

SERVQUAL–QFD-Based Service Improvement Framework for Smart Public Service Implementation in Subdistrict Administrative Services

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ABSTRACT

Public administrative services at the subdistrict level require continuous evaluation to ensure service delivery meets community expectations. This study evaluated administrative service quality at the Conggeang Subdistrict Office, identified critical service gaps, and translated citizen requirements into technical improvement priorities to support Smart Public Service development. A quantitative cross-sectional survey was conducted with 104 residents who had used administrative services at the subdistrict office. Data were collected using a questionnaire containing 16 attributes across five SERVQUAL dimensions: tangibles, reliability, responsiveness, assurance, and empathy. Instrument testing demonstrated strong internal consistency, with Cronbach's Alpha values of 0.900 for expectation, 0.934 for perception, and 0.885 for importance. SERVQUAL analysis revealed that 14 of the 16 attributes yielded negative gap scores. The largest negative gaps occurred in facility cleanliness and comfort (−0.16), digital information media availability (−0.14), fair and non-discriminatory service (−0.13), and service completion timeframe (−0.12). Quality Function Deployment (QFD) was then applied to map customer requirements into technical responses via the House of Quality. The Technical Matrix identified three primary priorities: consistent implementation of service SOPs (8.43%), establishment of clear completion-time standards (8.04%), and optimization of digital information media (7.65%). These priorities offer practical guidelines for service enhancement prior to full pilot implementation.

Keywords: Public Service, SERVQUAL, Quality Function Deployment, House of Quality; Subdistrict Administration

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INTRODUCTION

Providing quality public services is a core responsibility of local government agencies. In Indonesia, Law No. 25 of 2009 mandates public service providers to deliver professional, transparent, fast, and accessible services oriented toward public satisfaction [1]. Because administrative service quality directly influences public trust, government bodies must regularly monitor and refine their operational standards [2].

Subdistrict offices operate as frontline government units that interact directly with the community for essential administrative needs, such as identity cards (KTP) and family cards (KK). Given the high volume of daily service requests, evaluating service performance is essential to meet growing public expectations [3]. Service quality depends not only on physical facilities, but also on staff competence, processing speed, clear information, and adherence to established timelines [4].

The SERVQUAL framework is widely used to evaluate service quality across five key dimensions: tangibles, reliability, responsiveness, assurance, and empathy [5], [6]. By comparing user expectations with actual perceptions, SERVQUAL gap analysis helps identify specific areas where performance falls short [7], [8], [9]. However, while SERVQUAL pinpoints service deficits, it does not specify which technical actions service managers should prioritize.

To address this limitation, Quality Function Deployment (QFD) can be combined with SERVQUAL. QFD uses a matrix known as the House of Quality (HOQ) to systematically translate user expectations the "Voice of Customer" into

technical responses [10]. Previous studies have successfully integrated SERVQUAL and QFD to improve service quality in education, healthcare, and logistics ([11], [12], [13]). However, research applying this combined approach specifically to subdistrict administrative services remains limited [14], [15], [16].

This study focuses on administrative services at the Conggeang Subdistrict Office in Sumedang Regency. Initial field observations revealed problems related to waiting area comfort, clear service information, processing time certainty, and overall workflow. Therefore, this study aims to: (1) evaluate service quality using SERVQUAL; (2) identify attributes with the largest gap scores; and (3) translate citizen expectations into technical improvement priorities using QFD. The findings provide a practical framework to guide service enhancements toward Smart Public Service implementation.

MATERIAL AND METHOD

Research Design

This study used a quantitative cross-sectional design to assess service quality at the Conggeang Subdistrict Office, Sumedang Regency, West Java, Indonesia. Fieldwork was conducted from September to November 2025. The scope covered core administrative services, including identity card (KTP) and family card (KK) requests, cover letters, and document legalizations. Primary data were gathered through questionnaires, field observations, and interviews with service staff, while secondary data came from institutional documents and standard operating procedures (SOPs). Figure 1 outlines the complete research sequence.

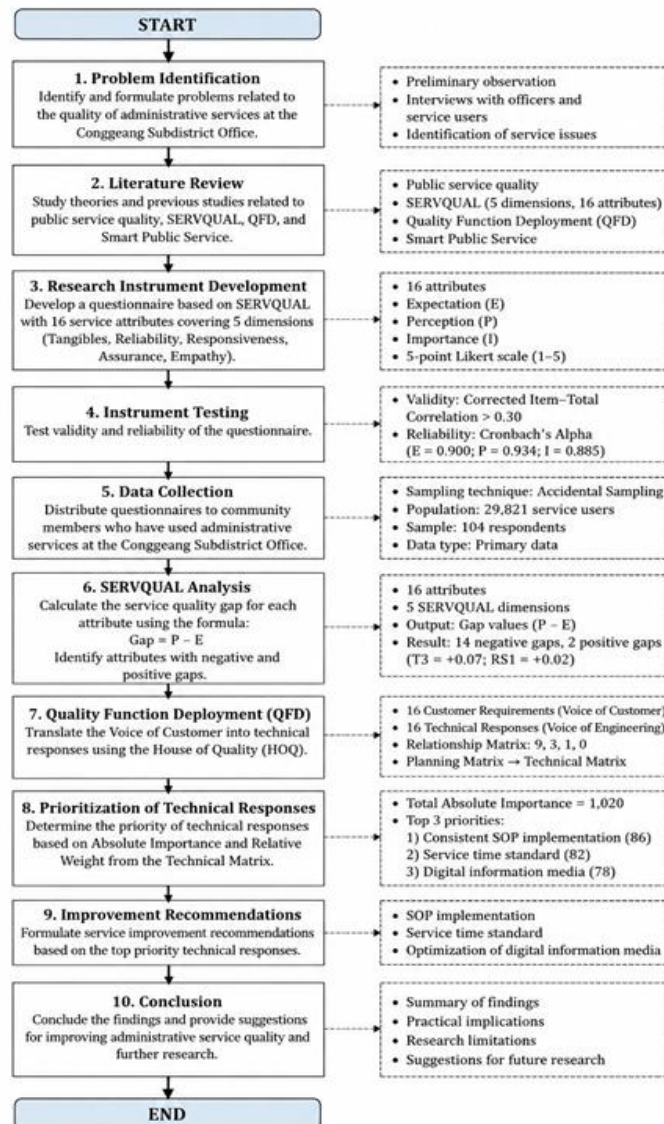


Figure 1. Research Flowchart

Population and Sample

The target population consisted of 29,821 citizens who used administrative services at the Conggeang Subdistrict Office. The minimum sample size was calculated using Slovin's formula with a 10% margin of error ($e = 0.10$):

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

where n is the minimum sample size, N is the population size, and e is the margin of error. With $N=29,821$ and $e=0.10$, the minimum sample size was calculated as follows:

$$n = \frac{29,821}{1 + 29,821(0.10)^2} = 99,67 \approx 100 \quad (2)$$

To ensure sufficient data, 104 valid responses were collected using accidental sampling by approaching citizens who had completed their administrative tasks at the subdistrict office.

Data Collection and Research Instrument

Primary data were gathered through direct observations, staff interviews, and structured questionnaires. Observations focused on mapping the actual service process, workflow, officer–user interactions, processing times, and supporting facilities. In-depth interviews with relevant service personnel provided context on operational procedures, service constraints, and practical improvement needs. Meanwhile, questionnaires were administered to community members immediately after they completed their administrative transactions.

The questionnaire comprised 16 attributes adapted from the five SERVQUAL dimensions: tangibles (T1–T5), reliability (R1–R2), responsiveness (RS1–RS3), assurance (A1–A3), and empathy (E1–E3). For each attribute, respondents evaluated three parameters expectation, perception, and importance on a 5-point Likert scale. Prior to main data collection, a pre-test was conducted to ensure the clarity and contextual suitability of all survey items.

These service attributes were tailored to reflect the specific operations of subdistrict administrative services. Across the instrument, the five dimensions evaluated physical service conditions, service delivery reliability, officer responsiveness, safety and assurance provided to citizens, and personal attention to user needs.

Instrument Validity and Reliability

Before proceeding to the main analysis, the questionnaire underwent validity and reliability testing. Item validity was evaluated using Corrected Item–Total Correlation, with items considered valid if their correlation coefficients exceeded 0.30. Instrument reliability was assessed using Cronbach's Alpha across all measurement sets.

The testing yielded Cronbach's Alpha values of 0.900 for expectation, 0.934 for perception, and 0.885 for importance, demonstrating strong internal consistency across all three evaluation sets. This verification confirmed instrument stability prior to conducting the SERVQUAL and QFD analyses.

These reliability metrics reflect internal consistency within the respective questionnaire sets rather than statistical confirmation of the five-dimensional SERVQUAL structure, as factor analysis was not within the scope of this study.

SERVQUAL Analysis

SERVQUAL analysis measured the variance between community expectations and actual perceptions regarding administrative service performance. Mean scores for expectation (E) and perception (P) were computed across all 16 service attributes, with service quality gaps determined using Equation (3):

where P represents the mean perception score and E denotes the mean expectation score. A negative gap indicates that service performance fell short of public expectations, whereas a positive gap shows that performance exceeded expectations. These gap scores helped identify operational areas requiring attention and served as baseline input for the subsequent QFD analysis. Rather than filtering out items based on gap magnitude, all 16 service attributes were retained as customer requirements in the QFD stage. This decision ensured that the QFD evaluation addressed the complete service system rather than focusing strictly on attributes with the largest negative gaps, allowing the gap values to function as comprehensive diagnostic information.

Quality Function Deployment Analysis

Quality Function Deployment (QFD) translated customer requirements into actionable technical improvement responses. All 16 SERVQUAL attributes were integrated into the House of Quality (HOQ) matrix as customer requirements, which were evaluated alongside 16 technical responses derived from operational conditions and service guidelines [10], [12].

The Planning Matrix incorporated Importance to Customer (IC), Customer Satisfaction Performance (CSP), Goal (G), Improvement Ratio (IR), Sales Point (SP), Raw Weight (RW), and Normalized Raw Weight (NRW). The IC scores were derived directly from customer importance assessments, while CSP reflected mean perception scores. The performance Goal (G) was set at 5.0, representing the maximum scale value. The Improvement Ratio (IR) was computed as the quotient of Goal to Customer Satisfaction Performance (G / CSP).

Raw Weights (RW) were calculated by integrating IC, IR, and SP. These customer-weight values were then applied within the Relationship Matrix to evaluate the contribution of each technical response toward fulfilling customer expectations. The Relationship Matrix utilized standard QFD values of 9 (strong), 3 (moderate), 1 (weak), and 0 (no relationship).

The 16 technical responses identified from service requirements included: maintaining service-room cleanliness, improving supporting facilities, balancing staff allocation during peak hours, displaying clear service information, optimizing digital information channels, consistently applying service SOPs, establishing completion-time standards, accelerating processing speed, enhancing officer responsiveness, providing complaint-handling mechanisms, conducting procedural training, offering service-excellence training, improving document accuracy, strengthening officer communication, delivering fair and transparent service, and simplifying service workflows.

The resulting QFD priorities provide structured guidelines for operational refinement. Because this study used a cross-sectional design without pilot implementation, these priorities represent strategic improvement directions rather than empirically validated intervention outcomes.

Research Ethics and Data Interpretation

Data collection was conducted by inviting citizens who had just completed administrative tasks to participate in the survey. Participation was entirely voluntary, and all responses were anonymized for research purposes. Because an accidental sampling technique was used without recording uncompleted visits or opt-outs, a formal response rate was not established.

The findings reflect the specific operational environment of the Conggeang Subdistrict Office and should not be generalized to other administrative facilities without local context verification. Furthermore, given the cross-sectional nature of the study, the results describe service conditions during the measurement period and do not establish direct causal relationships.

RESULTS AND DISCUSSION

Service Quality Evaluation Using SERVQUAL

Survey data were collected from 104 citizens who had used administrative services at the Conggeang Subdistrict Office. Across the dataset, the overall mean scores for expectation (E), perception (P), and importance (I) were 4.54, 4.52, and 4.63, respectively. Instrument reliability testing confirmed strong internal consistency, with Cronbach's Alpha values of 0.900 for expectation, 0.934 for perception, and 0.885 for importance.

Evaluating the SERVQUAL gap ($P - E$) revealed negative scores for 14 of the 16 service attributes. Only two attributes adequate officer availability during busy periods (T3) and prompt initial service (RS1) recorded positive gap scores of +0.07 and +0.02, respectively. Table 1 summarizes the mean expectation, perception, and gap scores across all attributes.

Table 1. SERVQUAL Analysis Results

Code	Service Attribute	Expectation	Perception	Gap
T1	Clean, orderly, and comfortable service area	4.64	4.48	-0.16
T2	Supporting service facilities are adequately available	4.53	4.47	-0.06
T3	Adequate number of service officers during busy periods	4.44	4.51	+0.07
T4	Service procedures and requirements are clearly available	4.60	4.49	-0.11
T5	Technology-based information media or services are available	4.58	4.44	-0.14
R1	Service is provided according to applicable procedures	4.60	4.58	-0.02
R2	Service is completed within the promised timeframe	4.60	4.48	-0.12
RS1	Officers serve users promptly	4.56	4.58	+0.02
RS2	Officers promptly assist users experiencing difficulties	4.61	4.59	-0.02
RS3	Complaints or questions are responded to promptly	4.52	4.42	-0.10
A1	Officers answer questions clearly and accurately	4.62	4.58	-0.04
A2	Officers are courteous and friendly	4.61	4.53	-0.08

A3	Users are confident that documents are processed correctly	4.62	4.55	-0.07
E1	Officers pay attention to users' needs	4.59	4.55	-0.04
E2	Officers provide fair and non-discriminatory service	4.63	4.50	-0.13
E3	Officers facilitate the service process	4.62	4.52	-0.10

The four largest negative gaps occurred in attribute T1 (-0.16, facility cleanliness, orderliness, and comfort), T5 (-0.14, availability of technology-based information media), E2 (-0.13, fair and non-discriminatory service), and R2 (-0.12, service completion within promised timeframe).

These deficit areas highlight operational aspects where actual service delivery falls short of public expectations. Waiting area cleanliness and comfort (T1) received the largest deficit, indicating that service users expect a better-maintained physical environment. The gap in digital information channels (T5) reflects growing demand for online access to service requirements and procedures before visiting the subdistrict office. Furthermore, the deficit in service fairness (E2) points to the need for equal treatment across all transactions, while the gap in completion times (R2) shows that users experience uncertainty regarding document processing schedules.

These findings correspond with prior public service studies demonstrating that physical environment, procedural transparency, and time certainty strongly shape public satisfaction [8], [17], [18]. Conversely, positive gaps for T3 (+0.07) and RS1 (+0.02) indicate that current staffing levels during busy hours and initial officer responsiveness meet citizen expectations. Rather than requiring corrective intervention, these aspects should be maintained as operational strengths.

Quality Function Deployment (QFD) Analysis

To translate citizen requirements into concrete technical responses, all 16 SERVQUAL attributes were carried forward into the House of Quality (HOQ) matrix as customer requirements (Voice of Customer). Retaining all attributes ensured that the improvement framework addressed the complete service system rather than focusing strictly on negative gap areas [12], [13].

Sixteen technical responses (Voice of Engineering) were identified based on subdistrict operational conditions and administrative guidelines. These responses included: maintaining service-room cleanliness, improving supporting facilities, balancing staff allocation during peak hours, displaying clear service information, optimizing digital information media, consistently enforcing service SOPs, establishing completion-time standards, accelerating processing workflows, enhancing officer responsiveness, providing complaint facilities, conducting procedural training, offering service-excellence training, improving document accuracy, strengthening officer communication, delivering fair service, and simplifying service workflows.

The relationship between each customer requirement and technical response was evaluated using standard QFD relationship weights: 9 (strong), 3 (moderate), 1 (weak), and 0 (no relationship) [10], [11]. Figure 2 illustrates the completed HOQ matrix structure.

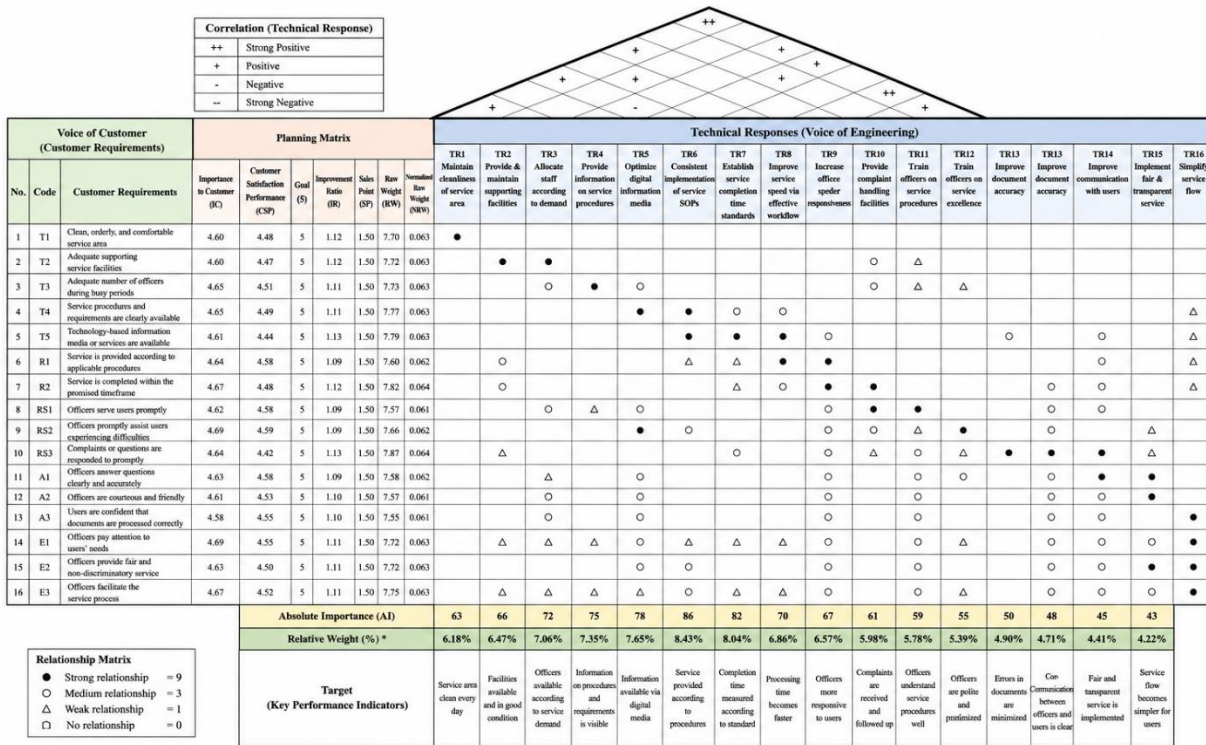


Figure 2. House of Quality (HOQ)

Technical Improvement Priorities

The Technical Matrix yielded Absolute Importance scores across the 16 technical responses: 63, 66, 72, 75, 78, 86, 82, 70, 67, 61, 59, 55, 50, 48, 45, and 43. Relative Weights were calculated by normalizing each score against the total Absolute Importance of 1,020. Table 2 presents the top three technical responses prioritized for implementation.

Table 2. Priority of Technical Responses

Priority	Technical Response	Absolute Importance	Relative Weight
1	Consistently implement service SOPs	86	8.43%
2	Establish service completion time standards	82	8.04%
3	Optimize digital information media	78	7.65%

The top technical priority is consistently implementing service SOPs, which scored an Absolute Importance of 86 (8.43%). Standardizing operational workflows directly addresses attribute T4 (gap = -0.11, clear procedures) and attribute R1 (procedural compliance). Standardized execution minimizes inconsistencies during service delivery and builds public trust [13].

The second priority is establishing service completion-time standards (Absolute Importance = 82; 8.04%). This priority targets attribute R2 (gap = -0.12). Defining and publishing clear processing timeframes for each transaction type provides users with predictable schedules and gives supervisory staff a benchmark for monitoring operational efficiency.

The third priority is optimizing digital information media (Absolute Importance = 78; 7.65%), which addresses attribute T5 (gap = -0.14). Providing service requirements, schedules, and flowcharts via digital platforms (such as an official website or WhatsApp information service) reduces confusion before citizens arrive at the office [19], [20]. However, digital channels should complement not replace in-person guidance to ensure equal accessibility for all demographic groups [8].

Together, these three priorities address procedural clarity, time certainty, and information access. Rather than functioning as isolated measures, they form an integrated strategy for improving administrative service quality.

Methodological Considerations

Several methodological factors should be considered when interpreting these findings. Because this study used a cross-sectional design without pilot implementation, the identified QFD priorities represent strategic directions for operational improvement rather than empirically tested intervention outcomes. Additionally, high baseline

perception scores (mean = 4.52 out of 5.00) create a minor ceiling effect, making gap values sensitive to small score variations. Furthermore, QFD priority rankings depend on assigned relationship weights and planning matrix assumptions. Therefore, the rankings offer a structured prioritization framework rather than an absolute measure of intervention impact.

Implementation Recommendations

Based on the HOQ results, Table 3 outlines practical implementation directions and responsible entities for the top three technical priorities.

Table 3. Implementation Recommendations and Responsible Parties

Priority	Implementation Direction	Responsible Party
Consistent SOPs	Disseminate and display service SOPs, apply them consistently throughout each service process, and conduct periodic monitoring.	Subdistrict leadership and service officers
Time standards	Establish standard completion times for each service type, communicate them to users, and monitor actual completion times.	Subdistrict leadership/service unit
Digital information	Optimize digital media such as WhatsApp, websites, or social media to provide information on requirements, procedures, schedules, and complaints.	Information administrator and service officers

These recommendations provide subdistrict leadership with an actionable roadmap. To ensure lasting improvement, implementation should be followed by routine monitoring, staff orientation, and post-intervention evaluations to track performance improvements over time.

CONCLUSION

This study evaluated public administrative service quality at the Conggeang Subdistrict Office using an integrated SERVQUAL–QFD approach. The SERVQUAL evaluation identified performance deficits in 14 of the 16 service attributes assessed. The largest negative gaps emerged in facility cleanliness and comfort (T1, -0.16), digital information availability (T5, -0.14), fair service delivery (E2, -0.13), and processing time certainty (R2, -0.12). In contrast, officer availability during peak hours (T3, $+0.07$) and initial service promptness (RS1, $+0.02$) exceeded citizen expectations and represent operational strengths that should be sustained.

To address these operational deficits, Quality Function Deployment (QFD) mapped citizen requirements into 16 technical responses within the House of Quality matrix. The Technical Matrix identified three primary improvement priorities: (1) consistent implementation of service SOPs (relative weight: 8.43%), (2) establishment of standard service completion times (8.04%), and (3) optimization of digital information channels (7.65%). Together, these priority responses provide subdistrict leadership with a structured, practical framework to enhance procedural reliability, time transparency, and information accessibility.

Because this research relies on a cross-sectional survey at a single subdistrict office without active intervention testing, the proposed priorities represent strategic implementation guidelines rather than validated intervention outcomes. Future studies should focus on pilot testing these recommendations, evaluating pre- and post-implementation outcomes, conducting multi-site comparative analyses across diverse subdistricts, and examining the sensitivity of QFD weighting assumptions to confirm operational effectiveness.

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