



Factors Affecting the Performance of the Community-Based Water Supply Organisations (CBWSOs) in Katavi Districts, Tanzania

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Abstract

Despite the government's efforts to improve rural water supply management through a community participation approach (CBWSO system), the implementation of the strategy in the Katavi region is still doubtful. CBWSOs in Katavi have been struggling to collect water charges with Political leaders in the front row to oppose water tariffs. This study aimed to assess the factors affecting the performance of CBWSOs in managing water supply schemes for the sustainability of water services in Katavi rural areas. An inductive approach and exploratory design were employed in this study. The study population comprised 48 respondents and supervisory board members of selected CBWSOs. Data was collected through one-on-one In-depth interviews, field observation and literature reviews. The findings revealed firstly, financial management was identified as a critical aspect, emphasizing the importance of community participation in the collection of funds. Secondly, regular infrastructure maintenance is essential for the reliability of the water supply. Thirdly Positive political influence involves securing funding and resources, creating a supportive regulatory environment, promoting community engagement, and advocating for the interests of CBWSOs. In contrast, negative political influence hinders decision-making processes and neglects the responsibilities of supporting and overseeing CBWSOs. Lastly, community awareness was identified as a significant factor. Community participation in the collection of funds fosters financial sustainability, a sense of ownership, responsible resource utilisation, and transparency. Recommendations include supporting financial sustainability, establishing a regulatory framework for infrastructure maintenance, minimising negative political interference, promoting community awareness and participation, providing capacity building, and implementing a monitoring and evaluation framework.

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1. Introduction

Water is a naturally occurring resource and fundamental for sustaining life and biological systems (Jacob and Gichuki, 2017). Research conducted by UNICEF (2021) and WHO (2019) revealed that 1 in 3 people globally cannot access safe drinking water. To promote integrated water resources management, the Government of Tanzania enacted reforms to improve water supply and sanitation services, such as the Water Development Policy 2002 and the National Water Sector Development Strategy 2006 (Nzilano, 2017). According to Emil and Augusta (2018), water supply projects in Africa cannot recover costs, capital maintenance, operations, and maintenance but collect revenues from water sales. According to Mulwa (2018), Community-Based Water Supply Organisations (CBWOs) are voluntary associations where people organise to mobilise their collective power's potential. According to the Water Supply and Sanitation Act No. 5 of 2019, Water services in rural areas are managed and operated by CBWSOs under the supervision of RUWASA at the district level.

Financial management is important in managing water supply services. Failure in revenue collection results in poor service provision and jeopardises the sustainability of water supply schemes. Studies on the performance of rural water schemes in the USA and some African countries, including Tanzania (Karres et al., 2022; Nithammer et al., 2022; Omarova et al., 2019; Omondi et al., 2020; Mgoba and Kabote, 2020; Kirenga et al., 2018) focused on technical, institutional involvement, and successful level (Jacob and Gichuki, 2017; Hasan et al., 2019; Kusworo, 2019). None of the above studies focused on financial management.

Poor infrastructure has contributed to inadequate service provisions, such as the age of the water schemes and water points. In line with schemes' infrastructures, there is a growing demand for claims to instruments for primary data collection, particularly for CBWSOs. The study on successful community-based water management by Domínguez et al. (2019) from perspectives from Rural Uganda indicated that water

infrastructure management was ineffective because of the absence of organisational characteristics (design principles, participatory, holistic, and structured assessment). In Tanzania, Mgulo and Kamazima (2022) studied participatory rural development; community participation focused on governance and management aspects, disconnection, lack of quality services, and community participation, support, and involvement. The literature revealed that various studies assessed adequate water supply sustainability, operation and maintenance, recordkeeping, and collection of water tariffs but did not focus on how infrastructure facilities affect the performance of CBWSOs.

Political interference hinders the performance of water supply projects (Masombe and Omwega, 2020). Ackermann and Eden (2011) described strategic management from the view of political, social, and technological contexts. They reckoned that both public and private actors influence the performance of organisations but did not focus on how political interference affects the performance of CBWSOs.

Lack of community awareness significantly influenced community-based organisations to deliver intended services. In Mexico, Leroy (2023) investigated how institutional factors affected the performance of community-based water management. Tantoh et al. (2021) in Cameroon concentrated on pro-community-based water management system sustainability, public, private, and grassroots communities, involvement and engagement of all stakeholders, and strong traditional leadership. None of the studies focused on how community awareness affects the performance of CBWSOs.

Organisational performance refers to the degree to which the organisation positions itself effectively with some informational, financial, and human resources (Conțu, 2020). Kifanyi et al. (2013) analysed the performance of Community-based projects and organisations in urban water supply and sanitation. Maral et al. (2023) identified the operational indicators associated with the performance of water utilities in Portugal, focused on the influence of community participation, project management skills, technology, and monitoring and evaluation practices which both leaves a gap in financial management, infrastructure facilities, and political interference factors. Daniel et al. (2023) have conducted studies in community-based water supply organisations/utilities; however, none of the investigations covered factors influencing the Performance of CBWSOs in Katavi region.

In Tanzania, water services sustainability was left to the beneficiary communities without any preparation for the management of the schemes (Mwendamseke, 2016). After the completion of projects, beneficiaries of water schemes complain about poor services provided by CBWSOs who manage the water schemes. The complaints about CBWSOs are initiated by common challenges of difficulties in efficiently collecting water bills from customers, inadequate or delayed water service due to poor maintenance of the water system, the insufficient capability of organisational water committee members, and a lack of setting applicable tariffs weakens system performance and management (GC et al., 2021). Katavi region has 182 villages where CBWSOs, through the Rural Water Supply and Sanitation Agency (RUWASA), serve 172 villages, with 124 villages reached with piped schemes and 41 villages with no piped systems. The coverage by infrastructure is 54%, which means improvement is required. In the financial year 2021/2022, the total budget was Tshs. 27,740,197,208.16, and up to December 2022 total of only TShs. 18,082,024,990.54 received by RUWASA for water infrastructure development in Katavi. On average, the volume of water produced should not be less than 42,984,480 litres per day, and revenue collection is supposed to be more than TShs. 42,984,480 per day (equivalent to TShs. 15,689,335,200 per annum) instead of TSh. 305,324,051 annually (extracted from RUWASA Service Delivery and Management System – RSDMS-2023).

The problems of data collection tools and financial management, lower education to the community about data and awareness of the operation and maintenance, and geographical challenges CBWSO faces Katavi region. Political interference hinders the performance of water supply projects (Masombe and Omwega, 2020). CBWSOs in Katavi have been struggling to collect water charges with Political leaders in the front row to oppose water tariffs. CBWSOs of Mpakato, Kaparema and Ikoise have this challenge in Tanganyika. Also, despite the efforts of the Government to improve rural water supply management through a community participation approach (CBWSO system), the implementation of the strategy in the Katavi region is still doubtful. This study aimed to assess the factors affecting the performance of CBWSOs in managing water supply schemes for the sustainability of water services in Katavi rural areas.

Therefore, this study was guided by four specific objectives; to examine the influence of financial management on the Performance of CBWSOs in Katavi, analyse the effect of political interference on the

Performance of CBWSOs in Katavi, analyse the influence of infrastructure facilities on the performance of water supply schemes in Katavi, and analysing the impact of community awareness on the performance of community water supply schemes in Katavi region

2. Methodology

The section articulated detailed information regarding research design, strategy and sampling procedures, including the study's area, the targeted population of the study, the sample size and sampling techniques, data collection methods, data management and analysis procedures, and the study's trustworthiness.

2.1 Research Approach

The study employed an inductive approach to generate discussions on factors affecting the performance of the CBWSOs in managing water supply schemes in the Katavi region. The qualitative approach involves data generation subjected to rigorous qualitative analysis formally and rigidly (Saunders et al., 2019).

2.2 Research Design

An explanatory research design was used in this study, in which propositions and questions about a phenomenon affecting the sustainability of the CBWSOs in managing water supply schemes in the Katavi region were carefully examined and articulated at the outset.

2.3 Area of the Study

Katavi region in Tanzania was taken as a study area. Mainly focused on CBWSOs found at Mlele (6), Mpanda (3), and Tanganyika (3) districts in Katavi region. The area was chosen because it is a subset of any region in Tanzania where this study could be conducted.



Figure 1: A map of the Katavi Region showing Districts of the study area.

2.4 Target Population of the Study

Population means the entire mass of observations, the parent group from which a sample will be formed (Saunders et al., 2019). Sampling was composed of CBWSOs with the highest and lowest performance in respective districts, as presented in Table 1 below. This study targeted 52 respondents: the management team and supervisory board of sampled CBWSOs.

Table 1: Composition of the Sample

LGA	CBWSOs		Number of Villages Served
	Good Performance	Poor Performance	
Mlele DC	Inyonga		3
Mpimbwe DC	Kibaoni		3
Mpimbwe DC	Majimoto		6
Mpimbwe DC		Mwamapuli & Chamalendi	5
Mlele DC		Nsenkwa**	3
Mpimbwe DC		Usevya & Ikuba*	5
Nsimbo DC		MMASI CBWSO	9
Nsimbo DC		Muungano CBWSO	11
Nsimbo DC		Nsimbo CBWSO	13
Tanganyika	KAPAREMA		5
Tanganyika	MPAKATO		11
Tanganyika		MSIKA	9

2.5 Sample Size and Sampling Techniques for the Study

According to Saunders et al. (2019), a sample refers to a small group of respondents drawn from a population where the researcher was interested in gaining information and drawing conclusions. The study sample comprised the Management team (30) and the Supervisory Board (22) of CBWSOs. Purposive sampling was chosen using the saturation approach as it has attained widespread acceptance as a methodological principle in qualitative research.

2.6 Data Collection Methods

In-depth interviews, surveys, and documentary reviews were used to obtain detailed information concerning the study objectives. According to Saunders et al. (2019), research instruments are central to quality assurance and control.

2.7 Data Analysis Plan

As Saunders et al. (2019) proposed, a researcher needs to manage data as soon as they start fieldwork. Braun and Clarke (2021) added that before analysing data, the researcher must first know the theoretical analysis on the ground for good thematic analysis. In this regard, a researcher employed thematic analysis and coded and analysed answers using Microsoft Excel 2016 and NVivo to generate tables and figures.

2.8 Variables and Measurements of the Study

The variables and measurement procedures of this study are presented in Table 2 below. The presentation below involves the type of variables and methods of measurement used for each variable by former researchers.

Table 2: Summary of influential factors outcome

<i>Variables</i>	<i>N of VRs</i>	<i>Code</i>	<i>Sub variables</i>	<i>Source</i>	<i>Type of Scale</i>
<i>Performance of CBWSOs</i>	3	PCB WSO	PCBWSO1: Supervisor’s role in water delivery	Leroy, D. (2023).	Ratio
			PCBWSO2: Role of CBWSOs Board of Directors		Ordinal
			PCBWSO3: Satisfaction with the level of service provided by CBWSOs		Ordinal
<i>Financial Management</i>	5	FM	FM1: Revenue collection from water tariff	Daniel et al., (2023)	Interval
			FM2: Revenue Duration		Ratio
			FM3: Revenue Condition/Tariff status		Interval
			FM4: Financial training		Ordinal
			FM5: Community-run monitoring		Ordinal

<i>Infrastructure facilities</i>	4	INF	IF1: Infrastructure condition	Domínguez, al., (2019)	Nominal
			IF2: Operational capability		Ordinal
			IF3: Maintenance of water schemes	Leroy, D. (2023)	Interval
			IF4: Amount of water produced	Murphy-Mills, et al. (2019)	Ratio
<i>Political Interference</i>	1	PI	PI1: Conflict resolution	Tantoh, et al., (2021)	Ordinal
	3	CA	CA1: Community participation in the collection	Leroy, D. (2023)	Ordinal
			CA 2: Social ties		Ordinal
CA 3: Trust in other members			Ordinal		
<i>Community Awareness</i>					

2.9 Validity and Reliability of the Qualitative Study

Credibility, dependability, transferability and confirmability are historically rooted in qualitative research from the positivist perspective (Saunders et al., 2019). The pilot study ensured the credibility and dependability of the research instruments (Cohen et al. 2017). The pilot study was conducted in Katavi region by selecting the Management team (6) and Supervisory Board (3) of CBWSOs which were not respondents. The pilot data obtained was not included in the actual study; rather, the study allowed for pre-testing of the research instruments.

2.10 Trustworthiness, Transferability, Confirmability and Ethical Consideration of the study

Trustworthiness is a state of demonstrating credibility, plausibility, and integrity (Saunders et al., 2019). The qualitative research inquiry aims to search for the common results, which is “truth” (Saunders et al., 2019). The researcher-maintained trustworthiness. This study ensured transferability by providing an in-depth description of the research methodology and a detailed description of the findings, enabling readers and other users to consult and make comparisons (Gay et al., 2012; Saunders et al., 2019). Confirmability is the degree to which others can confirm or corroborate the research findings (Yin, 2013). The researcher employed triangulation of data sources to ensure and enhance the results. The researcher obtained research clearance/permit from all required

institutions and authorities, and therefore, the researcher will also avoid data fabrication, falsification and plagiarism.

3. Results and Discussion

3.1 Results

This section comprises the data analysis, data presentation and data interpretation. This includes the response of all measured variables on the factors affecting the performance of CBWSOs, a case of Katavi region measured.

3.1.1 Interviewees' Demography

To fully meet this study's objectives, the researcher conducted an in-depth interview with 48 participants, which is 94.23% of the targeted population; the sex of participants was also crucial in understanding patterns in a qualitative study. The study findings indicated that most of the targeted population were men (71.15%), which shows that men are the majority of decision-makers in CBWSOs. Furthermore, the education level of the study participants was investigated, and findings indicated that the majority (53%) attended up to secondary education and the minority (9.62%) finished primary education. This made the in-depth interview reliable and trustworthy since all the respondents could read and understand the interview questions, and this trend justified their positions in the CBWSOs committee. Besides the education levels of the participants, positions were also considered. The study interview included: technicians, supervisors, chairpersons and accountants.

The frequency of participants based on variable demography is indicated in the graphical presentation below:

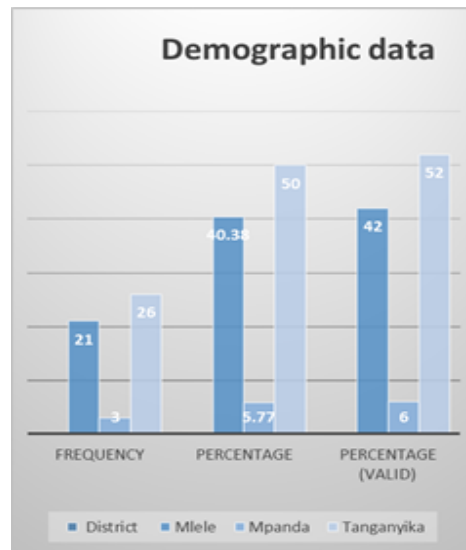


Figure 2: Showing the number of participants from

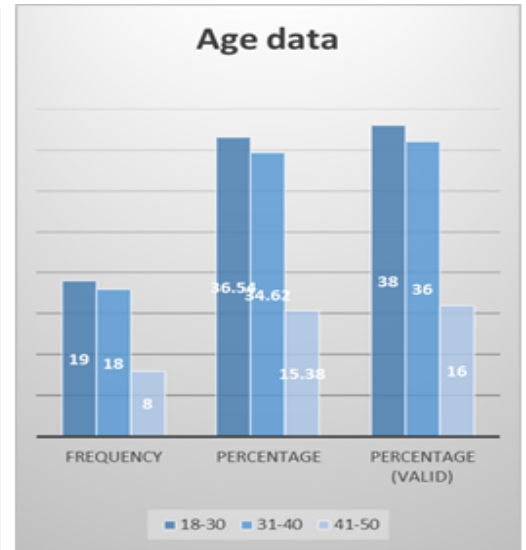


Figure 3: Showing the age group of all respondents

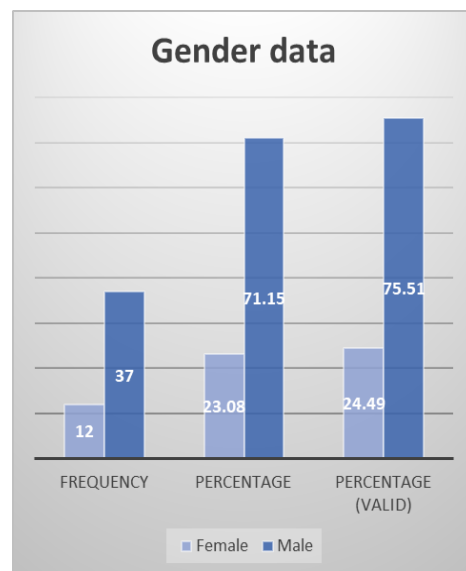


Figure 4: Showing gender of the respondents

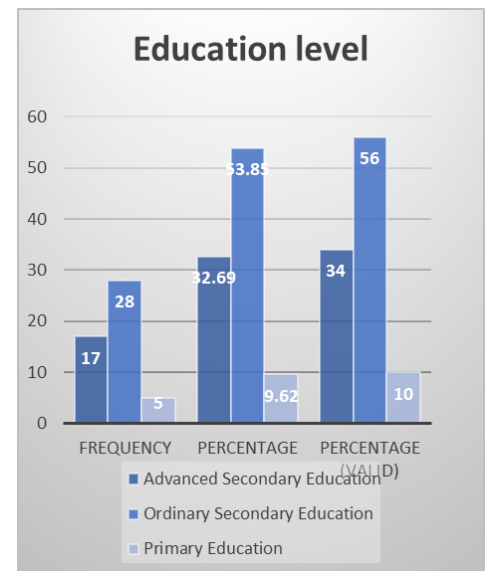


Figure 5: Education level of respondents

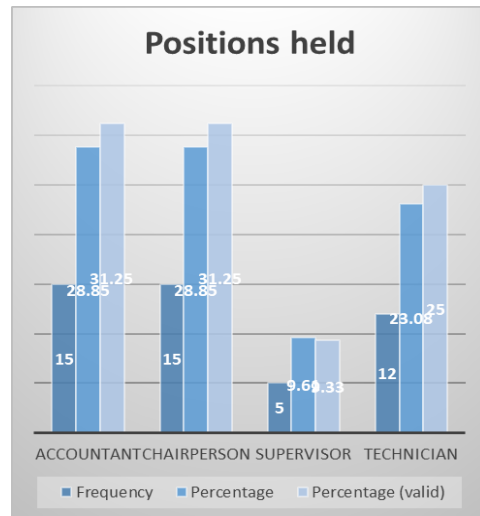


Figure 6: Position held by respondents

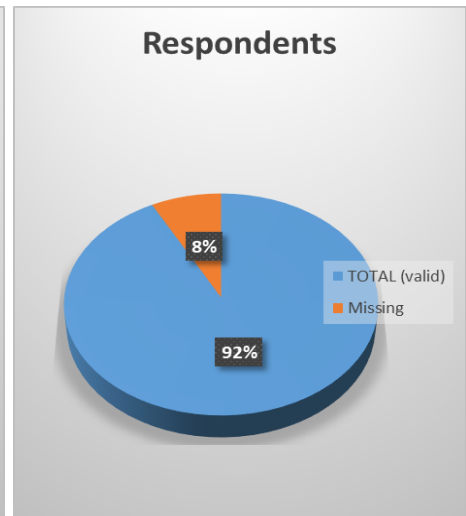


Figure 7: Percentage of respondents of the study

3.1.2 Data Analysis

3.1.2.1 The Influence of Financial Management on the Performance of (CBWSOs)

The influence of financial management on the performance of Community-Based Water Supply Organizations (CBWSOs) in the Katavi region is significant. Thematic analysis of the interviews with respondents highlighted key themes related to financial management, including revenue collection from water tariffs, revenue Duration, revenue condition/tariff status, financial training and community-run monitoring, as shown in Figure 8.



Source: Field data 2023

Figure 8: Financial management knowledge map

During the data collection from the field in Katavi region, respondents provided insights on revenue collection from water tariffs for Community-Based Water Supply Organizations (CBWSOs), the importance of community-run monitoring for Community-Based Water Supply Organizations and the importance of timely revenue collection to ensure the financial stability and sustainability. Respondents also highlighted the challenges in revenue collection from water tariffs, including late payments, unpaid bills, and financial mismanagement. Table 4.2 below presents fourteen (14) respondents' statements to emphasise the findings.

Table 4: Fourteen respondents comment on the influence of financial management

S/n	Respondent statements	Factors
1	<i>"Late payment of water bills, especially by schools and hospitals, is a problem. There is also a lack of collection due to misuse of funds and customer mistrust in using accounts."</i>	Revenue collection from water tariffs
2	<i>"One way to encourage timely bill payment is by incentivising customers who pay promptly. These incentives could include discounts, rewards, or special privileges. Clear communication and transparency about these incentives ensure customers are aware and motivated to participate."</i>	

3	<i>"The flexible payment options, such as instalment plans or subsidised tariffs, is important for economically disadvantaged households to alleviate the financial burden and ensure regular bill payments from low-income communities." (Interview field data, May 2023)</i>	
4	<i>"Timely payment of water bills is crucial for CBWSOs. Seminars and education can effectively improve the situation, but the response is not aligned due to regular motors burning causing high expenditure." (Interview field data, May 2023)</i>	Revenue Duration
5	<i>"There are late payments of bills and a lack of skills in payment through accounts. In rural projects, there is a low collection of money. Collecting water bills through accounts and educating customers can help address these issues." (Interview field data, May 2023)</i>	
6	<i>"Unpaid debts and loss at domestic points are issues. There is also a lack of suppliers. Using an accounting system, direct involvement of all board members, and following a code of ethics can help address these challenges." (Interview field data, May 2023).</i>	Revenue Condition
7	<i>"The low income of people affects the collection of water bills. Controlling leakages and collecting bills on time should be prioritised. Cash collection methods are aligned with addressing these issues." (Interview field data, May 2023)</i>	
8	<i>"Creating a good environment for bill collection and utilising systems for collection are proposed solutions." (Interview field data, May 2023).</i>	
9	<i>"There is a high number of shallow wells. However, the response regarding the use of public funds is not aligned." (Interview field data, May 2023)</i>	Financial training
10	<i>"There is a high number of shallow wells. However, the response regarding the use of public funds is not aligned." (Interview field data, May 2023)</i>	
11	<i>"Keeping accounting records up-to-date, monitoring the financial position, and becoming more efficient are suggested actions." (Interview field data, May 2023)</i>	
12	<i>"Creating a good environment for bill collection and utilising systems for collection are proposed solutions." (Interview field data, May 2023).</i>	Community-run monitoring
13	<i>"The response highlights many shallow wells and the</i>	

	<i>importance of banking money after collection." (Interview field data, May 2023</i>	
By 4 y	<i>"Using an accounting system, direct involvement of all board members, and following a code of ethics can help address these challenges." (Interview field data, May 2023</i>	

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By addressing these presented challenges and implementing the suggestions provided by the respondents, CBWSOs can improve their financial stability, ensure sustainable water supply services, and foster a mutually beneficial relationship with the community.

3.1.2.2 The Influence of Infrastructure Facilities on the Performance of Water Supply Schemes in Katavi

The influence of infrastructure facilities on the performance of water supply schemes in Katavi was analysed through thematic analysis of interview data. The analysis was based on key themes such as Infrastructure condition, Operational capability, Maintenance of water schemes, and Amount of water produced, as indicated in Figure 9. The sub-themes are further explained in the next sections.

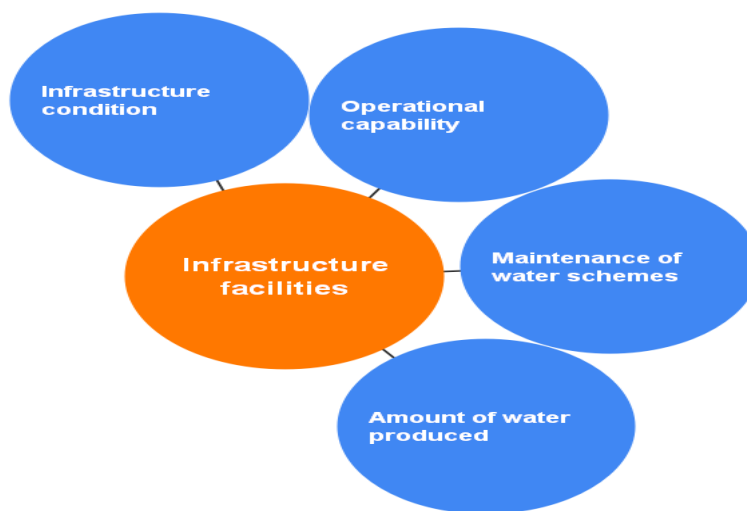


Figure 9: Infrastructure knowledge map (Source: Field data 2023)

During the data collection from the field in the Katavi region, respondents provided insights on the mentioned four variables regarding infrastructures. The responses obtained from the interviews provide insights into the role of infrastructure conditions and highlight various aspects related to its maintenance and water production challenges. Table 5 below presents some of the respondents' (10) comments on the influence of infrastructures, which represents the majority's response.

Table 5: Ten (10) respondents comment on the influence of infrastructure

S/n	Respondents comment	Theme
1	<i>"Infrastructure needs regular maintenance to avoid deterioration." (Interview field data, May 2023).</i>	Infrastructure condition
2	<i>"Infrastructure maintenance is challenging in remote areas due to accessibility and limited skilled personnel." (Interview field data, May 2023).</i>	
3	<i>"Inadequate infrastructure leads to frequent water leakages and interruptions in supply." (Interview field data, May 2023)</i>	
4	<i>"Operational capability depends on having trained personnel who can effectively manage and maintain the infrastructure." (Interview field data, May 2023)</i>	Operational capability
5	<i>"Financial resources are crucial for maintaining the operational capability of CBWSOs." (Interview field data, May 2023).</i>	
6	<i>"Regular maintenance is crucial to prevent system</i>	Maintenance

S/n	Respondents comment	Theme
	<i>failures and ensure uninterrupted water supply." (Interview field data, May 2023)</i>	<i>of water schemes</i>
7	<i>"Regular maintenance is crucial to prevent system failures and ensure uninterrupted water supply." (Interview field data, May 2023)</i>	
8	<i>"Regular monitoring is necessary to ensure adequate water production to meet the increasing demand." (Interview field data, May 2023)</i>	<i>Amount of water produced</i>
9	<i>"Water conservation practices are essential to maximising water production." (Interview field data, May 2023).</i>	
10	<i>"Managing water sources effectively is crucial for increasing water production." (Interview field data, May 2023).</i>	

The responses highlight the challenges CBWSOs face in maintaining infrastructure in remote areas, water leakages, pipeline bursts, equipment malfunction due to infrastructure deficiencies, inadequate infrastructure maintenance, repairs, and expansion funds.

Moreover, the responses point out the impact of inadequate infrastructure on the quality and reliability of water supply, the importance of adequate human resources in enhancing operational capability, the need for routine inspections, repairs, and replacements of equipment and infrastructure and the need for sustainable water management practices to maximize water production.

3.1.2.3 The Effect of Political Interference on the Performance of CBWSOs

The performance of Community-Based Water Supply Organizations (CBWSOs) in the Katavi region is influenced by various factors, including

political interference. Political influence includes conflict resolution and positive and negative political influence, as shown in **Figure 4.3**.

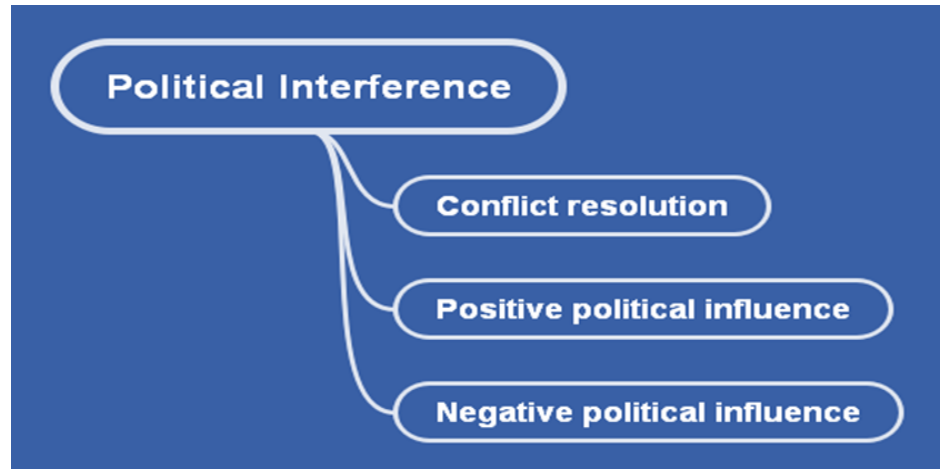


Figure 10: Political influence knowledge map (Source: Field data 2023)

The responses gathered from interviews provided insights into political leaders' positive and negative impacts on the operations and development of CBWSOs in the Katavi region. Also, the interview responses shed light on the importance of conflict resolution and provide insights into various strategies and approaches used in the Katavi region. Table 4.6 below presents ten (10) respondents' comments reflecting the majority's response.

Table 6: Nine (9) respondents' comments on the political influence

S/n	Respondent comments	Variable
1	"Open communication channels and regular meetings help us resolve conflicts and find solutions together." (Interview field data, May 2023)	Conflict resolution
2	"Mediation by impartial individuals has been effective in resolving conflicts and bringing parties together." (Interview field data, May 2023)	
3	, "We need to address the root causes of conflicts and find sustainable solutions to prevent them from arising again." (Interview field data, May 2023)	
4	"Building trust and promoting community ownership help us	

S/n	Respondent comments	Variable
	<i>resolve conflicts in a way that benefits everyone." (Interview field data, May 2023)</i>	
5	<i>"Political leaders have played a vital role in securing funds for our water projects, ensuring we have the necessary resources to provide reliable water services." (Interview field data, May 2023)</i>	Positive political impact
6	<i>"Political leaders have actively encouraged community engagement in water management, fostering a sense of ownership and responsibility among community members." (Interview field data, May 2023)</i>	
7	<i>"Political leaders have been our voice at the regional and national level, advocating for our issues and pushing for necessary policy changes to support the growth and development of CBWSOs." (Interview field data, May 2023)</i>	
8	<i>"Political interference has hindered our ability to make independent decisions and implement projects that align with the community's needs." (Interview field data, May 2023).</i>	Negative political influence
9	<i>"Political favouritism has resulted in unequal access to water services, with certain areas or groups receiving preferential treatment, while others are neglected." (Interview field data, May 2023).</i>	

The interview responses shed light on the challenges such as some of the political leaders tend to impose their own agenda or personal interests, disregarding the needs and priorities of the community, and patronage and favoritism, directing resources and benefits to specific individuals or groups within the community regardless of their water needs.

On the other side, the respondents declared to have political leaders' support in securing funding and resources for water projects, political leaders contribute to community engagement and participation in water management initiatives, and political leaders tend to advocate for CBWSOs at higher government and decision-making bodies.

3.1.2.4 The Impact of Community Awareness on the Performance of Community Water Supply Schemes in the Katavi Region

The study sought to assess the impact of Community awareness on the performance of community water supply schemes in the Katavi region. The key themes analysed in this section are community participation in the collection, social ties and trust in other members.



Figure 11: Community awareness knowledge map (Source: Field data 2023)

During the data collection from the field in the Katavi region, respondents provided insights on the three mentioned variables regarding community awareness. The responses obtained from the interviews provided insights into the role of community participation, trustworthiness and social ties. Table 7 below presents six (6) respondents' comments on community awareness replicating the majority views.

The interview responses shed light on the challenges such as some of the political leaders tend to impose their own agenda or personal interests, disregarding the needs and priorities of the community, and patronage and favoritism, directing resources and benefits to specific individuals or groups within the community regardless of their water needs.

On the other side, the respondents declared to have political leaders' support in securing funding and resources for water projects, political leaders contribute to community engagement and participation in water management initiatives, and political leaders tend to advocate for CBWSOs at higher government and decision-making bodies. During the data collection from the field in the Katavi region, respondents provided insights on the three mentioned variables regarding community awareness. The responses obtained from the interviews provided insights into the role of community participation, trustworthiness and social ties.

Table 7: Six (6) respondents' comments on community awareness

S/n	Respondent Comments	Variable
1	<i>"When community members actively participate in the collection of funds, it ensures that the financial burden is distributed among the community, making the CBWSO financially sustainable." (Interview field data, May 2023)</i>	<i>Community participation in the collection of fund</i>
2	<i>"When community members contribute to the collection process, they feel a sense of ownership over the CBWSO and are more likely to support its activities and initiatives." (Interview field data, May 2023)</i>	
3	<i>"When community members actively contribute to the collection of funds, it reduces the burden on the CBWSO and enables them to meet their financial obligations more effectively." (Interview field data, May 2023)</i>	
4	<i>"Trust is important for us to work together and achieve our goals." (Interview field data, May 2023)</i>	<i>Trust in other members</i>
5	<i>"We trust each other's judgment and rely on everyone's expertise when making important decisions." (Interview field data, May 2023)</i>	
6	<i>"We trust that the funds and resources allocated to the CBWSO will be used for the betterment of the community." (Interview field data, May 2023)</i>	

The responses obtained from the interviews shed light on the significance of community involvement in financial matters, community participation in building a sense of ownership and responsibility, and participation in the collection process. Furthermore, community participation in fund collection facilitates transparency and accountability.

3.2 Discussion

3.1 The Influence of Financial Management on the Performance of CBWSOs

The interviews with respondents in the Katavi region highlight key themes related to financial management in Community-Based Water Supply Organizations (CBWSOs). These themes include revenue collection from water tariffs, revenue duration, revenue condition/tariff status, financial training, and community-run monitoring. The challenges identified include late payments and unpaid bills, mismanagement of funds and customer mistrust.

These findings align with existing studies and theories related to financial management in CBWSOs. Prior research has emphasised the importance of revenue collection, efficient billing systems, and customer engagement in improving the financial sustainability and performance of CBWSOs (Kemerer et al., 2019; Alemie et al., 2017). Using incentives for timely bill payment and flexible payment options for low-income communities has been suggested as an effective strategy (Kemerer et al., 2019). Moreover, involving the community in monitoring activities has been recognised as a means to ensure accountability and sustainability in water supply projects (Strecker et al., 2015).

Regarding relevant theories, the findings align with financial management and control principles. Effective revenue collection, shortening the revenue cycle, and maintaining a favourable revenue condition reflect the importance of financial management mechanisms to ensure the financial stability of CBWSOs (Ntibinyane et al., 2021). The application of financial training to enhance financial management skills

and the community's involvement in monitoring aligns with the principles of accountability and transparency in financial governance (Hahn et al., 2014).

3.2 The Influence of Infrastructure Facilities on the Performance of CBWSOs

The findings from the interviews regarding the influence of infrastructure facilities on the performance of water supply schemes in Katavi align with existing studies and theories related to water infrastructure and operational management.

Infrastructure condition is a crucial factor in the effectiveness and sustainability of water supply organizations. This finding is supported by previous research highlighting the importance of infrastructure maintenance in ensuring the functionality and longevity of water systems (Ntibinyane et al., 2021; Alemie et al., 2017). Regular inspections, repairs and community involvement in reporting infrastructure issues are important practices. These findings align with the principles of asset management, which emphasise the need for proactive maintenance to prevent system failures and optimise infrastructure performance (Mugumya, 2013).

The importance of adequate human resources, financial stability, technology adoption and collaboration is highlighted, enhancing operational efficiency and performance (Teshome et al., 2020; Tadesse et al., 2019). Adopting technology and collaborating with stakeholders are also factors contributing to improved operational capability (Mugumya, 2013; Admassu et al., 2019).

Maintenance of water schemes is identified as essential for their long-term functionality and sustainability. These findings align with studies emphasising the significance of proactive maintenance practices, a skilled workforce, and financial resources for effective maintenance (Tadesse et al., 2019; Admassu et al., 2019). Community involvement in maintenance activities is an important aspect that fosters a sense of ownership and responsibility among community members (Teshome et al., 2020).

The amount of water produced is crucial in meeting the community's water needs. These findings align with studies highlighting the importance of sustainable water management, conservation measures, and efficient infrastructure operation in maximising water production (Tadesse et al., 2019; Admassu et al., 2019). Effective water management practices, community involvement, and infrastructure maintenance are key factors in optimising water production (Mugumya, 2013).

3.3 The Effect of Political Interference on the Performance of CBWSOs

The findings suggest that political interference can positively and negatively affect the performance of Community-Based Water Supply Organizations (CBWSOs). Positive political influence, as highlighted by some respondents, can contribute to the enforcement of laws, the sustainability of projects, and the resolution of water-related problems. This aligns with the theory that political support and advocacy can positively impact public service delivery (Brinkerhoff, 2008).

On the other hand, this negative influence can be attributed to political leaders misusing resources or spreading false information. Studies have shown that political interference in public service delivery can lead to inefficiencies, corruption, and a decline in service quality (Khemani, 2006; Andrews et al., 2017). This can lead to inadequate infrastructure maintenance, reduced revenue collection, and ultimately hinder the performance of the CBWSOs (Brinkerhoff, 2008).

Strengthening governance structures, promoting transparency and accountability, and fostering community engagement can help protect CBWSOs from undue political influence (Brinkerhoff, 2008; Andrews et al., 2017).

3.4 The Impact of Community Awareness on the Performance of CBWSOs

The findings regarding the impact of community awareness on the performance of community water supply schemes in the Katavi region

align with relevant studies and theories on community participation and trust in water governance.

Community participation in the collection of funds is highlighted as a significant factor in the effective management of CBWSOs. The findings align with the studies conducted by Wheeler et al., 2018 and Meinzen-Dick et al., 2019 that emphasise the importance of community participation in water governance, as it fosters a sense of ownership, shared responsibility, and equitable distribution of costs. As well as with the principles of community-based management and co-production of services, the community plays an active role in resource mobilisation and decision-making processes (Bakker, 2010; Kooy et al., 2018).

The findings highlight that trust among community members fosters strong relationships, cooperation, effective decision-making, responsible resource utilisation, and accountability. These findings resonate with studies conducted by Poteete et al., 2010 and Béné et al., 2019. common goals and ensure the sustainable management of resources. By actively involving the community in fund collection processes and fostering trust among community members, CBWSOs can promote financial sustainability, accountability, and collaboration. The findings reflect the finding of research conducted by done by Ostrom (1990), Pretty and Ward (2001) and Agrawal and Gibson (1999).

4 Conclusion

Therefore, the study findings emphasise on Effective financial management, including transparent fund collection, community participation, and responsible resource utilisation, is essential for the long-term viability of water supply systems. Adequate infrastructure conditions, operational capability, and maintenance practices are crucial for ensuring water supply infrastructure's functionality, reliability, and longevity. Also, positive political influence, such as securing funding, creating a supportive regulatory environment, and advocating for the interests of CBWSOs, enhances their effectiveness and development. However, negative political influence, including interference in decision-making, corruption, favouritism, and lack of support, hampers the functioning and

sustainability of CBWSOs. Lastly, Community involvement in the collection of funds promotes financial sustainability, fosters a sense of ownership and responsibility, and enables equitable financial burden sharing. By actively engaging the community, fostering trust, and promoting participation, CBWSOs can effectively enhance sustainability. The researcher recommends that CBWSOs to strengthen financial management and prioritise infrastructure maintenance, enhance governance and mitigating, foster community awareness and participation, facilitate capacity building and knowledge sharing and monitor and evaluate performance. Also, policy formulation on political interference, community participation and moving forward future studies should explore the recommendations above to mitigate political interference and enhance transparent and participatory governance structures within CBWSOs in the Katavi region.

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