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## Measuring Service Quality and User Satisfaction of Universitas Terbuka's Ruang Baca Virtual (RBV) Using SERVQUAL and EUCS

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### Keyword

Digital Library; Eucs; Service Quality; Servqual; User Satisfaction

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### Abstract

This study aims to measure the service quality and user satisfaction of the Ruang Baca Virtual (RBV) application within Universitas Terbuka's (UT) digital library and to identify priority dimensions requiring improvement. A quantitative survey approach was employed using two structured questionnaires based on the SERVQUAL and End User Computing Satisfaction (EUCS) models. SERVQUAL was applied to assess five dimensions of service quality (tangibles, reliability, responsiveness, assurance, and empathy), while EUCS evaluated five dimensions of user satisfaction (content, accuracy, format, ease of use, and timeliness). The SERVQUAL gap analysis was conducted using a percentage comparison approach against the ideal score to determine priority improvement areas. The research included 100 participants, where 50 respondents evaluated service quality using the SERVQUAL method, and the remaining 50 respondents measured user satisfaction using the EUCS approach. The results indicate that all SERVQUAL and EUCS dimensions fall within the "satisfied" category. Empathy and reliability emerged as key strengths in service quality, while ease of use and accuracy were identified as main strengths in user satisfaction. However, responsiveness and assurance (SERVQUAL), as well as format and timeliness (EUCS), exhibited relatively larger gaps, indicating areas requiring improvement. These findings provide a comprehensive descriptive evaluation of RBV performance and offer strategic insights for enhancing digital library services in distance learning environments.

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## 1. Introduction

One important innovation in higher education is the use of digital applications to support learning processes. Universitas Terbuka (UT), as a pioneer of distance education in Indonesia, has developed various digital services to facilitate teaching and learning activities. One of these services is Ruang Baca Virtual (RBV). RBV is designed to provide learning resources that can be accessed or read anytime and anywhere by its users, including students, lecturers, and tutors. Through this function, RBV is expected to enhance the effectiveness of distance learning and to support users' information needs. However, the effectiveness of a digital application is not solely determined by the availability of features; it is also shaped by the extent to which

users perceive the service as meeting their needs and expectations. User satisfaction is therefore a key indicator of successful digital application implementation, reflecting users' overall evaluation of outcomes and the alignment of system performance with their expectations [1]. In information technology-based services, service quality and user satisfaction are closely intertwined. Service quality can be evaluated using the SERVQUAL approach, which examines the gap between user expectations and perceptions across five key dimensions: reliability, responsiveness, assurance, empathy, and tangibles. The SERVQUAL model is grounded in the Gap Theory of Service Quality developed by [2]. This theory conceptualizes service quality as the discrepancy between users' expectations and their perceptions of actual service performance. Service quality is therefore determined by the magnitude and direction of the gap between what users expect and what they experience. When perceived performance meets or exceeds expectations, users tend to evaluate the service positively; conversely, negative gaps indicate unmet expectations and signal areas requiring improvement. The SERVQUAL framework operationalizes this concept into five core dimensions: tangibles, reliability, responsiveness, assurance, and empathy, which collectively represent both functional and relational aspects of service delivery. Meanwhile, the End User Computing Satisfaction (EUCS) model measures end-user satisfaction with information systems through the dimensions of content, accuracy, format, ease of use, and timeliness. The End-User Computing Satisfaction (EUCS) model, introduced by [3], measures users' satisfaction with information systems based on their evaluation of system outputs and usability characteristics.

The model comprises five dimensions: content, accuracy, format, ease of use, and timeliness. Unlike service quality frameworks that emphasize interaction processes, EUCS focuses on how users perceive the quality of information and system performance. By combining SERVQUAL and EUCS, this study adopts a dual-perspective evaluation framework that captures both service management performance and system-based user satisfaction in a digital library context. The integration of SERVQUAL and EUCS provides a more comprehensive evaluation, as the two frameworks capture both service performance and users' experience in interacting with the system. Previous studies have widely applied EUCS to assess satisfaction with computer-based systems. Research using EUCS indicates that all dimensions content, accuracy, format, timeliness, and ease of use, achieved high scores in e-learning services, suggesting that these services met user expectations and satisfaction criteria [4]. Previous studies have applied the End User Computing Satisfaction (EUCS) model to evaluate user satisfaction in digital library systems within higher education institutions. For example, an evaluation of the Valery (Virtual Resources Library) system reported very high user satisfaction levels across the five EUCS dimensions using a descriptive mean and grand mean approach [5]. Previous studies on digital library services have emphasized the importance of evaluating user satisfaction across service quality dimensions, reporting that system quality, information quality, and service delivery directly influence satisfaction levels in higher education contexts [6].

Another study reported that user satisfaction with the Kemendikbud library website was categorized as good [7]. In the context of e-library services, studies integrating EUCS with Importance-Performance Analysis (IPA) produced a Customer Satisfaction Index (CSI) of 60.34%, indicating a moderate level of user satisfaction [8]. In addition, research using WebQual 4.0 to evaluate the UNIPA e-learning website found that information quality and service interaction were strong determinants of user satisfaction [9]. Furthermore, this integrated model identifies both usability issues and service delivery gaps affecting user satisfaction and perceived value. This dual-perspective approach is essential in RBV-based systems, where organizational capabilities and service processes drive value creation. Accordingly, the integrated SERVQUAL-EUCS framework provides a more comprehensive evaluative structure compared to single-method approaches such as WebQual, SUS, or standalone EUCS applications. Similarly, SERVQUAL has been extensively used to evaluate the service quality of information systems. A previous SERVQUAL based assessment found that the empathy dimension exhibited the highest level of dissatisfaction and therefore required special attention, whilst tangible, reliability, responsiveness, and assurance dimensions also needed improvement in the Dapodik application [10]. Another SERVQUAL study examining customer satisfaction with an academic information system reported a satisfaction index of 77.37%, which was classified in the satisfied category [11]. Previous research has examined user satisfaction in educational applications by evaluating multiple dimensions of system

quality, including usability, information quality, and interaction aspects. The findings indicate that these dimensions play an important role in shaping users' perceptions and overall satisfaction within digital learning environments [12]. Within UT, several studies have specifically examined RBV. Research applying WebQual 4.0 to RBV found that usability quality had a negative effect on user satisfaction, whereas information quality and service interaction quality exerted positive effects [13]. Another evaluation of RBV using the System Usability Scale (SUS) produced a score of 72.66, placing RBV in the acceptable range [14]. Despite these contributions, studies that specifically measure both service quality and user satisfaction of RBV using a combined SERVQUAL and EUCS approach remain limited. This gap is noteworthy given that RBV, as part of UT's digital library ecosystem, plays a strategic role in supporting distance learning and serves as a key academic resource for the UT community. A comprehensive evaluation is therefore necessary to ensure that RBV services align with users' expectations while also identifying priority areas for improvement.

Accordingly, this study aims to measure the service quality and user satisfaction of RBV within UT's digital library using the SERVQUAL and EUCS methods. The findings are expected to provide an evidence-based overview of current service quality and satisfaction levels, identify improvement priorities, and formulate strategic recommendations to strengthen UT's digital library services. Ultimately, this study is expected to contribute to the enhancement of RBV services at UT and to enrich the literature on service quality and user satisfaction in the broader context of digital education. Based on the identified research gap and the strategic role of RBV in supporting distance learning at Universitas Terbuka, this study seeks to address several key questions. First, how is the perceived service quality of UT's Ruang Baca Virtual when evaluated using the SERVQUAL dimensions? Second, how is the level of user satisfaction with RBV when assessed through the EUCS dimensions? Furthermore, which specific service and system dimensions demonstrate relatively larger gaps between user expectations and perceptions, thereby requiring priority improvement? By addressing these questions, this study aims to provide a comprehensive descriptive evaluation of RBV service performance and user satisfaction within the context of digital library services in higher education.

## **2. Research Method**

This study employs a quantitative approach using a survey method to measure service quality and user satisfaction with the Ruang Baca Virtual (RBV) application in the digital library of Universitas Terbuka (UT). The SERVQUAL model is used to assess service quality based on the dimensions of tangibles, reliability, responsiveness, assurance, and empathy, while the End User Computing Satisfaction (EUCS) model is used to measure user satisfaction based on the dimensions of content, accuracy, format, ease of use, and timeliness. This approach is consistent with questionnaire-based practices for measuring service quality in e-learning systems and similar digital services. The research stages are presented in Figure 1.

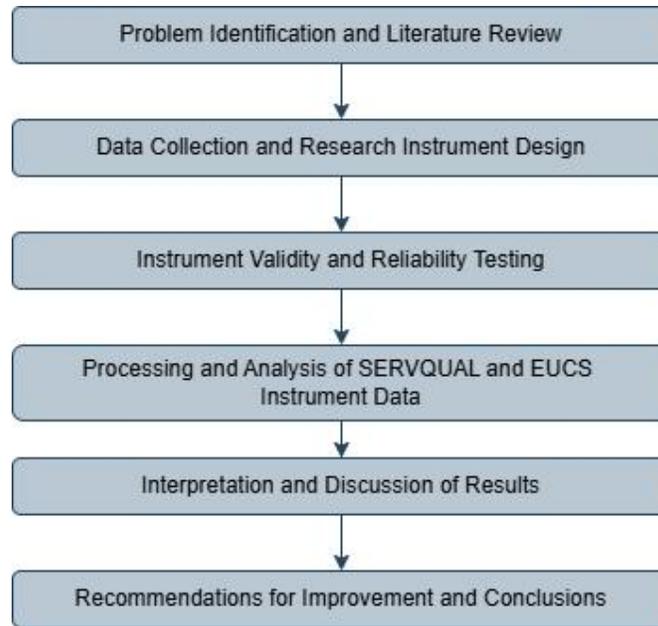


Figure 1. Research Method

### 2.1 Problem Identification and Literature Review

At this stage, the research identifies problems related to the service quality and user satisfaction of the RBV application and conducts a literature review on digital libraries, service quality, user satisfaction, the SERVQUAL method, and EUCS. This review serves as the basis for formulating the research problem, objectives, and conceptual framework. The UT RBV can be accessed via <https://pustaka.ut.ac.id/lib/ruangbaca/>. The main page interface of UT RBV is shown in Figure 2.

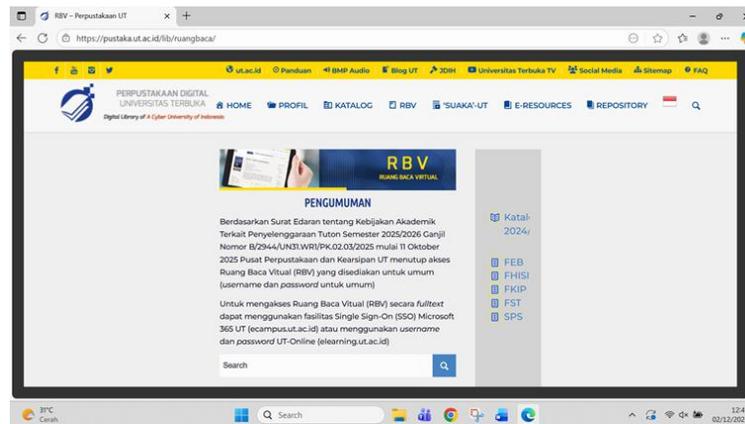


Figure 2. Website's Page of RBV UT

### 2.2 Data Collection and Research Instrument Design

At this stage, the research instrument in the form of a questionnaire was designed to collect data from UT RBV users. The statement items were developed based on the SERVQUAL dimensions (tangibles, reliability, responsiveness, assurance, empathy) and the EUCS dimensions (content, accuracy, format, ease of use, timeliness), which were adapted to the context of RBV usage. The measurement technique used in the questionnaire was a five-point Likert scale. This scale is widely used to measure the attitudes, opinions, and

perceptions of individuals or groups toward a social phenomenon [15]. Each response option was assigned a weighted score as presented in Table 1.

Table 1. Likert Scale [15]

Response	Score
Strongly Agree	5
Agree	4
Neutral	3
Disagree	2
Strongly Disagree	1

The determination of respondents in this study employed a random sampling technique, with the sample size calculated based on the Lemeshow formula. The target population comprised UT RBV application users, including students, lecturers, administrative staff, and other general users. The Lemeshow formula was selected because it can be used to estimate a representative sample size even when the exact population data are unknown and heterogeneous [16]. The Lemeshow formula used in this study is presented in equation (1) as follows:

$$n = \frac{z^2 p(1-p)}{d^2} \tag{1}$$

In this formula, n represents the required sample size, z is the standard normal value (a value of 1.96 was used to represent a 95% confidence level), p is the maximum proportion of occurrence in the population assumed to be 0.5 (50%) in order to obtain the largest and most representative sample size, and d is the allowable sampling error set at 0.10 (10%). A 10% margin of error was considered acceptable for exploratory descriptive evaluation, given the relatively homogeneous user population of RBV. These values of z, p, and d were substituted into the Lemeshow formula to produce an estimate of the minimum sample size sufficient to represent the population of UT RBV users. Based on the Lemeshow calculation, the minimum required sample was 96 respondents, which was practically rounded to 100 respondents. A total of 100 respondents participated in the study. Fifty respondents completed the SERVQUAL questionnaire to evaluate RBV service quality, and fifty respondents completed the EUCS questionnaire to assess user satisfaction with UT's digital services. The respondent groups were treated as independent samples, and the study did not attempt to match individual responses across instruments. Therefore, the analysis focuses on descriptive evaluation rather than examining statistical relationships between service quality and user satisfaction dimensions.

### 2.3 Instrument Validity and Reliability Testing

Item validity was tested using the corrected item-total correlation technique by correlating each item score with the total scale score. An item was considered valid if it had a correlation coefficient (r) greater than 0.30, indicating that it adequately represented the construct being measured. Instrument reliability was assessed using Cronbach's Alpha to examine internal consistency among items. A scale was considered reliable if the Cronbach's Alpha value was greater than 0.70, indicating that the consistency of respondents' answers was sufficient for research purposes.

### 2.4 Processing and Analysis of SERVQUAL and EUCS Instrument Data

At this stage, the questionnaire data were processed and analyzed by calculating the mean scores for each dimension, conducting a SERVQUAL gap analysis between expectations and perceptions, and assessing user satisfaction levels based on the EUCS dimensions. The service quality instrument employed the five

SERVQUAL dimensions, namely tangibles, reliability, responsiveness, assurance, and empathy. The indicators and item codes used in the instrument are presented in Table 2.

Table 2. SERVQUAL Instrument Indicators

No	Variable	Code	Indicator
1	Tangibles	sv_tg1	The website interface is attractive.
		sv_tg2	The website interface is not confusing.
		sv_tg3	The menus or links on the website are clear.
		sv_tg4	The language used on the website is easy to understand.
		sv_tg5	The website navigation process is not confusing.
		sv_tg6	The website has a good search engine feature.
		sv_tg7	The website displays well on different browsers and devices.
		sv_tg8	Images and icons on the website are clear.
		sv_tg9	The website has complete features and facilities.
		sv_tg10	The website covers various learning activities.
2	Reliability	sv_rl1	The website can be accessed anytime and anywhere.
		sv_rl2	The website loads quickly each time it is accessed.
		sv_rl3	The website quickly returns to active status if downtime/errors occur.
		sv_rl4	All input forms on the website function properly.
		sv_rl5	Announcements are available when there is new information on the website.
3	Responsiveness	sv_rs1	The website responds to user needs quickly.
		sv_rs2	The website promptly provides new features/services needed by users.
		sv_rs3	The website provides quick responses when problems occur.
4	Assurance	sv_as1	The website provides a sense of security when used.
		sv_as2	The website makes it easy for users to report service issues.
		sv_as3	Responses to reported issues are delivered in a user-friendly manner.
		sv_as4	The website provides tutorials/usage guides that are easy to access.
5	Empathy	sv_em1	The website provides a space for users to submit feedback and suggestions.
		sv_em2	The website provides easy access to information services.
		sv_em3	The website prioritizes user needs.

The user satisfaction instrument was developed based on the EUCS model, which comprises five dimensions: content, accuracy, format, ease of use, and timeliness. The indicators were adapted and adjusted to reflect the characteristics of UT's Ruang Baca Virtual (RBV). The details of the EUCS indicators and item codes are presented in Table 3 [16].

Table 3. EUCS Instrument Indicators

No	Variable	Code	Indicator
1	Content	ec_ct1	The application's menu content matches users' needs.
		ec_ct2	The application's menu content is easy to understand.
		ec_ct3	The application's menu content is comprehensive.
		ec_ct4	The benefits of the application's menu content are clear.
2	Accuracy	ec_ac1	The application displays and provides correct and accurate information.
		ec_ac2	Each feature clicked in the application always leads to the appropriate page.
3	Format	ec_fm1	The menu interface design is clear and well presented.
		ec_fm2	The application interface is sufficiently attractive, and the menus are easy to understand.
		ec_fm3	The application's interface layout makes it easier for users to navigate.
4	Ease of use	ec_eu1	The application is easy to use (easy to understand and learn).
		ec_eu2	The application can be accessed anytime and anywhere.
5	Timeliness	ec_tm1	The required information is easy to obtain through the application.
		ec_tm2	The application always displays the latest information.
		ec_tm3	The application provides the required information in a timely manner.

The assessment of users' perceptions and satisfaction with RBV employed a Likert scale divided into five categories, as presented in Table 4. The mean satisfaction score was also calculated to describe the overall level of satisfaction using equation (2), as follows:

$$RK = \frac{JSK}{JK} \tag{2}$$

with RK representing the mean satisfaction score, JSK denoting the total questionnaire score, and JK indicating the number of questionnaires [17].

Table 4. Likert Scale Satisfaction Levels [16]

No	Score Range	Perception Category	Satisfaction Category
1	1 - 1.79	Strongly Disagree	Very Dissatisfied
2	1.8 - 2.59	Disagree	Dissatisfied
3	2.6 - 3.39	Neutral	Fairly Satisfied
4	3.4 - 4.19	Agree	Satisfied
5	4.2 - 5	Strongly Agree	Very Satisfied

Data analysis was conducted to assess the service quality (SERVQUAL) and user satisfaction (EUCS) of UT's RBV using a percentage approach against the ideal score.

- a. For each SERVQUAL and EUCS dimension, the total observed score ( $\sum SH$ ) was calculated from respondents' answers and compared with the criterion (ideal) score ( $\sum SK$ ), which is obtained by multiplying the highest Likert-scale score by the number of items and the number of respondents.
- b. The percentage value for each dimension was calculated using equation (3) as follows:

$$p = \frac{\sum SH}{\sum SK} \times 100\% \tag{3}$$

- c. The percentage value (p) was interpreted into user satisfaction categories based on the following intervals: 0–20% (very dissatisfied), 21–40% (dissatisfied), 41–60% (fairly satisfied), 61–80% (satisfied), and 81–100% (very satisfied) [18].
- d. Specifically for service quality using SERVQUAL, the gap was identified using a percentage comparison approach against the ideal score rather than applying the classical perception–expectation (P – E) difference at the individual item level. The observed percentage score for each dimension was compared with the maximum attainable (ideal) score to determine the magnitude of the service gap. This approach was selected to provide a clearer aggregate representation of service performance in descriptive survey research using Likert-scale instruments, facilitating practical interpretation and prioritization of improvement dimensions. Similar percentage-based interpretations are commonly applied in descriptive service quality evaluations to enhance interpretability and managerial relevance [18].

## 2.5 Interpretation and Discussion of Results

At this stage, the analysis results are interpreted with reference to relevant theories and previous studies to identify service dimensions that represent strengths as well as those requiring priority improvements.

## 2.6 Recommendations for Improvement and Conclusions

At this stage, the conditions of service quality and user satisfaction with UT's RBV are summarized, followed by the formulation of specific improvement recommendations, practical implications, and suggestions for future research. This study employs two models to measure the service quality and user satisfaction of RBV, as shown in Figure 3 and Figure 4.

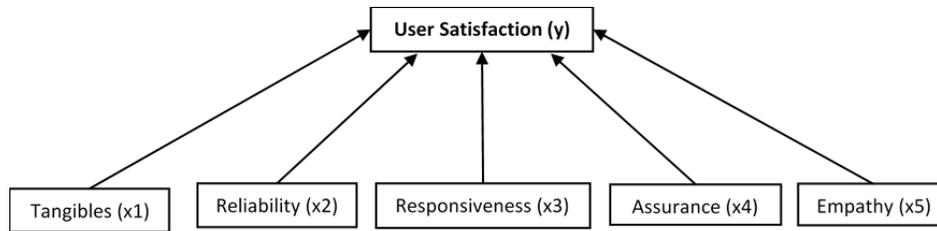


Figure 3. Model SERVQUAL

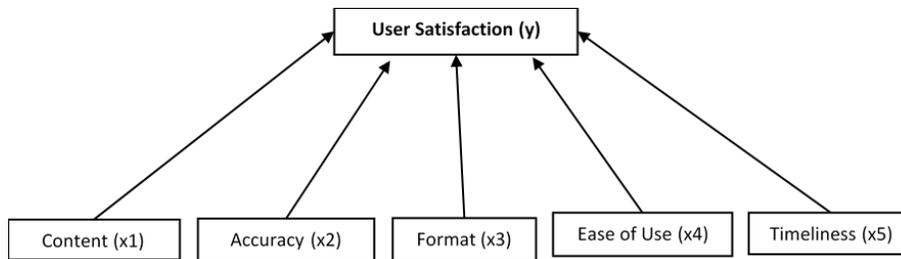


Figure 4. Model EUCS

Following the SERVQUAL model illustrated in Figure 3 and the EUCS model presented in Figure 4, this study employs both frameworks as complementary evaluative tools rather than as causal models. The SERVQUAL model is used to descriptively assess users' perceptions of service quality across five dimensions tangibles, reliability, responsiveness, assurance, and empathy. Meanwhile, the EUCS model is applied to evaluate user satisfaction from a system-use perspective through the dimensions of content, accuracy, format, ease of use, and timeliness. This study does not formulate or test causal hypotheses regarding the influence of service quality dimensions on user satisfaction. Instead, it adopts a descriptive evaluative approach aimed at measuring the level of perceived service quality and user satisfaction and identifying dimensions that demonstrate relatively larger gaps and therefore require priority improvement. By applying both models independently, the study provides a comprehensive overview of RBV performance from both service management and system usability perspectives.

### 3. Results and Discussion

This section presents the results of measuring the service quality and user satisfaction of UT's RBV using the SERVQUAL and EUCS methods, along with a discussion based on relevant theories and previous studies. Data were collected through a questionnaire developed with reference to the SERVQUAL and EUCS dimensions and completed by RBV users who utilized the service for learning activities.

Before presenting the main analysis results, the demographic characteristics of respondents are described to provide an overview of the sample profile.

Table 5. Respondent Characteristics

No	Variable	Category	Percentage
1	Gender	Female	58%
		Male	42%
2	Role	Student	72%
		Lecturer	16%
		Administrative Staff	6%
		Alumni	6%
3	Age Group	<20 years	10%
		20-24 years	44%
		25-29 years	18%
		30-34 years	28%

The demographic profile of the 50 SERVQUAL respondents shows that the majority were female (58%) and students (72%). Most respondents were within the 20–24 year age group (44%), indicating that the evaluation predominantly reflects the perceptions of active young adult RBV users.

Prior to the main analysis, the research instrument was tested for validity and reliability. Validity testing was conducted using Corrected Item–Total Correlation for each statement item. All statement items in the SERVQUAL and EUCS instruments showed correlation values above 0.30 and were significant at the specified confidence level. Therefore, they were deemed valid and capable of representing the constructs being measured. A summary of the validity test results is presented in Table 6.

Table 6. Validity Test Results of the RBV Research Instruments

No	Instrument	Number of Items	Validity Criteria	Remarks
1	SERVQUAL	25	r-calculated > 0.30; significant	All items are valid
2	EUCS	14	r-calculated > 0.30; significant	All items are valid

Next, the instrument reliability was measured using Cronbach's Alpha coefficient to assess internal consistency among items. The results showed that the SERVQUAL instrument with 25 statement items had a Cronbach's Alpha value of 0.968, whereas the EUCS instrument with 14 statement items had a Cronbach's Alpha value of 0.961. Both values are far above the minimum threshold of 0.70, indicating very high reliability; therefore, the instruments were considered consistent and suitable for use in the main data collection. A summary of the reliability test results is presented in Table 7.

Table 7. Reliability Test Results of the RBV Research Instruments

No	Instrument	Number of Items	Cronbach's Alpha	Reliability Category
1	SERVQUAL	25	0.968	Very high
2	EUCS	14	0.961	Very high

Based on data processing using the SERVQUAL method, the mean scores of the five service quality dimensions of UT's RBV (tangibles, reliability, responsiveness, assurance, and empathy) were obtained. Overall, all dimensions fell into the "satisfied" category, with mean scores ranging from 3.953 to 4.073 on a 1–5 scale. A summary of the measurement results is presented in Table 8.

Table 8. Mean Scores of RBV Service Quality Dimensions Based on SERVQUAL

No	Dimension	Mean Score	Category
1	Tangibles	4.014	Satisfied
2	Reliability	4.048	Satisfied
3	Responsiveness	3.953	Satisfied
4	Assurance	3.990	Satisfied
5	Empathy	4.073	Satisfied
	Overall mean	4.015	Satisfied

The "satisfied" category corresponds to a score range of 3.40–4.19 on the five-point Likert scale. Based on Table 8, the empathy dimension shows the highest mean score at 4.073, followed by reliability at 4.048 and tangibles at 4.014. The responsiveness (3.953) and assurance (3.990) dimensions display slightly lower mean scores, yet they remain within the satisfied category. The overall mean of 4.015 indicates that, in general, users perceive the service quality of RBV as good, with key strengths in the empathy of service management and the reliability of the service. When compared with the ideal score, the user satisfaction level falls within approximately 79–81%, where empathy demonstrates the highest satisfaction percentage, while responsiveness and assurance show relatively lower percentages. The remaining service gaps between observed performance and the ideal score, particularly in responsiveness and assurance, indicate that users still expect improvements in service speed, issue handling responsiveness, and stronger assurance regarding the reliability of UT's RBV services. These findings are consistent with prior research in Indonesian open university digital library settings, which reported that service quality significantly influences user satisfaction, and satisfaction subsequently affects system use and perceived net benefits [19].

The strong performance of the empathy dimension may be attributed to UT's long-standing commitment to student-centered distance education. As an open and distance learning institution, UT emphasizes accessibility and inclusivity, which are reflected in the perceived attentiveness and user-oriented features of RBV. Similarly, the high reliability score suggests that RBV has achieved technical stability and consistent service availability, which are critical in distance learning environments where students rely heavily on digital resources. In contrast, the relatively lower responsiveness score may indicate that system updates, problem resolution mechanisms, or user support channels are not yet fully optimized. In digital library contexts, responsiveness is closely related to server performance, response time, and real-time assistance, which may require continuous technical refinement.

The measurement of user satisfaction using the EUCS method provides a complementary view from the perspective of system use experience. The analysis results indicate that all EUCS dimensions content, accuracy, format, ease of use, and timeliness also fall within the “satisfied” category, with an overall mean of 4.182. A summary of the measurement results is presented in Table 9.

Table 9. Mean Scores of RBV User Satisfaction Dimensions Based on EUCS

No	Dimension	Mean Score	Category
1	Content	4.155	Satisfied
2	Accuracy	4.250	Satisfied
3	Format	4.053	Satisfied
4	Ease of Use	4.320	Satisfied
5	Timeliness	4.133	Satisfied
	Overall mean	4.182	Satisfied

The EUCS analysis indicates that all dimensions fall within the “satisfied” category, with an overall mean score of 4.182. Among the five dimensions, ease of use obtained the highest mean score (4.320), suggesting that users perceive RBV as intuitive, easy to learn, and accessible. This finding aligns with usability theory, which emphasizes that intuitive navigation and minimal cognitive load enhance user satisfaction and system acceptance. The accuracy dimension (4.250) also scored highly, indicating that users consider the information provided by RBV to be reliable and trustworthy, thereby strengthening perceived service value and user trust. The content (4.155) and timeliness (4.133) dimensions were rated moderately high, while format recorded the lowest mean score (4.053), although still within the satisfied category. In percentage terms, all EUCS dimensions exceeded 80% of the ideal score, with the smallest gap observed in ease of use. Conversely, relatively larger gaps in format and timeliness indicate opportunities for improvement, particularly in interface design consistency, navigation structure, visual layout, and the timeliness of content updates. From a service quality perspective, these gaps reflect mismatches between user expectations and system performance that may affect perceived service excellence if not addressed. These findings are consistent with previous studies demonstrating that system quality, information quality, and service quality significantly influence user satisfaction in higher education digital platforms [20] [21]. Similar digital library evaluations using EUCS have also identified interface quality and usability as key determinants of satisfaction and priority areas for service enhancement [8]. Recommendations for improvement across each dimension are presented in Table 10.

Table 10. Improvement Recommendations

No	Dimension & Model	Gap (%)	Key Findings	Improvement Recommendations
1	Responsiveness (SERVQUAL)	20.93	System response and service delivery are perceived as not fast enough compared to user expectations.	Set clear response time targets (e.g., main page load time < 2 seconds); optimize page performance (image compression, lazy loading, caching); optimize database queries; provide a fast and accessible support channel (chat/helpdesk) with defined initial response and escalation procedures.
2	Assurance (SERVQUAL)	20.20	Service reliability, security, and assurance are perceived as not yet optimal.	Develop and publish an RBV service SLA; clarify security and privacy policies; provide a user-friendly troubleshooting guide/FAQ; display informative and reassuring error messages.
3	Format (EUCS)	18.93	Interface layout and visual consistency still require improvement.	Standardize layout structure (menu, buttons, headings); establish UI design guidelines (colors, typography, icons); refine visual elements that are less optimal; ensure a responsive display across devices; use a consistent UI template for new content.
4	Timeliness (EUCS)	17.33	The timeliness and frequency of content/information updates have not fully met user expectations.	Schedule regular content updates; display "last updated" information on key pages; ensure cache mechanisms update with changes; set reminders/warnings for content updates so information remains timely for users.

#### 4. Conclusions and Future Works

This study evaluated the service quality and user satisfaction of the Ruang Baca Virtual (RBV) application within Universitas Terbuka's digital library using the SERVQUAL and EUCS models. The results indicate that all SERVQUAL dimensions (tangibles, reliability, responsiveness, assurance, and empathy) and EUCS dimensions (content, accuracy, format, ease of use, and timeliness) fall within the "satisfied" category, with mean scores exceeding 4.0 on a five-point scale. Empathy and reliability emerged as key strengths in service quality, while ease of use and accuracy were identified as primary advantages in user satisfaction. However, responsiveness and assurance (SERVQUAL), as well as format and timeliness (EUCS), exhibited relatively larger service gaps, indicating priority areas for improvement. From an academic perspective, this study contributes by integrating SERVQUAL and EUCS within a descriptive evaluation framework for digital library services in a distance learning university context, offering a dual-perspective assessment that combines service delivery quality and system-based satisfaction analysis. Practically, the findings provide actionable guidance for RBV administrators to enhance responsiveness, strengthen assurance and security clarity, refine

interface design and visual consistency, and ensure timely content updates while maintaining the dimensions that have demonstrated strong performance.

Despite these contributions, several limitations should be acknowledged. The sample size was limited to 100 respondents, which may restrict the generalizability of the findings. The data were collected through self-reported questionnaires that may introduce response bias, and the cross-sectional design captured perceptions at a single point in time without examining longitudinal changes in service experience. Additionally, this study did not explicitly measure the frequency of RBV usage among respondents, which may limit deeper behavioral insights regarding usage intensity and engagement patterns. Future research is therefore encouraged to involve larger and more diverse samples, integrate mixed-method approaches, expand the evaluation to other digital services within Universitas Terbuka, and develop causal models to examine the influence of service quality dimensions on satisfaction and continued usage intention, thereby generating more robust and targeted recommendations.

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