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Assessment of Complaint Handling Practices and Factors Affecting Customer Satisfaction with Water Service Quality in Ubungo District

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Abstract
Urban water utilities in rapidly growing cities face increasing pressure to provide reliable services while maintaining effective customer engagement. This study assessed complaint handling practices and identified factors affecting customer satisfaction with water service quality in Ubungo District, Dar es Salaam, Tanzania. A mixed-methods approach was adopted, integrating quantitative and qualitative data from multiple sources. Primary data were collected through structured questionnaires administered to 239 DAWASA customers and 141 staff, while secondary data comprised 11,710 complaint records extracted from the DAWASA Customer Relationship Management (CRM) system for the period April 2024 to March 2025. Water quality testing was also conducted at 20 sampling points during wet and dry seasons to verify technical service consistency. Quantitative data were analyzed using descriptive statistics, cross-tabulation, correlation, and multiple regression, while qualitative responses were examined using thematic analysis. Spatial analysis was performed to identify geographic disparities in complaints, response time, and satisfaction. Results showed that 46.9% of customers had lodged complaints in the previous year, but only 32.1% were satisfied with the responses they received. CRM data indicated that although 57.8% of complaints were addressed within one week, 33.98% experienced prolonged response times of 6–55 days. Multiple regression analysis revealed that responsiveness was the strongest predictor of customer satisfaction ($\beta = 0.464$), followed by service reliability ($\beta = 0.344$) and water quality ($\beta = 0.127$). Overall satisfaction levels were low, with only 29.3% of customers reporting satisfaction compared to 39.3% who were dissatisfied. Qualitative findings highlighted delayed response, poor follow-up, communication gaps, aging infrastructure, and limited operational resources as major sources of dissatisfaction. Spatial analysis further revealed significant inequalities, with peripheral areas experiencing longer response times and lower satisfaction levels. Water quality parameters met national standards, indicating that customer dissatisfaction was driven more by service reliability and institutional responsiveness than by water safety. The findings demonstrate that improving complaint response efficiency, decentralizing technical teams, strengthening communication systems, and prioritizing infrastructure upgrades in high-burden areas are critical for enhancing customer satisfaction. The study provides evidence to support customer-centered management and operational reforms for urban water utilities and contributes to efforts toward achieving equitable and sustainable water services aligned with Sustainable Development Goal 6.
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Background of the Study

Access to safe and reliable water is a fundamental human right and a critical requirement for public health, economic productivity, and sustainable urban development (UNICEF, 2016). Despite global efforts to improve water access, approximately 600 million people worldwide still lack safely managed drinking water services, with the burden disproportionately affecting rapidly growing urban areas in developing countries (WHO/UNICEF Joint Monitoring Programme, 2017). Cities such as Dar es Salaam in Tanzania face significant challenges due to rapid urbanization, aging infrastructure, population pressure, and socio-economic inequalities, all of which strain existing water supply systems and compromise service quality.

Across Sub-Saharan Africa, similar challenges persist in urban water service delivery. Studies have shown that inconsistent water supply, poor infrastructure maintenance, and weak institutional capacity contribute to low customer satisfaction and increased reliance on unsafe alternative water sources (Kombe et al., 2015; Chitonge, 2011). In Ghana, Twum and Abubakari (2020) reported that rapid population growth combined with institutional inefficiencies has widened inequalities in access to reliable water services. These findings suggest that the challenges experienced in Tanzania reflect broader regional systemic issues that require improvements not only in infrastructure but also in governance and service management.

In response to these challenges, the Government of Tanzania has aligned national water sector reforms with global commitments such as the Sustainable Development Goals (SDG 6), which aim to ensure universal and equitable access to safe and affordable drinking water by 2030 (UN, 2015). National strategies, including the National Water Policy (NAWAPO) and the Water Sector Development Programme (2006–2025), target expanded coverage and improved service quality, with ambitious goals of achieving 95% urban water access (NAWAPO, 2025). However, despite these efforts, Dar es Salaam continues to experience frequent service interruptions, high levels of non-revenue water, infrastructure deterioration, and unequal distribution of water services (World Bank, 2019; Kabote & John, 2017).

Beyond technical constraints, the quality of interaction between service providers and customers plays a crucial role in shaping user satisfaction. Service quality literature emphasizes reliability, responsiveness, communication, and customer engagement as key determinants of satisfaction (Han et al., 2021). In the water sector, effective complaint management systems are particularly important because they provide a mechanism for customers to report service failures and for providers to demonstrate accountability and responsiveness. Efficient complaint handling enhances trust, improves customer experience, and contributes to institutional performance.

However, evidence from Dar es Salaam highlights ongoing challenges in complaint management and customer responsiveness. Records from the Dar es Salaam Water Supply and Sanitation Authority (DAWASA) show a high volume of customer complaints in Ubungo District from 2019 to 2024, with an increasing number of unresolved cases. Common complaints include pipeline bursts, faulty meters, billing errors, inconsistent supply, and delays in response times, with average response times ranging from 3 to 7 days. Although digital complaint platforms have been introduced, institutional response remains limited, revealing gaps in communication, operational efficiency, and customer service.

Furthermore, most existing studies in Tanzania have primarily focused on technical aspects of water provision, such as infrastructure development and treatment technologies, while giving limited attention to institutional, socio-economic, and governance factors that influence customer satisfaction and service perceptions (Ngonyani, 2019; Putu, 2021). There is therefore a need for comprehensive research that examines both the effectiveness of complaint handling mechanisms and the broader factors that inhibit customer satisfaction with water service quality.

This study, seeks to address this gap by evaluating how water service providers manage customer complaints and identifying the key barriers to customer satisfaction in a rapidly urbanizing context. The findings will contribute to evidence-based policy and operational improvements, strengthen accountability in water service provision, and support national and global efforts toward achieving sustainable and equitable urban water services.

Literature Review

Access to safe, reliable, and affordable water is essential for urban service delivery and a key element in achieving Sustainable Development Goal 6 (WHO/UNICEF, 2021). However, in many developing cities, including Dar es Salaam, rapid urban growth, aging infrastructure, high levels of non-revenue water, and institutional constraints continue to hinder service quality and customer satisfaction (World Bank, 2019; Kabote & John, 2017). The literature consistently shows that customer satisfaction in the water sector depends not only on technical performance but also on how service providers engage with customers, especially through complaint handling and responsiveness (Ong et al., 2023; Mengiste et al., 2020).

Water service quality is commonly assessed using dimensions such as reliability, availability, adequacy, safety, and responsiveness (Ramya et al., 2019; WHO, 2021). Reliability, which refers to continuity of supply and adequate pressure, has been identified as one of the strongest determinants of customer satisfaction. Studies in Tanzania and other African countries show that frequent supply interruptions, delayed maintenance, and poor infrastructure significantly reduce customer trust and satisfaction (Kabote & John, 2017; Chege, 2021). In Ubungo District and other urban areas, aging infrastructure and inadequate investment have further constrained service reliability (URT, 2020).

Beyond physical infrastructure, responsiveness to customer complaints has emerged as a critical dimension of service quality. Effective complaint management systems allow utilities to identify service failures, respond promptly, and maintain accountability. Empirical studies indicate that timely complaint resolution and clear communication significantly improve customer satisfaction and institutional trust (Mengiste et al., 2020; Balinado et al., 2021). Conversely, delayed responses, bureaucratic procedures, and limited institutional capacity weaken customer confidence and negatively affect service perceptions (World Bank, 2019). Although utilities such as DAWASA have introduced digital complaint platforms, resource constraints and operational inefficiencies continue to limit their effectiveness.

The SERVQUAL model provides a useful framework for understanding customer perceptions of service quality across five dimensions: reliability, responsiveness, assurance, empathy, and tangibles (Parasuraman et al., 2017). In the water sector, responsiveness and reliability are the most influential factors affecting satisfaction, especially when service interruptions are common and customer-provider interactions are key to service recovery (Alemayehu et al., 2016; Ong et al., 2023). The Expectancy–Disconfirmation Theory further explains that customer satisfaction hinges on the gap between expected and perceived service performance; when complaint handling is slow or ineffective, negative disconfirmation happens, resulting in dissatisfaction (Pizam & Milman, 1993). Institutional and governance factors also significantly influence service quality outcomes. Institutional Resource-Based perspectives stress that organizational capacity, resource distribution, accountability mechanisms, and regulatory effectiveness determine utilities' ability to provide reliable services and meet customer needs (Kishiwa et al., 2018). Weak governance, limited funding, staff shortages, and poor coordination are identified as major barriers to effective urban water service delivery in Tanzania and other Sub-Saharan African countries (Kabote & John, 2017; World Bank, 2019).

In addition, environmental and socio-economic factors further complicate water service provision. Rapid population growth, informal settlements, groundwater over-extraction, and climate variability increase pressure on existing systems and contribute to service interruptions (Kombe et al., 2015; Augustus et al., 2023). High levels of non-revenue water—often exceeding 40%—reduce operational efficiency and financial sustainability, limiting utilities' capacity to invest in infrastructure and customer service improvements (World Bank, 2019). Social factors such as affordability, accessibility, and community engagement have also been shown to influence customer satisfaction and service acceptance (Teshome et al., 2020).

Despite extensive literature on infrastructure performance and water production capacity, relatively little attention has been given to customer-focused aspects, such as complaint-handling practices, communication effectiveness, and user experience at the district level. Most studies in Tanzania focus on national or regional trends and technical improvements, with less attention to local institutional dynamics and customer-provider interactions (Ngonyani, 2019; Putu, 2021). Additionally, the link between complaint management systems and broader systemic challenges—such as institutional capacity, governance efficiency, and socio-economic factors—remains underexplored, especially in rapidly urbanizing districts like Ubungo.

This study addresses this gap by integrating technical and non-technical perspectives to examine how complaint handling practices and systemic factors jointly influence customer satisfaction with water service quality. By focusing on Ubungo District, the research provides context-specific evidence on the effectiveness of complaint management systems, the institutional and operational barriers affecting service delivery, and the key determinants of customer satisfaction. The findings are expected to contribute to improved accountability, better customer-centered service management, and evidence-based policy interventions for urban water utilities.

Materials and Methods

Research Design

This study employed a mixed-methods research design integrating quantitative and qualitative approaches to generate comprehensive evidence on water service quality, complaint-handling practices, and customer satisfaction in Ubungo District. Quantitative data were collected through structured questionnaires administered to DAWASA customers and staff, and through the extraction of numerical and categorical variables from DAWASA's Customer Relationship Management (CRM) database, including complaint types, geographic locations, and response or closure timelines. Qualitative data were obtained from open-ended questionnaire responses and narrative fields within the CRM system (such as complaint descriptions, root causes, and actions taken), supplemented by staff explanations of operational and institutional constraints. The use of multiple sources enabled triangulation, strengthening the validity, depth, and reliability of the findings.

Study site

The study was conducted in Ubungo District, one of the key districts of Dar es Salaam Region, Tanzania (approximately latitude 6°7′S and longitude 39°2′E). According to the 2022 National Census, Ubungo has an estimated population of 1,086,912 and is among the most densely populated districts in the region. Settlement patterns vary substantially, with high-density wards such as Sinza, Manzese, Kimara, and Ubungo Msewe, and peri-urban wards including Kwembe and Makuburi exhibiting lower densities. These differences create uneven demand and pressure on water distribution infrastructure. Water services in Ubungo are mainly provided by DAWASA, with supply sourced from the Upper and Lower Ruvu treatment plants through the transmission and distribution network. Despite these supply systems, the district experiences persistent operational challenges, including aging pipelines, frequent leakages, pressure losses—especially in elevated zones such as parts of Kimara, Kwembe, and Saranga—limited storage capacity, and high non-revenue water. These constraints contribute to intermittent service and compel some communities, particularly in peri-urban areas, to rely on alternatives such as boreholes, shallow wells, and private vendors, making Ubungo an appropriate setting for assessing complaint handling and customer satisfaction with water service quality.

Target Population

The target population comprised three groups within Ubungo District: DAWASA water customers (residential, commercial, and institutional users) including those connected through household meters, those using shared or public standpipes, and those experiencing intermittent supply; commercial and institutional consumers such as small businesses, schools, health facilities, and public offices whose operations are highly sensitive to service interruptions and billing issues; and DAWASA staff involved in production, distribution, maintenance, customer service, and complaint management, including technicians, plumbers, engineers, and operations personnel. Including both service users and providers enabled a more complete assessment of service performance and the operational realities influencing complaint resolution and satisfaction outcomes.

Sample size and sampling frame

A total of 380 valid respondents were included in the analysis, comprising 239 customers and 141 DAWASA staff. The customer sample was drawn from approximately 193,701 active customer connections within Ubungo District. The sample size was initially determined using Slovin's formula at a 95% confidence level and an approximate 5% margin of error (Solvin, 2003). To account for non-response and incomplete submissions, the sample was slightly increased beyond the minimum estimate, and after data cleaning, 380 questionnaires were retained as valid for analysis.

Sampling was conducted using two approaches. For customers, stratified random sampling was used by categorizing respondents into domestic (residential), commercial, and institutional connection types. Within each stratum, respondents were drawn from multiple wards and service zones—such as Kimara, Mbezi, Manzese, Ubungo, Kibamba, and Makuburi—to capture variation in water service experiences associated with pressure zones, network age, and settlement characteristics. For DAWASA staff, purposive sampling was applied to include personnel whose roles directly relate to service delivery and complaint handling, including staff in engineering, operations, maintenance, zonal management, and customer service. This ensured that respondents had practical knowledge of infrastructure conditions, complaint procedures, and operational constraints affecting response and resolution.

Data Collection Methods

Data were collected from three main sources: questionnaires, CRM complaint records, and water quality testing. Two structured questionnaires served as primary data collection tools. The customer questionnaire evaluated service experience and satisfaction across key areas, including supply consistency, pressure adequacy, perceived water quality, complaint reporting procedures, response effectiveness, and overall satisfaction. It featured Likert-scale questions, Yes/No queries, frequency-based responses, and open-ended questions for additional insights. The staff questionnaire gathered institutional perspectives on system performance and challenges, such as infrastructure condition, frequency and causes of service disruptions, complaint-handling processes, coordination issues, and staffing or resource limitations. The questionnaires were administered through a hybrid approach—online forms shared via community and staff WhatsApp groups, and field-based surveys in areas with limited digital access. A total of 420 questionnaires were distributed (260 to customers and 160 to staff). Of these, 392 were returned, resulting in a response rate of 93.3%. After cleaning and removing incomplete or invalid responses, 380 questionnaires were retained (239 customers and 141 staff).

In addition to questionnaire data, verified complaint records were extracted from DAWASA's CRM system for the period April 2024 to March 2025, yielding 11,710 complaint entries for Ubungo District. Variables extracted included complaint category, location, reporting channel, response time, resolution status, root cause, and action taken. These records provided objective evidence of responsiveness, complaint patterns, and recurring service-delivery failures, thereby strengthening the assessment of complaint-handling practices.

Water quality testing was performed to verify service consistency. Twenty sampling points were selected across key service zones, including Ubungo, Kimara, Mbezi, and peripheral areas such as Manzese, Mabibo, and Kwembe. Sampling locations were chosen based on complaint history, customer density, and network position (upstream, midstream, downstream). To account for seasonal variation, samples were collected during the wet season (March 2025) and the dry season (June 2025). The parameters tested included turbidity, pH, conductivity, free residual chlorine, aluminum, and bacteriological indicators. All samples met Tanzania Bureau of Standards for drinking water (TZS 789:2018), with E. coli and total coliform counts at 0 per 100 ml across all samples.

Data Analysis

Quantitative data from questionnaires and CRM records were cleaned and analyzed using SPSS Version 26 and Microsoft Excel. Descriptive statistics (frequencies, percentages, and means) were used to summarize respondent demographics, service experience indicators, satisfaction levels, complaint types, and response time distributions. Cross-tabulations were conducted to compare service experiences and satisfaction across demographic and service-related groups, including gender, connection type, and location. Correlation analysis was applied to examine the relationships between key service quality dimensions—such as reliability, water quality, and responsiveness—and customer satisfaction. Multiple regression analysis using Ordinary Least Squares (OLS) was used to identify predictors of customer satisfaction and to estimate the relative influence of service quality dimensions, with particular focus on reliability and responsiveness.

CRM complaint records were further analyzed using categorical frequency analysis to identify the main root causes of complaints, trend analysis to examine monthly changes in complaint volumes during the April 2024–March 2025 period, response-time analysis with grouped response categories (same-day, 1–4 days, longer delays), including the identification of extremes, and root cause–action mapping to evaluate how DAWASA typically responds to the most common complaint categories. Qualitative data from open-ended questionnaire responses and CRM narratives were analyzed using thematic analysis guided by Braun and Clarke's six-step framework, which helped identify recurring themes such as perceived neglect, delayed follow-ups, and communication gaps. Finally, spatial analysis was conducted to examine geographic clustering of complaints, response performance, and customer satisfaction. Complaint locations and survey respondent locations were aligned using ward and locality fields and mapped in GIS to visualize complaint hotspots, the spatial distribution of key service challenges, variation in response times, and spatial patterns in satisfaction, supporting the identification of priority areas for infrastructure improvements and customer engagement.

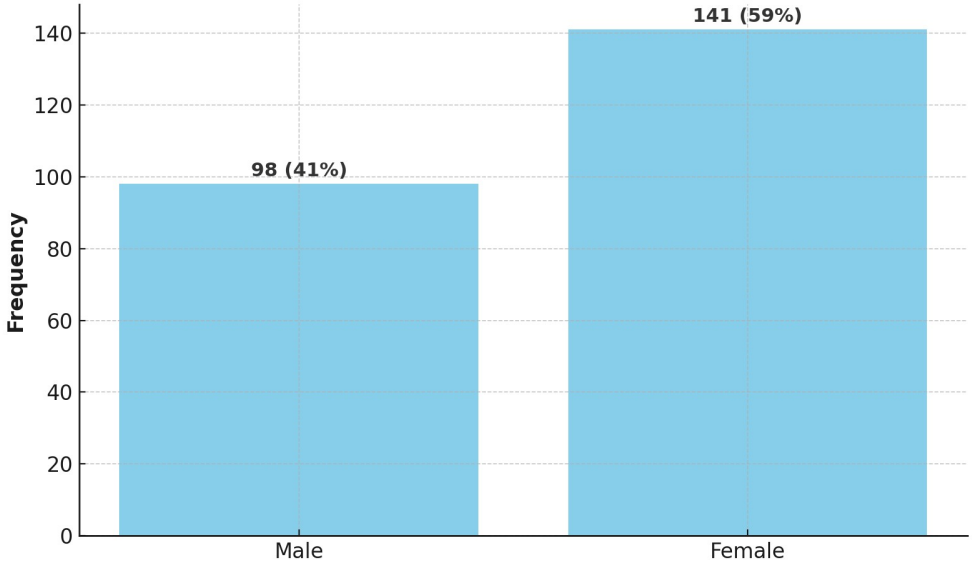
Ethical Considerations

Ethical principles were observed throughout the study. Participation was voluntary and based on informed consent. Respondents were assured of confidentiality and anonymity, and no personally identifying information was included in analysis outputs or reporting. Access to DAWASA CRM complaint data was strictly limited to research purposes, and the dataset was handled securely to protect privacy and institutional integrity.

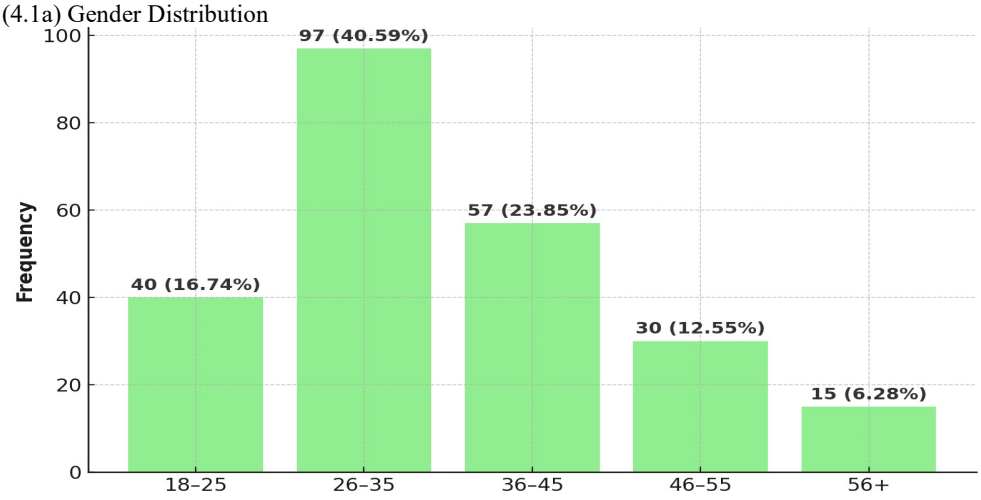
Results and Discussion

Demographic Profile of Respondents

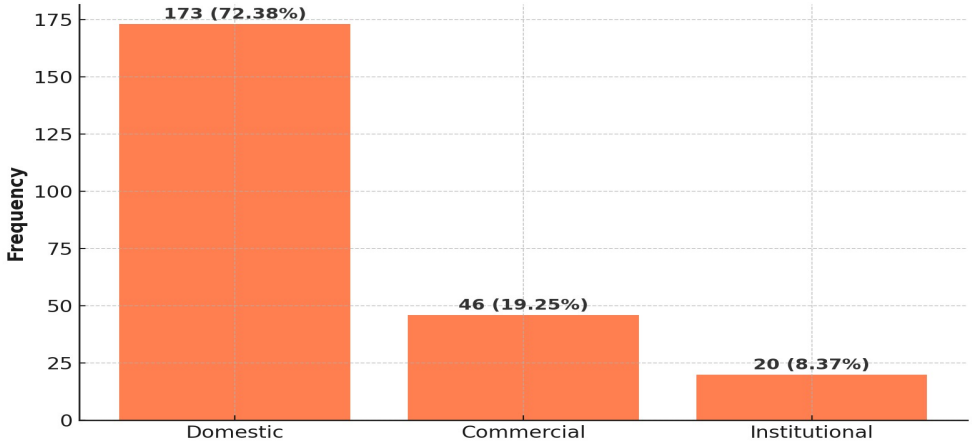
The demographic profile of respondents provides a breakdown of the 380 respondents who participated in the study, comprising 239 Ubungo residents and 141 DAWASA staff. The analysis can present descriptive statistics on gender, age group, and type of water connection for customers or staff, by department.



(4.1a) Gender Distribution



(4.1b) Age Distribution



(4.1c) Type of Water Connections

Figure 1: Demographic Graphs

The data in Figure 1 indicate that the majority of customer respondents were female (59.0%), highlighting the critical role women play in household water management. The major part of customers (40.59%) was people aged 26 to 35, a group of young, economically active people engaged in domestic activities, accounting for 72.38%, aligning with the study's focus on household-level experiences. The presented demographics help to understand the end-users' views on the quality of the provided service and their level of satisfaction in Ubungo District.

Responsiveness to Customer Complaints

Among the 239 customers that were surveyed, 112 (46.9%) were reported to have filed a complaint with DAWASA in the last 12 months.

Table 1: Incidence of Customer Complaints (n = 239)

Complaint Status	Frequency	Percentage (%)
Lodged a Complaint	112	46.9
Did Not Lodge Complaint	127	53.1

Source: Authors' Compilation (2025).

Almost half 46.9% of customers who were surveyed have made a complaint at least once in the last year, this showing that there is a significant level of interaction with DAWASA's feedback channels.

Table2: Channels Used for Submitting Complaints (n = 112)

Complaint Channel	Frequency	Percentage (%)
Phone Call	64	57.1
Physical Visit	32	28.6
SMS / Online Platform	16	14.3

Source: Authors' Compilation (2025).

Phone calls were the most favored means for reporting service issues, accounting for more than 50% of those who have voiced their complaints. It is indicative of the sustained faith in the conventional, immediate methods of communication, which might be attributable to the fact that people are not sufficiently informed about or cannot easily access digital channels.

Table 3: Satisfaction with Complaint Response (n = 112)

Satisfaction Level	Frequency	Percentage (%)
Satisfied	36	32.1
Not Satisfied	76	67.9

Source: Authors' Compilation (2025).
Just 32.1% of customers who made a complaint were happy with the way their cases were managed, thus, the company received most of the complaints about response and follow-up.

Table 4: CRM Complaint Summary (April 2024 –March 2025)

Response Time Group	Number of Complaints	Percentage (%)
Same-day (0 days)	1873	15.99
Short (1-4 days)	5007	42.76
Average (~5 days)	851	7.27
Long (6-55 days)	3979	33.98
Total	**11710**	**100**

Source: Authors' Compilation (2025).
Customer Relationship Management records have documented the repeated delays and area-specific problems with the service. More than half of the complaints (57.75%) were dealt with within the week, however, almost 34% of those complaints were left for a considerably long time and thus, the dissatisfaction of the customers might have deepened leading to the public trust in the responsiveness of the service was eroded.

Qualitative feedback from both customer surveys and CRM narratives showed that the main themes revolved around DAWASA's responsiveness to customer complaints. The thematic analysis of the open-ended responses recognized three significant issues, the first one being the delays in response, then poor follow-up, and lastly, negative staff attitudes. In fact, they unearth the emotional and relational sides of the matters which the digital study cannot solely disclose, besides plunging further into the problems indicated by the quantitative data.

Theme 1: Delays in Response
Many customers were voicing their dissatisfaction with the long waiting times that were happening before any kind of action was taken to deal with their problems. They also asserted that such delays were particularly frequent in areas such as Goba and Kibamba. One of the respondents remarked: "Nilitoa taarifa tangu wiki iliyopita lakini mpaka leo hakuna aliyefika kutatua tatizo." (I reported the issue last week, but no one has come to fix it yet.). These waiting times correspond with the data from the CRM which shows that 33.98% of complaints took from 6 up to 55 days to get a response.

Theme 2: Inadequate Follow-Up
The ban on regularly visiting the follow-up after the first call or promised visit was the most common complaint of the customers, and most of the customers pointed out that even though their complaint was acknowledged, no action was taken: "Walipokea malalamiko, wakasema watafika, lakini hawakurudi tena."(They acknowledged the complaint, said they would come, but never returned). This behavior leaves people feeling insecure and undermines their trust in the effectiveness of DAWASA's response system.

Theme 3: Staff Attitudes
Besides, customers can also bring up the issue of staff attitudes when talking about DAWASA, some employee's unprofessionalism and lack of empathy were mentioned by customers: "Mfanyakazi wenu alinijibu kwa hasira, kana kwamba nimewasumbua." (The staff responded angrily, as if I was bothering them) If the technical issue is eventually resolved, negative interactions of this type can still greatly affect the perceived quality of service.

The study on customer complaints and the feedback given by customers through qualitative methods reveal major deficiencies in DAWASA's ability to react which is the central component of the SERVQUAL model. Although 57.75% of the complaints were taken care of within a week, 33.98% of them had to wait for a very long time, even up to 55 days, thus, the overall customer satisfaction was substantially negatively affected.

Qualitative responses pinpointed the lack of follow-up, unreturned calls, and staff indifference, particularly in hard-to-reach areas such as Goba and Kibamba, as the most frequently mentioned issues. These challenges reflect a systemic gap between what customers expect and how the service performs.

From the standpoint of Institutional Resource-Based Theory (IRBT), these delays indicate that the organization is facing internal constraints, including limited staff capacity, poor coordination between departments, and over-centralization of the technical response units. These situations align with the findings of Mengiste et al. (2020). According to them, poor internal processes in utility agencies were a major cause of public dissatisfaction (Teshome et al., 2020). To address these issues, DAWASA should be improve decentralized response structures, invest on CRM optimization, and enhance staff accountability to align with modern standards of public service delivery.

Factors Inhibiting Customer Satisfaction (Objective Three)

The statistical results helped identify the factors that significantly contribute to customer dissatisfaction with water service in Ubungo District. The data analysis focused on cross-tabulation, regression modeling, and the assessment of correlations between satisfaction levels and respondent characteristics.

Table 5 Shows the Satisfaction Levels Disaggregated by Gender.

Gender	Very Dissatisfied	Dissatisfied	Neutral	Satisfied	Very Satisfied
Female	6.38	16.31	43.26	28.37	5.67
Male	2.04	27.55	38.78	26.53	5.1

Source: Authors' Compilation (2025).

These results indicating that, while more females reported being *"neutral,"* males were more likely to be *"dissatisfied,"* and suggesting gender-based differences on service experience or expectations.

Table6: Connection Type vs Reported Water Shortages (%)

Connection Type	Reported Shortages
Domestic	77.42
Commercial	84.62
Institutional	96.3

Source: Authors' Compilation (2025).

The results show that 96.30% of institutional users, 84.62% of commercial users, and 77.42% of domestic users reported experiencing water shortages, which suggests that water shortages are widespread across all categories, with institutional users being the most affected. This may be due to the higher volume demands or reliance on scheduled supplies.

To assess which service dimensions most influence satisfaction, a regression model was applied with reliability**,** responsiveness**,** and water quality as independent variables. The multiple regression analysis conducted on this study examined the influence of three core service quality dimensions responsiveness to complaints, reliability of water supply, and water quality on overall customer satisfaction, as illustrated in Figure 4.2.

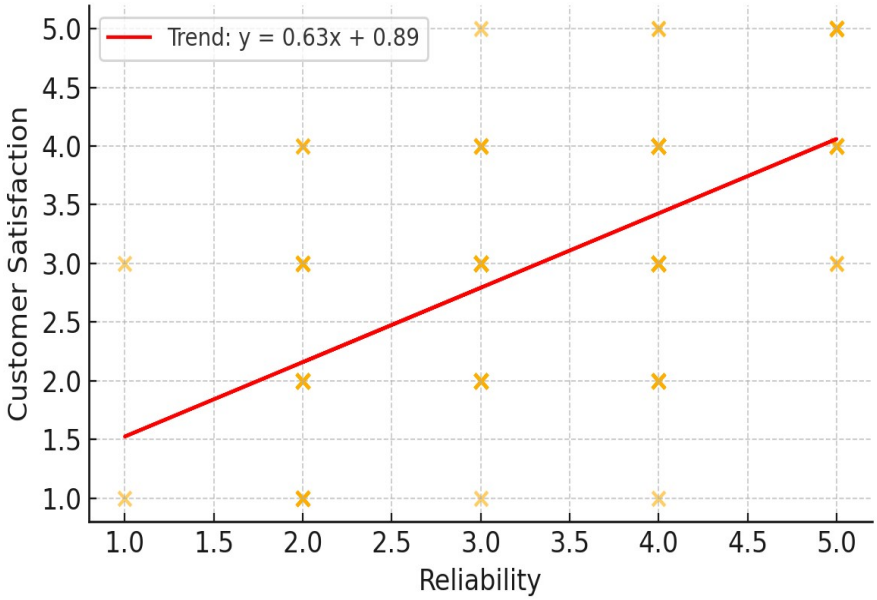


Figure 2a Reliability vs Customer Satisfaction

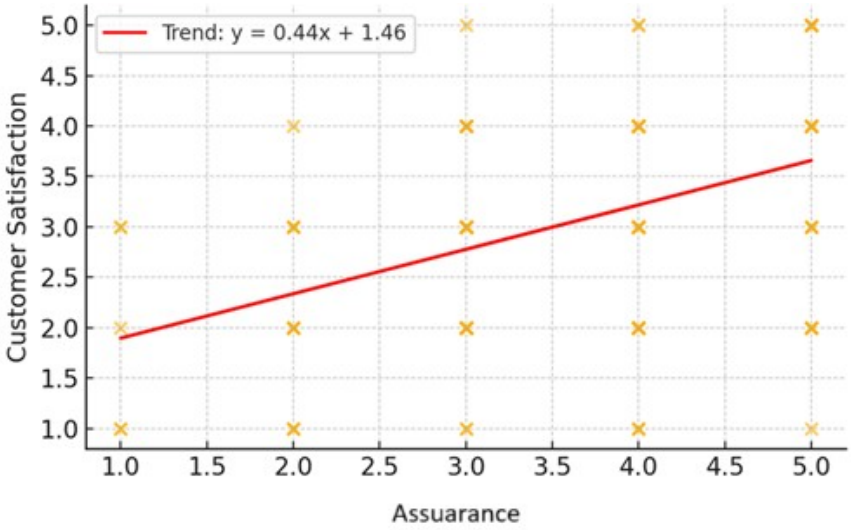


Figure 2b Assurance vs Customer Satisfaction

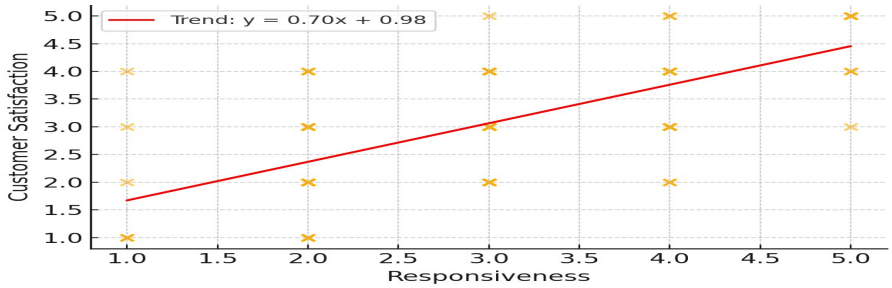


Figure 2c Responsiveness vs Customer Satisfaction

The standardized beta coefficients indicated that responsiveness has the strongest positive impact (β = 0.464), followed by reliability (β = 0.344), and water quality (β = 0.127). The findings here indicate that people living in Ubungo District are primarily in need of having their complaints answered quickly and effectively. Hence,

communication and issue resolution become the most important factors for customers in this area. The fresh multiple regression model may be outlined as:
ZSatisfaction= β1. Zresponsiveness + β2. Zreliability + β3……...Equation (3)

Where:

- Z means the variables are standardized (z-scores),
- β1=0.70, β2=0.63, and β3=0.44
- ε is the error term (unexplained variation).

Thematic analysis of open-ended responses from DAWASA customers and staff identified three dominant themes that constitute rich contextual factors leading to customer dissatisfaction.

Theme 1: Infrastructure and Leakage

The customers were many and quite vocal about persistent leaks, broken pipes, and low pressure, especially in the areas of Kimara, Goba, and Saranga. The words "leakages," "pipe burst," and "low pressure" were used in the submitted grievances more often than not, reflecting the aged and malfunctioning infrastructure network. One example of a respondent pointing out that, "Water is leaking every day close to our house, but no one even comes after we have reported it." These reports mostly point out the inefficient way in which DAWASA is operating and, therefore, the urgency of the systematic upgrading and maintenance to supply the service as it was initially planned.

Theme 2: Communication Gaps

Most of the respondents disclosed that they become confused with their billing statements, require information on how to make complaints, and verify service schedules. One of the quoted complaints reads: "We don't understand our bills," and another one, "They cut water without any warning." These statements show a lack of customer education and poorly implemented communication. The proposals, which were highly appreciated by the respondents, revolve around better use of SMS to send messages, conducting activities in the open to educate the people, and creating platforms for easy complaint lodging. The sentiments being expressed here is that there is little interaction between the utility provider and the users, which are usually followed by frustration and distrust.

Theme 3: Governance and Resource Constraints

Along with insinuations of the DAWASA's depressive institutional performance, the respondents mentioned a dwindling number of employees, a lack of energy, and a scarcity in the district and remote areas. Many complaints have pointed out frontline staff as less empowered and equipped with few resources to swiftly tackle difficulties, as the comments illustrate, e.g., “Technicians say they are out of tools and transport.” Such obstacles reflect deeply seated governance and resource bottlenecks that could be causing bureaucratic delays and misaligned operational priorities.

These investigations are able to demonstrate the fact that people living in users of water supply services in Ubungo District are more in favor of DAWASA's ability to provide timely and effective responses than that of maintaining a continuous water supply or even water quality. The findings presented here align well with the SERVQUAL framework, which suggests that responsiveness and reliability are the two main factors that determine the quality of services rendered by utility sectors.

Moreover, one result is consistent with the Institutional Resource-Based Theory (IRBT), which suggests that internal factors such as slow follow-up, weak coordination, and under-resourced teams can negatively affect organizational performance (Joseph et al., 2019). Some of the qualitative responses addressed issues such as delayed action and poor communication, indicating governance-related gaps (Leticia, 2022).

SERVQUAL Model

The SERVQUAL model was used to measure the gap between customers' expectations and their actual experiences of water service in the Ubungo District. The model measures the quality of service in five different categories. Nevertheless, the study only focused on three main aspects i.e. Reliability, Responsiveness, and Assurance, because of their close connection to DAWASA's activities and the nature of the data collected. Customer expectations were assumed to be consistently high (scored at 5), representing the best possible standard for service provision (Kassa et al., 2017). Perceptions were captured through survey responses and rated on a 5-point Likert scale. The SERVQUAL gap score was then calculated using
Gap Score =Perception Score-Expectation Score……...Equation (4)

As shown in table 8.

Table 8: SERVQUAL Gap Scores by Dimension

SERVQUAL Dimension	Expectation Score	Mean Perception Score	Mean Gap Score	Respondent Count
Reliability	5	3	−2.00	78
Responsiveness	5	2.95	−2.05	213
Assurance	5	3.02	−1.98	216

Source: Authors' Compilation (2025).

Interpretation

According to the SERVQUAL data, negative gap scores of a substantial magnitude were found for all three dimensions that were measured:

Responsiveness (−2.05) showed the biggest gap, meaning customers were very dissatisfied with DAWASA's complaint handling and response speed.

Reliability (−2.00) indicated that customers had frequent inconsistencies in water supply, thus, confirming the service interruptions and irregular schedules that have been reported previously.

Assurance (−1.98) pointed to mistrust in staff competence, communication clarity, and service assurance, which was also reflected in the qualitative part of the complaints regarding staff behavior and the lack of proactive updates.

These findings correspond to the standardized beta coefficients from the multiple regression analysis, where responsiveness (β = 0.40) was the most significant predictor of customer satisfaction.

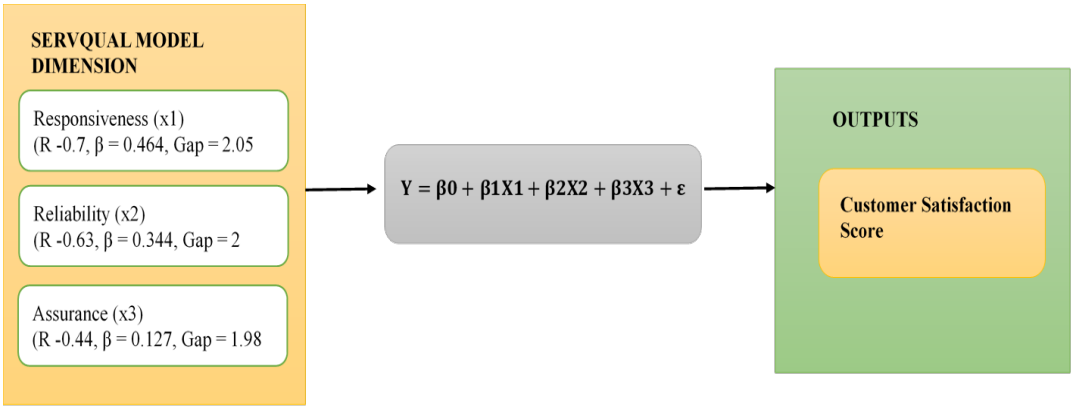


Figure 3: SERVQUAL Model Design

The diagram in Figure 4.8 summarizes the relationships among the SERVQUAL dimensions, their statistical influence on customer satisfaction, and the computed perception–expectation gaps. The model is described by the following multiple regression equation;

Where;

R = Correlation coefficient with satisfaction

β = Standardized beta coefficient (strength of influence)

Gap = Perception – Expectation score difference

ε = Error term (unexplained variation)

The model in this study is based on key assumptions, including linearity, which assumes a direct relationship between SERVQUAL dimensions and customer satisfaction, and independence of errors, meaning that residuals are uncorrelated across observations (Teshome et al., 2020). The intercept (β_0) is considered essentially zero since the values used have been standardized (z-score). In other words, the mean of the dependent variable matches the mean of the predictors (Ong et al., 2023). Additionally, the model treats the error term (ε) as the remaining variation that, according to the sources, cannot be explained in the analysis or is random measurement error (Kimey, 2008).

A web-based HTML simulation tool was developed to further explain the model and provide an interactive way of understanding it. This instrument enables users to adjust SERVQUAL dimension scores using sliders and instantly observe the change in the customer's satisfaction level predicted by the standardized regression equation (Lee et al., 2016).

SERVQUAL-Based Model and Interactive Simulation

An interactive HTML-based simulation tool was developed to add a qualitative dimension to the quantitative assessment of the SERVQUAL dimensions and to facilitate smooth interpretation of their influence on customer satisfaction. This tool allows users, including researchers, utility managers, and policymakers, to simulate different service quality scenarios and observe their effects on the predicted satisfaction score (Y) in real time, as shown in Figure 4.

The tool was built using a multiple regression model derived from survey data, incorporating three key SERVQUAL dimensions: Responsiveness, Reliability, and Assurance. Users interact with the model by adjusting slider inputs that represent perception scores (on a 1–5 scale) in each dimension. As inputs are modified, a tool calculates the corresponding standardized scores (z-scores), applies regression weights (β), and outputs the predicted satisfaction score in the original scale (0–5), along with an interpretive comment (example "Neutral", "Satisfied").

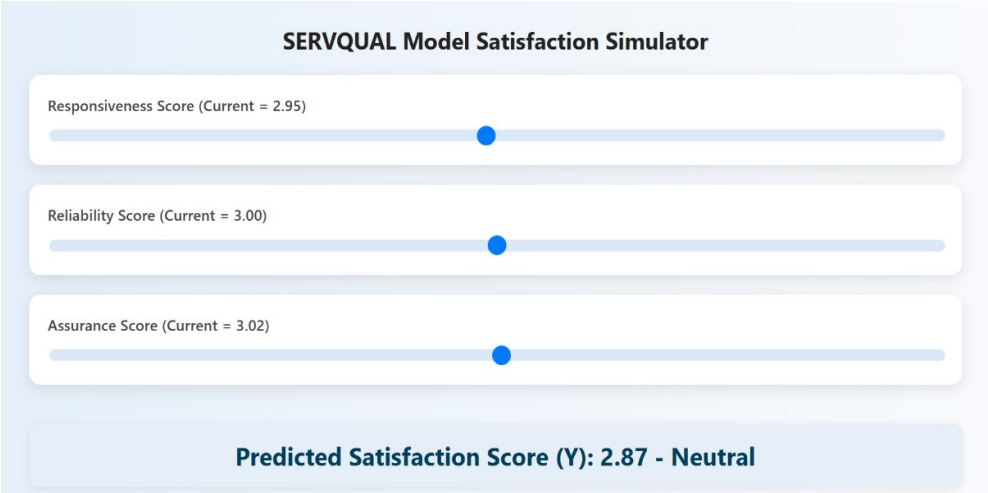


Figure 4: SERVQUAL Model Simulator.

(Online, https://shorturl.at/yqX51)

The integration for this simulation can enhance research by linking statistical findings with an applied, user-centered interface, bridging a gap between technical analysis and actionable decision support.

Overall Customer Satisfaction

This section presents the overall customer satisfaction levels based on Likert-scale responses from DAWASA customers in the Ubungo District. As shown in Table 4.9, the distribution of satisfaction levels indicates that 31.38% of respondents were neutral about the services they received, 28.45% were dissatisfied, and 10.88% were very dissatisfied. Only 22.59% of customers reported being satisfied, and a minimal 6.69% indicated they were very satisfied. The major part of customers in these results seems either unhappy with the service or emotionally neutral, indicating that the service delivery for these customers has serious shortcomings.

Table 9: Overall Customer Satisfaction Ratings (n = 239)

Satisfaction Level	Frequency	Percentage (%)
Very Dissatisfied	26	10.88
Dissatisfied	68	28.45
Neutral	75	31.38
Satisfied	54	22.59
Very Satisfied	16	6.69

Source: Authors' Compilation (2025).

The satisfaction levels shown here are consistent with earlier findings on reliability, responsiveness, and water quality, thus confirming a broader story: customers are unhappy with most aspects of service provision. In comparison to the expectations set in the previous research works of Kabote & John (2017) and Mengiste et al. (2020), which indicate that effective communication, regular supply, and quick complaint resolution are the main factors of satisfaction, DAWASA's performance seems to be below the expected level (Ong et al., 2023). The findings here send a very clear message that the utility should not only renew the infrastructure but also involve customers in a very careful and deliberate way if it wants to get back their trust and raise their level of satisfaction.

Spatial Analysis of Service Challenges

Spatial analyses were performed to understand the local changes in customer complaints, satisfaction levels, and service response times in the Ubungo District area. Here, data from CRM records and survey responses, including location references, are combined to identify spatial inequalities in water service delivery.

Complaint Density: The research showed that areas such as Kimara Baruti, Goba Mpakani, Kibamba CCM, and Mbezi Mwisho have the highest customer complaint density, as shown in Figure 4.5. These locations reported the most issues; therefore, DAWASA's infrastructure network may be under the most stress. The clustering of complaints suggests ongoing service disruptions, which are likely in areas with aging infrastructure and high population density.

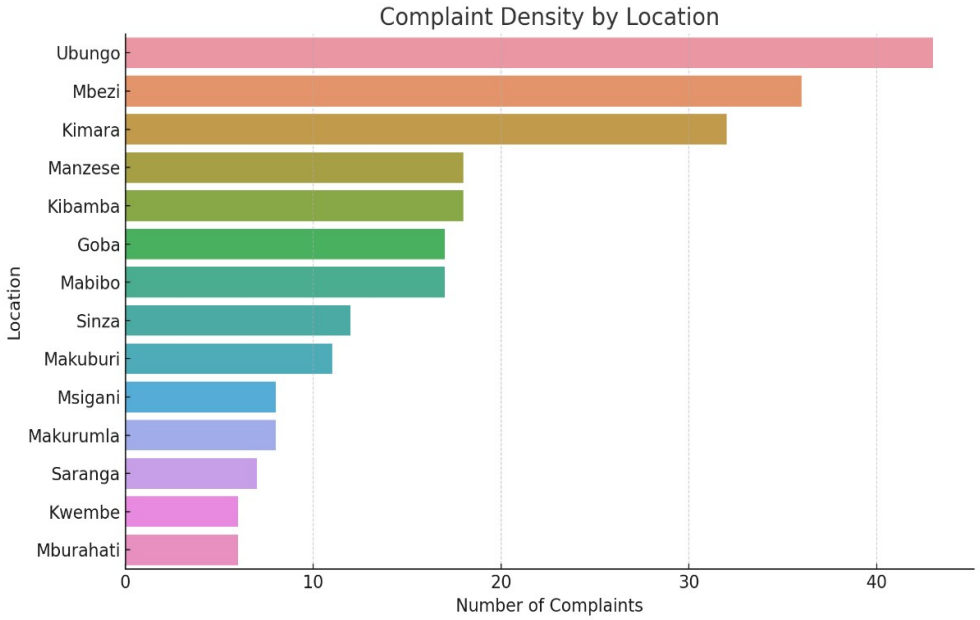


Figure 5: Spatial Analysis of Service Challenges

Customer Satisfaction by Location:

The satisfaction levels varied greatly across different areas, as shown in Figure 4.6. Places like Mburahati and Manzese had relatively high satisfaction, while Saranga, Makurumla, and parts of Goba experienced the highest dissatisfaction. These variations align with the results of the service frequency and water pressure surveys,

indicating that geographic disparities in service quality still exist and affect perceptions and trust in DAWASA's performance.

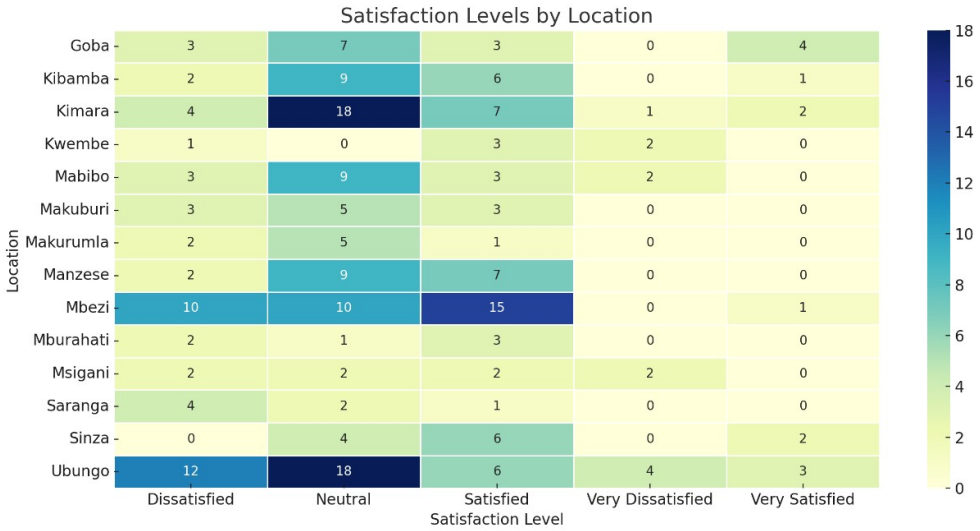


Figure 6: Customer Satisfaction by Location

Response Times by Ward: The illustration 4.7 shows the geographic spread of the average times for complaint responses. Areas including Mbezi Mwisho and Goba Mpakani are identified as having the highest average response durations, ranging from 8.9 to 11.4 days. On the other hand, some of the center-based districts, such as Kimara and Manzese, were able to have their issues addressed in much less time, usually within 4 days. The trend is indicative of the centralization of technical teams or resource constraints affecting peripheral service delivery.

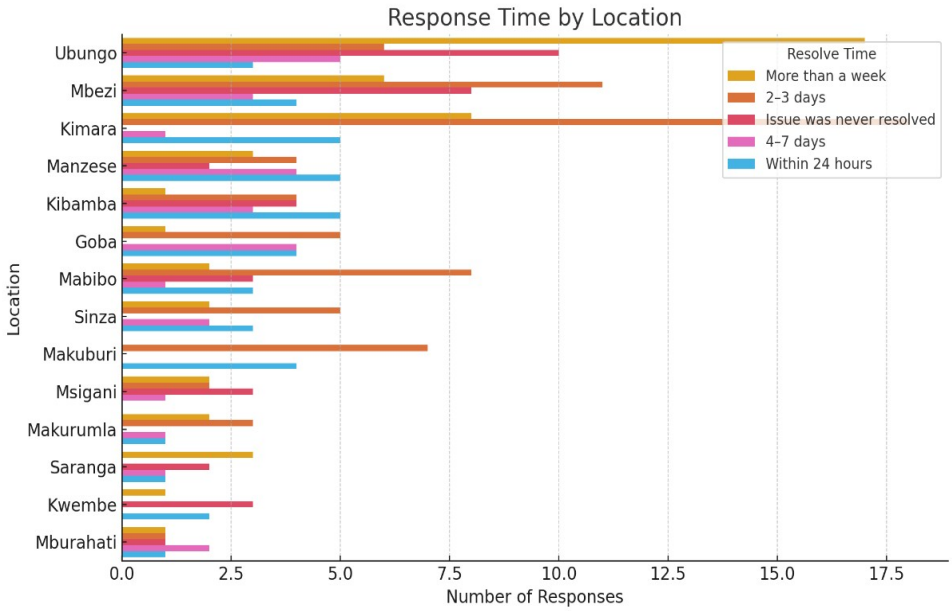


Figure 7: Response Times by Ward

Such research results have a profound effect on the policy layer; targeting infrastructure upgrades and decentralizing response teams can significantly increase service equity. Moreover, the remodeling of digital communication means that in the most impacted areas, it may result in the abolition of waiting time and the facilitation of customer interaction.

Policy Implications: The spatial analysis of data revealed significant geographical disparities in service delivery, leading to important policy implications for DAWASA. For example, areas with many complaints and long response times, such as Goba Mpakani, Saranga, and Mbezi Mwisho, require targeted infrastructure upgrades and localized technical response units to further improve their effectiveness. To ensure services are delivered equitably across wards, DAWASA should implement GIS-based monitoring to track complaints and satisfaction metrics in real time. Additionally, revitalizing community engagement through proactive communication and digital platforms like WhatsApp can help bridge trust gaps and promote the delivery of water services that are more sustainable, inclusive, and accountable.

Conclusion

The study found that DAWASA's responsiveness to customer complaints was inadequate; nearly half (47%) of customers submitted complaints, but only 32.1% was satisfied with how their cases were resolved. The CRM records revealed systemic delays in 34% of complaints, with response times of 6 to 55 days. Weak communication, poor follow-up, and limited staff capacity further undermined responsiveness, reflecting the critical service delivery gap on the responsiveness dimension of SERVQUAL, consistent with Institutional Resource-Based Theory, which links organizational capability to service outcomes.

This study identified both operational and systemic factors that strongly influence customer satisfaction. Institutional challenges such as aging infrastructure, high levels of non-revenue water, weak interdepartmental coordination, and limited resources constrained DAWASA's capacity to meet service expectations. Consequently, overall satisfaction was low, with only 22.6% of respondents being satisfied compared to 39.3% who were dissatisfied. This pattern may reflect negative disconfirmation as explained by the Expectancy–Disconfirmation Theory (EDT), which suggests that the service consistently fell short of expectations. Spatial analysis further revealed that neighborhoods closer to operational centers, such as Kimara and Manzese, performed better than peripheral areas like Goba, Saranga, and Mbezi Mwisho. This indicates that location, resource allocation, and institutional capacity together shape customer satisfaction outcomes.

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