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# Innovating Public Service Quality Assessment: A Contextual Validation of Gronroos's Model in Ethiopia

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**Abstract**

In the domain of public sector service quality research, scholarly attention has traditionally placed greater emphasis on the functional dimensions of service delivery, often at the expense of adequately examining technical quality and image, two elements that play a particularly pivotal role within the governance contexts of emerging economies. This study responds to this limitation by proposing and empirically validating an innovative and context-sensitive adaptation of Grönroos's three-dimensional service quality model. Based on a survey of 384 public service users in Ethiopia, the findings show that functional quality, technical quality, and organizational image are distinct yet interrelated factors that jointly shape citizens' perceptions of overall service quality and satisfaction. The core innovative contribution of the study lies in the contextual validation and extension of the model, offering a more comprehensive analytical framework that expands the traditionally narrow focus on functionality to systematically include governance critical dimensions such as technical competence and institutional reputation. This innovative framework serves as a robust and reliable analytical tool for assessing public services in institutional environments characterized by low trust and limited capacity. Moreover, the study puts forward three strategically oriented managerial innovations for reform: the development of integrated training programs that simultaneously build technical expertise and citizen-oriented service skills; the explicit embedding of governance principles, including equity and transparency, into service delivery processes; and the systematic enhancement of institutional legitimacy through stronger accountability and participatory feedback mechanisms. Together, these insights provide a practical and innovative roadmap for transforming public administration and rebuilding citizen trust across diverse emerging economy contexts.

**Keywords:** service quality dimensions; innovative assessment framework; public sector innovation; Grönroos's model; Ethiopia

## INTRODUCTION

Improving public service quality has recently emerged as a priority in the reform agendas of many developing countries. These countries have confronted long-standing challenges such as puny institutional capacity, poor accountability systems, and public

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discontent with basic service delivery (Ivanyna & Salerno, 2021; MIF, 2018). Ethiopia is a notable example of this situation: despite the implementation of various public sector modernization initiatives and administrative reforms, the quality of services provided by government institutions remains a serious concern (Siyum, 2024; Alemseged & Hailay, 2019; Assefa et al., 2024).

In service quality research, the issue of measurement is a particularly prevalent subject. Given the intangible, process-oriented, and often relational nature of services, especially in the public sector, accurately assessing service quality requires strong conceptual models. However, much of the existing research has relied on the SERVQUAL framework to evaluate service quality. Although SERVQUAL is widely applied across sectors and settings, it continues to face sustained criticism. It has been criticized for placing too much emphasis solely on the service delivery process, i.e., the functional dimension (Bowen et al., 2023; Loeffler & Bovaird, 2020; Wirtz & Lovelock, 2021).

Yet, there is broad recognition in the literature that no clear consensus exists regarding the precise nature or detailed features of service quality dimensions (Osborne et al., 2021). Nonetheless, service quality is widely recognized as a multifaceted construct (Berry et al., 1988; Gronroos, 1990, 1984). In this regard, Ali et al. (2018) argue that relying solely on the functional dimension to explain or measure customer perceptions may distort the concept of service quality and lead to poor predictive validity.

Compared with the American originated SERVQUAL model, European scholars, particularly Grönroos, propose a more relational perspective through a framework that emphasizes three core dimensions, namely technical quality, referring to what is delivered, functional quality, referring to how the service is delivered, and organizational image, understood as institutional reputation. This framework is especially well suited for measuring public service quality in emerging economy contexts such as Ethiopia (Brysland & Curry, 2001; Wisniewski, 2001). Its comprehensive nature effectively captures key characteristics of the public sector, including fairness, accessibility, and transparency, all of which strongly shape citizens' service perceptions (Osborne & Strokosch, 2013). More importantly, the model clearly explains why technical quality and organizational image carry greater significance in such settings. In contexts where the technical capacity of the bureaucracy is relatively underdeveloped, the reliable provision of core public services, that is, technical quality, becomes a primary concern for citizens. At the same time, in environments characterized by low levels of institutional trust, the perceived legitimacy and reputation of public institutions, reflected in organizational image, are not secondary attributes but foundational elements that directly mediate citizen experiences and overall trust in governance. As a result, these dimensions are weighted more heavily in emerging economy analyses than in typical studies conducted in developed country contexts.

The limited use of Grönroos's service quality model is not unique to Ethiopia but reflects a wider global pattern in which SERVQUAL has dominated empirical research for decades (Ladhari, 2009a; Seth et al., 2005). This tendency is particularly evident in public sector studies of developing countries, where institutional contexts necessitate more nuanced frameworks (Fatima et al., 2019; Thokoa et al., 2022). In Ethiopia, this global pattern is particularly clear. A review of recent empirical literature reveals a heavy reliance on SERVQUAL and similarly fragmented approaches, with minimal application of alternatives, such as Grönroos's model (Balcha, 2024; Alamirew, 2024). Dependence on a single, often ill-fitting framework has produced inconsistent results and a weak, theory-driven understanding of public service quality, underscoring the urgent need for methodological re-evaluation. This indicates a notable research gap, as Grönroos's model may provide a more contextually relevant and behaviorally grounded lens for analyzing the dynamics of public service interactions in environments characterized by administrative lethargy, limited resources, and citizen skepticism, a situation very common in developing countries (Osborne et al., 2013). Its emphasis on functional quality, including frontline service providers' behavior, empathy, and communication practices, is consistent with current policy discourses on citizen-centered governance, co-production, and public service motivation (Osborne et al., 2013; Vigoda-Gadot & Meiri, 2008).

Therefore, the purpose of this study is to critically evaluate the feasibility and practicality of Grönroos's service quality model in the public services of developing country context, experimenting with its potential as both a diagnostic tool and a comprehensive reform framework using survey data collected from public service users in Ethiopia.

The study offers several contributions. First, it enriches the literature on public service quality by empirically testing Grönroos's three-factor model within the Ethiopian public sector. In doing so, it advances the conceptualization of functional quality by explicitly integrating governance-relevant dimensions such as equity, transparency, procedural justice, and accessibility, which are often overlooked in existing models. The research also employs rigorous measurement validation

through Partial Least Square-Structural Equation Modeling (PLS-SEM), addressing longstanding concerns about validity and reliability within the study contexts. Furthermore, by modeling organizational image and citizen trust as mediating mechanisms that connect service quality dimensions to policy-relevant outcomes, namely satisfaction, compliance, and trust, it tackles both theoretical and empirical gaps in public administration. Collectively, these contributions not only provide contextually valid measurement tools for Ethiopia and comparable governance settings but also generate actionable insights to guide reforms aimed at improving service effectiveness while reinforcing citizen trust in public institutions of developing countries.

In the next section, Grönroos's model as a theoretical basis for this study, empirical evidence, and the research gap are presented. The following sections explain the research methods and then present the results of the hypothesis tests. The article concludes with a discussion of the implications of the findings.

## Literature Review

### *Grönroos's Service Quality Model*

Grönroos's model articulates a clear distinction between technical quality (the *what*—the outcome, accuracy, or correctness of the service) and functional quality (the *how*—the procedures, behaviors, and interactions through which the service is actually delivered). Moreover, he highlights image—the institutional reputation that continually shapes public perceptions—as a third, independent dimension, framing how citizens and customers evaluate service quality across time (*Grönroos*, 1984). This tripartite conceptualization not only provides a sharper alternative to one-dimensional or overly generalized multi-item scales but also carefully disentangles outcome-based perceptions from process-based perceptions, while simultaneously recognizing organizational reputation as an indispensable interpretive lens through which overall service quality is judged.

Complementary theoretical perspectives strengthen the relevance of this model and clarify why Grönroos's framework is particularly significant in public-sector contexts:

- Service-dominant logic and service encounter theory emphasize that processes (functional quality) often shape user satisfaction, particularly in services where outcomes are largely credence-based or experience-based. Service-dominant logic posits that value is co-created through service-for-service exchange, drawing attention to process and resource integration, not just the outcome (Osborne et al., 2013; Vargo & Lusch, 2004, 2008).
- Organizational justice theory (Colquitt, 2001; Tyler, 1990) highlights procedural legitimacy: citizens evaluate not only substantive outcomes but also whether the procedures were fair, impartial, and provided opportunities for voice, an essential determinant of trust, legitimacy, and compliance in public service delivery.
- Trust and legitimacy theory explains how institutional reputation (image) mediates or moderates the relationship between perceived quality and behavioral outcomes such as compliance, cooperation, and willingness to express voice. Legitimacy in public administration is understood as a socially conferred perception that actions are appropriate within a normative system (Suchman, 1995), and trust is critical in sustaining performance and legitimacy in public governance (Campbell, 2023; Verhoest, 2025).

Taken together, these theories suggest that in public administration, process-related dimensions (such as responsiveness, transparency, and fairness) may be at least as consequential as technical accuracy, and in certain circumstances even more influential, in shaping citizens' downstream outcomes such as satisfaction, trust, and compliance.

### *Measurement Approaches in the Literature*

- *SERVQUAL and its public-sector adaptations:* Since the late 1980s, SERVQUAL (Berry et al., 1988) has dominated empirical research on service quality through its five generic dimensions: tangibles, reliability, responsiveness, assurance, and empathy. Because of its extensive validation across sectors and its relatively straightforward operationalization, many scholars in the public sector have adopted SERVQUAL items. Nevertheless, critics contend that SERVQUAL conflates process and outcome dimensions, and its factor structure does not always exhibit stability across different contexts (Ali et al., 2018; Bowen et al., 2023; Loeffler & Bovaird, 2020; Wirtz & Lovelock, 2021). This recognition has stimulated interest in alternative conceptual frameworks, such as Grönroos's tripartite model or Brady and Cronin's hierarchical approaches.
- *Higher-order and hybrid models:* More recent measurement studies—for instance, Brady and Cronin's (Brady & Cronin, 2001) hierarchical model of perceived service quality—propose conceptualizing service quality as a higher-order construct, with process- and outcome-related

dimensions operating as first-order factors that together form overall perceived quality. This approach is particularly useful when functional quality is decomposed into identifiable sub-dimensions such as responsiveness, empathy, and fairness, which are theoretically distinct yet empirically interrelated. By treating these as interdependent but conceptually differentiated factors, higher-order and hybrid models provide a more integrative and systematic means of capturing the inherent complexity of service quality, especially within public-sector settings where both procedural integrity and substantive outcomes shape citizens' perceptions in nuanced ways (Polyakova & Mirza, 2015).

### *Empirical Studies*

- *Private-sector validations of Grönroos's model:* Empirical research across diverse industries—including hospitality, banking, telecommunications, and retail—has repeatedly affirmed the robustness of Grönroos's distinction between technical and functional quality. Findings consistently indicate that functional quality exerts a comparatively stronger influence on customer satisfaction and loyalty than technical outcomes alone, particularly in service contexts where users actively participate in or directly experience the delivery process (Brady & Cronin, 2001; Kang & James, 2004). Furthermore, institutional image persistently emerges as a crucial antecedent and mediating factor, linking perceptions of both process and outcome quality to broader overall evaluations of service performance (Grönroos, 1984, 1990).
- *Studies in the public sector globally:* Empirical evidence in government and public administration consistently underscores that process-related attributes—such as courtesy, timeliness, transparency, and procedural fairness—are strong predictors of citizen satisfaction and trust. In Scotland, for example, police service quality assessed through SERVQUAL surveys with elected representatives revealed notable gaps in responsiveness and assurance (Parker et al., 2014). Comparable applications in Thailand showed that assurance and tangibles were key predictors of citizen satisfaction with local government services (Boon-itt & Rompho, 2012; Ueasangkomsate, 2019). In China, county-level hospital assessments using SERVQUAL identified empathy and reliability deficiencies as major patient concerns (Qiu et al., 2024), while hospital-based evaluations in Pakistan confirmed responsiveness and assurance as the strongest determinants of patient satisfaction (Siddiqi et al., 2009). Studies in Northern Cyprus extended SERVQUAL to policing, revealing persistent service quality gaps between citizen expectations and perceptions (Iyikal & Celebi, 2016). Beyond SERVQUAL, alternative indices have been applied: Portugal's POLQUAL model in police traffic services merged process and outcome attributes into a composite index (Silva, 2013), whereas Philippine studies integrated SERVQUAL with multi-criteria decision-making methods (AHP–TOPSIS) to pragmatically combine service dimensions in assessing public agencies (Ocampo et al., 2019). Nevertheless, much of this scholarship continues to rely on either adapted SERVQUAL items, customized indices that conflate process and outcomes without theoretical separation, or the treatment of organizational image and trust as independent constructs without systematically testing their mediating roles.
- *Evidence from developing and African contexts:* Research in emerging economies shows that institutional constraints—such as resource scarcity, bureaucratic complexity, and corruption risks—heighten the importance of functional quality dimensions, particularly transparency, accessibility (linguistic and physical), and equity (Elisa, 2020). African studies further confirm that procedural fairness and transparency are key drivers of citizen satisfaction and compliance intentions, especially in open public administration and sustainable development (Adebayo et al., 2025; Waddington et al., 2019). However, many studies rely on measurement tools adapted from Western contexts without adequate cultural adjustment or rigorous tests of measurement invariance (Fatima et al., 2019; Ladhari, 2009a; Thokoa et al., 2022). Cross-national evidence also shows that consumers in developing economies emphasize core service delivery (technical quality), while those in advanced contexts prioritize supplementary services (Knight, 2015). These findings suggest that extending Grönroos's model with governance-oriented dimensions, such as equity and accessibility, may better capture public-sector expectations in emerging contexts like Ethiopia.
- *Evidence from Ethiopia:* Bokan (2017), in a study of the Ethiopian Revenue and Customs Authority, reported negative SERVQUAL gap scores across all dimensions, most notably in assurance, indicating that taxpayers' expectations exceeded their perceptions. Reliability, responsiveness, and assurance were

identified as the strongest predictors of satisfaction. Similarly, Assefa et al. (2024), examining police service delivery in Nekemte Town, found that SERVQUAL dimensions significantly shaped citizen satisfaction. Alamirew (2024), investigating service quality at the University of Gondar's College of Business and Economics, noted comparatively low responsiveness scores, contrasted with higher scores in tangibles and assurance. Finally, Melkamu & Teshome (2023), focusing on trust in the Addis Ababa police, demonstrated that procedural fairness and perceived effectiveness were substantial determinants of citizen trust.

In sum, empirical scholarship on public service quality in Ethiopia consistently underscores weaknesses in service processes (long waiting times, poor communication, language barriers, and perceived unfairness) as well as variability in service outputs (delays, errors). Yet, the majority of these studies continue to depend heavily on SERVQUAL or fragmented indicators, paying limited attention to alternative frameworks (Alamirew, 2024; Balcha, 2024). As a result, few investigations have rigorously tested a theoretically grounded and validated model that explicitly separates technical quality, functional quality (with governance-relevant sub-dimensions), and image, employing robust structural equation modeling (SEM) techniques alongside formal tests of measurement invariance across demographic groups and service types.

### *Research Gap*

Across the reviewed literature, three key points of convergence can be identified: (1) functional or process-related dimensions exert a notably strong influence on citizens' evaluations and behavioral outcomes; (2) image and trust play a key role in shaping or conditioning how these process and outcome signals are interpreted; and (3) measurement matters critically, valid tools must account for cultural, institutional, and service-type differences (Dybro Liengaard, 2024).

From this synthesis, several persistent research gaps become evident: First, in public-sector contexts, especially within emerging economies such as Ethiopia, the application of theoretically grounded frameworks like Grönroos's tripartite model remains limited, as most studies continue to rely on SERVQUAL or ad hoc instruments without rigorous comparative testing. Second, governance-sensitive elements of functional quality, such as equity, transparency, procedural justice, and accessibility, are frequently overlooked or superficially addressed, often subsumed under broader categories such as empathy or responsiveness, leaving unresolved whether these dimensions warrant independent conceptualization. Third, the causal mechanisms linking technical and functional dimensions to organizational image and policy-relevant outcomes, such as citizen satisfaction, compliance, trust, complaint behavior, and perceptions of legitimacy, are underexplored. There is little empirical work systematically testing the mediating or moderating roles of image and trust, despite their acknowledged relevance to public administration. Fourth, concerns about measurement validity persist, as few studies in developing contexts have undertaken robust invariance testing using advanced approaches, such as PLS-SEM with the MICOM procedure (Dybro Liengaard, 2024). Finally, the rapid rise of e-government and hybrid delivery raises critical questions about whether the relative importance of technical versus functional quality shifts in digital contexts, an issue that has attracted scant scholarly attention in emerging economies and remains largely under-researched in Ethiopia.

Hence, to address these shortcomings, the present study systematically extends and empirically validates Grönroos's model by incorporating governance-salient functional dimensions, employing rigorous measurement testing, and examining the mediating role of image in shaping policy-relevant outcomes.

### *Conceptual Framework*

The study adopts Grönroos's (1990) service quality model, which conceptualizes service quality as a multidimensional construct comprising technical quality, functional quality, and organizational image. This framework provides a comprehensive perspective on service encounters, particularly relevant to public-sector contexts in emerging economies such as Ethiopia. The constructs are operationalized as follows:

- *Technical quality (TQ):* Refers to the outcome of the service encounter, the actual substance citizens receive. In the public sector, this includes accuracy, reliability, timeliness, and adequacy of services (e.g., permit issuance, healthcare provision, document processing), answering: Did the citizen receive what was promised?
- *Functional quality (FQ):* Refers to the manner and process of service delivery, encompassing responsiveness, courtesy, empathy, professionalism, communication, and fairness. It addresses: How was the service delivered?
- *Image (IM):* Institutional image shapes citizens' interpretations of both technical and functional quality. It reflects reputation, trustworthiness, and credibility; a positive image can enhance evaluations

even when service is imperfect, while a negative image may amplify dissatisfaction.

- *Overall service quality (OSQ):* Citizens' comprehensive evaluation of service quality combines their experiences of technical and functional quality, filtered through organizational image.
- *Citizen/customer satisfaction (CS):* Overall perceived service quality directly influences satisfaction, reflecting citizens' contentment with both the service encounter and the delivering institution.

This theoretical integration enables a more nuanced and context-sensitive analysis of public service quality, encompassing both transactional and relational dimensions. Figure 1 shows a diagrammatic representation of the conceptual framework. Accordingly, the study hypothesizes and tests the following relationships:

H1: FQ positively affects IM.
H2: TQ positively affects IM.
H3: FQ directly affects OSQ.
H4: TQ directly affects OSQ.
H5: IM positively affects OSQ.
H6: OSQ positively affects CS.
H7: IM mediates the relationship between FQ and OSQ.
H8: IM mediates the relationship between TQ and OSQ.

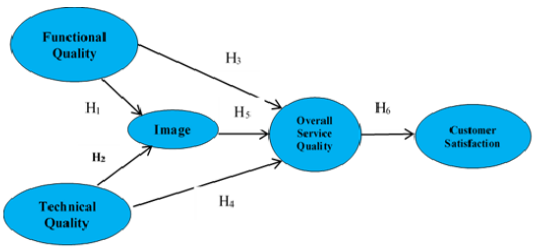


Figure 1. Graphic representation of conceptual model

## METHODS

### Research Design

This study adopted a quantitative research design to assess the relevance and applicability of Grönroos's service quality model in the public sector. More specifically, it employed an explanatory survey design to test the hypothesized relationships among the model's core constructs, including functional quality, technical quality, organizational image, overall service quality, and citizen satisfaction. The research was conducted within the context of Ethiopian public services, and the primary survey data were collected from citizens who had used these services during the study period.

### Research Context and Sampling

The investigation was undertaken in four Ethiopian federal public service organizations. Six undergraduate students were trained for data collection. To reduce sampling errors during the selection process, a multi-stage sampling technique was used. First, federal public service organizations were divided into three sectors: administrative, social, and economic. Then, two organizations were chosen from the economic sector, one from each of the remaining two sectors, with proportional representation in mind. Accordingly, the Ministry of Trade and Regional Integration and the Ethiopian Construction Authority from the economic sector, the Ministry of Labor and Skills Development from the administrative sector, and the Ministry of Women and Social Affairs from the social sector were chosen based on the large number of citizens they served.

The sample size was determined using the recommendations of Adam (2020). Adam states that as the population grows, the sample size decreases and eventually stabilizes at around 380 cases. Consequently, 400 structured surveys were randomly given to customers who received public services from these institutions during the research period (November 2024 – January 2025). A total of 384 valid survey responses were successfully gathered, yielding an exceptionally high response rate of 96%. These fully completed questionnaires served as the primary dataset for the follow-up statistical evaluations conducted in the research.

### Measures

The measurement instrument was developed by adapting Grönroos's (1984, 1990) three-dimensional service quality framework, which distinguishes technical quality, functional quality, and image. Functional quality was conceptualized as a reflective-reflective higher-order construct with sub-dimensions (Core Functional/Process + Equity + Transparency + Procedural Justice + Accessibility). Core items were adapted from established service quality scales (Berry et al., 1988) and Grönroos's (1990) descriptions of functional quality (how services are delivered). Governance-related dimensions, namely equity and procedural justice, were drawn from organizational justice research, particularly Colquitt's (2001) validated justice scale and Tyler's (1990) procedural justice framework. Transparency indicators were adapted from public administration scholarship stressing decision clarity and openness (Heald, 2006), while accessibility items were informed by e-service and public sector service quality studies addressing linguistic, physical, and

economic access (Azizzadeh, 2024; Bouckaert & Van de Walle, 2003).

Technical quality reflects the accuracy, completeness, and timeliness of service outcomes. At present, since no standardized instruments exist for evaluating TQ in the public sector, the research team conducted exploratory interviews with both service users and civil servants to generate relevant measurement items. Drawing on the interview findings and a systematic review of the literature, the authors developed six items to capture this dimension. The construct of image (agency reputation/trust) was operationalized from its theoretical foundation—Grönroos's articulation of the role of image—together with public administration scholarship that links image to citizen trust and governance outcomes (Bouckaert & Van de Walle, 2003). Accordingly, seven measurement items were specifically designed by the authors for this study. Customer satisfaction was operationalized to capture outcome variables including satisfaction, trust, and compliance, with items adapted from the public-sector trust and satisfaction literature (Holroyd et al., 2021). This design not only secures theoretical alignment but also enhances the instrument's applicability within emerging governance contexts.

A five-point Likert scale (1 = strongly disagree, 5 = strongly agree) was used for all measurement items of FQ, TQ, IM and CS, whereas, customers' perceptions of overall service quality were measured using a five-point semantic differential scale, anchored by the polar descriptors 1 = (Very low) and 5 = (Very high). (For a comprehensive breakdown of the measurement items, please refer to Appendix I.)

## Ethical Considerations

All participants gave informed consent. Respondents were fully informed that their information would be kept strictly confidential, and participation was completely voluntary. All data were anonymized during processing and stored securely in line with the social science research ethics.

## RESULTS

The data were analyzed using SmartPLS software (version 4.1.1.4), which applies structural equation modeling (SEM) to test the dimensional configuration of Grönroos's framework and its linkages with overall service quality and citizen satisfaction. In accordance with established SEM procedures (Hair et al., 2017), the analysis proceeded in two stages: (1) assessment of the measurement model, which rigorously tested the psychometric properties of the constructs, including reliability and validity criteria, to ensure robust measurement; and (2) evaluation of the structural model, which utilized bootstrapping with 5,000 iterations to estimate path coefficients and determine their statistical significance within the proposed theoretical framework.

## Measurement Model Assessment

The measurement model was rigorously validated. First, two Amharic language experts reviewed the instrument to ensure the accuracy and appropriateness of the Amharic wording and content. Subsequently, the instrument was pilot tested with 50 respondents to assess its clarity and contextual relevance, and it was then translated and back-translated into Amharic to secure semantic equivalence. Secondly, psychometric validation was carried out using PLS-SEM, following the guidelines of Hair et al. (2017). Indicator reliability was assessed through standardized factor loadings ($\geq 0.70$), while internal consistency reliability was evaluated using Cronbach's alpha and composite reliability (CR), both meeting the $\geq 0.70$ threshold. Convergent validity was confirmed by ensuring that the average variance extracted (AVE) for each construct exceeded 0.50. Discriminant validity was evaluated using the Fornell–Larcker criterion and the heterotrait–monotrait ratio of correlations (HTMT $< 0.85$ as a strict criterion, or $< 0.9$ as a liberal one) (Henseler et al., 2016). Finally, model fit was examined through predictive relevance, assessed via $R^2$ values (where 0.25 →weak, 0.5 → moderate, and 0.75 → substantial) and $f^2$ effect sizes (where 0.02 → small, 0.15 → medium, and 0.35 → large effects), in line with best practices in PLS-SEM (Hair et al., 2017).

Table 1. Standardized factor loadings, reliability indices, and convergent validity metrics

| Construct | Item | # Initial Items | Item Loading | Cronbach Alpha | CR | AVE |
|---|---|---|---|---|---|---|
| Functional Quality **FQ** | CP | 5 | 0.870 | 0.902 | 0.907 | 0.719 |
| | EQ | | 0.800 | | | |
| | TR | | 0.853 | | | |
| | PJ | | 0.873 | | | |
| | AC | | 0.842 | | | |
| Core Process **(CP)** | CP1 | 6 | 0.800 | 0.848 | 0.853 | 0.624 |
| | CP2 | | 0.766 | | | |
| | CP3 | | 0.862 | | | |
| | CP4 | | 0.702 | | | |
| | CP5 | | 0.811 | | | |
| | CP6 | | 0.720 | | | |
| Equity **(EQ)** | EQ1 | 4 | 0.861 | 0.862 | 0.872 | 0.707 |
| | EQ2 | | 0.872 | | | |
| | EQ3 | | 0.808 | | | |
| | EQ4 | | 0.822 | | | |
| Transparency **(TR)** | TR1 | 4 | 0.867 | 0.841 | 0.850 | 0.613 |
| | TR2 | | 0.811 | | | |
| | TR3 | | 0.777 | | | |
| | TR4 | | 0.729 | | | |
| Procedural Justice **(PJ)** | PJ1 | 4 | 0.830 | 0.880 | 0.884 | 0.736 |
| | PJ2 | | 0.886 | | | |
| | PJ3 | | 0.886 | | | |
| | PJ4 | | 0.827 | | | |
| Accessibility **(AC)** | AC1 | 4 | 0.816 | 0.858 | 0.858 | 0.702 |
| | AC2 | | 0.861 | | | |
| | AC3 | | 0.894 | | | |
| | AC4 | | 0.776 | | | |
| Technical Quality **(TQ)** | TQ1 | 6 | 0.813 | 0.851 | 0.855 | 0.575 |
| | TQ2 | | 0.762 | | | |
| | TQ3 | | 0.781 | | | |
| | TQ4 | | 0.824 | | | |
| | TQ6 | | 0.653 | | | |
| Image **(IM)** | IM1 | 7 | 0.831 | 0.883 | 0.883 | 0.682 |
| | IM2 | | 0.825 | | | |
| | IM4 | | 0.880 | | | |
| | IM5 | | 0.810 | | | |
| | IM6 | | 0.779 | | | |
| Customer Satisfaction **(CS)** | CS2 | 6 | 0.872 | 0.896 | 0.897 | 0.763 |
| | CS3 | | 0.862 | | | |
| | CS5 | | 0.871 | | | |
| | CS6 | | 0.889 | | | |

**Note:** CR = composite reliability; AVE = average variance extracted.
***Source**: Own survey data, 2024/25.*

Accordingly, out of the initial 41 first-order items, 36 items satisfied the standardized factor loading criterion (≥ 0.70). Only item TQ6 (loading = 0.653) was retained, as its inclusion did not reduce the reliability and validity of the corresponding principal construct (see Table 1). Table 1 presents the reliability of all constructs, with Cronbach's alpha values ranging from 0.841 to 0.896 and CR values ranging from 0.850 to 0.897, all surpassing the 0.70 benchmark, thereby indicating strong internal consistency.

Table 2. Discriminant validity: Fornell-Larcker criterion for first-order constructs

| Construct | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 |
|---|---|---|---|---|---|---|---|---|---|
| 1. EQ | ***0.841*** | | | | | | | | |
| 2. CP | 0.586 | ***0.790*** | | | | | | | |
| 3. IM | 0.560 | 0.660 | ***0.826*** | | | | | | |
| 4. OSQ | 0.658 | 0.628 | 0.793 | ***1*** | | | | | |
| 5.TR | 0.686 | 0.721 | 0.511 | 0.548 | ***0.783*** | | | | |
| 6. PJ | 0.623 | 0.691 | 0.72 | 0.701 | 0.634 | ***0.858*** | | | |
| 7. CS | 0.397 | 0.449 | 0.482 | 0.512 | 0.359 | 0.633 | ***0.873*** | | |
| 8. TQ | 0.561 | 0.684 | 0.769 | 0.752 | 0.57 | 0.706 | 0.461 | ***0.758*** | |
| 9. AC | 0.523 | 0.686 | 0.674 | 0.632 | 0.635 | 0.702 | 0.446 | 0.649 | ***0.840*** |

***Note**: The values on the diagonal (bold and italicized) represent the square roots of each construct's AVE, whilst the other values indicate correlations between constructs. OSQ represents overall service quality.*
***Source**: Own survey data, 2024/25.*

The table further shows that all latent constructs demonstrated AVE values exceeding the 0.50 threshold, confirming adequate convergent validity. Importantly, this psychometric requirement was also met by the reflective-reflective higher-order construct FQ, as reported in Table 1.

Table 3. Discriminant validity: Heterotrait-Monotrait ratio (HTMT) for first-order constructs

| Construct | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 |
|---|---|---|---|---|---|---|---|---|---|
| 1. EQ | - | | | | | | | | |
| 2. CP | 0.677 | | | | | | | | |
| 3. IM | 0.641 | 0.757 | | | | | | | |
| 4. OSQ | 0.711 | 0.682 | 0.843 | | | | | | |
| 5.TR | 0.783 | 0.840 | 0.583 | 0.591 | | | | | |
| 6. PJ | 0.709 | 0.797 | 0.814 | 0.747 | 0.725 | | | | |
| 7. CS | 0.452 | 0.514 | 0.538 | 0.539 | 0.402 | 0.710 | | | |
| 8. TQ | 0.650 | 0.800 | **0.879*** | 0.808 | 0.666 | 0.817 | 0.523 | | |
| 9. AC | 0.601 | 0.806 | 0.772 | 0.682 | 0.732 | 0.806 | 0.509 | 0.763 | - |

**Note:** *= *HTMT<0.9; for all HTMT values, p<0.001*
***Source**: Own survey data, 2024/25.*

For discriminant validity, the square root of each construct's AVE was greater than its correlations with all other constructs, fulfilling the established criterion (Fornell & Larcker, 1981) for both first-order constructs (Table 2) and the higher-order construct FQ (Table 4). Further, discriminant validity was also tested using the Heterotrait–Monotrait Ratio (HTMT), and the results showed that almost all HTMT ratios were consistently below the conservative threshold of 0.85, thereby robustly establishing discriminant validity across the measurement model, except few, which were still below the liberal threshold of 0.9 (see Table 3 for first-order constructs and Table 4 for the higher-order construct).

Table 4. Heterotrait-Monotrait ratio (HTMT) & Fornell-Larcker criterion for higher-order constructs

| | TQ | IM | OSQ | CS | FQ |
|---|---|---|---|---|---|
| **HTMT Ratio** | | | | | |
| FQ | 0.787 | 0.776 | 0.786 | 0.567 | - |
| **Fornell-Larcker Criterion** | | | | | |
| FQ | 0.753 | 0.745 | 0.752 | 0.548 | **(0.*848*)** |

***Note:*** *The value in parentheses & bold is the square roots of FQ's AVE, whilst the rest of the values indicate FQ's correlations with the rest of the constructs. For all HTMT values, p<0.001.*

***Source****: Own survey data, 2024/25.*

## Structural Model Assessment

The structural model assessment validates both the direct and indirect relationships between the five fundamental latent constructs: FQ, TQ, IM, OSQ, and CS. The findings, as presented in Table 5, reveals significant structural paths (direct and mediation effects) and predictive relevance measures, as discussed below.

The results indicate that both FQ ($\beta = 0.383$, $t = 7.403$, $p < 0.001$) and TQ ($\beta = 0.481$, $t = 9.311$, $p < 0.001$) exerted significant positive influences on Image, strongly supporting hypotheses H1 and H2. The effect sizes ($f^2 = 0.184$ & $0.290$) of FQ and TQ, respectively, suggest that TQ has a stronger influence on image than FQ. This finding implies that when services are delivered professionally (TQ) and with care (FQ), customers are more likely to have a positive impression of the organization.

While FQ and TQ both have statistically significant positive influences on OSQ ($p < 0.001$)—thereby supporting hypotheses H3 and H4—both effects are fairly small in magnitude. The path coefficients ($\beta = 0.268$ for FQ → OSQ and $\beta = 0.230$ for TQ → OSQ) and the respective effect sizes ($f^2 = 0.089$ and $0.060$) reflect a small-to-moderate degree of explanatory power. This would imply that although FQ and TQ are significant OSQ determinants, they do not fully account for differences in citizens' perceptions of service quality.

From Grönroos's (1990) perspective, this result corresponds with his model's acknowledgment of image's adjunct status to technical and functional quality. The moderate effect of FQ and TQ suggests that citizens' overall judgments are likely to be influenced by institutional perceived legitimacy, trust, and fairness—factors aggregated in Grönroos's "image" construct but not explicitly measured with SERVQUAL. Conversely, SERVQUAL's concentration on the perception-expectation difference in service delivery can ignore these legitimacy- and perception-driven factors, perhaps particularly important in public sector settings. The study, therefore, confirms that mediating factors, like institutional trust, citizen involvement, or fairness of procedure perceptions, most likely have an important function within the determination of OSQ, supplementing the technical and functional emphasis placed by Grönroos.

The statistically robust path coefficient between Image and OSQ ($\beta=0.417$, $t=9.744$, $p<0.001$) yields compelling empirical evidence in support of hypothesis H5. This finding substantiates that organizational image functions not merely as an outcome of service quality dimensions, but more importantly as a pivotal mediating mechanism that amplifies customers' holistic evaluations of service quality. Notably, the most substantial structural relationship emerged between OSQ and CS, demonstrating both strong statistical significance ($\beta=0.512$, $t=12.2$, $p<0.001$) and considerable practical relevance ($f^2=0.355$), thereby conclusively validating hypothesis H6. These results theoretically corroborate the fundamental proposition that perceived service quality serves as a critical antecedent of customer satisfaction - a well-established principle consistently documented in seminal service quality frameworks, including the SERVQUAL paradigm and Brady & Cronin's (2001) hierarchical service quality model.

The mediation analysis provides more information on the indirect mechanisms involved. FQ and TQ exhibit significant indirect effects on OSQ via image ($\beta = 0.16$ and $\beta = 0.201$, respectively, $p < 0.001$), supporting hypotheses H7 and H8. However, TQ had a slightly stronger indirect effect than FQ. This considerable but partial mediation suggests that image is a major conduit for shaping service quality perceptions. But it didn't completely replace the direct influence of FQ and TQ on OSQ. The ongoing significance of direct pathways in total effects (FQ → OSQ = 0.428; TQ → OSQ = 0.43) suggests that both direct service experiences and image perceptions contribute to quality perceptions via a dual pathway.

Notably, the aggregate effects analysis reveals FQ and TQ exert virtually equivalent total impacts on OSQ ($\Delta\beta < 0.01$), suggesting these dimensions assume commensurate importance in forming holistic service evaluations when considering both direct and mediated pathways.

Importantly, the proposed model accounts for substantial variance in core endogenous constructs, with explanatory power reaching $R^2 = 0.655$ for organizational image (IM) and $R^2 = 0.705$ for OSQ, thereby exhibiting excellent predictive power.

Table 5. Standardized path coefficients for direct and mediation effects

| Hypothesis | Path | β | SE | t-value | $R^2$ | $f^2$ |
|---|---|---|---|---|---|---|
| **H1** (direct) | FQ -> IM | 0.383 | 0.05 | 7.403* | 0.655 | 0.184 |
| **H2** (direct) | TQ -> IM | 0.481 | 0.05 | 9.311* | | 0.290 |
| **H3** (direct) | FQ >OSQ | 0.268 | 0.04 | 6.097* | 0.705 | 0.089 |
| **H4** (direct) | TQ >OSQ | 0.23 | 0.05 | 4.6* | | 0.060 |
| **H5** (direct) | IM >OSQ | 0.417 | 0.04 | 9.744* | | 0.203 |
| **H6** (direct) | OSQ >CS | 0.512 | 0.42 | 12.2* | 0.262 | 0.355 |
| H7(indirect) | FQ -> IM -> OSQ | 0.16 | 0.03 | 5.542* | | |
| H8(indirect) | TQ -> IM -> OSQ | 0.201 | 0.03 | 4.552* | | |
| Total | FQ->OSQ | 0.428 | 0.05 | 8.434* | | |
| Total | TQ->OSQ | 0.43 | 0.05 | 8.363* | | |

***Note**: *p<0.001*
***Source**: Own survey data, 2024/25.*

These empirical outcomes collectively underscore: (a) the inherently multidimensional structure of service quality, and (b) image's dual role as both consequential outcome and critical mediator in service appraisal mechanisms.

Consequently, our findings advocate for an integrated service delivery framework that simultaneously: (i) optimizes functional and technical service components, (ii) strategically cultivates institutional image capital, and (iii) systematically enhances overall service quality perceptions to maximize customer satisfaction.

## DISCUSSION

The prevailing empirical literature on public service quality remains largely rooted in unidimensional assessments that focus primarily on functionality. This study introduces a paradigm level innovation by systematically applying and empirically validating Grönroos's tripartite framework of functional quality, technical quality, and organizational image within the relatively under explored context of public administration in Sub Saharan Africa. The findings do not simply replicate existing theory but extend it in an innovative manner, presenting a context sensitive model that recalibrates our understanding of the determinants of service quality in governance environments characterized by institutional fragility.

The study's central innovative contribution lies in its empirical identification of differentiated contextual weightings among the model's dimensions. Structural equation modeling confirms that both functional quality and technical quality are significant drivers of overall public service quality and citizen satisfaction, in line with foundational theory. However, a more revealing insight emerges in that technical quality exerts a noticeably stronger influence on organizational image than functional quality. This result is theoretically innovative because it challenges the implicit assumption of dimensional parity derived from Western contexts. It suggests that in settings such as Ethiopia, where technical capacity is often limited and service delivery is inconsistent, citizens' trust in institutions is more fundamentally anchored in the dependable substance of service, namely technical quality, rather than in the interpersonal manner of delivery, or functional quality. This reordering of priorities represents a meaningful contextual innovation in public administration theory, implying that pathways to institutional legitimacy in emerging economies may require a reversed or reconfigured strategic emphasis.

Methodologically, the study also advances innovation by rigorously developing and validating context appropriate measurement scales using PLS SEM, thereby directly addressing a common shortcoming in emerging economy research where instruments are frequently adopted without empirical validation. At the theoretical level, the study innovates further by incorporating governance salient constructs such as equity, transparency, and procedural justice into the operationalization of functional quality. This integration reframes service interactions as direct citizen experiences of governance, a perspective that is especially important in environments marked by low institutional trust.

Moreover, the mediation analysis offers an innovative perspective on the role of organizational image. The findings demonstrate that image is not a peripheral outcome but a central mediating mechanism, a psychological bridge that is carefully constructed through demonstrable technical competence and fair procedures. This positions organizational image as a critical strategic asset in public administration, one that is earned through consistent performance rather than shaped through rhetoric alone.

### Managerial Implications

This investigation empirically demonstrates that service quality in public institutions constitutes a multidimensional phenomenon shaped by the synergistic interplay between technical proficiency and functional delivery. These determinants exert a dual influence—both directly shaping the institutional image and indirectly affecting overall service quality, which ultimately impacts citizen satisfaction through this pivotal mediator. The path analysis elucidates the image's dual role as both an outcome variable and mediating mechanism, thereby underscoring the strategic imperative of integrated communication and institutional branding in public service contexts. Therefore, from a policy perspective, the

findings provide clear and actionable pathways for implementing public service reform that meaningfully depart from conventional technocratic standards. Rather than prioritizing isolated efficiency indicators or compliance, as is common in typical reform models, this study advocates an integrated, citizen perception centered approach that is particularly relevant in contexts such as Ethiopia. The recommendations can be summarized as follows.

First, human capital development should go beyond purely technical training. Unlike standards that focus only on procedural or technical skill enhancement, this model calls for strategic investment in dual competency training systems. Training programs must simultaneously strengthen technical problem-solving capacities and systematically cultivate citizen oriented soft skills, such as empathy and communication, since both are foundational to institutional trust.

Second, optimizing functional quality should be understood as a form of governance practice. This requires moving beyond generic courtesy norms and deliberately embedding governance principles into service process design. In practice, this entails proactively institutionalizing equity, transparency, procedural justice, and accessibility within daily operations, thereby transforming each service encounter into a direct citizen experience of good governance, which is especially critical in low trust environments.

Third, organizational image should be built on performance. In contrast to superficial reputation management or public relations campaigns, sustainable image capital must be constructed through systematic trust rebuilding mechanisms. This includes transparent accountability procedures, real time citizen feedback systems, and value-based leadership. The findings confirm that enduring institutional reputation is a direct outcome of sustained service excellence rather than a substitute for it.

Fourth, process reengineering should aim to enhance service experience. While traditional process improvement efforts often target back-office efficiency, this approach emphasizes improvements at the front line that elevate perceived service quality. Evidence based, incremental changes such as computerized queue management, service tracking technologies, and multilingual signage can substantially improve citizens' perceptions of fairness and responsiveness, generating high impact returns from relatively modest investments.

Fifth, performance measurement systems should be innovated to achieve a balanced perspective. Public organizations should move away from Key Performance Indicators that capture only outputs or compliance and adopt balanced scorecards that integrate technical results, functional and experiential dimensions, and organizational image capital. This innovative measurement system reflects the principle that what is measured is what gets managed. To improve overall service quality, performance metrics must therefore include the citizen perceptions that conventional indicators frequently overlook.

## CONCLUSION

This research moves beyond generic model validation to deliver a nuanced and context specific innovation. It presents an evidence-based framework that advocates a dual pathway reform strategy: prioritizing foundational investments in technical capacity and service reliability, while at the same time embedding governance principles within service processes so that functional interactions are transformed into trust building encounters. This integrated approach offers a more relevant and innovative blueprint for public administration in Africa and in comparable contexts, directly addressing the intertwined challenges of capacity limitations and the erosion of public trust.

In summary, these recommendations collectively argue for a shift away from siloed, efficiency dominated standards toward a multidimensional and integrated performance framework. This framework is specifically designed to address the distinctive challenges of trust building and capacity constraints in emerging public sectors, where citizen satisfaction is inseparably linked to perceptions of both competence and procedural justice.

### Limitations and Future Research Directions

Notwithstanding its substantive contributions, this study presents four methodological constraints that warrant careful consideration. Primarily, the cross-sectional research design employed for collecting perceptual data at a single temporal juncture, while methodologically appropriate for exploratory inquiry, inherently constrains causal interpretation. Subsequent investigations would benefit from adopting longitudinal cohort studies or randomized controlled trials to systematically trace the evolution of service quality perceptions, particularly in post-policy reform contexts.

Secondly, the exclusive focus on federal-tier public service entities and formal sector institutions in Ethiopia may inadvertently marginalize citizen experiences with municipal-level or informal/decentralized service delivery mechanisms. Expanding the institutional typology and geographical sampling framework would yield a more holistic understanding of public service quality determinants.

Third, while Grönroos's theoretical model provides a robust conceptual foundation, its current formulation

may not fully encapsulate the politico-administrative, sociocultural, and bureaucratic idiosyncrasies influencing public service delivery. Future theoretical advancements could productively integrate institutional theory paradigms, public value governance frameworks, and citizen-state trust architectures to enhance the model's contextual fidelity.

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