

An assessment of the urban water service delivery quality gap in Uganda and Tanzania: tapping the customer's voice in water service delivery

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Abstract

The current reforms in the water sector in the Sub Saharan Africa have put the customer at the centre stage for sustainable water service delivery. However, few studies have been conducted to assess the gap between customer's expectations and his/her perception of the actual water service delivered, yet this knowledge is important to support prioritization in developing water service delivery improvement.

Using the SERVQUAL model, we sampled 527 customers of National Water and Sewerage Corporation [NWSC] and Dar Es Salaam Water and Sewerage Corporation [DAWASCO] to assess the service quality delivery gaps. The results indicate a gap of -1.98 for NWSC and -2.81 for DAWASCO on a seven point scale. We also found out that the service quality dimensions of reliability and responsiveness as very important to customers, yet it is on these dimensions that both utilities have the biggest service quality gaps of -2.73 for NWSC and -3.80 for DAWASCO. The results imply that water utilities in Uganda and Tanzania should continue improving the quality of water service delivery by concentrating more on reliability and responsiveness of water service delivery.

Keywords: water service quality, water reforms, customer satisfaction, NWSC, DAWASCO, SERVQUAL.



1 Introduction

Water service delivery is essential to public health, economic development and the state of the environment (Shi [1]). It is therefore important to assess how effectively and efficiently a water utility delivers its services. Many studies in the water sector have been conducted with the objective of examining the impact of ownership (public vs. private) on performance of water utilities (Kirkpatrick *et al.* [2], Dijk [3], and Ndandiko [4]). Others have been conducted to examine the effect of public regulation and external environment on utilities' performance (Cubbin and Tzanidakis [5] and Mugisha [6]). A common feature of all these studies is that they downplay the quality of water service delivery and the level of customer satisfaction as relevant performance dimensions for water utilities. With the reforms that are taking place in the water sector, the customer of water is now playing a centre stage in urban water service delivery (OECD [7], Ogawa and Tanattashi [8]). Thus, customers assess the quality of service accorded and decide whether it meets his/her expectations (Parasuraman *et al.* [9, 10]). Using case studies NWSC for Uganda, and DAWASCO for Tanzania, we empirically assess the urban water service delivery quality gap using the SERVQUAL model.

2 The research motivation and objectives

The needs and expectations of customers are inadequately addressed in delivering urban water services; yet among the reforms embraced by NWSC and DAWASCO is to put the customer at the forefront of their operations. Despite the refocusing on the customer, no academic study has been attempted to assess the gap between customer water service expectations and the actual quality of water service delivery in emerging economies.

Based on this we set out to:

1. determine and examine the service quality gaps of customers of NWSC and DAWASCO; and
2. determine the service quality gaps and relative importance of the different service quality dimensions.

3 Related literature

Customer satisfaction is an abstract concept and its actual manifestation varies. Consequently, researchers conceptualise it differently (Oliver [11]; Parasuramann *et al.* [9], Brady and Robertson [12]; Kaplan [13]; Benington [14]). A common understanding is viewing it as an individual's feeling of pleasure or disappointment resulting from comparing a product's or service's perceived performance (outcome) in relation to his or her expectations. Work done by Parasuraman *et al.* between 1985 and 1988 provide a basis for this common understanding by using a gap between the customer's expectation and their perceived experience of performance.



Parasuraman *et al.* [9] developed an instrument to measure service quality generally known as SERVQUAL. The disconfirmation paradigm is the basis of the SERVQUAL model, which views service quality as the gap between the expected level of service and the customer perceptions of the level received. It is this SERVQUAL instrument that we use to assess the quality of urban water service delivery and consequently customer satisfaction in Uganda and Tanzania.

3.1 Understanding service quality

Lewis [15] describes service quality as a measure of how well the service level delivered matches customers' expectations. Cronin and Taylor [16] view it as a form of attitude representing a long-run overall evaluation. Also Parasuraman *et al.* [9: p48] define service quality as "a function of the differences between expectation and performance along the quality dimensions".

3.2 Dimensions of service quality

The service quality instrument has five dimensions as shown in figure 1 below:

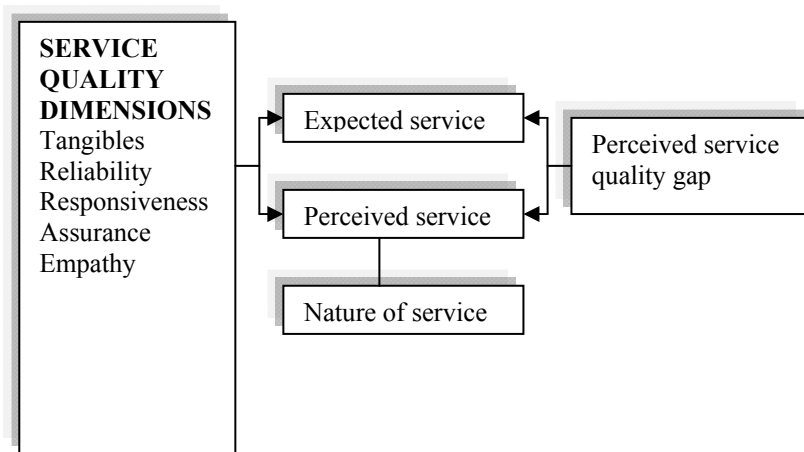


Figure 1: Theoretical framework showing the perceived service quality gap. (Source: adapted from Zaithaml *et al.* [17] as quoted by Lee [18].)

The above model shows that to assess the level of satisfaction with the service delivery one compares users' expectations with his/her perception of the service delivered. This comparison leads to the identification of the perceived service quality gap on the five dimensions [see table 1 below] of tangibles, reliability, responsiveness, assurance and empathy. Clearly from the framework, service quality is the disconfirmation between the customer's expectations and perception of service performance.

3.3 Measurement of service quality: the SERVQUAL instrument

To measure service quality, we have used five dimensions with 22 features. The 22 features have been used twice to measure customer’s expectations and their actual perception of the performance of a water utility. The details are given in table 1 below;

Table 1: Water Service Quality model (WASERVQUAL).

Dimension	Description	Indicators
Reliability	Ability to perform the service dependably and accurately.	*Living to the promises made *Showing sincere interest in solving customer’s problems *Providing water at the promised time *Ensuring billing accuracy *Ensuring few water interruptions
Tangibles (service environment)	Appearance of physical facilities, equipment, personnel and communication materials.	*Having up-to-date equipment * Having visibly appealing facilities *Having employees that are well dressed and appear neat *Having water pipes that are well maintained
Responsiveness	Willingness to help customers and provide prompt service.	*Customers given individual attention *Identifying customer’s needs *Having customers’ interests at heart *Prompt handling of complaints
Assurance	Knowledge and courtesy of employees and their ability to convey trust and confidence.	*Customers trusting employees *Customers considering water to be safe *Employees being polite *Employees having knowledge to address customer’s questions
Empathy	Caring, individualized attention provided to the customer.	*Timely information on likely water disconnection *Adequate time given for water bill clearance *Length of queues while clearing water bills *Willingness of employees to help

(Source: Parasuraman *et al.* [10]; Tynan and Kingdom [19].)

The Service Quality [SQ] gap depends on the capability to minimize the difference between expected quality [Qe] and Perceived Quality [Qp] by customers as summarized below in equation (1).

$$SQ\ gap = Qp - Qe \tag{1}$$

The above expression can be used for each service quality dimension and or for the overall service quality. When expected service exceeds perceived service

[negative gap score], quality is unsatisfactory. The bigger the negative gap scores the higher the level of unsatisfactory performance. When expected service equals perceived service [zero gap score] quality is satisfactory. When perceived service exceeds expected service [positive gap score] then service level is more than satisfactory. Parasuraman *et al.* [10], Foster [20] and Walker *et al.* [21] contend that if the service provided by the organization meet the needs and expectations of the customer, then this may subsequently lead to higher customer satisfaction.

The SERVQUAL instrument is accepted as a valid and reliable instrument. Its use allows investigation of service quality in a number of ways as highlighted by Donnelly and Shiu [22]: the customers' ratings of service quality dimensions and their importance can be assessed to provide information on service provider's performance; the impact of service provider's action on service quality can be monitored over time; and the gaps in meeting customer expectations can be indentified and quantified to support better prioritization in developing service improvement.

Many studies have applied the SERVQUAL mode in different industries, for instance retailing (Oliver [11]), education (Cuthbert [23]), health (Lam [24]), airlines (Robledo [25]) and banking (Newman [26]), and tourism (Akama and Kiet [27]), among others. Few studies have applied the model in the water sector (Lee [18]).

3.3.1 Criticisms of SERVQUAL instrument

Although widely used, the instrument is subject to a number of criticisms (Carman [28]; Babakus and Boller [29]; Cronin and Taylor [16]; Teas [30]; and Chase and Stewart [31]). The critics have focused on the operationisation of perceived quality as a gap score, the ambiguities of the expectation construct and the unsuitability across different services.

Parasaraman *et al.* [32] responds to critics by quoting several studies that have applied the model and concluded that it is a reliable instrument. On whether service quality should be measured using the SERVQUAL or SERVPERF, Zeithamal *et al.* [17] recommended that if the primary purpose of measuring service quality is to explain the variance in the dependent construct, SERVPERF is appropriate. On the other hand if the purpose is to diagnose service shortfalls, the SERVQUAL is suitable.

The weaknesses notwithstanding, SERVQUAL still seems to be the most practical method available for measuring service quality (Cuthbert [23]). There is general consensus that the 22 features of the SERVQUAL are reasonably good predictors of service quality.

4 Method

Using a SERQUAL questionnaire, responses from 527 customers of NWSC and DAWASCO were received out of 809 that were given out. The sample selected was based on guidance from Long and McMellon [33] that the sample size should be at least 5 times the number of items.



The questionnaire was structured in two parts. Part one comprised of 22 features each grouped under five dimensions for evaluating expectations and perceptions respectively.

A dual case study Yin [34] of NWSC and DAWASCO was selected because of the different reform routes taken and differences in the performance levels. For instance, NWSC is quoted as a high performing utility in Sub-Sahara Africa while DAWASCO is not (Mugabi *et al.* [35]).

4.1 Data analysis

The Statistical Package for Social Science [SPSS] for windows version 16.0 was used to analyze the data. Service quality was measured by computing the difference between the ratings customers assigned to the paired expectations and perception features. For each customer, service quality score for each feature was calculated. The gap score for each of the five dimensions was calculated by computing the mean score on the feature that make up each dimension. The overall measure of service quality was computed by calculating the means of the five dimensional gap scores.

The service quality scores [perceptions minus expectations] were interpreted as follows: a positive score indicated that the quality of service received by the customer exceeds his/her expectations. Consequently the customer[s] will be delighted with the service received. On the other hand a negative score was interpreted to mean that the service received is less than expectation. For this category the size of the score was important in concluding on the level of customer dissatisfaction with water services delivered. A zero score indicates that the service received matched expectation.

5 Findings and discussion

The findings give the overall service quality scores as the gap between expected and perceived quality, the overall service quality perception by different customer segments, the overall service quality and customer satisfaction rating, service quality gap scores for the different quality dimensions and the relative importance of the dimensions.

5.1 Overall scores for expectations, perceptions and service quality gap

The overall minimum, maximum, mean and standard deviation values for expectation, perception and service quality gap scores are given in the table 2 below.

The mean score on a seven point scale for expectation was 6.72 and for perceptions 4.74 for NWSC giving a service quality gap score of -1.98. On the other hand, DAWASCO got a mean score of 6.43 for expectation and 3.62 on perception giving a service quality gap of -2.81. The negative service quality gap for both utilities indicates that NWSC's and DAWASCO's customers perceived the utility's performance to be below their expectations. It is logical and common to have negative service quality scores if expectations are

Table 2: Overall scores for expectations, perceptions and Service Quality gap.

Variables	N		Minimum		Maximum		Mean		Standard Deviation	
	NWSC	DAWASCO	NWSC	DAWASCO	NWSC	DAWASCO	NWSC	DAWASCO	NWSC	DAWASCO
Expectation	391	208	6.52	5.00	7.00	7.00	6.72	6.43	0.17	0.46
Perception	391	208	2.27	2.36	6.68	5.14	4.74	3.62	0.96	0.54
Overall mean service Quality gap Score: NWSC -1.98; DAWASCO -2.81										

considered ideal as it is in this case. This is so because it is unlikely for a water utility to consistently provide services that exceed all its customers' expectations. Lower negative scores indicate better service quality. The negative score of -1.98 for NWSC is reasonable however; the one of -2.81 for DAWASCO is an indicator of inadequate water quality service delivery. This is consistent with a conclusion drawn by Parasuraman *et al.* [10] that a negative service quality gap score of above 2.5 is serious to warrant urgent managerial action to be taken to reduce the gap.

5.2 Service quality dimensions

The quality of water service delivery is a multi-dimensional construct which is analyzed using different dimensions. The dimensions are tangibility, reliability, responsiveness, assurance, and empathy. The expectation, perception and service quality gap scores for the five dimensions are shown in table 3 below:

Table 3: Mean scores of SERVQUAL gap scores for the five dimensions.

Dimension	NWSC			DAWASCO		
	Expectation	Perception	Service quality GAP	Expectation	Perception	Service quality GAP
Tangibles	6.61	4.98	-1.63	6.03	3.14	-2.89
Reliability	6.83	4.10	-2.73	6.76	2.96	-3.80
Responsiveness	6.72	4.94	-1.78	6.69	3.55	-3.14
Assurance	6.71	4.85	-1.86	6.48	4.64	-1.82
Empathy	6.75	4.85	-1.90	6.19	3.83	-2.36
Overall AVG	6.72	4.74	-1.98	6.43	3.62	-2.81

From the results above, water customers in the two utilities rated the 22 items in the expectations section of the SERVQUAL above 6 on the 7-point "strongly agree" to "strongly disagree" scale. This is in line with the results in other studies in which scores in excess of 6 have been commonly recorded (Curry *et*

al. [36]). The expectations scores for tangibles were the lowest with scores of 6.61, and 6.03 and those of reliability were highest with scores of 6.83, and 6.76 for NWSC and DAWASCO respectively.

The SERVQUAL gap scores for all dimensions were negative. This indicates a shortfall in meeting customer expectations across all dimensions. The highest score was for reliability having a value of -2.73 and -3.80 for NWSC and DAWASCO respectively. Parasuraman [10] observes that a gap score of 2.5 and above is significant and requires appropriate managerial action. The gap scores of DAWASCO are all above -2.5 except on assurance. A comparative performance of the two utilities on the five dimensions is summarized on the radar below.

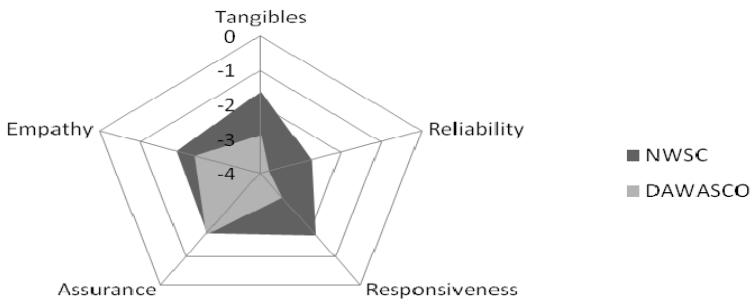


Figure 2: The SERVQUAL gap scores of NWSC and DAWASCO on the five dimensions.

Clearly as shown on the radar above, DAWASCO has wider service quality gaps than NWSC. The widest gaps between the two utilities are on responsiveness, reliability and tangibles.

5.3 Relative importance of SERVQUAL dimensions

To improve service quality and consequently customer satisfaction, concern should be on reducing the gaps of service quality dimensions that are important to the customers. The relative importance of the SERVQUAL dimensions is shown in table 4 below.

Except for the tangibles dimension, the weightings were generally comparable to the original weightings derived by Zeithaml *et al.* [17]. According to Zeithaml *et al.* [17] customers tend to be quite consistent in ranking service quality dimensions and their studies have shown reliability to be the most important dimension and tangibles the least important. For the two dimensions, reliability and responsiveness, the ranking order was the same in both the original weightings derived by Zeithaml *et al.* [17].

A comparison between the service quality gap scores on the different dimensions and the importance weights attached to those dimensions indicates that on reliability which is scored highest in terms of importance has the widest

Table 4: Importance of the SERVQUAL Dimensions to customers.

Mean points out of 100			
Dimension	Study by Zeithaml <i>et al.</i> [1990]	DAWASCO	NWSC
Reliability	32	36	38
Responsiveness	22	32	25
Assurance	19	11	14
Empathy	16	12	13
Tangibles	11	9	10
Total	100	100	100

service quality gaps for both utilities of -2.73 and -3.82 for NWSC and DAWASCO respectively. For the case of NWSC, tangible which is the least important has the smallest service quality gap score of -1.63.

6 Conclusions and recommendations

NWSC is close to meeting its customer's expectations with a service quality gap of -1.98 while DAWASCO is far with a gap of -2.81. By improving water service delivery, customer satisfaction would improve as well.

Service quality dimensions of reliability and responsiveness are rated by customers as very important. Unfortunately it is on these dimensions that both utilities have the biggest service quality gaps of -2.73 for NWSC and -3.80 for DAWASCO.

The two utilities should have different water service delivery improvements for the different service quality dimensions. The investments likely to yield the greatest improvement in customer satisfaction are those related to reliability and responsiveness. Therefore, the utilities should invest more in informing customers about water disconnections, providing prompt service, will and ability to help customers, keeping their promises with customers, being sincere in solving customer's problems, providing water at the promised times and keeping error free records.

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