

Measuring Library Service Excellence: Integrating Servqual with Accreditation Standards

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ABSTRACT

The excellent service provided by the library is an essential factor for maintaining students' engagement and motivation in learning. However, the number of accredited libraries, indicating their quality, is relatively low. This paper aims to measure the service quality of a library owned by a higher education institution by accreditation standards. The Servqual (Service Quality) approach was employed with 20 distinct indicators derived from accreditation criteria. The respondents were students from a private university in Indonesia, accounting for 120. A semi-structured interview for confirmatory analysis purposes followed the method. The findings reveal that 55% of the indicators rejected the null hypothesis, showing a negative gap between reality and expectations, which indicates a need for improvement. Quadrant-based mapping was utilized to identify the priority areas for improvement. Furthermore, recommendations based on the accreditation component are provided, facilitating practical improvement steps for library management.

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1. Introduction

The library is considered a central focal point for knowledge discovery, creation, and dissemination, particularly in the university [1], [2]. The number of libraries in Indonesia is approximately 181,100, where 3223 of them are owned and managed by higher education institutions. If we observe further, only 659 out of 3223 libraries, approximately 20%, hold accreditation. This condition should become a primary concern for universities to continuously endeavor to improve the services and standards of their library.

Several studies show how important the service quality of libraries will affect the student's engagement and motivation in their learning process [2], [3], [4]. Facilities, services, and literature collections are among those components that positively influence library quality [4], [5]. On the other hand, a library's service excellence can leverage the university's branding [6], [7], reflecting its credibility and quality, which often become critical determinants of new students' selection of a university for future studies. Nevertheless, digital disruption creates another challenge, shrinking library visits, particularly during the COVID-19 pandemic [3], [8]. Moreover, the library must have adequate facilities, competent librarians, and comprehensive standard procedures to provide excellent and convenient services.

Accreditation offers comprehensive and standardized criteria for scrutinizing quality assurance and improvement [9]. It strengthens and sustains the library's quality and integrity with credible public recognition [10], [11]. A study from [12] shows that accreditation contributes about 80% to the loyalty of library users, while complex and soft services contribute 82.8% and 79.7%, respectively. To obtain accreditation from the accreditation body of the national library, there is a set of criteria to be satisfied. Several studies have focused on the organization level to identify the critical components of library services and assess their readiness for accreditation [5], [10], [11], [13]. Meanwhile, measuring the

service gap perceived by library users can also provide valuable insights regarding the library's existing service quality, which is essential for further improvement.

Previous studies have utilized the Servqual method to assess the perceived quality of services provided by the library [14], [15], [16]. Hamdani et al. combined the fuzzy method and Servqual to determine user satisfaction in public libraries [17]. Alam and Mezbah-ul-Islam incorporated Serqual and LibQual (Library Quality) protocol while designing questionnaire instruments for assessing the service quality of the academic libraries [18]. However, most studies did not consider accreditation criteria as underpinning measurement references for quality improvement. Therefore, this study aims to investigate the service quality provided by the university library using the Servqual method with a combination of accreditation standards, enabling gap evaluation between perceived service quality and expected value of the library's visitors. A library in one of the higher education institutions in Indonesia was used as a case study.

The paper is organized as follows. Section 2 describes the details of the methodology carried out in this study. Section 3 delineates the assessment results of the library service quality perceived by the visitor. Additionally, the confirmation analysis provides insights from the interview with librarians concerning assessment results. This section presents recommendations for further service improvement based on accreditation criteria. Finally, Section 4 concludes the study and provides directions for future research opportunities.

2. Methods

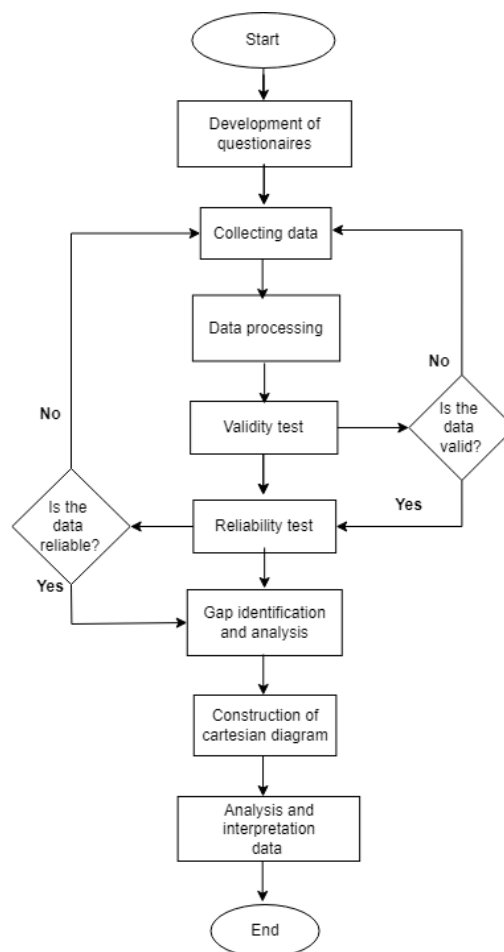


Figure 1. Research flow diagram

Figure 1 depicts the research flow adopted in this study. Initially, the development of a questionnaire was performed as a rigorous tool for data collection. In most cases, the study regarding the quantification of quality towards a particular service requires the provision of selective data

representing the customer's perceived values. The theoretical grounds of service quality (Servqual) encompass five distinct dimensions, namely Tangibles, Reliability, Responsiveness, Assurance, and Empathy [14], [15], [16], [17]. These dimensions were then derived into 20 indicators as a measurement tool based on accreditation standards.

Table 1 describes indicators for each dimension representing the service quality perceived by the visitor. These indicators were then transformed into an online questionnaire form. The questionnaire was divided into three main parts: 1) respondent background to capture their demography, 2) expectation questions to measure the expected values perceived from the service provided by the library, and 3) reality questions to measure the actual service values perceived by the library visitors. Each question within both expectation and reality was devised using a Likert scale in the range of 1 to 5, where the lowest value represents "Not Important" while the highest value represents "Very Important."

Table 1. List of indicators to quantify the service quality derived from the Servqual dimensions

No	Questionnaire Indicators	References
Tangibles (T)		
1	Library location	
2	The availability of reading room with sufficient seats *)	[9], [15], [18]
3	The availability of qualified librarians *)	
4	Complete of literature collections (e.g. textbooks, journal, etc.) *)	
5	Equipped with digital technologies to excel the service (e.g. online searching platform, online public access catalogue, circulation systems, etc.) *)	[9], [15], [16], [18]
6	There is a program involving academic civitas *)	[3], [9], [21]
Reliability (Ra)		
1	The library opens regularly according to the normal operation time *)	[9], [15], [16]
2	Convenience on the collection borrowing and retuning process *)	[9], [15]
3	Conformance between books and shelf allotment *)	[15], [16]
4	The visitors are able to access the library collection via online systems *)	[9], [18]
Responsiveness (Rs)		
1	The librarians are responsive to handle the visitors' necessity	
2	The promptness of librarian in responding the visitor necessity	[15], [16], [18], [21]
3	The librarians are well and indulgent in responding the visitor necessity	
Assurance (A)		
1	Librarians provide a clear and understandable information *)	[15], [16], [18], [21]
2	Librarians are consistently polite when serve the visitors	[21]
3	Safety and comfort are well maintained in the library *)	
4	Conformance between bibliography and literatures (supported with automation systems) *)	[9], [15], [16]
Empathy (E)		
1	The librarians are friendly towards the visitors	
2	The librarians willing to listen and respond to the visitors complains	[15], [16], [18], [21]
3	The librarian services are equal and fair to all visitors	

*) Indicators derived from national library accreditation board requirements

The subsequent step was collecting data, which relied on the sample size. The case study used in this research was a library in a private university in Surabaya – Indonesia, with approximately 1900 students. This study employed the Slovin formula to determine the sample size with a 10% margin of error. The formula is presented in equation 1, which denotes the number of samples, represents the total population, and indicates error tolerance. Accordingly, the minimum number of samples was 95 to be collected. The Slovin approach is considered suitable for the study since the number of

populations was stipulated. The questionnaire was distributed using an online Google form, and data collection was undertaken between March and April 2022.

$$n = \frac{N}{(1 + Ne^2)} \quad (1)$$

Data processing was conducted using Excel and SPSS software. The following step is critical for ensuring the validity and reliability of the questionnaire instruments through a statistical test. A validity test was performed to assess whether the instrument can capture effectively the concept being investigated [19], [20]. Meanwhile, the reliability test was aimed to determine the internal consistency of response items collected from the survey [18], [20]. Afterward, the process identified the service gap between expected and reality values collected from the questionnaire. To determine the priority for improvement, each indicator was mapped to construct a Cartesian diagram, enabling detailed analysis in the form of a quadrant map [16]. The subsequent confirmatory analysis was conducted through semi-structured interviews with the librarian to obtain their insights. This step was performed for two reasons: 1) to evaluate the measurement tools and 2) to diminish bias and subjectivity toward interpreting the results. Finally, the results were analyzed to draw managerial implications, improvement recommendations, and conclusions.

3. Results and Discussions

3.1. Validity and Reliability Test Results

The questionnaire was distributed to all class years and included all departments in the university. The returned data was about 120 after cleaning the outlier data, which accounts for 20 data. The highest number of respondents came from the industrial engineering department, with approximately 36.3%. In addition, most respondents were from the class of 2019, accounting for 29.2%.

The subsequent process is conducting the validity test for each indicator in the instrument. SPSS software was employed to conduct a validity test via the Pearson Product Moment Correlation. Initially, the *r* count (Pearson correlation value) was calculated and compared with the *r* table. The item can be considered valid if the *r* count > *r* table [19]. In this study the number of samples (*n*) was set at 53 with a confidence level of 95%. Thus, the *r* table obtained was 0.2706 with a degree of freedom (*df*) equal to (*n* – 2), implying that any statement with an *r* count lower than this value was considered invalid. In addition, the comparison for each statement *r* count and *r* table is given in Table 2. It is noteworthy that all given statements were valid for either expectation or reality as a measurement instrument towards the perceived value of the library service.

Table 2. Validity test results

No	Indicator	R table <i>df</i> = <i>n</i> – 2	R Count		Note
			Expectation	Reality	
1	T1	0.2706	0.662	0.634	Valid
2	T2	0.2706	0.803	0.752	Valid
3	T3	0.2706	0.710	0.805	Valid
4	T4	0.2706	0.815	0.791	Valid
5	T5	0.2706	0.779	0.776	Valid
6	T6	0.2706	0.807	0.783	Valid
7	Ra1	0.2706	0.786	0.749	Valid
8	Ra2	0.2706	0.827	0.776	Valid
9	Ra3	0.2706	0.823	0.765	Valid
10	Ra4	0.2706	0.800	0.796	Valid
11	Rs1	0.2706	0.936	0.908	Valid
12	Rs2	0.2706	0.890	0.845	Valid
13	Rs3	0.2706	0.808	0.874	Valid

No	Indicator	R table $df = n - 2$	R Count		Note
			Expectation	Reality	
14	A1	0.2706	0.888	0.886	Valid
15	A2	0.2706	0.863	0.854	Valid
16	A3	0.2706	0.879	0.894	Valid
17	A4	0.2706	0.884	0.816	Valid
18	E1	0.2706	0.871	0.928	Valid
19	E2	0.2706	0.799	0.874	Valid
20	E3	0.2706	0.860	0.943	Valid

This study performed a reliability test using SPSS software and Alpha Cronbach. Some studies used a coefficient of 0.6 as a limit for determining the acceptance of a reliability test [20], [22]. In this study, the selected coefficient was 0.8, considered good reliability [19]. Thus, any value above this coefficient is considered reliable. Table 3 presents the reliability test results, indicating that all statements used in the questionnaire were reliable. This means the indicators are consistently performed to measure service quality across different datasets.

Table 3. Reliability test results

	Expectation	Reality
Total indicators	20	20
Alpha Cronbach's value	0.95	0.943
Note	Reliable	Reliable

3.2. Gap Analysis

The gap between expectation and reality values was investigated using the equality test to observe its significance [20]. The type of statistical equality test follows the data normality, which generally consists of parametric and non-parametric tests. According to the normality test conducted using Kolmogorov-Smirnov and Shapiro-Wilk, the result shows that the two-tailed p-value (Sig. value) was lower than 0.05, indicating that the data does not follow the normal distribution [23]. Thus, the non-parametric equality test, namely Wilcoxon, was employed.

The test was performed on each of the indicators to observe significant inequalities. Herein, we shall test the following hypotheses:

$$H_0: \mu_x = \mu_y$$

$$H_1: \mu_x \neq \mu_y$$

where μ_x and μ_y represent means of reality and expectation indicators, respectively. When the two-tailed p-value (Sig. value) > 0.05 , then H_0 is accepted and H_1 is rejected, indicating that no significant difference between two observations. Similarly, when the two-tailed p-value (Sig. value) < 0.05 , then there is significant statistical evidence to reject H_0 , while alternative hypotheses H_1 can be accepted. This condition leads us to infer that there is a significant difference between two observations.

Table 4 presents the result of the gap analysis for each measured dimension. All indicators reject the null hypothesis in the tangible dimension, indicating no significant difference between expectation and reality indicators. Regarding the reliability dimension, one indicator (Ra1) accepts the null hypothesis, while the remaining three reject it. Interestingly, all indicators associated with responsiveness and empathy reject the null hypothesis. Additionally, regarding the assurance dimension, an equal number of indicators accept and reject the null hypothesis, with two indicators each. It is seen that all dimensions have negative values, indicating that the service perceived by library visitors needs to meet their expectations. Moreover, 11 out of 20 indicators reject the null hypothesis, emphasizing the need to evaluate the library's service quality. The service quality, denoted as Q , represents the ratio between reality and expectations. Service quality can be considered

perceivably good if $Q \geq 1$ [22]. From Table 4, we can observe that all indicators show Q value lower than 1, suggesting that service quality is yet far from expectation.

Table 4. Gap analysis and Wilcoxon test results

No	Indicator	Reality X	Expectation Y	Gap	Avg. Gap	Q	Avg. Q	Sig.	Note
1	T1	4.39	4.62	-0.23		0.950		0.014	H_0 rejected
2	T2	4.42	4.72	-0.30		0.937		0.003	H_0 rejected
3	T3	4.02	4.3	-0.28	-0.40	0.935	0.911	0.014	H_0 rejected
4	T4	3.86	4.64	-0.78		0.832		0.000	H_0 rejected
5	T5	4.02	4.52	-0.50		0.889		0.000	H_0 rejected
6	T6	3.85	4.17	-0.32		0.923		0.006	H_0 rejected
7	Ra1	4.36	4.41	-0.05		0.989		0.545	H_0 accepted
8	Ra2	4.36	4.56	-0.20	-0.30	0.956	0.934	0.013	H_0 rejected
9	Ra3	4.18	4.59	-0.41		0.911		0.000	H_0 rejected
10	Ra4	3.87	4.39	-0.52		0.882		0.000	H_0 rejected
11	Rs1	4.36	4.49	-0.13		0.971		0.151	Fail to reject H_0
12	Rs2	4.37	4.48	-0.11	-0.10	0.975	0.978	0.247	Fail to reject H_0
13	Rs3	4.44	4.5	-0.06		0.987		0.516	Fail to reject H_0
14	A1	4.45	4.56	-0.11		0.976		0.219	Fail to reject H_0
15	A2	4.39	4.52	-0.13	-0.24	0.971	0.948	0.166	Fail to reject H_0
16	A3	4.38	4.76	-0.38		0.920		0.000	H_0 rejected
17	A4	4.27	4.62	-0.35		0.924		0.001	H_0 rejected
18	E1	4.45	4.56	-0.11		0.976		0.210	Fail to reject H_0
19	E2	4.33	4.41	-0.08	-0.11	0.982	0.977	0.387	Fail to reject H_0
20	E3	4.5	4.63	-0.13		0.972		0.118	Fail to reject H_0

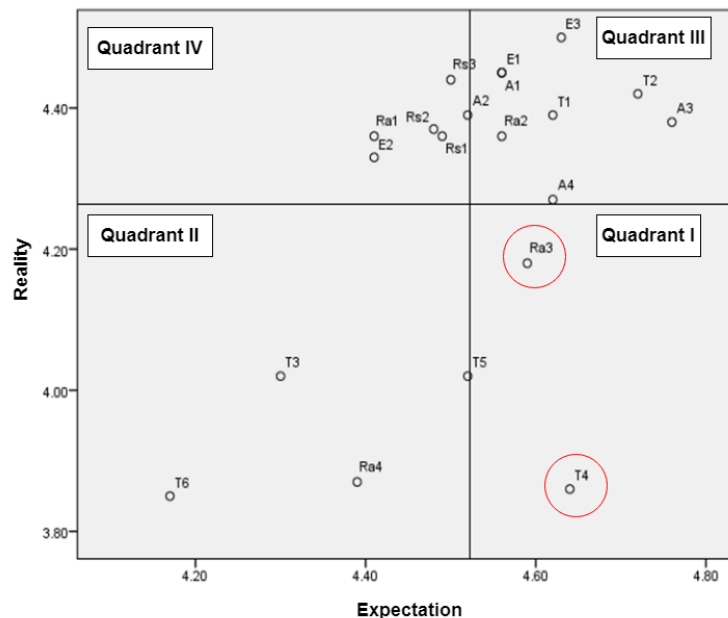


Figure 2. Quadrant-based mapping for each indicator

To identify thoroughly the priority of improvement, we mapped all the indicators in the Cartesian diagram. By doing so, we can easily identify in which quadrant an indicator belongs to [16]. Figure 2 depicts the mapping of each indicator into four different quadrants based on the expectation and reality value. The average values of expectation and reality were 4.53 and 4.26, respectively. The highest priority for improvement lies within quadrant I, as indicated by high expectation values (above the average) but low reality values (below the average). For instance, indicator T4 is related to the literature collection, which most visitors perceive as an unsatisfactory experience. Moreover, indicator

Ra3 asserted that the placement of the literature collection also required considerable attention, allowing the visitor to find the literature conveniently. The second priority for improvement is quadrant II, where indicators have relatively low expectations and values in reality. For instance, indicator T6 suggests that the library should have more regular programs involving academia, such as book review writing workshops. This is followed by quadrants III and IV as the lowest and lowest priority for improvement, respectively. The detailed distribution of indicators in each quadrant is presented in Table 5.

Table 5. Distribution of indicators for each quadrant

Quadrant	Indicator	Priority for improvement
I	T4, Ra3	Highest priority
II	T6, Ra4, T3, T5	Second priority
III	A4, A3, T2, T1, Ra2, A1, E1, E3	Less priority
IV	E2, Ra1, Rs2, Rs1, A2, Rs3	Lowest priority

3.3. Confirmatory Analysis

The following step is to conduct a confirmatory analysis through semi-structured interviews with the librarian. According to the interview results, the librarian confirmed that the list of questionnaire questions was reliable as a measurement tool that reflect the service quality assessment. Nonetheless, one question seemed ambiguous from the librarian's point of view, but it was still acceptable from the respondent's perspective. The librarian appreciated the importance of this study, which could be beneficial in improving the library service quality.

"We have considered to devise a strategic plan aimed at achieving the accreditation standards. However, we are still struggling to reform the management practices through digitalisation and indeed improving service quality. To prepare for accreditation, the librarian actively participates in seminars and workshops for knowledge upgrading." – librarian.

Indeed, library facilities (e.g., literature collections, digital technologies, reading rooms, open spaces) are crucial in leveraging service quality. The library has gradually updated the collection and upgraded the facilities. However, a noticeable lack was observed in librarian shortage, where only one staff member worked as a full-time librarian and was supported by one part-time staff member. It would only be impossible to achieve decent service levels if the responsible staff were limited. The librarian also noticed this condition, especially after contemplating the assessment results. The tangible and reliability aspects are among the priority areas that directly affect the perceived service values of library visitors.

"All aspects of quality assessment are considered equally important. However, we need to prioritize areas for further improvement. With this study, we can easily identify the most critical aspects perceived by the customers or visitors. Three priority improvement areas include collection, supporting facilities, and services, since the main function of university libraries is to provide literature findings for students." – librarian.

High service quality will encourage students to visit and use library services frequently, which is essential to support their studies. On the other hand, the attractiveness of library services could contribute to engaging new prospective students. Therefore, continuous improvement of service quality in the library should be part of strategic initiatives at the university management level.

"Capable staff plays important role in managing the library. I wish the management could allocate the right resources. Moreover, upgrading program for the librarian will enhance both knowledge and capability of providing better services." – librarian.

"To attract more visitors, we need to reform the facilities, as more students are demanding decent open space for study. An artistic layout design equipped with sufficient supporting facilities will surely compel students to visit the library frequently. Moreover, I wish that

academia, such as lecturers or student communities, could develop regular programs with us, such as book reviews and seminar. By doing so, more students will engage in learning activities at the library.” – librarian.

The insights from the librarian confirm that developing library experiences related to education purposeful activities, such as information literacy, writing courses, and other activities interacting with faculty members [3], [7]. Promoting such activities will increase student visits and engagement naturally. The library should be developed as a central point of knowledge creation, not only as a place to gain information. Reform in the organizational and technological aspects of library management is strongly advisable to advocate for knowledge creation within the library [2].

3.4. Practical Implications and Recommendations

With considerable challenges and limited resources, the development of the library as a central point of learning in the university is inevitable. Development programs should consider the input from users, in this case, students, as well as accreditation standards as benchmarks. The study provides practical implications for the university by highlighting several crucial indicators for improvement. By evaluating the service quality using accreditation standards, the results allow the university to prepare for accreditation with a comprehensive understanding of the existing conditions.

Table 6 outlines improvement recommendations based on the research findings and aligned with the components of accreditation standards. The first three components were selected as their substantial weighting factor in the accreditation assessment, accounting for 65% [9], [11]. Moreover, these are the most influential aspects of the perceived service quality from the visitor’s point of view. For example, the literature collection should adequately support particular academic departments. Meanwhile, the other components encompass facilities, management, and amplifying factors, accounting for 35% of the total [9], [11].

Table 6. Improvement recommendation with respect to accreditation components

No	Component	Weight	Improvement recommendation
1	Literature collection	20	<ul style="list-style-type: none"> - Establish regulations for periodic expansion of literature collections both in numbers and diversity - Expand the literature collection covering more than 1000 titles of literature excluding thesis, dissertation, and reports - Expand strategic networking to increase access towards online literature collections (i.e. journals, conferences, e-book) - Improve standard operation procedures for organising and maintenance of collections
2	Service	25	<ul style="list-style-type: none"> - Improve literature finding service through an implementation of One Public Access Catalogue (OPAC) - Develop regular programs engaging academia - Enhance membership management and create promotional programs to attract visitors from outside the university - Provide information about library services to improve visitors’ literacy
3	Librarian	20	<ul style="list-style-type: none"> - Incur subject librarian, enabling students to consult about literature findings within specific field of study - Provide regular training and upgrading programs for librarians - Allocate of sufficient librarians with suitable competency
4	Others	35	<ul style="list-style-type: none"> - Design better library layout, compelling more students to visit and study in the library - Provide proper and convenient facilities, such as open space, reading sections, discussion rooms

No	Component	Weight	Improvement recommendation
			<ul style="list-style-type: none">- Reinforce innovation capacity to continuously improve the service quality- Assertive commitment from management, including sufficient budget allocation and incorporate library service into a strategic development program of the university

4. Conclusion

The increasing need for improvement in the service quality of libraries is imperative in higher education institutions. This study integrates the accreditation standards with the Servqual method to evaluate the service quality perceived by students at a university. The results show that 11 out of 20, approximately 55% of the indicators rejected the null hypothesis with the negative gap between reality and expectation, indicating the immediate need to improve the library's service quality. The priority areas for improvement were identified using quadrant-based mapping. Furthermore, the confirmatory analysis suggests that the improvement should encompass the facility, organizational, and technological aspects. Detailed recommendations are provided, grounded in accreditation components, to facilitate actionable steps for library management.

Nonetheless, this study has several limitations regarding the object used as a case study restricted to more than one institution, which cannot represent more general library conditions in higher education in Indonesia. The study did not intend to measure the relative accreditation score but instead quantify the service quality provided by the library. Therefore, future studies should evaluate the effectiveness of proposed indicators to capture a comprehensive picture of the library services, ultimately contributing to accreditation attainment. In addition, an analysis based on accreditation scoring would provide clear evidence of the potential accreditation rank that the library can achieve.

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