Users' Perception on the Quality of Water Service Delivery in Iramba and Singida Districts

Bahati Shagama

Tanzania Institute of Accountancy, Dar es Salaam, Tanzania,   bshagama@yahoo.com

Abstract

This study assessed users' perception towards quality of water services delivery in Iramba and Singida Districts. Data were collected from 350 water users in the study areas using a questionnaire and a guide for focus group discussion (FGD). Descriptive statistics such as frequency, mean, standard deviation and percentages were used to analyse the perceived quality of water service delivery, whereby socio-economic variables and explanatory variable were used as the best variables in assessing the delivery of quality water services. The results show that the level of satisfaction of water users with service parameters of quality, accessibility, quantity, and reliability was low. This is because only about half of all households were satisfied with the service they received. Water users had a negative perception towards water service delivery in the study area. Thus, initiatives need to be made by the service providers, service authority (community owned water supply organisations and District Councils) and service users to improve the service delivery

Key words: *Perception, Quality service, water service, service delivery*

1.0 Introduction

Water is a basic human right to which everyone is entitled (UNICEF, 2016). However, the majority of the people in the world are still lacking access to quality water service. Approximately 663 million people are reported not to have access to reliable sources of drinking water (UNICEF, 2016). The rate of access to domestic water services in rural sub-Saharan Africa (SSA) is among the lowest worldwide, with approximately 1 in 2 rural dwellers lacking access to reliable sources of drinking water. The demand for water is rising due to an increase in urban and rural populations (Akpor and Muchie, 2011). In Tanzania, despite decades of government and donor investments in water projects, nearly 50 percent of the rural population still lack access to improved drinking water (Joseph, et al., 2018). Almost 48 percent of the rural population has access to improved water source on their household premises. lack of access to improved water source, compel

many women to travel long distances in search of water for drinking and other domestic needs, wasting u a lot of time which could have been spent on other productive activities (Joseph, et al., 2018).

The Government of Tanzania has made several efforts including decentralisation of the water sector to ensure accessibility to quality water for all citizens in the country (Miquel-Florensa & Garcia-Valinas, 2013). In this respect, the central government acts as a coordinator in the water sector, while the administration at the district level holds the main competencies for implementation. According to Miquel-Florensa and Garcia-Valinas (2013), communities at the grassroots level have the opportunities of participating in designing, managing, and maintaining their water projects and services. The National Water Policy was formulated in 1991 and reviewed in 2002 to provide this avenue to the community. According to the National Water Policy (URT, 2002), water scarcity is becoming a serious problem in the country even in areas that had no such a problem in the past. This is caused by many factors including prolonged and severe drought and competing uses of water sources and catchments (Kabote and John, 2017).

The need for providing safe water to human population is clearly stated in the Tanzania Development Vision (TDV) 2025, which stresses on the universal access to safe water in both urban and rural areas. Furthermore, access to quality water services is vivid in the development and implementation of the Water Sector Development Programme (WSDP- 2006-2025), Water Resource Management Act No. 11 of 2009 and Water Supply and Sanitation Act No. 12 (Kabote and John, 2017). Despite the implementation of many policy reforms the country's rural water woes are reported to persist (UNDP 2014; Carlitz and Taylor, 2017; Jimenez et al., 2010). Among the policy reforms include decentralisation of water service delivery, transferring ownership of water points to a new village institution called Community Owned Water Supply Organisations (COWSOs) and significant donor funding which is budgeted at US $3 billion for the second phase (2015–2025),. In the decentralisation of water service delivery, communities have increasingly been engaged in significant responsibilities such as management of water supply infrastructure, supervision of daily water delivery, and maintenance of infrastructure. Communities have demonstrated a clear preference for dealing with such water delivery issues with the minimum possible contact with the administration and coordination of the central government.

Literature shows that geographical, socio-economic status, cultural context and the types of sources of water services account for the differences in perceptions towards the quality-of-service delivery (Rodríguez-Tapia et al. 2017; Kumasi et al., 2015). A study by Kumas et al. (2015) in Ghana revealed that water users have a positive perception towards the service provider. Hence, the people had more positive perceptions towards local government than towards the central government because the former was closer to people and thus was more capable of managing and ensuring effective and accountable service delivery at the local level than was the case with the latter. Rodríguez-Tapia et al. (2017) studied household's perception towards water quality and willingness to pay for clean water in Mexico City and found that families preferred alternative sources of drinking water instead of relying on the city's quality supply of the services. As Doria (2010) argues, for many years, a considerable amount of research has focused on attempting to understand how water quality is perceived. Other scholars such as Herbst et al. (2009) and Francis et al. (2015) focused on the relationship between perception, behaviour, long-term sustainability, and effectiveness of water services.

Scholarly research demonstrates that aesthetic qualities such as taste, colour, odour, and the manner in which water service is delivered have significant impact on consumers' perception towards water quality and water safety (Doria, et al., 2005; da Silva et al., 2010; Francis et al., 2015). Other researchers also indicated that perceptions among water users are influenced by demographic characteristics of individuals or community members, negative health and disease incidents related to water, and sanitation and hygiene education campaigns (WASH) Doria, 2010; Francis et al., 2015). Since little attempts have been made to examine the perceptions of water users towards the delivery of quality water services and factors such as quantity, quality, accessibility, and reliability on the perceived quality of water services, there was therefore a need of carrying out this study. In this respect, this paper adds knowledge to the exiting literature and informs service providers on the manner in which the community perceives the delivered water services. The study findings can be used as a guide to water service providers (government and NGOs) on use and management of water resources with the aimed of improving the quality and enhance service delivery and performance of the water sector.

The study was guided by the agency theory, that is, the 'agent – principal relationship,' which depends on power positions and information flow between

the principals and the agents. The question, then, is how can the principals manage the interests of the agents to enable the latter be in line with the goals which they (principals) wish to achieve as an alteration of principal-agent relationships, where principals theoretically gain more leverage over agents who are directly responsible for service provision. Analysing users' perception using the principal agent perspective helps to explain the trade-offs between different actors and the changes that service providers (agents) bring with them, given the new responsibilities of the actors involved. The ultimate principals are the citizens or service users, and the manner in which they perceive the quality of water service delivery while politicians are the agents as representatives in decision-making organs.

Users' perception is an opinion about something viewed and assessed; every customer has different beliefs towards certain services. These beliefs play an important role in determining customers' satisfaction, and this cannot be taken as an afterthought (Angelova and Zekiri, 2011). Therefore, socio-economic variables such as sex, age, education, marital status, household size and explanatory variables, which are quantity, quality, accessibility, and reliability were analysed to understand the users' perception of the quality of water service.

Therefore, this paper adds knowledge to the exiting literature and informs service providers on the manner in which the community perceives the delivered water service.

2.0 Methodology

Data were collected from Iramba and Singida Districts in Tanzania. These two districts were selected because they constitute a large population with challenges of water services in Singida region (URT, 2015). A cross sectional study design and multistage sampling techniques were used in selecting the study area. In the first stage, two districts were selected purposively because of having relatively more challenges of water services than there are in the remaining districts. The second stage involved random selection of three wards from each district making six wards. In the third stage, one village was purposively selected from each ward amounting to six villages selected. The villages selected were Mgori, Ilongero, and Mtinko from Singida District and Msigiri, Nselembwe, and Nguvumali from Iramba District. A sample of 350 households was involved in the study. Proportional sampling using a household village register was applied

to determine sub-samples from each village and thereafter, simple random sampling was used to select respondents from each village.

A combination of both qualitative and quantitative data collection methods was used for triangulation purposes. Qualitative data were collected through Focus Group Discussions (FGDs) and key informants interviews. One FGD was conducted in each village making six FGDs. Each FGD comprised 8 -10 participants. The Village Executive Officers (VEOs), chairperson and a secretary of COWSO from each village, 2 Ward Councillors, and 2 District Water Engineers were involved as key informants. Household questionnaire survey was used to collect both qualitative and quantitative data. Descriptive statistical analysis was computed to explore the distribution of socio-demographic characteristics of the respondents. The qualitative data, which were collected from FGDs and KIIs, were analysed using content analysis technique, which is consistent with the objectives of the study. Data were analysed by using thematic analysis, whereby data were coded and conclusions were drawn based on the themes of the study. The analysis of perception involved calculation of index scores from a Likert scale using the formula: index scoreX 100%. Every respondent was required to rate his/her perception towards the delivery of quality water services which were ranged from dissatisfied (1), undecided (2) to satisfied (3).

3.0. Results and Discussion

3.1 Water Users' Perception on the Quality of Water Services

3.1.1 Users' perception of water quality

Descriptive results showed mixed responses on colour, odour (smell), taste, water treatment, and protection of the source. The perception of users of quality of water services delivery in the study area is presented in Table 1. The average of the points scored was distributed in three categories namely dissatisfied (negative perception), satisfied (positive perception), and neutral perception.

Table 1: Users' perception on the quality of water (n = 350)

Statements	Dissatisfied	Undecided	Satisfied
Colour of water from the source	187(53.4)	65(18.6)	98(28.0)
Smell of water collected from the source	190(54.3)	118(33.7)	42(12.0)
Test of water from the source	176(50.3)	96(27.4)	78(22.3)

Water treatment	182(52.0)	107(30.6)	61(17.4)
Water source protection	212(60.5)	72(20.5)	66(18.0)

The results in Table 2 show that the perception of water users towards the quality of water was negative. About 45.7 percent of the respondents indicated a negative perception, while 12.9 percent indicated positive perception towards water quality. The situation was supported by findings from FGD at Mgori village:-

> *"The quality of water is not good as it has salt taste and the colour is like milk, therefore it is suitable for neither drinking nor washing clothes. Normally we walk a long distance to find water suitable for drinking and washing clothes."*FGD's in Mgori Village.

The findings are in line with the findings reported in a study by Doria et al. (2005) which revealed that the perception of water quality was largely influenced by water taste, perception of risk, colour, odour, familiarity, and trust. Barnett et al. (2018) found that many problems of water quality are related to decisions and behaviours made by human actors.

Table 2: Quality perception level (n = 350)

Variables		Score	Frequency	Percent
Dissatisfied	(Negative)	0 – 5	160	45.7
Undecided	(Neutral)	6 – 10	145	41.4
Satisfied	(Positive)	11 – 15	45	12.9
Total			**350**	**100.0**

3.1.2 Perception of users of the quantity of water

Perception of water users on the quantity of water is presented in Table 3 with various attitudinal statements concerning water for drinking and food preparation, house clean up and personal hygiene, laundry and a flow of collected water. The finding indicated that users were dissatisfied with the water collected for drinking and food preparation, clean up and personal hygiene, laundry, flow of water and the total quantity of water collected per day. Majority (55.7%) of the respondents had a negative perception towards the quantity of water (Table 4). The negative perception among users is influenced by the quantity of water collected per person daily, that is 1- 5 buckets of 20 litres each.

Table 3: Users' perception on quantity of water (n = 350)

Statements	Dissatisfied	Undecided	Satisfied
Water collected for drinking & food preparation	159(45.4)	56(16.0)	135(38.6)
Water collected for house clean-up & personal hygiene	224(64.0)	48(13.7)	78(22.3)
Water collected for laundry	208(59.4)	52(14.9)	90(25.7)
Flow of water at WCP =	161(46.0)	57(16.3)	132(37.7)
Total water collected per day	233(66.6)	46(13.1)	71(20.3)

Lpcd = litres per capita per day, WCP = Water Collection Point

3.1.3 Buckets of water collected daily

The majority (55.7%) of the respondents reported that the quantities of water collected daily by the household ranged from 1 to 5 buckets of 20 litres each, while 28.9 percent of the respondents indicated that the quantity of water collected daily ranged from 6 to 10 buckets per household. However, 15.4percent of the respondents argued that the quantity of water collected daily by the household was more than 10 buckets. The results indicate that the majority of the household were getting 1 to 5 buckets daily, which is equivalent to 20 to 100 litres. The quantity of water obtained by a household was not enough as the majority 53% - 54%) of the respondents had a household size of 5 to 10 persons. According to the water policy of Tanzania (URT, 2002), a household of that size is required to get 125 – 250 litres of water per day (25 litres per person per day). The findings are inconsistent with policy requirement. Therefore, there is a need for district council and water users associations to improve the quantity of water required by users.

Table 4: Buckets (20 litres each) of water household collect per day (n = 350)

Variables	Frequency	Per cent
1-5 buckets	195	55.7
6-10 buckets	101	28.9
More than 10 buckets	54	15.4
Total	**350**	**100.0**

3.1.4 Distance covered to access water

The majority (54.1%) of the respondents walk more than 1000 meters (Table 5), while 16.5 percent of the respondents walk fewer than 400 metres from their homesteads to the water sources. This is in contrast with the Tanzania National Water Policy (2002), which requires the distance covered from the homestead to the water source to be not more than 400metres. Long distances covered leads to a negative perception among users towards accessibility. The findings are in line with Human Development Report (2006) by UNDP, which reveals that women in Africa and Asia walk for an average distance of 6 kilometres to collect water. This makes them consume less quantities of water, as it is heavy to carry the water for a long distance.

Table 5: Distance covered from household home to water source (point) (n = 350)

Variables	Frequency	Percent
Less than 400 meters	58	16.5
Between 401-1000 meters	103	29.4
More than 1000 meters	189	54.1
Total	**350**	**100.0**

3.1.5 Waiting time on accessing water

Waiting (queuing) time before accessing water is also an indicator of accessibility of water. The findings showed that the majority (64.6%) of the respondents spent more than an hour waiting for water for one round trip (Table 6). Minority (22.9%) of the respondents used less than 30 minutes as waiting time. This situation is caused by long queue and low pressure of water from the water point. The findings are consistent with what is reported by Kayser et al. (2013) who found that in low-income countries women and children spend an average of one hour per trip collecting water, which reduces school attendance among children. In another study, Karimi (2016) found that in Githurai, Nairobi, citizens were spending 30 minutes to more than one hour waiting for water at water kiosks. The findings revealed that water users were spending a lot of time in water collection the time could otherwise be used on other productive activities.

Table 6: Waiting time for accessing water from the source (in minutes) (n = 350)

Variables	Frequency	Percent
Below 30 minutes	80	22.9
30 minutes to 1 hour	44	12.6
More than 1 hour	226	64.6
Total	350	100.0

3.1.6 Users' perception of accessibility

Slightly more than half (52.6%) of the respondents had a negative perception towards water accessibility while 9.7 percent showed a positive perception on water accessibility. The fact that users failed to get enough water within the required distance of 400 metres and acceptable time of 30 minutes caused them to have a negative perception towards accessibility of water services. This finding shows that the users were not accessing enough water to meet their daily domestic uses. The findings are in line with the findings in a study by Katomero (2017) who found that overall access to safe and clean water among rural population is poor. The author reveals further that in Bunda District only 51.9 percent of the rural population out of 212,485 people were served with clean and safe water. The remaining 48 percent had no access to safe and clean water. A FGD at Nguvumali village reported the following,

> *"Sometimes access to water is difficult because of charges paid for a bucket collected, whereby one bucket of 20 litres is charged Tshs.50/=, we suggest that the affordable price should be Tshs 30/= or 20/= "* FGDs in Nguvumali Village.

3.1.7 Users' perception of water service reliability

The perception of water users on water reliability is presented in Table 7 with various attitudinal statements concerning continuity of water service, maintenance of infrastructure, and availability of electricity or diesel. Different responses were obtained whereby the majority (50.9% to 58.6%) of users had a negative perception towards or rather were dissatisfied with availability of water service. Water service was not reliable to users due to poor maintenance of water facilities, lack of technicians, and shortage of electricity or fuel to run water pumps.

Table 7: Users' perception on Reliability (n = 350)

Statements	Dissatisfied	Undecided	Satisfied
There is continuity of water services	183(52.3)	51(14.6)	116(33.1)
Availability of maintenance of water facilities	102(29.1)	59(16.9)	189(54.0)
Availability of technicians to repair water facilities	193(55.1)	36(10.3)	121(34.6)
Availability of water supply for 24 hours in the village	178(50.9)	42(12.0)	130(37.1)
Availability of energy (electricity/Diesel) to run water pump	205(58.6)	31(8.9)	114(32.6)

The findings in Table 8 revealed that the majority (52.6%) of the respondents had a negative perception towards the reliability of water service, while 12.9 percent of the respondents had a positive perception towards water reliability. The findings indicate that users were not getting water services throughout the day. Normally, water was available through rationing of 3 to 6 hours per day and the water kiosk was opened from 7.00 am to 10.00 am in the morning and from 4:00 pm to 7:00 pm in the evening hours. The water rationing was mostly caused by shortage of fuel or electricity to operate water pumps. The findings are consistent with the findings in a study by Ngwenya and Kgathi (2006) in Ngamiland Botswana. The study findings showed that, there was unreliable water supply caused by break down of diesel pump and erratic delivery of diesel fuel. This finding was supported by the observation in FGD at Ilongero village which is as follows, -

> *"We don't get water throughout the day because the pump is too old to work throughout the day and night. Therefore, we are getting by rationing (6 hours per day for 3 days per week only)"* FGD in Ilongero Village.

This finding implies that there was no reliable water supply as water service was not provided to users for 24 hours per day and users were dissatisfied with the services provided.

Table 8: Reliability Level (n = 350)

Variables	Score	Frequency	Percent
Dissatisfied	0 – 5	184	52.6
Undecided	6 – 7	121	34.6
Satisfied	8 – 15	45	12.9
Total		**350**	**100.0**

3.1.8 Overall perception of quality of water services

The perception of quality of water services delivery was on four elements of quality water services (Quality, quantity, accessibility, and reliability). The findings reveal that 50.9 percent of the respondents had a negative perception, 40percent were neutral, and 9.1 percent had a positive perception towards the quality of water services delivered. Generally, the results as presented in Table 9 imply that the perception of water users on the quality of water service delivery was negative. This trend was contributed by, among other factors, poor infrastructure of facilities such as water tanks, pumps, and water pipes, and low ability of service providers to pay for water bills or to purchase fuel for operating the pumps. Poor maintenance of facilities and poor administration of water service delivery by the community owned water supply organizations (COWSOs) also contributed to the problem. These findings are consistent with the findings reported in a study by Sherry (2017) who found that water users in Dar es Salaam were generally dissatisfied with the level and quality of water services. This was because of worn out water infrastructure, poor administration, and poor maintenance leading to poor water quality as well as poor physical access to water points.

Table 9: Users' Perception on Quality of Water Services Delivery n = 350

Levels	Frequency	Percent
Dissatisfied (Negative)	178	50.9
Undecided (Neutral)	140	40
Satisfied (Positive)	32	9.1

4.0. Conclusions and Recommendations

Water users had a negative perception towards water service delivery in the study area. The service delivery does not meet the required standards as per the national water policy of 2002 and international water guidelines. There is

a gap between water service delivery and the required service to be delivered at the study area. The results show further that the agent was not performing its functions of ensuring that quality water services are delivery leading to poor relationship between the agent and the principal. Water users in the study area has a negative perception towards quality of water services, thus the intention of the government is to ensure that quality water service is delivered to the community. Initiatives need to be made by the service providers, service authority (community owned water supply organisations and District Councils) and service users of improving the service delivery. The old diesel operated water motor pumps should be replaced with modern electrical operated water pumps in order to improve the reliability of water service provision. Water users should be educated on the cost sharing and paying for water tariffs.

References

Akpor, O. B. and Muchie, M. (2011). Challenges in meeting the MDGs: The Nigerian drinking water supply and distribution sector. Journal of Environmental Science and Technology 4(5), pp.480 – 489.

AMCOW (2012). A Snapshot of Drinking Water in Africa. Prepared for African Ministers' Council on Water as a Contribution to the 11th Summit of Heads of State and Governments of the African Union with Special theme: Meeting the Millennium Development Goals on Water and Sanitation. 30 June - 1 July, 2012. 14pp.

Angelova, B. and Zekiri, J. (2011). Measuring customer satisfaction with service quality using American customer satisfaction model. International Journal of Academic Research in Business and Social Sciences 1(3),pp. 1 – 27.

Bryman, A. and Bell, E. (2011). Business Research Methods. (3th Ed.), Oxford University Press Inc., New York. 765pp.

Carlitz, R. and Taylor, B. (2017). The challenge of water provision in rural Tanzania. International Growth Centre.[http://www.theigc.org/blog/the-challenge-of-water-provision-in-rural-tanzania] site visited on 20/08/2017.

Creswell, W. J. (2012). Research Conducting & Evaluating Quantitative and Qualitative Research, University of Nebraska. Lincold. 650pp.

Doria, M. F. (2010). Factors influencing public perception of drinking water quality. Water Policy 12,pp.1 – 9.

Doria, M. F., Pidgeon, N. and Hunter, P. R. (2005). Perception of tap water risks and quality: A structural equation model approach. Water Science and Technology 52(8),pp.143 – 149.

Francis, M., Nagarajan, G., Sarkar, R., Mohan, V., Kang, G. and Balraj, V. (2015). Perception of drinking water safety and factors influencing acceptance and sustainability of a water quality intervention in rural southern India. BioMed Central Public Health 15(1),pp. 1 – 9.

Hatry, H. P. (2007). Performance Measurement: Getting Results. (2nd Ed.), Urban Institute, Washington DC. 87pp.

Herbst, S., Benedikter, S. and Koester, U. (2009). Perceptions of water, sanitation and health: a case study from the Mekong Delta, Vietnam. Water Science and Technology 60(3),pp.699 – 707.

Holzer, M. and Yang, K. (2004). Performance measurement and improvement: An assessment of the state of the art. International Review of Administrative Sciences 70,pp.15 – 31.

Joseph, G, Haque, S. S and Ayling, S. C. E (2018) Reaching for SDGs the Untapped potential of Tanzania's water supply, Sanitation and Hygiene Sector (English). Wash Poverty Diagnostic. World Bank Group, Washington DC, USA 165pp

Kabote, S. J. and John, P. (2017). Water governance in Tanzania: performance of governance structures and institutions. World Journal of Social Sciences and Humanities 3(1),pp. 15 – 25.

Karimi, A. N. (2016). Assessment of the quality of water service delivery in Peri Urban Kenya. Case study of Githurai Nairobi. Dissertation for Award of MSc Degree at University of Dar es Salaam, Tanzania, 94pp.

Katomero, J. G. (2017). Accountability as element of governmentality: An investigation of National and Local Executive Accountability Practice in water sector in Tanzania. Thesis for Award of PhD Degree at University of Twenty, Enschede, the Netherlands, 206pp.

Kayser, G. L., Moriarty, P., Fonseca, C. and Bartram, J. (2013). Domestic water service delivery indicators and frameworks for monitoring, evaluation, policy and planning. A Review. International Journal of Environmental Research and Public Health 1(10),pp. 4812 – 4835.

Kumasi, T. C., Adank, M., Smits, S., Agbemor, D. B., Chimbar, T. L. andAtengdem, J. (2015). User Satisfaction with Handpump Water Services: A Synthesis of Findings from 3 Districts Akatsi South, East Gonja and Sunyani West Districts. IRC-CWSA, Ghana (307 – 318)

Licari, M. J., McLean, W. and Rice, T. W. (2005). The condition of community streets and parks: A comparison of resident and non-resident evaluations. Public Administration Review 65, pp.360–368.

Miquel, F. and Garcia, V. (2013). Water service quality in Tanzania: Access and management. International Journal of Water Resource Development 29(3), pp. 451 – 471.

Sherry, J. (2017). Perception of Water serve's and Innovation to improve Water Services in Tanzania. Master of Science in Geography Dissertation, Virginia Polytechnic Institute and State University. 78pp.

UNDP and United Republic of Tanzania (2014). Tanzania Human Development. [http://hdr.undp.org/sites/default/files/thdr2014-main.pdf] site visited on 10/6/2018.

UNICEF (2014). Right to Safe Water and Sanitation. Current Issues No. 3. UNICEF, New York. 5pp.

UNICEF/WHO (2010). Progress on Sanitation and Drinking Water, 2010 Update. JMP estimates are based on a linear regression of nationally. Representative Household Surveys 2,pp. 117 – 132.

UN-Water (2015). The United Nations World Water Development Report, Water for a Sustainable World. United Nations Educational Scientific Cultural Organization, New York. 139pp.

United Republic of Tanzania (2014).Tanzania Mainland Household Budget Survey Main Report, 2011/2012. National Bureau of Statistics, Dar es Salaam, Tanzania. 201pp

URT (2002).National Water Policy. Ministry of Water and Livestock Development, Dar es Salaam. 97pp.

URT (2015). Tanzania Development Vision 2025, Big Result Now. 2013/2014. President's Delivery Bureau, Dar es Salaam, Tanzania. 32pp

World Health Organisation (2016) Drinking Water Fact Sheet

http://www.who.int/mediacentre/factsheets/fs391/en/ site visited on 10/11/2019.