



Stakeholders' Engagement in Planning and Monitoring the Performance of Water Supply Projects at Songea Water Supply and Sanitation Authority

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Abstract

This study assessed stakeholder engagement in planning and monitoring the performance of water supply projects at the Songea Water Supply and Sanitation Authority (SOUWASA) in Tanzania. Employing a mixed-methods research design, the study combined both quantitative and qualitative approaches. Data were collected from 91 SOUWASA staff, community representatives, and local government officials, selected through simple random and purposive sampling. Quantitative data were analysed using descriptive and inferential statistics, including regression analysis, while qualitative data were examined through thematic analysis. The results show that stakeholder participation, communication mechanisms, and conflict resolution significantly influence project performance at the 5% level ($p < 0.05$). Among these, conflict resolution had the strongest effect. Effective engagement was found to enhance coordination, reduce delays, and align project objectives with community needs, ultimately improving project performance. However, qualitative evidence indicated inconsistencies in depth and continuity of engagement, often undermined by declining interest, weak communication, and conflicting priorities. The study concludes that while stakeholder engagement positively impacts project outcomes, its effectiveness depends on being continuous and inclusive throughout the project lifecycle. Strengthening communication, building stakeholder capacity, and formalizing conflict resolution are critical to enhancing project success and sustainability.

Keywords: Communication, Conflict Resolution, Planning and Monitoring, Project Performance, Stakeholders Engagement

1. Introduction

Water supply projects are crucial for ensuring access to safe and reliable water, a fundamental human right recognized by the United Nations (UN). According to the WHO/UNICEF Joint Monitoring Programme (JMP) Report (2024), approximately 2 billion people worldwide still lack access to safely managed drinking water services, underscoring the urgent need for effective water supply project management globally. Effective stakeholder

engagement in the monitoring and planning of these projects has been increasingly recognized as essential for enhancing project performance and sustainability (Sancin *et al.*, 2023).

Globally, a study by the European Environment Agency (EEA, 2021) highlights that water supply projects with active stakeholder participation during planning and monitoring phases report higher efficiency, lower cost overruns, and improved user satisfaction. The European Union's Water Framework

Directive emphasizes the importance of engaging local communities, governments, and the private sector in water supply to achieve integrated and sustainable outcomes (Serbo, 2022). Similarly, in Asia, projects such as the Delhi Jal Board's water supply improvements have demonstrated that involving residents, municipal authorities, and NGOs in planning and monitoring enhances transparency, reduces leakages, and improves service delivery (Kumasi, 2019). This global evidence underscores the vital role of stakeholder engagement in achieving successful water project outcomes.

In Africa, the water supply sector faces significant challenges, including rapid urbanization, climate variability, and inadequate infrastructure. According to the African Development Bank (AfDB, 2022), water projects often fail to meet their objectives due to poor stakeholder involvement in project planning and monitoring, resulting in misaligned goals, a lack of accountability, and resource wastage. Countries such as South Africa and Kenya have implemented participatory approaches with varying degrees of

found that stakeholder engagement reduced delays and improved service reliability.

Tanzania, like many African countries, faces significant challenges in its water supply, particularly in rural and peri-urban areas. According to the Tanzania Water Sector Status Report of 2024, about 79.6% of the population has access to safe water supply. This figure is slightly above the sub-Saharan African average of 66% (World Bank, 2022) and some East African neighbours such as Kenya, where access stands at about 66% (JMP, 2024). However, Tanzania performs better than Uganda, which reports approximately 63% coverage (JMP, 2024). Despite these efforts, urban water utilities in Tanzania continue to struggle with project delays, budget overruns, and poor service delivery, reflecting broader regional challenges in sustaining reliable and equitable water supply systems. Studies, such as Mkwata (2024), on water projects in Dar es Salaam reveal that insufficient stakeholder participation during the planning and monitoring phases leads to misunderstandings, a lack of community buy-in, and ineffective project

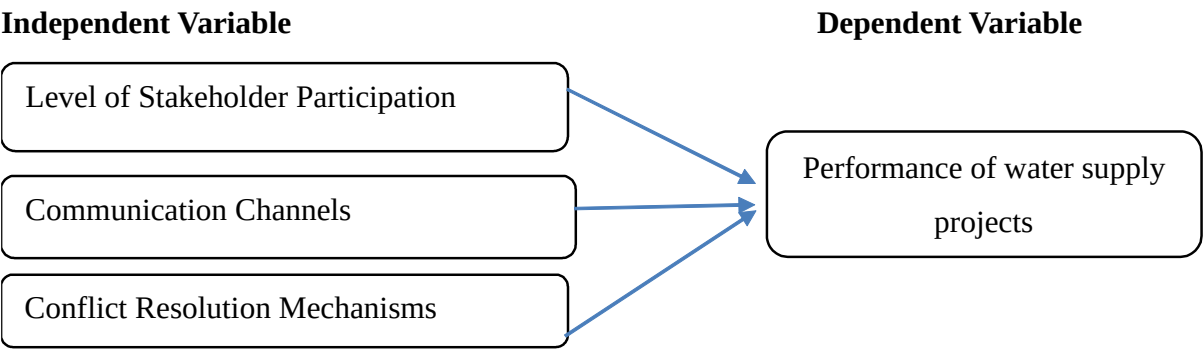


Figure 1: Conceptual Framework

Source; Sanka (2024)

success (Koech *et al.*, 2020). For example, in Kenya, the Kenya Water Act (2016) mandates community involvement in water resource management committees, which has improved project ownership and maintenance (Diing *et al.*, 2022). A case study from South Africa’s Amatola Water Supply Scheme (2020)

implementation. Furthermore, reports from the Tanzania National Bureau of Statistics (2022) indicate that many water projects funded by donors and the government struggle with performance issues linked to inadequate monitoring mechanisms and a lack of involvement from beneficiaries and local authorities.

Therefore, understanding and improving stakeholder engagement in the monitoring planning process remains a national priority.

The Songea Water Supply and Sanitation Authority (SOUWASA) is responsible for providing water services in Songea Municipality, a rapidly growing urban centre in Ruvuma Region, which is located in the southern part of Tanzania bordering Mozambique to the south. The lack of engagement has been linked to insufficient feedback loops, poor identification of emerging challenges, and weak corrective actions, ultimately impacting project performance (Liana et al., 2023). Academic studies, such as those by Mwilenga *et al.* (2025), on water supply projects in water utilities like Songea emphasize that stakeholder involvement during the monitoring and planning phases can significantly enhance transparency, community

remain in formalizing these engagements, which compromises project effectiveness.

This study examined the influence of stakeholder's engagement in the planning and monitoring of the water supply projects at SOUWASA, Songea. Also, this study pinpointed the empirical evidence on how active participation of stakeholders, including local communities, other government authorities and project implementers, affects project performance metrics (timeliness, cost efficiency and service delivery). The findings obtained aim to inform policies and practices that strengthen sustainable water supply management in SOUWASA - Songea and similar contexts.

1.2 Conceptual Framework

A conceptual framework is a hypothesized model identifying the concepts under study and their relationships. The conceptual framework describes the

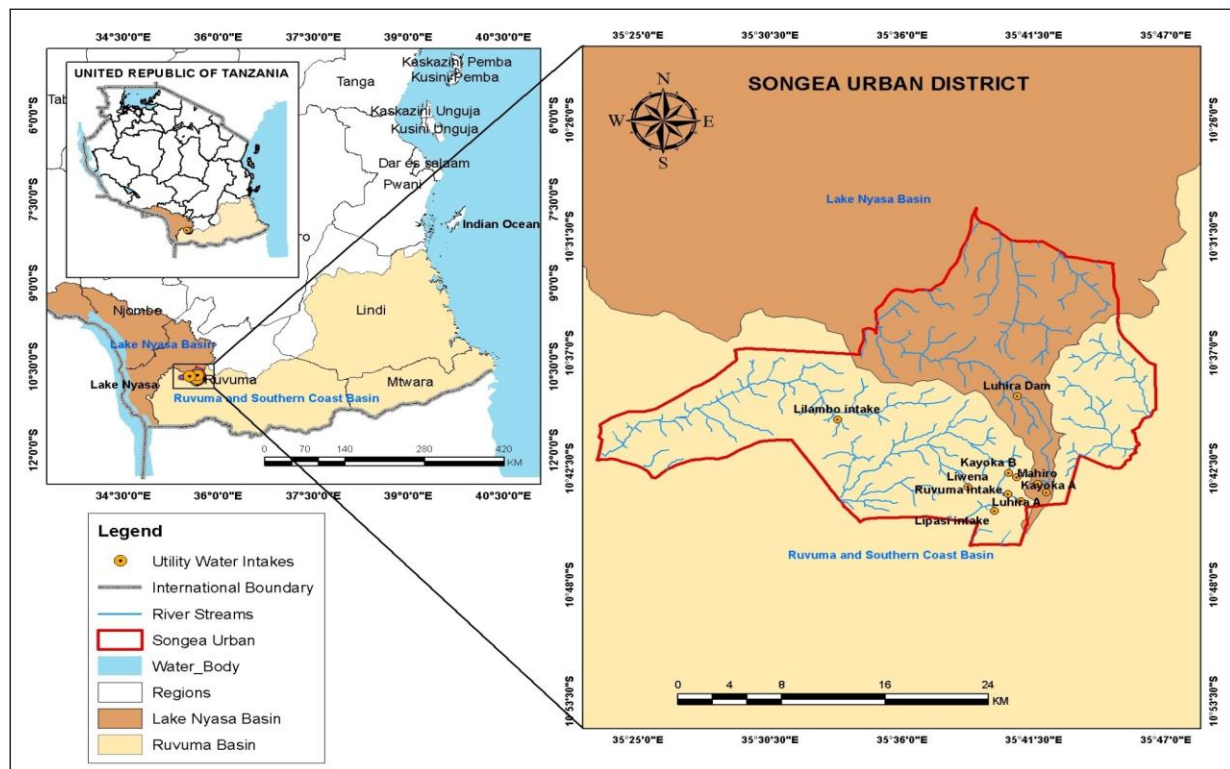


Figure 2: Songea map showing geographical location of service area

ownership, and resource utilization. However, gaps relationship between the independent and dependent

variables. As shown in the figure below, the dependent variable depends on the function of the independent variable that occurs

2. Materials and Methods

2.1 Area of the Study

This study was conducted at Songea (SOUWASA) area, in Songea Municipality. This municipality is

- 2024 still classifies Songea as a good performer except for the key challenge of high water demand compared to water production.

2.2 Research Approach

The research adopted a mixed-methods approach, combining both quantitative and qualitative techniques to explore key variables, ensuring a robust and comprehensive analysis. This approach effectively

Table 1: Distribution of SOUWASA Staff

Category/Department	Population	Percentage (%)
Management Staff	9	8.4
Engineers/Technical Staff	31	25.2
Administrative Staff	20	16.8
Operations and Maintenance	24	21.0
Finance and Procurement Staff	16	12.6
Customer Service Staff	19	16.0
Total	119	100

Source; SOUWASA (2024)

rapidly growing urban centre in the Ruvuma region of Tanzania, where access to reliable and safe water supply remains a critical challenge. First, Songea municipality has experienced increasing demand for water services due to population growth and urbanization, making it an ideal location to assess how stakeholder engagement impacts project performance in a dynamic environment. Second, SOUWASA, as the solely water utility provider, has implemented multiple water supply projects with varying degrees of success, providing a rich context to explore the role of monitoring and stakeholder participation. Third, limited research has been done specifically on stakeholder engagement in water project monitoring within this region, offering an opportunity to contribute valuable insights that can inform policy and improve project outcomes locally and in similar Tanzanian settings. EWURA annual performance report for regional and national utilities 2020 -21 shows Songea Urban utility performance under category A, whose coverage is 75% and above and meets Operation and maintenance and depreciation costs. The report of 2023

integrates numerical data with descriptive insights, enabling the researcher to delve into the subject from both statistical and contextual perspectives. The mixed-methods approach is particularly valuable for this study as it enhances the depth and breadth of the investigation, allowing for a thorough exploration of complex phenomena (Dubey et al., 2022).

2.3 Targeted Population

In this study, the population refers to the entire set of individuals or entities that possess the specific characteristics relevant to the research objectives. According to data from SOUWASA (2024), the total population size has been determined to be 119 individuals, as outlined in Table 2.1.

2.4 Sample Size and Sampling Techniques

2.4.1 Sample Size

For this study, the chosen sample size consisted of 91 participants. The Yamane formula (Equation 1) was utilised by the researcher to determine the appropriate sample size from the population, whereby;

$$n = N / (1 + N(e)^2) \quad (1)$$

n = Sample Size,

N = Total Number of Population,

95% confidence level

e = Sampling error in this study researcher use 0.05 sampling error

$$n = 119 / (1 + 119 (0.05)^2)$$

$$n = 91$$

2.4.2 Sampling strategies

The study employed a combination of Simple Random Sampling and Purposive Sampling to ensure both representativeness and the collection of in-depth insights. Simple Random Sampling was used to select a broad sample of employees at SOWASA, giving each individual an equal chance of participation and minimizing selection bias, thereby allowing generalization of the results. In contrast, Purposive Sampling targeted key informants such as senior managers, project supervisors, and monitoring and evaluation officers who possess specialized knowledge about project planning and monitoring. This dual approach enabled the study to gather comprehensive data from the general workforce while also capturing detailed perspectives from individuals directly involved in water supply project implementation and oversight (Smith, 2020).

2.5 Data Collection Methods

This study utilized multiple data collection methods to ensure a comprehensive and well-rounded analysis. The primary method was a survey, chosen for its efficiency in gathering structured data from a large sample, allowing for the integration of both qualitative and quantitative insights. Within the survey, questionnaires using a Likert scale were employed to measure participants' attitudes, perceptions, and experiences in a standardized and quantifiable manner, enhancing the reliability and validity of the results (Muguro et al., 2024). Additionally, interviews were conducted to collect in-depth, qualitative information

from selected participants, allowing for deeper exploration of insights that may not emerge through surveys alone. To complement primary data, a documentary review was also undertaken, drawing from academic literature, government reports, and credible online sources to provide contextual background and support the interpretation of the study's results (Muguro et al., 2024).

2.6 Data Analysis Methods

This study employed a combination of descriptive statistics, thematic analysis, and inferential statistics to ensure a comprehensive analysis of both quantitative and qualitative data. Descriptive statistics, including measures such as mean, median, standard deviation, and range, were used to summarize and simplify complex data, revealing key patterns and trends. For qualitative data, thematic analysis was applied to identify and interpret recurring themes and insights, particularly from interviews and textual responses (Hamed et al, 2020). Additionally, inferential statistics, including regression analysis and hypothesis testing, were employed to make generalizations about the broader population based on the sample, enabling the study to explore relationships between variables such as Level of Stakeholder Participation, Communication Channels, and conflict resolution mechanisms in relation to water supply project performance. The analyses were conducted using SPSS Version 26, ensuring accuracy and reliability in data interpretation (Hamed *et al*, 2020).

3. Results

3.1 Socio-demographic characteristics

Socio-demographic characteristics involve the social and demographic attributes of a study's participants, such as age, gender, education level, occupation, and Position. Analysing socio-demographic data is important for interpreting results, as it can reveal how different population groups may be affected by or respond to various factors in the

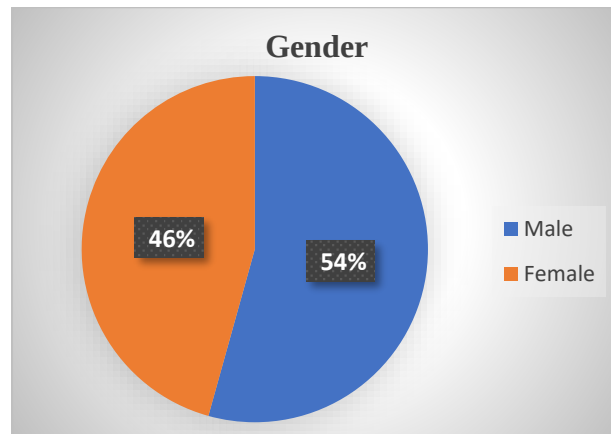


Figure 3: Gender of respondents

Source: Field data (2025)

research. The socio-demographic characteristics of the respondents, as presented in the figures, provide a comprehensive overview of the study sample at SOUWASA.

3.1.1 Gender;

In terms of gender distribution, the respondents

both genders and ensuring gender-inclusive perspectives in the study.

3.1.2 Age Distribution;

Regarding the age distribution, the majority of respondents were within the productive working age range. When regrouped, 24.6% (20 respondents) were

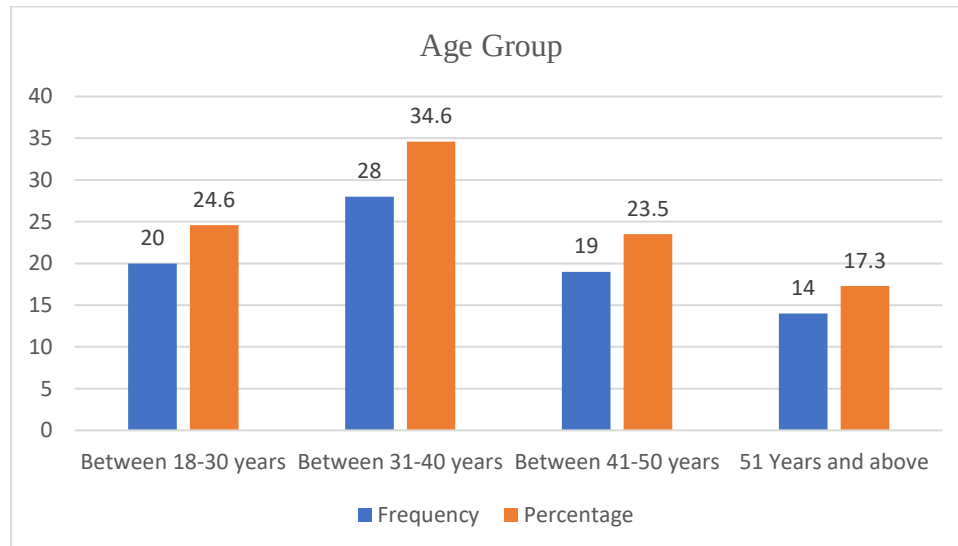


Figure 1: Age group of respondents

were relatively balanced, with 44 males (54.3%) and 37 females (45.7%), indicating a fair representation of

aged 18–30 years, 58.1% (47 respondents) fell within the 31–45 years category, while 17.3% (14 respondents) were above 45 years. This pattern

indicates that most participants are in their prime working years, which suggests they likely possess relevant knowledge and practical experience related to water supply project planning and monitoring.

years of experience, and 16.0% (13 respondents) with less than one year of experience. The combination of seasoned professionals and relatively newer employees adds depth to the results, providing both long-term

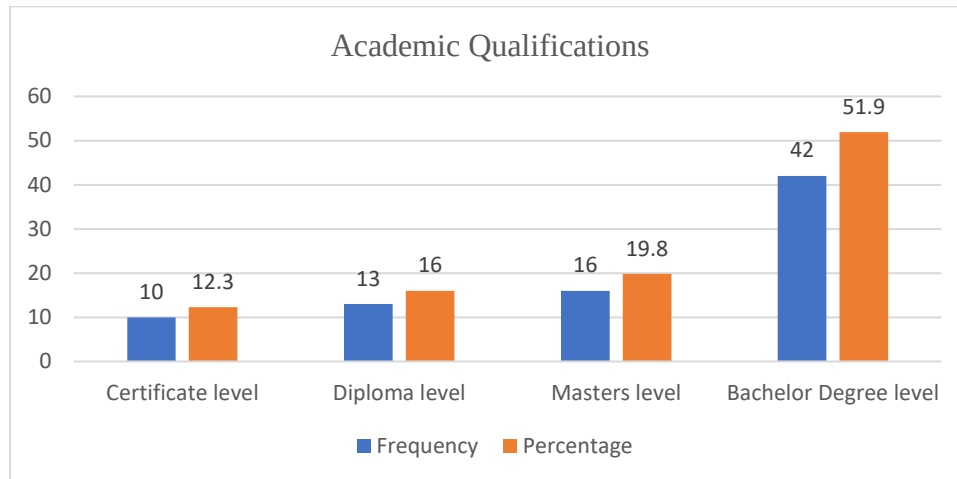


Figure 2: Academic qualification of respondents

3.1.3 Academic Qualifications;

In terms of academic qualifications, more than half of the respondents (51.9% or 42 individuals) held a Bachelor's degree, followed by 19.8% (16 respondents) with a Master's degree, 16.0% (13 respondents) with a Diploma, and 12.3% (10 respondents) with a Certificate. This shows that the workforce at SOUWASA is relatively well-educated, with a significant portion having attained higher education, which is important for informed participation in project monitoring and stakeholder engagement activities.

3.1.4 Work Experience

Lastly, in the category of work experience, a significant proportion of respondents (65.4% or 53 individuals) had four or more years of experience, suggesting that most participants have had ample time to become familiar with SOUWASA's operational procedures and water supply project practices. This is complemented by 18.5% (15 respondents) with 2 to 4

perspectives and fresh insights into stakeholder engagement in monitoring planning.

3.2 Descriptive Statistics

The analysis of stakeholder engagement in monitoring planning reveals significant insights into its perceived impact on the performance of water supply projects at SOUWASA. The overall average mean score of 3.54 with a standard deviation of 1.041 suggests a generally positive perception of stakeholder engagement, though with some variation in views among respondents.

The statement "Stakeholder engagement significantly improves the success of water supply projects" received a mean score of 3.68 and a standard deviation of 1.023, indicating that a majority of respondents agree or strongly agree with the sentiment, although a notable proportion (28.4%) remained neutral. This reflects a strong belief among participants that active stakeholder participation contributes meaningfully to project success.

Similarly, the statement “Involving local communities in the planning process enhances monitoring effectiveness” yielded a mean score of

Finally, the statement “Effective stakeholder engagement increases transparency and accountability in project monitoring” received a mean of 3.47. While

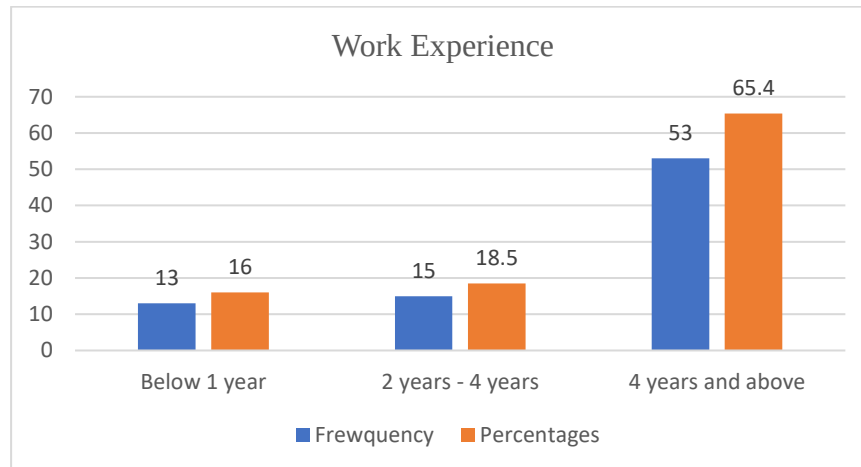


Figure 3: Work experiences of respondents

3.42. While 45.7% of respondents agreed and 8.6% strongly agreed, a significant portion (25.9%) remained neutral, and 18.5% disagreed. This mixed response suggests that while there is recognition of community involvement’s value, some respondents may have doubts about its practical implementation or impact.

Regarding the statement “The lack of stakeholder involvement reduces the effectiveness of monitoring planning”, the mean score was 3.57. Here, nearly half (49.4%) agreed and 12.3% strongly agreed, showing a clear consensus that inadequate stakeholder engagement has negative implications on planning effectiveness. This result reinforces the importance of inclusive participation in all planning stages.

The sentiment that “Regular stakeholder meetings contribute positively to project performance” also scored highly, with a mean of 3.58 and the highest percentage of strong agreement (28.4%). This reflects a common understanding that continuous communication and feedback loops through meetings foster better project outcomes.

a fair number of respondents agreed (32.1%) or strongly agreed (21.0%), a combined 44.4% were either neutral or disagreed. This result indicates some uncertainty or scepticism about whether engagement alone is enough to ensure transparency and accountability, possibly pointing to organizational or structural challenges in execution.

In conclusion, the results demonstrate a generally favourable perception of stakeholder engagement’s role in enhancing the planning, monitoring, and performance of water supply projects. However, the presence of neutral and dissenting views also highlights the need for more consistent stakeholder integration practices and efforts to clarify the tangible benefits of such engagement within SOUWASA projects.

During the interview, respondents were asked regarding the **How would you describe the involvement of local stakeholders in the planning phase of water supply projects at SOUWASA?**

Respondent 1; *Local stakeholders are involved primarily through consultation meetings and feedback*

sessions. However, their engagement is often limited to the early stages, with minimal participation in decision-making and project implementation ((Project Manager at SOUWASA, 25, March 2025)

Respondent 2; Stakeholder involvement exists but is not always meaningful. While we are invited to meetings, the final decisions are often made without fully considering our input. There needs to be a more

Table 2 Stakeholders Engagement in monitoring planning on the performance of water supply projects

Statements For 5 Likert Scale			Frequency	Percent	Mean	SD
Stakeholder engagement significantly improves the success of water supply projects.	Strong	Disagree	1	1.2	3.68	1.023
	Disagree	Disagree	10	12.3		
	Neutral	Disagree	23	28.4		
	Agree	Disagree	27	33.3		
	Strong Agree	Disagree	20	24.7		
	Total		81	100.0		
Involving local communities in the planning process enhances monitoring effectiveness.	Strong	Disagree	1	1.2	3.42	0.934
	Disagree	Disagree	15	18.5		
	Neutral	Disagree	21	25.9		
	Agree	Disagree	37	45.7		
	Strong Agree	Disagree	7	8.6		
	Total		81	100.0		
The lack of stakeholder involvement reduces the effectiveness of monitoring planning.	Strong	Disagree	2	2.5	3.57	0.948
	Disagree	Disagree	10	12.3		
	Neutral	Disagree	19	23.5		
	Agree	Disagree	40	49.4		
	Strong Agree	Disagree	10	12.3		
	Total		81	100.0		
Regular stakeholder meetings contribute positively to project performance.	Strong	Disagree	2	2.5	3.58	1.171
	Disagree	Disagree	16	19.8		
	Neutral	Disagree	19	23.5		
	Agree	Disagree	21	25.9		
	Strong Agree	Disagree	23	28.4		
	Total		81	100.0		
Effective stakeholder engagement increases transparency and accountability in project monitoring.	Strong	Disagree	2	2.5	3.47	1.130
	Disagree	Disagree	18	22.2		
	Neutral	Disagree	18	22.2		
	Agree	Disagree	26	32.1		
	Strong Agree	Disagree	17	21.0		
	Total		81	100.0		
Average Mean Score					3.54	1.041

Source; Field Data (2025)

inclusive approach to ensure that community voices are truly heard (Community Leader, 25 March 2025)

Respondent 3; *The engagement of stakeholders, including government officials and local communities, varies from project to project. In some cases, engagement is strong, but in others, there is little effort to incorporate stakeholder views beyond formalities (SOUWASA Engineer, 25 March 2025)*

The thematic analysis of the qualitative responses from SOUWASA stakeholders reveals a recurring theme of limited and inconsistent stakeholder engagement.

While stakeholders are involved through consultation meetings and feedback sessions, their participation is often superficial and confined to the early planning stages, with minimal influence on decision-making and implementation. This sentiment is echoed by the community leader, who notes that although stakeholders are invited to participate, their contributions are not meaningfully considered, suggesting a lack of inclusivity in the engagement process. Additionally, the SOUWASA engineer highlights that the degree of stakeholder involvement varies by project, with some showing strong engagement and others merely fulfilling formal requirements. Overall, these responses suggest that while stakeholder engagement structures exist, they often lack depth, consistency, and genuine integration, limiting their effectiveness in enhancing project performance.

During the interview, respondents were asked regarding the **What challenges, if any, have you encountered in engaging stakeholders throughout the project lifecycle?**

Respondent 1; *One major challenge is maintaining consistent stakeholder interest. Many stakeholders engage at the beginning but lose interest as the project progresses, making it challenging to ensure ongoing collaboration (Project Manager at SOUWASA, 26 March 2025)*

Respondent 2; *A key challenge is a lack of technical understanding among community members, which makes meaningful participation difficult. Additionally, communication between SOUWASA and the community is not always clear, which can lead to misunderstandings (Community Leader, 26 March 2025).*

Respondent 3; *Conflicting interests among stakeholders make decision-making complex. Some groups prioritize environmental concerns, while others focus on cost efficiency, leading to delays in project implementation (SOUWASA Engineer, 25 March 2025).*

Thematic analysis of challenges in stakeholder engagement at SOUWASA reveals several key issues that hinder effective participation. A significant challenge is maintaining stakeholder interest throughout the project lifecycle, as initial engagement tends to decline over time, making sustained collaboration difficult (Project Manager, 26 March 2025). Additionally, a lack of technical knowledge among community members limits their ability to contribute meaningfully, while unclear communication between SOUWASA and stakeholders leads to misunderstandings and reduced engagement (Community Leader, 26 March 2025). Furthermore, conflicting stakeholder priorities, such as balancing environmental concerns with cost efficiency, complicate decision-making and contribute to project delays (SOUWASA Engineer, 25 March 2025). These challenges suggest that stakeholder engagement necessitates enhanced communication, capacity-building initiatives, and strategies to maintain interest throughout the project lifecycle.

During the interview, respondents were asked about their experience, and how stakeholder engagement influences the success or failure of water supply projects at SOUWASA.

Respondent 1; *Strong stakeholder engagement leads to higher acceptance of projects, reducing resistance and implementation delays. When stakeholders are*

involved, projects run more smoothly and are better maintained (Project Manager at SOUWASA, 25 March

delays, leading to smoother project execution and better long-term maintenance (Project Manager, 25

Table 3: Regression Coefficients

Model	Unstandardized Coefficients		Standardized Coefficients Beta	T	Sig.	95.0% Confidence Interval for B	
	Beta	Std. Error				Lower Bound	Upper Bound
1 (Constant)	0.174	0.078		2.250	0.027	0.020	0.329
Level of Stakeholder Participation	0.116	0.033	0.122	3.491	0.001	0.050	0.182
Communication Channels	0.311	0.073	0.335	4.275	0.000	0.166	0.456
Conflict Resolution Mechanisms	0.517	0.080	0.557	6.490	0.000	0.358	0.675

a. Dependent Variable: Performance of Water Supply Projects

Source: Field Data (2025).

2025)

Respondent 2; *Proper stakeholder engagement ensures that community needs are met, making the project more beneficial to the people it serves. When engagement is poor, there is resistance, and some community members may not support the project (Community Leader, 25 2025)*

Respondent 3; *Stakeholder involvement improves project sustainability. Engaged stakeholders help in*

March 2025). Additionally, meaningful engagement ensures that community needs are adequately addressed, increasing public support and preventing opposition that may arise from exclusion or lack of transparency (Community Leader, 25 March 2025). Furthermore, stakeholder participation enhances project sustainability by enabling early identification of potential risks, leading to improved planning and execution (SOUWASA Engineer, 25 March 2025). These results highlight that effective stakeholder

Table 4: Model summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	0.982 ^a	0.965	0.964	0.1599482

Source: Field Data (2025).

identifying potential risks early, which helps in better project planning and execution (SOUWASA Engineer, 25 March 2025)

Thematic analysis of stakeholder engagement in water supply projects at SOUWASA reveals its critical role in project success and sustainability. Strong stakeholder involvement fosters greater acceptance, minimizes resistance, and reduces implementation

engagement is essential for project efficiency, community buy-in, and long-term viability.

3.4 Regression analysis

The regression analysis in Table 3.2 reveals that all three independent variables Level of Stakeholder Participation, Communication Channels, and Conflict Resolution Mechanisms have a statistically significant

Table 5: ANOVA

Model		Sum of Squares	Df	Mean Square	F	Sig.
1	Regression	54.508	3	18.169	710.201	0.000 ^b
	Residual	1.970	77	0.026		
	Total	56.478	80			

Source; Field Data (2025).

positive influence on the performance of water supply projects at SOUWASA. The constant (intercept) value of 0.174 ($p = 0.027$) indicates a baseline level of project performance when all predictors are set to zero. Stakeholder Participation has a positive coefficient of 0.116 ($p = 0.001$), indicating that increased participation modestly enhances project performance. Communication Channels show a more substantial positive effect, with a coefficient of 0.311 ($p < 0.001$), implying that effective communication significantly contributes to improved outcomes. The strongest predictor is Conflict Resolution Mechanisms, with a coefficient of 0.517 ($p < 0.001$), highlighting those well-structured methods for resolving conflicts are crucial for ensuring project success. All predictors fall within statistically significant confidence intervals, confirming the robustness of these results.

The model summary in Table 3.3 shows that the regression model has a very strong explanatory power, as indicated by the R value of 0.982, which suggests a high degree of correlation between the independent variables (stakeholder participation, communication channels, and conflict resolution mechanisms) and the performance of water supply projects. The R Square value of 0.965 implies that approximately 96.5% of the variation in project performance can be explained by the model, making it highly predictive. The Adjusted R Square of 0.964 further confirms the model's reliability by accounting for the number of predictors included, showing that the model remains robust even when adjusted for complexity. Additionally, the standard error of the estimate (0.1599) indicates a low level of error in the model's predictions, reinforcing its accuracy and effectiveness in evaluating the performance of water supply projects.

Table 5 presents the ANOVA results, which assess the overall significance of the regression model. The model's F-value of 710.201 with a significance level (p-value) of 0.000 indicates that the regression model is statistically significant and that there is a very strong relationship between the independent variables (stakeholder participation, communication channels, and conflict resolution mechanisms) and the performance of water supply projects. The sum of squares for regression (54.508) compared to the residual sum of squares (1.970) suggests that most of the variability in project performance is explained by the model rather than by random error. This confirms that the model fits the data well and reliably predicts the performance outcomes of water supply projects at SOUWASA.

4. Discussion

The results from this study clearly demonstrate that stakeholder engagement plays a vital role in enhancing the performance of water supply projects at SOUWASA. The regression results indicate that elements such as the level of stakeholder participation, effective communication channels, and conflict resolution mechanisms all have significant positive effects on project outcomes. Notably, conflict resolution mechanisms emerged as the strongest predictor, underscoring the importance of addressing disagreements constructively to maintain project momentum. This aligns with the broader understanding that active and well-managed stakeholder involvement contributes to smoother project implementation and better achievement of objectives.

Qualitative insights further reveal that while stakeholder engagement processes are in place, their depth and consistency vary considerably. Stakeholders

are often involved mainly in initial consultation and feedback, with limited opportunities to influence critical decisions during implementation. This superficial engagement can undermine the inclusivity and effectiveness of monitoring and planning efforts. Community representatives and project staff alike expressed concerns about the lack of meaningful participation and the inconsistency of engagement across projects, which suggests that current practices may not fully leverage the potential benefits of stakeholder involvement. Such limitations highlight the need for SOUWASA to develop more inclusive and continuous engagement strategies that ensure all voices are genuinely considered throughout the project lifecycle.

Challenges identified through thematic analysis highlight barriers that affect sustained and effective stakeholder participation. Declining interest over time, technical knowledge gaps among community members, unclear communication, and conflicting priorities among stakeholders create obstacles that weaken collaborative efforts. These challenges emphasize the importance of ongoing capacity-building, transparent and accessible communication, and mechanisms to manage differing stakeholder interests proactively. Addressing these issues is critical not only for enhancing project performance but also for fostering trust, increasing community support, and ensuring the sustainability of water supply initiatives in the region. Overall, the results suggest that strengthening stakeholder engagement practices essential for SOUWASA to achieve more effective and sustainable project outcomes.

The results related to stakeholder engagement in this study are consistent with the work of Sanka (2024) from Dar es Salaam, who found that active participation and community involvement significantly enhance project success by fostering ownership and ensuring the relevance of water supply projects. This supports the current study's results, which emphasize the importance of ongoing stakeholder involvement throughout the project

lifecycle. However, both studies also highlight challenges such as ineffective capacity-building programs and the difficulty of managing diverse stakeholder views, which, when not addressed, can undermine project outcomes. Similarly, Langsdale et al. (2022), in a study on water governance in South Africa, found that incorporating a wide range of perspectives contributes to more inclusive and equitable water management solutions. This finding aligns with the present study, which advocates for structured engagement activities and tailored communication to capture and integrate diverse stakeholder inputs.

Furthermore, the current study's emphasis on sustainability through stakeholder involvement resonates with results from Nzomo et al. (2021) in Machakos County, Kenya, who found that active stakeholder participation in all project phases significantly enhances the durability and success of water projects. This similarity confirms the idea that stakeholder engagement is not only a tool for improving implementation but also a strategic approach to ensuring long-term sustainability. Compared to the study by Mshote (2023) from the University of Dodoma, which found that poor feedback mechanisms and lack of transparency reduced stakeholder trust and participation, the present study's results suggest that when SOUWASA adopts clear communication and inclusive practices, stakeholder trust and effectiveness are greatly improved. Therefore, across all these studies, a consistent theme emerges: effective, inclusive, and transparent stakeholder engagement is essential for achieving both short-term success and long-term sustainability in water supply projects.

5. Conclusion and Recommendations

In conclusion, this study highlights that effective stakeholder engagement is fundamental to the success and sustainability of water supply projects at SOUWASA. While participation, communication, and conflict resolution positively influence project performance, current engagement practices often lack

depth and consistency, limiting their full potential. Addressing challenges such as declining stakeholder interest, technical knowledge gaps, and conflicting priorities requires deliberate efforts to foster inclusive, continuous, and transparent engagement processes. By strengthening these aspects, SOUWASA can enhance collaboration, build greater community trust and support, and ultimately improve the efficiency and long-term viability of its water supply initiatives.

Recommendations

The following recommendations aim to enhance stakeholder engagement and improve the effectiveness of water supply projects implemented by SOUWASA. They focus on promoting inclusive participation, transparent communication, and community empowerment.

- i) Establish mechanisms for ongoing stakeholder involvement; SOUWASA should move beyond limited initial consultations and ensure stakeholder engagement throughout all stages of water supply projects. Regular, structured activities such as workshops, feedback sessions, and participatory monitoring help maintain stakeholder interest, encourage active participation, and integrate diverse perspectives into the decision-making and implementation processes. This continuous involvement strengthens collaboration and improves project outcomes by keeping stakeholders engaged and informed.
- ii) Develop clear, transparent, and accessible communication channels; Effective stakeholder engagement depends on transparent and inclusive communication. SOUWASA should invest in multi-directional channels that allow timely information sharing and feedback between project teams and stakeholders. Communication methods should be tailored to different community groups by using local languages and visual aids to bridge

knowledge gaps, enhance understanding, and foster stronger relationships and participation.

- iii) Implement targeted capacity-building programs; To address technical knowledge limitations, SOUWASA should introduce training and awareness initiatives aimed at equipping stakeholders with the skills and knowledge necessary for meaningful involvement in planning, monitoring, and conflict resolution. Enhancing technical understanding empowers communities, elevates the quality of engagement, and fosters a deeper sense of ownership over project outcomes.
- iv) Ensure inclusivity and transparency in decision-making; SOUWASA must guarantee that stakeholder input genuinely influences project decisions and is not just symbolic. This can be achieved by documenting and clearly communicating how feedback is incorporated into project planning and implementation. Promoting transparency and accountability in this way builds trust, encourages sustained participation, and leads to more effective and sustainable water supply projects.

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Conflict of Interest

The Authors declares that there are no potential conflicts of interest,

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