Analysis of User Satisfaction Levels to Improve the Quality of Services in Nursing Education Laboratory

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ABSTRACT

Purpose – The purpose of this research is to analyze user satisfaction levels, specifically those of lecturers and students, regarding the services provided by the Nursing Laboratory at the Padang Department of Nursing, Ministry of Health Polytechnic, Padang.

Design/methods/approach – This research employs a qualitative research approach with a descriptive quantitative method. It is an exploratory study that utilizes a questionnaire as the primary data collection instrument. The questionnaire is based on a Likert scale and encompasses five dimensions of satisfaction: Tangibles, Reliability, Responsiveness, Assurance, and Empathy.

Findings – The research results indicate gaps in respondent satisfaction frequencies in the dimensions of Responsiveness and Reliability, with scores of 86.7% and 87.6%, respectively. These scores are slightly lower compared to the other three dimensions: Tangibles (88.5%), Assurance (88.6%), and Empathy (88.4%). The overall average user satisfaction level is 87.9%, which falls within the 80.1%-100% interval, indicating a "very satisfactory" rating.

Research implications/limitations – Measuring user satisfaction levels in laboratory serves as an essential method for improving service quality and management in educational laboratory. These findings can provide a benchmark for future service policy directions in the laboratory. A limitation of this research is the relatively small sample size.

Originality/value – Based on the findings and analysis, laboratory management must focus on improving services in the dimensions of Responsiveness and Reliability to achieve a more balanced level of service quality.

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Introduction

Vocational higher education serves as a platform to shape and nurture an individual's potential, encompassing physical, moral, and intellectual aspects, to produce individuals who are well-prepared in terms of abilities and skills (Barudin, 2020). One of the most prominent vocational education fields in Indonesia is nursing. The nursing department is a discipline that produces healthcare professionals. To achieve this goal, vocational higher education institutions emphasize practical skills, resulting in more extensive practical sessions. Consequently, the implementation of these programs is closely integrated with the use of educational laboratory as the initial domain for learning activities.

The Nursing Education Laboratory, often referred to as the Nursing Laboratory, is a type of educational laboratory (Eka Lestari & Laasara, 2022). This laboratory operates as a simultaneous laboratory comprising several specialized labs categorized by nursing departments (Fitri et al., 2021). The Nursing Education Laboratory is defined as a supporting institution within educational entities, which may include enclosed or open spaces systematically managed according to specific scientific methodologies to support educational, research, and community service activities (Rosadi & Takim, 2022). Thus, the nursing laboratory serves as a primary facility for conducting educational activities in vocational institutions.

A quality laboratory requires effective management to optimize its role in supporting the Tri Dharma of Higher Education (Indrawan et al., 2019). These activities must encompass functions such as services, facilities and infrastructure provision, and development. Development includes areas like learning media for education and facilities for research and community service. Optimal use of the laboratory can expand opportunities to train students in achieving the skills necessary for their competencies. Enhancing laboratory management involves maximizing the functionality and utility of the laboratory in terms of service quality, thereby addressing all user needs effectively (Juniari et al., 2023).

Research on user satisfaction with laboratory has been conducted in various educational institutions, such as the research by Ariyati (2018), which employed a descriptive method with an exploratory research design. The findings revealed that the majority of students expressed moderate satisfaction levels with laboratory services: 42.27% for laboratory staff services, 58.76% for equipment, 52.58% for practicum materials, and 46.39% for supporting facilities. Thus, most aspects assessed fell within the "moderately satisfied" category. From the students' perspective, three key factors contribute to comfort in laboratory: a safe environment, guided learning, and accessibility (Kerr et al., 2020). What differentiates this research is its focus on user satisfaction in a nursing education laboratory, utilizing five dimensions of user satisfaction to comprehensively represent service quality.

The Nursing Laboratory at Padang, under the Padang Ministry of Health Polytechnic's Department of Nursing, comprises nine distinct laboratories: the Medical-Surgical/Basic Nursing Laboratory, Pediatric Nursing Laboratory, Maternity Nursing Laboratory, Community and Gerontological Nursing Laboratory, Mental Health Nursing Laboratory, Cardiovascular Nursing Laboratory (CVCU), Emergency Nursing Laboratory, Disaster Nursing Laboratory, and Anatomy-Physiology Laboratory. These laboratories are managed by two Educational Laboratory Technicians (PLP).

The primary users of these laboratory are students from the Diploma-III Nursing Program and the Applied Bachelor of Nursing Program, totaling approximately 500 students. Due to the high demand for the nursing program, the laboratory experience a high level of activity. The users' expectations, including those of students and lecturers, can significantly influence their satisfaction levels. Therefore, it is essential to evaluate user satisfaction with the laboratory services, particularly considering the challenge of managing nine laboratories with only two PLPs. This disproportionate ratio places a significant burden on laboratory managers.

Practical laboratory sessions play a crucial role in enhancing learning quality (Elfi, 2022). User satisfaction reflects the degree of alignment between users' perceptions and their expectations. Factors influencing user satisfaction are categorized into five dimensions: tangibles, reliability, responsiveness, assurance, and empathy (Barudin, 2020). Analyzing these dimensions can help identify issues affecting user satisfaction.

The Nursing Laboratory in Padang, located on the main campus of the Padang Ministry of Health Polytechnic, has not yet been the subject of user satisfaction research to evaluate its services. This research is valuable for identifying user-related issues and providing insights for future development. The primary objective of this research is to assess and analyze user satisfaction with the services provided by the nursing laboratory.

Methods

This research employs a descriptive quantitative research method and is classified as exploratory research using a questionnaire as the primary instrument. The subjects of the research include students and lecturers from the Diploma-III Nursing Program and the Applied Bachelor of Nursing Program under the Department of Nursing, Ministry of Health Polytechnic, Padang. The sample was selected using purposive sampling, involving users who utilized the laboratory services between January and July 2024.

The data collection technique utilizes a Likert scale, which measures responses ranging from positive to negative. The questionnaire encompasses five dimensions of satisfaction: Tangible (Physical Evidence), Reliability, Responsiveness, Assurance, and Empathy.

(1) *Tangible (Physical Evidence)*: Evaluates the physical facilities, equipment, and appearance of personnel.
(2) *Reliability*: Assesses the ability to perform the promised service dependably and accurately.
(3) *Responsiveness*: Measures the willingness to help users and provide prompt service.
(4) *Assurance*: Focuses on the knowledge and courtesy of staff and their ability to inspire trust and confidence.
(5) *Empathy*: Considers the provision of caring and personalized attention to users.

The data analysis aims to address the research's objective, which is to analyze the satisfaction levels of users—specifically lecturers and students—regarding the services provided by the Nursing Laboratory at the Department of Nursing, Ministry of Health Polytechnic, Padang. After data collection, the responses are analyzed by interpreting processed data through tabulation to provide an accurate depiction of the findings. Each indicator is categorized based on scores obtained from the questionnaire, multiplied by weighted values assigned to specific categories (Ariyati, 2018).

Result

The data collected from the distribution of the questionnaire involved 131 respondents who were users of the Nursing Education Laboratory in Padang. The results of this research are discussed based on service quality using five dimensions, which are evaluated from the perspective of users as the most critical aspect of assessing service quality. These dimensions include:

1. Tangibles

The results of the descriptive analysis for the tangibles dimension of the Nursing Laboratory services in Padang are presented in Table 1.

Table 1

Descriptive Results of the Tangibles Dimension in Laboratory Service Satisfaction

Category	Frequency	Percentage (%)
Very Dissatisfied	0	0
Dissatisfied	0	0
Moderately Satisfied	4	3.1
Satisfied	46	35.1
Very Satisfied	81	61.8
Total	131	100

Based on the data in Table 1, it can be concluded that for the tangibles dimension of the laboratory services, 81 respondents (61.8%) felt very satisfied. However, there were still 4 respondents (3.1%) who felt moderately satisfied, and 46 respondents (35.1%) who felt satisfied.

2. Reliability

The results for the reliability dimension are presented in Table 2.

Table 2

Descriptive Results of the Reliability Dimension in Laboratory Service Satisfaction

Category	Frequency	Percentage (%)
Very Dissatisfied	0	0
Dissatisfied	0	0
Moderately Satisfied	5	3.8
Satisfied	46	35.1
Very Satisfied	80	61.1
Total	131	100

Based on the data in Table 2, it can be observed that for the reliability dimension, the majority of respondents, 80 (61.1%), felt very satisfied. Additionally, 46 respondents (35.1%) were satisfied. However, 5 respondents (3.8%) indicated that they were only moderately satisfied with the reliability provided by the Nursing Laboratory in Padang.

3. Responsiveness

The results for the responseivenss dimension are presented in Table 3.

Tabel 3

Descriptive Results of the Responsiveness Dimension in Laboratory Service Satisfaction

Category	Frequency	Percentage (%)
Very Dissatisfied	0	0
Dissatisfied	0	0
Fairly Satisfied	6	4.6
Satisfied	49	37.4
Very Satisfied	76	58
Total	131	100

Based on Table 3, it can be observed that the satisfaction level of respondents regarding the responsiveness dimension shows that 76 respondents (58%) feel very satisfied, and 49 respondents (37.4%) feel satisfied. The majority of users are satisfied with the services related to the responsiveness of the management. However, there are 6 respondents (4.6%) who feel only fairly satisfied.

4. Assurance

The results for the assurance dimension are presented in Table 4.

Table 4

Descriptive Results of the Assurance Dimension in Laboratory Service Satisfaction Levels

Category	Frequency	Percentage (%)
Very Dissatisfied	0	0
Dissatisfied	0	0
Fairly Satisfied	7	5.3
Satisfied	44	33.6
Very Satisfied	80	61.1
Total	131	100

Based on Table 4, it can be observed that 7 respondents (5.3%) feel only fairly satisfied with the assurance dimension of laboratory services. However, the majority of respondents feel very satisfied, with 80 respondents (61.1%), and another 44 respondents (33.6%) expressing satisfaction.

5. Empathy

The description of the empathy dimension in laboratory service user satisfaction is presented in Table 5.

Table 5

Descriptive Results of the Empathy Dimension in Laboratory Service Satisfaction Levels

Category	Frequency	Percentage (%)
Very Dissatisfied	0	0
Dissatisfied	0	0
Fairly Satisfied	8	6.1
Satisfied	48	36.6
Very Satisfied	75	57.3
Total	131	100

Based on Table 5, it can be observed that 8 respondents (6.1%) feel only fairly satisfied with the empathy dimension of laboratory services. However, the majority of respondents report very high satisfaction, with 75 respondents (57.3%) feeling very satisfied and 48 respondents (36.6%) feeling satisfied.
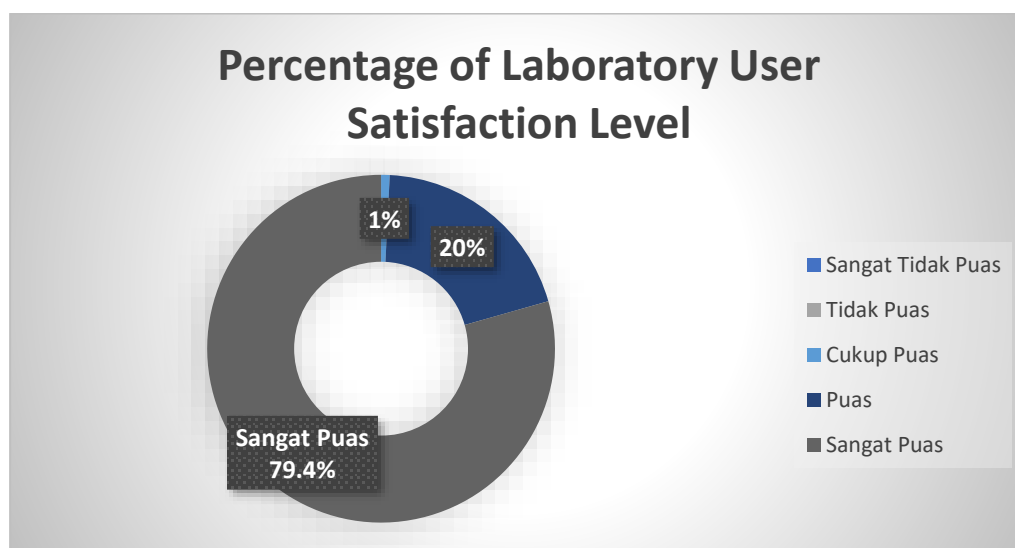
Figure 1.

Average Percentage of Satisfaction Level in Five Dimensions of User Satisfaction
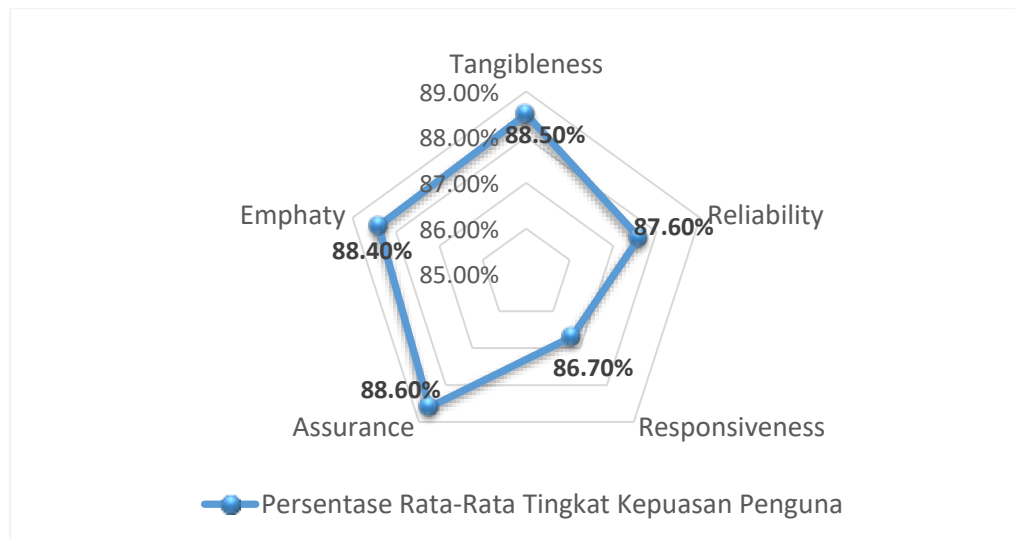
Based on Figure 1, the percentage of satisfaction levels in laboratory usage across the five user satisfaction dimensions can be observed. Lower satisfaction levels are evident in the dimensions of responsiveness and reliability, at 86.7% and 87.6%, respectively. These percentages are slightly lower when compared to the other three dimensions: tangibility at 88.5%, assurance at 88.6%, and empathy at 88.4%.

Figure 2.

Average Percentage of Five Dimensions of Laboratory User Satisfaction Level

Based on Figure 2, the frequency of respondent satisfaction levels indicates that the majority feel very satisfied (79.9%) and satisfied (20%). However, 1% of respondents

report feeling only fairly satisfied with the services provided by the nursing education laboratory.

Figure 3

Percentage of Average Satisfaction Levels Among Laboratory Users
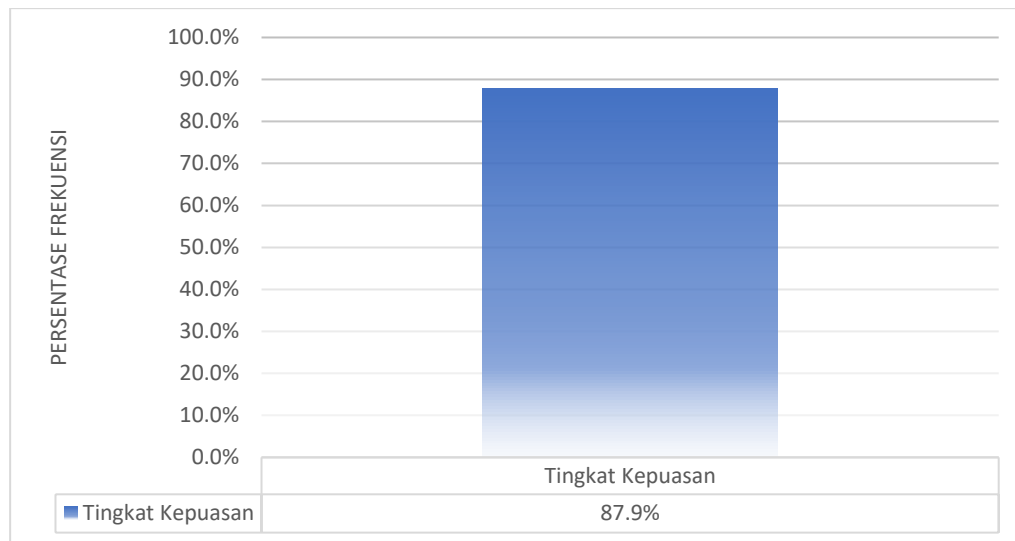
From Figure 3, the overall average satisfaction level of users is 87.9%. This falls within the interval of 80.1%–100%, which corresponds to the "very satisfying" category in the evaluation.

Discussion

1. Tangible Evidence as a Dimension of Service Quality

Tangible evidence, or tangibles, represents a dimension of service quality encompassing physical facilities, equipment, and staff (Badrudin, 2020). In this study, the dimension of user satisfaction being assessed includes the facilities and infrastructure of the nursing laboratory and human resources (HR), specifically the Educational Laboratory Staff (PLP). Based on the collected data, no dissatisfaction was reported by users regarding this dimension. However, some respondents expressed being fairly satisfied, highlighting the need for laboratory management to improve facilities, infrastructure, and the availability of HR.

This is supported by the implementation of barcodes in certain elements of the laboratory, which enhances the usability of laboratory facilities and serves as a safety measure for users. Research conducted by Susanto et al. (2023) on the use of barcodes in material safety data sheets demonstrates a significant relationship between barcode implementation and user safety. Similarly, a study by Erna Setyaningsih et al. (2024) on the use of QR codes for cataloging and standard operating procedures (SOPs) in operating Basic Physics Laboratory equipment reported improved effectiveness in laboratory practices and research activities.

Based on research by Murdiyanto and Bintari (2020) on student satisfaction revealed that 31.2% of respondents were dissatisfied, and 7.2% were very dissatisfied with the completeness and quality of facilities in the anesthesiology nursing laboratory. This aligns with a study by Juniari et al. (2023), which identified a low gap in the tangible dimension. Additionally, research by Dunggio (2023) investigating the relationship

between infrastructure, service quality, and student satisfaction found a significant correlation between the availability of physical and non-physical facilities and student satisfaction levels.

To address the aforementioned concerns, efforts to enhance the completeness and quality of nursing laboratory facilities are crucial to achieving optimal student learning outcomes. Such improvements must be fully supported by policymakers, as understanding the significance of facilities and infrastructure in education can guide more effective decision-making processes (Agustina et al., 2022).

2. Reliability in Laboratory Services

Reliability is a dimension of service quality encompassing the ability to provide agreed-upon services promptly, accurately, and dependably (Badrudin, 2020). In this study, the focus of reliability lies in the capability of laboratory managers, particularly Educational Laboratory Staff (PLP), to meet user expectations. High-quality laboratory services tailored to student needs are highly desirable. Offline laboratory usage, preferred by users, allows direct interaction with students (Ayyuni et al., 2023). One critical aspect of reliability for PLPs is their ability to effectively schedule and allocate laboratory spaces to meet practical learning needs.

Studies on the relationship between service quality in practical settings and nursing student satisfaction have found a significant correlation between reliability and service satisfaction, with a p-value of 0.001 ($p < 0.005$) (Kasihani et al., 2021). Identified that the reliability of PLPs is a critical factor influencing student satisfaction (Rosadi & Takim, 2022). Despite these findings, some respondents in this study expressed moderate satisfaction with the reliability dimension, underscoring the need for attention from management. This dimension is crucial as it significantly impacts overall service satisfaction. In this era of technological advancement, laboratory must adapt by incorporating virtual technologies as learning tools and improving technological management capabilities (Iswanto et al., 2022).

4. Responsiveness in Laboratory Services

The quality of nursing education is reflected in the competencies of its graduates, supported by the responsiveness of laboratory managers (Pranata et al., 2021). Responsiveness refers to the staff's readiness to assist users, provide prompt and appropriate services, and respond effectively to user needs (Badrudin, 2020). In this study, the responsiveness dimension pertains to the tasks and functions of laboratory managers, specifically PLPs.

Although the findings showed moderate satisfaction among some respondents regarding responsiveness, this is in line with previous research on Student Satisfaction with the Quality of the Nursing Learning Process, which reported that 0.8% of students were very dissatisfied with responsiveness (Murdianto & Bintari, 2020). This dissatisfaction is mainly due to the limited availability of faculty assistance.A quality laboratory is one with adequate management systems that support its vision and mission while enabling practical and research activities for all users (Silvia & Aryanti, 2022).

Educational institutions must address user complaints to improve laboratory-based learning quality. Additionally, PLPs must demonstrate responsiveness to enhance user satisfaction and trust.

5. Assurance in Laboratory Services

Assurance refers to the confidence provided by higher education institutions in their ability to deliver reliable services tailored to institutional capabilities (Murdiyanto & Bintari, 2020). In the context of education laboratory management, this involves aligning the capabilities of the laboratory, leadership, PLPs, and staff to instill trust and confidence in users. Assurance includes managerial knowledge of service delivery, courtesy, and politeness in providing information, thereby fostering user trust.

Based on Figure 2, some respondents expressed being only fairly satisfied with the services provided. This could be attributed to a lack of trust in the laboratory manager's ability to provide accurate information. If this small percentage of dissatisfaction is not addressed, it may influence other users' perceptions. Therefore, there is a need for training and development to enhance the laboratory manager's competencies in improve user assurance.

6. Empathy as a Dimension of Service Quality

Empathy is a dimension of service quality that involves the genuine attention given by service providers to their clients. This includes ease of communication, the ability to convey information in an understandable manner, and a willingness to listen to customer complaints and feedback (Badrudin, 2020). In the context of laboratory services, this dimension relates to the ease with which information is communicated by laboratory managers and their openness to receiving and acting on user feedback.

This is in line with research that identifies key elements of empathy in the laboratory environment, such as the ability of PLPs to receive feedback on laboratory conditions, show care and attention, motivate practitioners (students), understand user needs, and communicate effectively (Juniari et al., 2023). As PLPs in the field of nursing education, they must also serve as educators who motivate practitioners (students) to develop a passion for their profession (Nakayoshi et al., 2021).

According to Table 5, some respondents still feel only fairly satisfied with the empathy dimension of the service. However, this dimension has a relatively higher percentage of respondents who report being fairly satisfied compared to the other dimensions. This requires attention from laboratory management, as empathy is strongly linked to user satisfaction (Juniari et al., 2023). In this context, PLPs are on the front lines of providing services in educational laboratory (Kartikasari, 2019), and thus their role in this dimension should be carefully considered by all stakeholders.

The differences observed across the five dimensions indicate that there has not yet been uniformity in the quality of laboratory services. As shown in Figure 1, while there is a percentage difference of approximately 2%, these variations suggest that equity in service provision has not been fully achieved in the nursing education laboratory. This aligns with the research conducted by Alnajid et al. (2023), which highlighted student dissatisfaction with service quality in clinical practice settings due to gaps in satisfaction levels.

Based on Figure 2 further emphasizes that all five dimensions of service quality must be implemented thoroughly and evenly across all aspects of laboratory management. even though there are 1% of respondents who are quite satisfied with the laboratory service, this indicates that the dimensions are effective in identifying issues. This finding is in line with the research on the Relationship between Clinical Practice Service Quality and Student Satisfaction which shows that the five dimensions obtained a P value of < 0.005, indicating that the five dimensions have a very significant relationship (Kasihani et al., 2021).

Overall, the service quality in nursing education laboratory is at a very satisfactory level. However, upon further analysis, some areas are still rated as moderately satisfactory. These weaknesses in certain elements of service quality dimensions are caused by factors such as the insufficient number of human resources (HR) or Educational Laboratory Staff (PLP) compared to the number of laboratories, the lack of training and professional development for PLPs, and the inadequacy of facilities and infrastructure to maintain and improve the quality of service for users.

Effective laboratory management requires adequate human resources, facilities, infrastructure, and more efficient funding (Holilah & Pohan, 2018). Laboratory management itself is a process of utilizing available resources effectively and efficiently to support all activities carried out in the laboratory (Kartikasari, 2019). Proper and effective laboratory management can create a comfortable and safe environment for all laboratory users (Gusmanto, 2023). By monitoring the quality of service in the laboratory helps identify existing issues. Furthermore, through quality assurance in the laboratory, the overall quality of the higher education institution can be improved.

Conclusion

The quality of service in educational laboratory is a fundamental factor in providing effective laboratory services. Through measurement and analysis of user feedback, it is possible to identify and address issues based on the five dimensions of service quality. This study reveals that, overall, user satisfaction with the services provided in the laboratory is very satisfactory. This level of satisfaction should be maintained and further improved to meet the evolving needs of users. Therefore, it is essential to enhance the capabilities of laboratory managers and Educational Laboratory Staff (PLP) to effectively manage educational laboratory.

Declarations

Author contribution statement

The contribution made by the author in this work is that the first author was the initiator of the research, data collection and analysis. The second author contributed to editing and analysis.

Funding statement

Data availability statement

All data related to this research can be obtained by sending a message to the following email: hidaysan97@gmail.com.

Declaration of interests statement

That in this study the authors have no competing financial interests or personal relationships that could influence the work reported in this study.

Additional information

If you have input or additions to this research, you can send a message to the following email: hidaysan97@gmail.com.

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