slightly Insignificant
	Moderately	Fairly Essential
2,3,4	Satisfied	Fairly Essential
3,4,5	Satisfied	Important
4,6,6	Very Satisfied	Highly Significant

Step 3: Foundation of TFN esteem recognitions and esteem of client desires

The fuzzy calculation process determines the Triangular Fuzzy Number (TFN) for both the client's perceived and expected values. The average weight of all clients is then computed using the arithmetic mean, following the formula below:

$$a_m = \frac{(a_{m1} + a_{m2} + a_{m3} \dots a_{mi})}{N} \tag{2}$$

$$b_m = \frac{(b_{m1} + b_{m2} + b_{m3} \dots b_{mi})}{N} \tag{3}$$

$$c_m = \frac{(c + c_{m2} + c_{m3} \dots c_{mi})}{N} \tag{4}$$

Step 4 : Get a single esteem from the normal weight of each variable

The subsequent step is to verify the fuzzification values through the defuzzification algorithm. This approach generates a single numerical figure that signifies the average weight of each variable. The defuzzification procedure is conducted using the following formulas:

$$X = \frac{a_m + b_m + c_m}{3} \tag{5}$$

Step 5: Calculate the crevice for each property

The part of each trait hole will appear how imperative these traits are in giving moved forward benefit quality. After determining the defuzzification values for perception and expectation, the gap for each quality can be computed using the formula provided below.

$$Gap_i = MA_{pi} - MA_{ei} \tag{6}$$

RESULTS & DISCUSSION

Result

The fluffy servqual application to decide understudy contentment with college administrations was tested using legitimate and consistent quality assessments. Table r-0.195 shows that there was a total of 100 responses. Table R is a numerical reference table frequently utilized to evaluate the validity of opposing beliefs.

Table 5. Instrument Validity Test

	Perception		Expectation		
	r-table 0.195		r-table 0.195		
P1	0.606	Valid	H1	0.386	Valid
P2	0.570	Valid	H2	0.396	Valid
P3	0.492	Valid	H3	0.405	Valid
P4	0.510	Valid	H4	0.353	Valid
P5	0.519	Valid	H5	0.421	Valid
P6	0.615	Valid	H6	0.440	Valid
P7	0.577	Valid	H7	0.335	Valid
P8	0.464	Valid	H8	0.492	Valid
P9	0.671	Valid	H9	0.449	Valid
P10	0.581	Valid	H10	0.333	Valid
P11	0.560	Valid	H11	0.359	Valid
P12	0.534	Valid	H12	0.474	Valid
P13	0.650	Valid	H13	0.493	Valid
P14	0.564	Valid	H14	0.536	Valid
P15	0.708	Valid	H15	0.535	Valid
P16	0.639	Valid	H16	0.524	Valid
P17	0.368	Valid	H17	0.389	Valid
P18	0.674	Valid	H18	0.481	Valid
P19	0.640	Valid	H19	0.495	Valid
P20	0.670	Valid	H20	0.624	Valid
P21	0.604	Valid	H21	0.531	Valid

P22	0.511	Valid	H22	0.479	Valid
P23	0.495	Valid	H23	0.497	Valid
P24	0.432	Valid	H24	0.582	Valid
P25	0.704	Valid	H25	0.471	Valid
P26	0.524	Valid	H26	0.501	Valid

Table r has an esteem of 0.195 at a 5% significance level (df or N 100), as seen in the graph. If the computed r-value is greater than the r-table value, the item within the measurement instrument is considered significant, signifying a correlation between the related components. If the predicted value of r is less than the table esteem, the instrument is faulty, showing that there is no connection between the connected components. This R tally was produced using the test data provided by SPSS. The next step may be an unshakeable quality test with the findings presented in Table 6.

Table 6. Case Processing

		N	%
Cases	Valid	100	100.0
	Excluded ^a	0	,0
	Total	100	100.0

Table 7. Reliability

Cronbach.s Alpha	N of Items
0.746	53

Reliability testing pertains to the idea that data collection methods serve as trustworthy instruments capable of precisely obtaining actual data from the field. Unwavering quality testing is also used to assess surveys that are indications of causes or development. A survey is deemed reliable or valid when an individual's response to the given explanation remains consistent and stable over time. The results of the unshakable quality test in table 6 show that the measuring equipment used is of high unwavering quality, as seen by the rxx value of 0.746, which is close to 1. In common, the unwavering quality is considered palatable in the event that ≥ 0.700 .

Figure 1 illustrates the characteristics of respondents, consisting of students from Indramayu State Polytechnic, distributed across 13 Informatics Building offices, 17 Mechanical Building offices, and 70 Air Conditioning and Engineering offices.

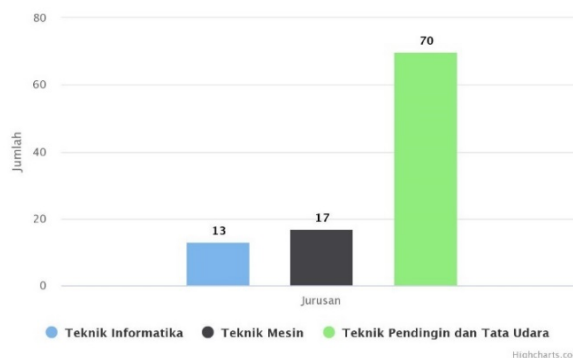


Figure 1. Characteristics of Respondents

The subsequent step involves calculating the total number of responses on the respondents' Likert scale according to Condition 1. Table 7 displays the outcomes of the perception and expectation calculations.

Table 7. Number of respondents based on Likert scale

No	Question	Perception					Expectation				
		1	2	3	4	5	1	2	3	4	5
1	Comfort, cleanliness and safety of the college board	2	26	26	39	7	1	0	8	23	68
2	Completeness, comfort, maximum cleanliness	1	27	26	34	12	0	0	10	17	73
3	The library is complete, comfortable, and clean	0	8	31	45	16	0	1	13	25	61
4	Completeness, convenience, hygiene, and accessibility for physical activities.	25	30	20	21	4	1	2	15	35	47
5	The availability, cleanliness, and comfort of railway stations.	8	32	22	28	10	0	0	11	27	62
6	The Student Activity Unit cubicles provide a secure, clean, well-equipped, and comfortable environment.	11	26	26	32	5	0	0	13	24	63
7	Availability of broadband internet via hotspots.	8	36	22	26	8	0	0	9	12	79
8	A safe, clean, and comfortable environment in the prayer facility (mosque)	1	16	19	49	15	0	0	6	17	77
9	During class breaks, the room will be comfortable, complete, clean, and safe	13	30	24	28	5	0	0	13	28	59
10	Accessibility to green spaces	18	37	19	20	6	0	1	10	18	71
11	The safety, completeness, and comfort of campus transportation vehicles	14	25	22	33	6	0	1	13	31	55
12	The Tandas-WC room is comfortable, comprehensive, and clean	12	26	29	25	8	0	0	14	19	67
13	Educational curriculum and learning procedures	2	17	21	54	6	0	0	7	20	73
14	Lecturer's qualifications and competence	0	10	29	52	9	0	0	8	18	74
15	Classroom and practicum environments	1	13	27	47	12	0	0	10	19	71
16	The penyarah gave content that was straightforward and easy to understand	0	16	38	38	8	0	0	9	16	75
17	Quality of alumni	2	11	34	43	10	1	1	17	21	60
18	Proper regard and respect	7	22	24	38	9	0	0	9	29	62
19	The overall level of service in ensuring the smooth operation of college operations	3	11	36	40	10	0	0	14	25	61

20	Compliance, Accuracy, and Accuracy of SIAKAD Period (Academic Information System)	2	12	40	38	8	0	0	12	26	62
21	Expertise and competencies acquired post-graduation	0	16	25	50	9	0	0	10	17	73
22	Expertise in the subject of employment	1	14	28	49	8	0	0	10	19	71
23	Campus safety	3	8	22	47	20	0	0	8	16	76
24	Take the initiative to help	4	8	30	44	14	0	0	13	25	62
25	Friendliness, courtesy, and demeanor in providing service.	1	10	27	49	13	0	0	10	26	64
26	Effective communication is maintained between students and institutional roles	2	9	24	43	22	0	0	8	18	74
Number of respondents										100	

Table 7 shows that 11 students responded to the Likert scale 1 discernment, 26 students responded to the Likert scale 2, 26 students responded to the Likert scale 3, 32 students responded to the Likert scale 4, and 5 students responded to the Likert scale 5. In response to address number one, respondents indicated a need for Likert scale 1 (understudies), Likert scale 2 (understudies), Likert scale 3 (13 understudies), Likert scale 4 (24 understudies), and Likert scale 5 (63 understudies).

No	Question	Perception				Expectation			
		a	b	c	Xp	a	b	c	Xe
1	Comfort, cleanliness and safety of the college board	2.25	3.23	4.16	3.21	3.58	4.57	4.89	4.35
2	Completeness, comfort, laboratory cleanliness	2.30	3.29	4.17	3.25	3.63	4.63	4.90	4.39
3	Completeness, comfort, cleanliness of the library	2.69	3.69	4.53	3.64	3.46	4.46	4.85	4.26
4	Completeness, comfort, cleanliness of sports facilities	1.74	2.49	3.45	2.56	3.26	4.25	4.78	4.10
5	Comfort, cleanliness and availability of parking space	2.08	3.00	3.90	2.99	3.51	4.51	4.89	4.30
6	Comfort, cleanliness, completeness and safety of the Student Activity Unit room	2.05	2.94	3.89	2.96	3.50	4.50	4.87	4.29
7	Hotspot bandwidth availability	1.98	2.90	3.82	2.90	3.70	4.70	4.91	4.44
8	Comfort, cleanliness and safety of the prayer room (mosque)	2.62	3.61	4.46	3.56	3.71	4.71	4.94	4.45
9	The comfort, completeness, cleanliness and safety of the waiting room during class breaks	1.95	2.82	3.77	2.85	3.46	4.46	4.87	4.26
10	Availability of Green Areas	1.77	2.59	3.53	2.63	3.59	4.59	4.88	4.35
11	Comfort, completeness, and safety of campus operational vehicles	2.06	2.92	3.86	2.95	3.40	4.40	4.85	4.22
12	Comfort, completeness and cleanliness of the toilet room	2.03	2.91	3.83	2.92	3.53	4.53	4.86	4.31
13	Curriculum and learning process	2.47	3.45	4.39	3.44	3.66	4.66	4.93	4.42
14	Lecturer quality and qualifications	2.60	3.60	4.51	3.57	3.66	4.66	4.92	4.41
15	The atmosphere of lectures and practicum	2.57	3.56	4.44	3.52	3.61	4.61	4.90	4.37
16	The material presented by the lecturer was clear and easy to understand	2.38	3.38	4.30	3.35	3.66	4.66	4.91	4.41
17	Quality of alumni	2.50	3.48	4.38	3.45	3.39	4.38	4.78	4.18
18	Response and speed in service	2.27	3.20	4.11	3.19	3.53	4.53	4.91	4.32
19	Overall service quality in supporting the smooth running of lecture activities	2.46	3.43	4.33	3.41	3.47	4.47	4.86	4.27
20	Relevance, Accuracy and Timely SIAKAD (Academic Information System)	2.40	3.38	4.30	3.36	3.50	4.50	4.88	4.29
21	Knowledge and skills acquired after college	2.52	3.52	4.43	3.49	3.63	4.63	4.90	4.39
22	Mastery of the field of work	2.50	3.49	4.41	3.47	3.61	4.61	4.90	4.37
23	Campus security	2.76	3.73	4.53	3.67	3.68	4.68	4.92	4.43
24	Initiative in helping	2.60	3.56	4.42	3.53	3.49	4.49	4.87	4.28
25	Friendliness, courtesy and attitude in service	2.64	3.63	4.50	3.59	3.54	4.54	4.90	4.33
26	Good communication between students and the department is established	2.76	3.74	4.52	3.67	3.66	4.66	4.92	4.41

Figure. 2. Defuzzification Student Satisfaction

After evaluating the respondents' Likert scale results, the fuzzy values are established by combining Conditions 2 and 3 to derive the defuzzification perception (X_p) and defuzzification expectation (X_p), as shown in Figure 2. The value "a" indicates a small fuzzy number, "b" represents a moderate fuzzy number, and "c" signifies a large fuzzy number. The defuzzification value for each perception and expectation is then utilized to calculate the performance gap using Condition 5, as depicted in Figure 3.

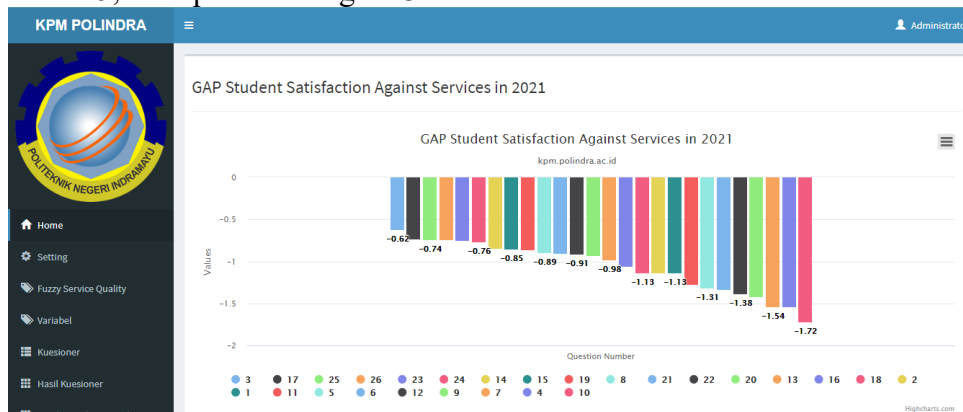


Figure 3. GAP Student Satisfaction Against Services in 2021

The outcomes of the gap performance analysis are presented through graphical representations, corresponding to the rankings derived from Condition 5. Position 1 (to begin with) with the littlest hole esteem appears in address number 3 which is -0.63. Address number 10 has the highest crevice esteem at -1.72. The respondents' results indicate lower values, suggesting that student satisfaction with school administration falls short of expectations. With the measures required to progress administration for the whole amount of crevices that exist.

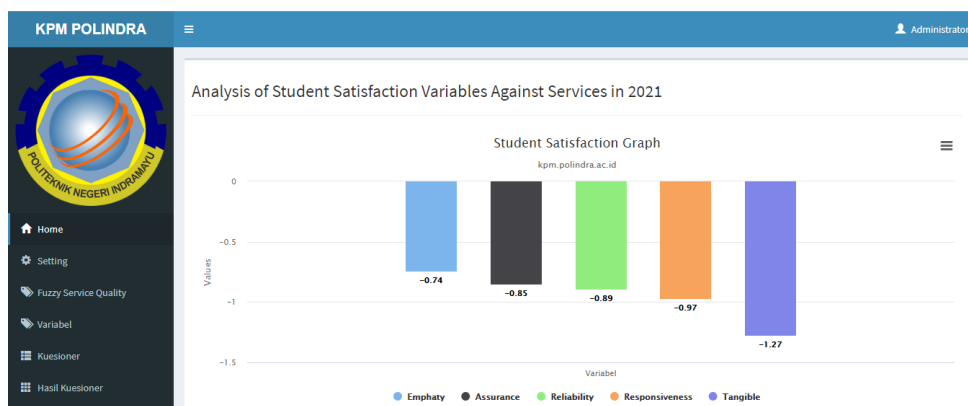


Figure 4. Analysis of Student Satisfaction Variables Against Services in 2021

The fuzzy SERVQUAL gap level across five factors indicates that empathy ranks first with the smallest gap value of -0.74, followed by assurance in second place with a gap value of -0.85. Reliability takes the third position with a gap value of -0.89, while responsiveness ranks fourth with a gap of -0.97. Lastly, tangibility holds the fifth position with the largest gap value of -1.27. Figure 5 provides a detailed illustration of these findings.

Rank	Variable	Perception	Expectation	GAP	Explanation
1	Empathy	3.60	4.34	-0.74	Needs improvement
2	Assurance	3.54	4.40	-0.85	Needs improvement
3	Reliability	3.47	4.36	-0.89	Needs improvement
4	Responsiveness	3.32	4.29	-0.97	Needs improvement
5	Tangible	3.04	4.31	-1.27	Needs improvement

Figure 5. Table Ranking of Student Satisfaction Variables Against Service in 2021

Discussion

The results of the reliability and validity tests indicate that the instrument used in this study meets acceptable research standards. With an r value of 0.746, exceeding the minimum threshold of 0.700, the instrument demonstrates a high level of internal consistency. This implies that the survey items are measuring what they are intended to measure in a consistent manner. The positive correlation among the measured components confirms the significance of the items, thereby ensuring that the data collected can be considered dependable for further analysis. This reliability is essential in studies measuring subjective perceptions such as service satisfaction.

The performance gap analysis between student perceptions and expectations reveals several critical insights into the quality of services at Indramayu State Polytechnic. The largest gap was observed in question number 10, with a value of -1.72, signaling a major discrepancy between what students expect and what they experience. In contrast, question number 3 showed the smallest gap at -0.63, suggesting closer alignment in that area. When analyzing the five SERVQUAL dimensions, empathy emerged as the strongest factor with the smallest negative gap (-0.74), followed by assurance, reliability, responsiveness, and tangibility. The latter, with a gap value of -1.27, was the most problematic, indicating that the physical facilities and equipment fell far below student expectations.

These findings suggest a pressing need for service improvement, particularly in tangible resources such as infrastructure, equipment, and facilities. Students' dissatisfaction with the tangible aspects of the campus environment may hinder their academic experience and overall perception of the institution. By prioritizing upgrades to physical resources while also maintaining strengths in empathy and assurance, Indramayu State Polytechnic can begin to close the satisfaction gap. Continuous monitoring and responsive management strategies will be essential in addressing these service quality issues and enhancing student satisfaction across all dimensions.

CONCLUSION

This study concludes that the quality of campus services at Indramayu State Polytechnic, as perceived by students, still falls short of their expectations. Although the institution demonstrates strengths in areas such as empathy and assurance, significant service gaps remain, particularly in tangible aspects like

facilities and infrastructure. These gaps highlight the need for targeted improvements to ensure a more satisfactory student experience.

By applying the fuzzy SERVQUAL method, this research provides a structured framework for identifying and prioritizing areas for service enhancement. The method allows campus administrators to make informed decisions in their efforts to align services more closely with student expectations. Overall, continuous quality improvements are essential to boosting student satisfaction and supporting institutional development.

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