Influence of Participatory Project Practices on Ruwasa Project's Performance: The Case of Ushetu District, Tanzania

Cyprian Ndabavunye and Dionis J. Ndolage
Department of Accounting and Finance, The Open University of Tanzania
Author corresponding Email: cyprianpaul97@yahoo.co.uk

Abstract
The study investigated the influence of participatory project practices (PPP) on performance of rural water projects carried out by Rural Water Supply and Sanitation Agency (RUWASA) in Ushetu district, Tanzania. It specifically looked at the influence of participatory project planning and implementation, monitoring, and communication on project performance. Using a casual research design and a Likert rated questionnaire, the study collected quantitative primary data from 171 respondents, including 143 water users and 28 RUWASA staff. Both descriptive and inferential statistics such as Pearson correlation and multiple linear regression were used to analyse the data. The results showed a positive relationship between project performance and participatory project planning, implementation, monitoring, and communication. The multiple linear regression analysis revealed that participatory project planning and implementation had a significant positive impact on project performance. Similarly, a participatory project monitoring and communication were also found to have a positive effect on project performance. The study concluded that involving the community in project planning, implementation, monitoring, and communication can enhance the performance of RUWASA projects in terms of cost-effectiveness and sustainable clean water supply. It was recommended that community members participate in all aspects of project planning, implementation, and monitoring, and that participatory communication be prioritized to facilitate knowledge-sharing and informed decision-making.

Keywords: *Project performance, participatory project practices, project planning project implementation, project monitoring, project communication*

INTRODUCTION

Water is crucial for the socio-economic development and healthy ecosystems of the global population including Tanzania (Beard & Mitlin, 2021). It is utilized for various purposes such as domestic use, irrigation, transportation, livestock, fishing, wildlife, hydroelectric power generation, environmental flow, and recreation to mention a few. Despite the goals outlined in

Tanzania's Development Vision 2050, which aims to ensure that clean and safe water is accessible at homesteads (Safari, 2024), over 65 percent of the population living in rural areas currently has limited access to clean water and reliable sanitation (USAID, 2024). According to Kamara *et al*. (2017), challenges such as declining access to improved water supplies, inconsistent availability, and inadequate service quality are particularly pronounced in rural regions. These issues stem from infrastructure failures, aging infrastructure, lack of maintenance, and the impacts of natural disasters.

In response to this challenge, Maniu and Rambo (2018) suggested that involving the community in project planning and implementation, monitoring, and effective communication can improve project performance.Rushagika (2015)argues that community participation in project planning and implementation can lead to increased project acceptabilityRushagika (2015), fair distribution of benefits, local resource mobilization, proper project allocation, and project sustainability. On the other hand, Oduor and Murei (2020) assert that community participation in project monitoring is crucial for identifying and solving problems to ensure the project achieves its objectives. Also, Luhombo *et al*. (2019), recommend that project leaders and implementers should involve the local community in project implementation by establishing well-structured communication channels. Providing information effectively can build trust, promote community ownership, and encourage participation and feedback (Riaz, 2017).

In 2002, the Government of Tanzania recognized the importance of community involvement in the rural water supply and sanitation projects. As a result, they established the National Water Policy of 2002, which decentralized rural water management to communities, allowing them to operate, maintain, and sustain their water supply infrastructure. Additionally, the policy mandated district water engineers or managers to support Community Owned Water Supply Organizations (COWSOs) by assisting with registration, providing operation and maintenance guidelines, monitoring progress, and reporting. As part of these efforts, over 3,000 COWSOs were established to manage newly developed rural water schemes (Lemmens *et al*., 2017). In 2019, the government further strengthened community involvement by transforming COWSOs into Community Based Water Supply Organizations (CBWSOs) through the Water Supply and Sanitation Act No.5 of 2019(The United Republic of Tanzania, 2019). To ensure the effective functioning of CBWSOs, the Government established the Rural Water Supply and Sanitation Agency (RUWASA) to oversee their

operations. Additionally, this initiative aimed to facilitate community participation in the identification, planning, design, construction, and management of rural water supply and sanitation projects across the rural areas of mainland Tanzania(The United Republic of Tanzania, 2019).

Despite the government's efforts to establish RUWASA for providing safe drinking water and basic sanitation facilities to the people in line with MDGs, the sustainability of water supply and sanitation in rural areas is uncertain due to some non-functional water points. According to the World Bank (2023), only 61% of households in Tanzania currently have access to basic water supply and 32% have access to basic sanitation in rural areas, with figures remaining as low as 39% and 68% respectively. Specifically, in Ushetu district, access to water services has reached approximately 47%, leaving 53% of people without access to clean water and sanitation URT (2024).

Despite the lack of accessibility to clean water for some households in Ushetu district and other areas of the country, little attention has been paid to assessing the influence of participatory project practices on the performance of RUWASA. Most studies in Tanzania have focused on factors like accountability, transparency, capacity building, budgetary allocation, staff technical skills in Monitoring and Evaluation, and organizational capacity, neglecting the role of participatory project practices on project performance (Tonya, 2015; Eliamringi & Kazumba, 2017;IRC, 2017;Kirenga *et al*., 2018; Mandara *et al*., 2018;Juma, 2019). This lack of knowledge hinders understanding of how participatory project practices impact the performance of rural water supply in Ushetu district. Therefore, this study addressed this gap by examining the contribution of participatory approaches, such as project planning and implementation, monitoring, and communication, to the performance of rural water projects implemented by RUWASA in Ushetu district.

STATEMENT OF THE PROBLEM

Access to clean and safe water is crucial for human health and well-being. In rural areas of Tanzania, the Rural Water Supply and Sanitation Agency (RUWASA) is instrumental in providing sustainable water supply services to communities. However, there are challenges in ensuring access to safe water, with many rural areas facing issues such as water scarcity, poor water quality, and inadequate infrastructure (Chowdavarapu & Manikandan, 2016; MoW, 2020;NAOT, 2020). Shayo (2020) noted that one potential solution to enhance the performance of rural water supply services is through the implementation of participatory project practices in project planning,

implementation, monitoring, and communication. These practices help in identifying proper project allocation, managing constraints, promoting coordination among team members, and enabling effective project progress(Kimisha, 2015).

Despite the fact that there are potential benefits of participatory project practices, there have been few studies that have looked into how it affects project performance(Tonya, 2015; Eliamringi & Kazumba, 2017;IRC, 2017; Kirenga *et al*., 2018; Mandara *et al*., 2018; Juma, 2019). Specifically, there has been limited research on the influence of participatory project practices on the performance of RUWASA's water projects in Ushetu district, where 53% of households still lack access to water supply. To address this gap, the current study aimed to examine how participatory project practices, including planning, implementation, monitoring, and communication, impact the performance of rural water supply projects implemented by RUWASA in Ushetu district.

The Study Objectives

General Objective

The main objective of this study was to examine the influence of participatory project practices on the performance of rural water projects implemented by RUWASA in Ushetu District.

Specific Objectives

The specific objectives of this study were to:

i. To determine the influence of participatory project planning and implementation on the performance of RUWASA's projects in Ushetu District;
ii. To find out the influence of participatory project monitoring on the performance of RUWASA'sprojects in Ushetu District; and
iii. To examine the influence of participatory project communication on the performance of RUWASA's projects in Ushetu District.

Significance of the Study

The study is beneficial to RUWASA in Shinyanga Region, Ministry of Water, Community Based Water Supply Organizations (CBWSOs), policymakers, and other stakeholders. RUWASA in cooperation with the Ministry of Water may use the results of the study to design strategies for involving communities in planning and implementation of water projects. The findings are also useful to scholars as a reference material when carrying

out further research in related areas. Also, the findings add knowledge to the existing literature.

LITERATURE REVIEW

Theoretical Literature Review

The study was informed by participatory development theory, which was initially developed by Freire in 1970 (Freire, 1970) and later formally introduced by Robert Chambers in 1983 (Chambers, 1983). This theory emerged in the 1970s as a response to the limitations of top-down development approaches that saw local communities as passive recipients of interventions (Freire, 1970). Influenced by Chambers, participatory development theory advocates for a more inclusive and participatory approach that actively involves local communities in decision-making processes (Chambers, 1983). The roots of participatory development theory can be traced back to the criticism of modernization theory, which promotes a top-down, ethnocentric, and paternalistic view of development rather than a bottom-up approach (Penderis, 2012). The top-down approach often disregarded the knowledge and expertise of local people, relying instead on experts and external agencies to design and implement projects (Cyper & Dietz, 1997).

Rahim (1994) stated that participatory development theory advocates for a shift towards more bottom-up and participatory approaches that empower local communities to control their own development processes. This involves local communities in identifying development priorities, making decisions, and implementing projects (Thomas, 1994). The origins of participatory development theory can be seen as a response to the limitations of top-down development approaches and a recognition of the importance of empowering local communities to lead their own development processes (Penderis, 2012). Today, the theory is popular because it allows people and communities to define and actively participate in their own development rather than being passive recipients of technological processes in development (Thomas, 1994).

Despite the importance of the participatory development theory in project performance, the approach still faces operational criticisms. Long (1992) stated that the theory is often criticized for being time-consuming and costly, as decisions may be delayed or changed based on feedback from community members, leading to projects taking longer to complete and potentially exceeding budget limits. Granovetter (1992) added that participatory development may not be suitable for all contexts, as some communities may

lack the capability or willingness to actively participate in decision-making processes. Furthermore, Nelson and Wright (1995) argued that participatory development theory sometimes neglects the significance of technical expertise and skills in project planning and implementation. They emphasize the need for a balance between participatory processes and expert knowledge to achieve successful development outcomes (Nelson & Wright, 1995). Furthermore, McAbee (2022) emphasized that variations in levels of participation within different segments of a community in participatory development can result in power imbalances and the neglecting of marginalized voices. For example,Inagaki (2007) conducted a study on a community partnership project aimed at improving healthcare services in South Africa, which revealed that certain groups such as youth, individuals with low income, the elderly, and those with limited education were excluded from the decision-making process. The study highlighted that inputs from these marginalized groups were overshadowed by those from academics, elites, and formal agencies (Inagaki, 2007). As a result, the sense of project ownership and commitment varied among different participants, impacting the effectiveness of coalition building efforts within the project (Inagaki, 2007).

Despite the potential drawbacks, there is a clear evidence that participatory development theory has become mainstream in recent empirical literature (Campbell & MacPhail, 2002; Inagaki, 2007). Among the development projects studied, more have followed participatory approaches rather than modernization or diffusion theories (Campbell & MacPhail, 2002; Inagaki, 2007). Hence, the selection of this theory in this study is based on the above argument. In this study, participatory development theory plays a crucial role in project planning and implementation (AlWaer *et al*., 2008). When it comes to project planning, this theory emphasizes a bottom-up approach that involves active participation from community members in problem identification, goal setting, and strategy development (Korir *et al*., 2021). This ensures that projects are relevant, sustainable, and tailored to the specific needs of the community. Moreover, involving community members in the planning process fosters ownership and support for the project, increasing the chances of its success (Menoka *et al*., 2013).During project implementation, participatory development theory encourages the active involvement of community members in decision-making, resource allocation, and monitoring and evaluation activities (Dhakal, 2023). This ensures that projects are carried out transparently and accountably, with input from those directly impacted by the project.

Additionally, Oduor and Murei (2020) emphasized that participatory development theory plays a crucial role in project monitoring by advocating for the involvement of community members in data collection, progress assessment, and identification of challenges or opportunities for improvement. By engaging community members in monitoring activities, development projects can benefit from local knowledge, expertise, and perspectives, resulting into a more effective and sustainable outcomes (Luhombo *et al*., 2019). Participatory monitoring also helps to build trust and collaboration between project implementers and community members, showcasing a dedication to transparency, accountability, and shared responsibility (Miseda & Nyonje, 2014). Ultimately, this approach to project monitoring can lead to more inclusive, responsive, and impactful development interventions that better cater to the needs and aspirations of the communities they aim to assist.

Furthermore, in terms of project communication, participatory development theory stresses the importance of creating open and inclusive communication channels among all project stakeholders (Mwanyalo & Mberia, 2017). This involves not only transmitting information from project leaders to the community but also allowing community members to express their opinions, concerns, and ideas (Anaeto & Solo-Anaeto, 2010). According to Luhombo *et al*. (2019), participatory communication encompasses sharing information about project goals, activities, and progress, as well as providing platforms for dialogue, feedback, and collaboration. Riaz (2017)asserts that participatory communication fosters a sense of ownership and empowerment among community members, resulting in more effective and sustainable development outcomes (Riaz, 2017).

Empirical Literature Review

The Influence of Participatory Project Planning and Implementation on the Project Performance

Mukamana and Kalimba (2022) conducted a study to establish the influence of stakeholder participation in the performance of Speak Out project implemented by FVA in Karongi, Nyanza, Gisagara, Nyaruguru Districts in Rwanda. Specifically, the study aims to determine the influence of stakeholder participation in project identification on the performance of Speak Out project; to examine the influence of stakeholder participation in project planning on the performance of Speak Out project; to find out the influence of stakeholder participation in resource mobilization and evaluation on performance of Speak Out project. The findings revealed that stakeholder participation in project identification, project planning, and resource

mobilization has significance positive influence in the performance of Speak out Project. Mkutano (2018) in His study attempted to investigative how participatory planning and implementation affected the project performance on NGOs in Nairobi City. The study found that there was increased and improved performance in NGOs projects when employees and stakeholders were effectively engaged in project planning and implementation. Specifically, it concluded that participatory project planning and implementation ensured employees and stakeholders worked towards a common goal.

Sam (2018) conducted a study to establish the influence of stakeholder's participation on the performance of WASH project in Musanze District public projects in Rwanda. The findings revealed that stakeholder participation in project identification, planning, and execution influenced project performance. The study recommended that WASH should put mechanisms that ensure the maximum participation of respondents in most roles during the implementation phase, more so in the conceptualization and project planning role and administration and logistics. Sabrie (2022) conducted a study to establish the influence of participatory project implementation on the performance of WASH projects focusing at Polish Humanitarian Action project in Banaadir region, Somalia. Specifically, the study focused on participatory project resources allocation and participatory project control. The findings revealed that both two variables were positive and had significantly influenced the performance of Polish Humanitarian Action project. The study concluded that participatory project implementation and the performance of Polish Humanitarian Action project are connected to each other.

The Influence of Participatory Project Monitoring on the Project Performance

Mutiso and Omwenga (2020), sought to investigate the influence of participatory monitoring on the sustainability of SamburuVigurungani Water Project (SVWP) in Kenya. The result obtained explained 71.9% of the variation in the sustainability of SamburuVigurungani Water Project (SVWP) in Kenya. Further, according to the ANOVA statistics, there is a significant relationship between all the independent variables and the dependent variable; while the p-value implied that there is a statistically significant relationship between participatory monitoring and the sustainability of Samburu Vigurungani Water Project (SVWP).

The study by Kirongo and Andala (2021)indicated that 90.6% of the respondents did agree greatly that participation of community at M&E stage influenced sustainability of Savings for Transformation Project. The study recommends an enhanced community participatory monitoring and evaluation to increase sustainability of Savings for Transformation project through engaging all stakeholders in M&E activities. Otieno (2016) investigated the perceived effects of participatory monitoring and evaluation on the LASDAP project implementation in the former Bondo County Council now named Bondo Sub County in the new structure of county government in Kenya.The study found that PM&E in general improved the LASDAP process and especially stakeholder relationships. These findings led to the recommendation that the county government adopt monitoring structures used by the defunct local authorities in current and future projects.

Sugal (2017)examined if participatory monitoring and evaluation affected effective implementation of the CDF in Balambala Constituency. Using the descriptive design, the researcher found that participatory M&E is important in projects implementation. Similarly, Jeremiah (2021) sought to investigate the effects of participatory monitoring and evaluation practices on performance of NG-CDF projects in Samburu County of Kenya. The findings obtained from a multiple regression model revealed a relationship between participatory monitoring and evaluation practices and the performance of NG-CDF projects, which turned out to be significant positive and strong.

The Influence of Participatory Project Communication on the Project Performance

Nyandongo (2017) in His study aims to investigate and evaluate the relationship between communication and project management performance.The results indicated that there was a strong positive relationship between communication and project outcomes. Communication increases success rates and improves the overall performance of projects. Moreover, the results have established that project managers who regard communication as one of the most important factors contributing to the success of projects, have achieved higher success rate in their projects than the other participants (Nyandongo, 2017). The high success rate seen on their projects is perceived as a direct result of effective communication.

Uwamahoro and Ogbe (2021) conducted a study to see if there is a link between effective communication and capacity factor of hydropower projects in Musanze District, Rwanda. The results obtained from regression analysis showed that R square was 0.391 means that capacity factor was increased by

effective communication by 39.1%. This agrees that this model is acceptable as an effective communication has a significant impact on the capacity factory. Kiradoo (2017) in His study focused at communication and the role it plays in management of quality and timelines as far as project success in concerned. Desk research was embraced where relevant literature was reviewed by the inquiry. The findings revealed that formal and informal tools of communication are key for sound comprehension of information of the project as well as the rate of success. Zulch (2014) looked on communication as a foundation of management of the project activities. It was noted that the skills of the project manager to communicate information in a way that is effective is an important factor of success in management of the project.

CONCEPTUAL FRAMEWORK

A conceptual framework is the ideal framework designed by a researcher to show how dependent and independent variables of the study depend on or connect to each other. It is a conceptual framework that helps a researcher better understand his or her data presentations. In the same view, Mugenda and Mugenda (2003) argues that a researcher constructs a conceptual framework that act as study guidance during data presentation and discussion. Therefore, the conceptual framework for this study is clearly presented in Figure 2.1. This diagram shows the relationship between the dependent (performance of RUWASA's projects) and independent variables (participatory project practices), their possible pattern of influence on each other. The directions of the arrows show the interrelationships between the key variables of the study.

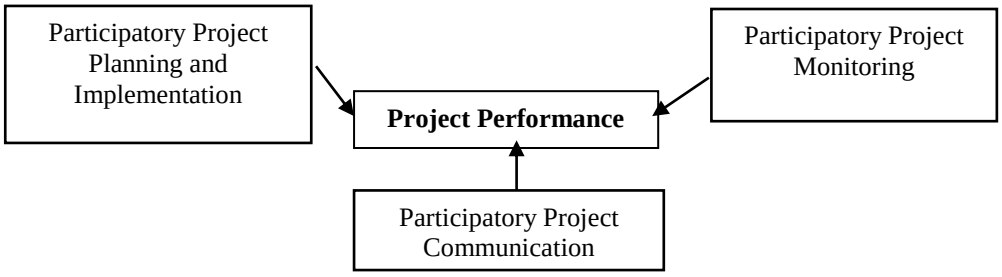


Figure 1: **Conceptual Framework**
Source: Researcher (2024).

METHODS

The study employed a casual research design and quantitative research approach to establish the influence of participatory project practices on the performance of RUWASA's projects in Ushetu district. To meet the objectives of the study, the study involved 171 participants, including 28

RUWASA employees and 143 households with water usage from Busenda, Iramba, Igwamanoni, Mbika, and Ulowa villages. The study sample size was obtained through Yamane (1967) formula with a 95% level of confidence (0.05 level of precision). The formula is represented by, $n = N/(1 + N * e^2)$, where n indicates sample size, N represents population size, and e is a margin of error. Also, the study participants were obtained through a simple random sampling technique. Study participants were guaranteed of confidentiality and the anonymity. The data was collected by using of a Likert rated structured questionnaire. The tool comprises close-ended questions that adopt a five-point Likert scale ranging from 1 to 5, where 1 represents strong disagreement, 2 represents disagreement, 3 represents undecided, 4 represents agreement, and 5 represents strong agreement. This tool allowed respondents to provide their perceptions regarding the research questions. The collected data were analyzed using descriptive and inferential statistics. Descriptive statistics were used to analyse the demographic information of the respondents and the result were presented through frequency and percentage. Also, inferential statistics through Pearson correlation and multiple linear regression were used to determine the bivariate relationship and casual relationship between the dependent variable (the performance of water projects) and the independent variable (participatory project practices), respectively.

RESULTS

Reliability of Instrument

To enhance reliability in the study, a pilot study was conducted separately with 25 participants, accounting for 10% of the target population. The data gathered from this pilot study was assessed for reliability using Cronbach's Alpha. The results presented in Table 2 showed that the Cronbach's Alpha values for each variable exceeded 0.7, indicating good reliability. As noted by Amirrudin *et al*. (2020), a reliability coefficient of at least 0.7 is generally deemed acceptable, whereas a coefficient below this threshold may suggest the necessity for additional revisions to the instrument.

Table 2: Reliability Results

Variable	Cronbach alpha (α)	No. of items	Comments
Participatory Project Planning & Implementation	0.884	4	Acceptable
Participatory Project Monitoring	0.734	6	Acceptable
Participatory Project Communication	0.705	4	Acceptable
Performance of RUWASA Projects	0.911	6	Acceptable
Overall	0.920	20	Acceptable

Source: Field Data, (2024)

Response Rate of Questionnaire

The questionnaires were distributed to 171 participants in Ushetu District, including 143 water users and 28 RUWASA employees. Participants were asked to indicate their agreement level using a 5-point Likert scale. Out of the 171 questionnaires distributed, 159 were completed and returned, resulting in a return rate of 92.98%. According to Mugenda and Mugenda (2003), a response rate of 50% is sufficient, 60% is good, and 70% is very good for drawing reliable conclusions. *Weisberg et al* (1996) recommend a response rate of 70% for reliable conclusions, which was exceeded in this study. See Table 1 for a summary of the questionnaire response rate.

Table 1: The Response Rate

Respondent category	No. of questionnaires distributed	returned	Percentage (%)
RUWASA employee	28	26	16.4
Household Water User	143	133	83.6
Total	**171**	**159**	**100.0**

Source: Field Data (2024)

Univariate Descriptive Statistics

Tables 3-6 present the descriptive statistics of the respondents' demographic characteristics collected by the survey. The basic information collected in this study includes gender, age, education level, and their participation in project planning, implementation, and monitoring.

Table 3: Gender of the Respondents

Gender	**Frequency**	**Percentage**
Male	78	49.1
Female	81	50.9
Total	**159**	**100.0**

Source: Research Findings (2024)

The findings presented in Table 3 shows that the majority (50.9%) were female and the rest (49.1%) were male. However, the gap between female and male was very small. This implies that the study was gender sensitive.

Table 4: Age of the Respondents

Age	**Frequency**	**Percentage**
18-25 years	08	5.0
26-35 years	26	16.4
36-45 years	60	37.7
Above 45 years	65	40.9
Total	**159**	**100.0**

Source: Research Findings (2024)

Table 4 show that a bigger percentage of respondents were aged above 45 years (40.9%), followed by 37.7% who were aged 36-45 years. Other respondents were aged 26-35 years (16.4%), and 18-25 years (5.0%). This implies that majority of the respondents were aged above 36 years and so were mature enough to understand issues that were being investigated.

Table 5: Level of Education

Education Level	Frequency	Percentage
Primary	79	49.7
Secondary	50	31.4
Certificate	04	2.5
Diploma	08	5.0
Bachelor Degree	15	9.5
Master's Degree	03	1.9
Total	**159**	**100.0**

Source: Research Findings (2024)

The findings in Table 5 show that the majority of the respondents have at least a primary-level education. This implies that respondents had a basic knowledge of reading and writing; hence, they can fill out the questionnaire accordingly.

Table 6: Participation in Project Planning and Implementation

Participation in Project Planning and Implementation	Frequency	Percentage
Yes	140	88.1
No	19	11.9
Total	**159**	**100.0**

Source: Research Findings (2024)

The results presented in Table 6 demonstrate that a significant proportion of the participants (88.1%) have taken part in the project implementation, suggesting that they are well-acquainted with the factors that may influence project performance. Given their high level of engagement and knowledge of project implementation, researchers can anticipate receiving precise responses from the participants in the questionnaires.

Bivariate Statistical Analysis

In contrast to univariate descriptive analysis which is used to summarize the characteristics of one variable separately, bivariate statistical analysis is concerned with comparing the characteristics between variables by assessing the strength of the associations. By using a standard measure of association, the main aim of the bivariate statistical analysis is to establish patterns within the data. This is achieved using a correlation matrix (Table 7). As the nature

of the data used in this study is continuous delivered from the computed mean of the ordinal level (ranked) data, Janse *et al*. (2021) suggests that one of the most suitable tests for assessing ordinal association is the Pearson's correlation coefficient (r). The Pearson correlation coefficient (r) is the test conducted for correlation purposes that highlights the relationship between a variable. It also provides information regarding the direction and magnitude of a particular relationship. The value of the correlation coefficient lies between +1 and -1. When the value range is close to 0, it means that the relationship between variables is very weak. In other words, when the value range is 0.2–0.39, there is a weak correlation. If value ranges are 0.4–0.59, there is a moderate correlation. Also, if the value range is 0.6–0.79, there is a strong correlation, and when the value is 0.8–1.0, there is a very strong correlation. 0 indicated no relationship between the two variables. The plus and minus signs show the positive and negative relationship between variables. Table 7 present the relationship between the independent variables (Participatory Project Practices) and dependent variable (Performance of RUWASA Projects).

Table 7: Pearson's Correlation Analysis/Correlation Matrix

Variable		**Performance of RUWASA Projects**
Participatory Project Planning and Implementation	Pearson Correlation	0.817**
	Sig. (2-tailed)	0.000
Participatory Project Monitoring	Pearson Correlation	0.659**
	Sig. (2-tailed)	0.000
Participatory Project Communication	Pearson Correlation	0.774**
	Sig. (2-tailed)	0.000

*Note: **Correlation is significant at the 0.01 level (2-tailed).*
Source:

The Statistical Correlation Table 7 revealed that the three independent variables, Participatory Project Planning and Implementation, Participatory Project Monitoring, and Participatory Project Communication, were positively correlated with the dependent variable, Performance of RUWASA Projects, with correlation coefficients of 0.817, 0.659, and 0.774, respectively. Additionally, all the independent variables had p-values below 0.05, signifying a statistically significant relationship with the dependent variable. In light of these results, it can be concluded that Participatory Project Planning and Implementation, Participatory Project Monitoring, and Participatory Project Communication serve as reliable indicators of the performance of RUWASA Projects in Ushetu District.

Explanatory Statistical Analysis

The correlation analysis performed using bivariate statistical analysis does not provide complete details about the variables. So, in order to further examine the relationship between independent variables and dependent variable, the multivariate explanatory analysis "regression analysis" was performed. Regression analysis helps to determine the effect of one variable on another. In this study, to validate the relationship between independent and dependent variables, multiple linear regression was carried out. However, before running the regression model, a model diagnostic was conducted to test the basic assumptions of regression. These are multicollinearity tests, normality of the distribution, outlier test, and homoscedasticity, which are shown below:

Multicollinearity Test

Multicollinearity refers to the situation in which the independent or predictor variables are highly correlated. In this study, multicollinearity was checked with tolerance and variance inflation factor (VIF) statistics. According to McClelland et al. (2017), a tolerance value less than 0.1 almost certainly describes a serious collinearity problem. On the other hand, Elith et al. (2013) stated that a VIF value greater than 10 is also a concern. In this study, all of the independent variables were found to have a tolerance of more than 0.1 and a VIF value of less than 10, meaning that there is no multicollinearity in the independent variables.

Table 8: Multicollinarity Test Result

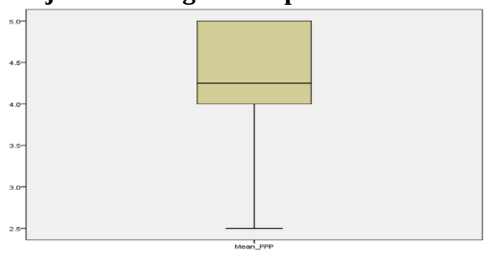
Model	Collinearity Statistics	
	Tolerance	**VIF**
Participatory Project Planning & Implementation	0.553	1.809
Participatory Project Monitoring	0.674	1.484
Participatory Project Communication	0.551	1.815

Dependent Variable: Performance of RUWASA Projects

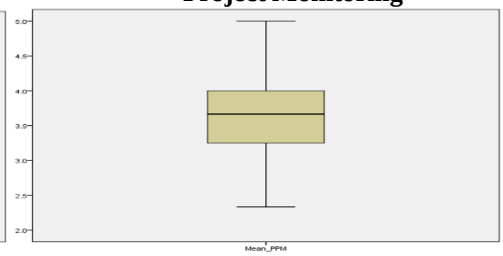
Outlier test

The study conducted an outlier test to identify any potential anomalies within the data set. The results of this test indicated that there are no outliers present. This finding suggests that the data is consistent and reliable, allowing us to proceed with further analyses without concerns regarding extreme values that could skew the results. The absence of outliers strengthens the integrity of our study and supports the validity of our conclusions.

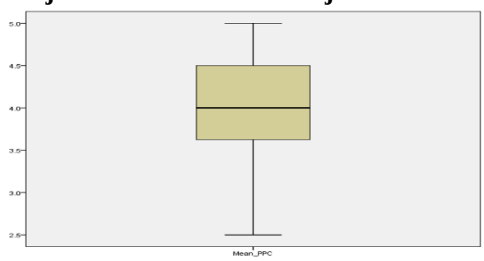
Project Planning and Implementation

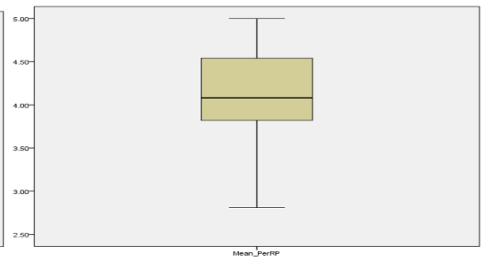


Project Monitoring



Project Communication Project Performance





Normality Distribution Test

Regression analyses need the independent variables to be normally distributed. Skewness and kurtosis are statistical tools that can enable us to check if the data is normally distributed or not. Skewness assesses the extent to which a variable's distribution is symmetrical (Hair *et al*., 2022). On the other hand, kurtosis refers to a measure of whether the data are heavy-tailed or light-tailed relative to a normal distribution. When both skewness and kurtosis are close to zero, the pattern of responses is considered a normal distribution (George & Mallery, 2016). For this study, the skewness and kurtosis test results were close to zero, and it can be concluded that the data for all variables were normally distributed.

Table 9: Skewness and Kurtosis Test for Normality

Independent Variables	N	Skewness	Kurtosis
		Statistic	Statistic
Participatory Project Planning & Implementation	159	-0.552	0.917
Participatory Project Monitoring	159	0.042	-0.047
Participatory Project Communication	159	-0.558	0.012

Heteroscedasticity

According to Jung *et al*. (2023), one of the fundamental assumptions in linear regression is that the residuals exhibit equal variance across all levels of the predictor variable, known as homoscedasticity. The presence of heteroscedasticity, as noted by Daryanto (2020), indicates that this assumption has been violated, leading to unreliable regression results (Astivia

& Zumbo, 2019). To test for heteroscedasticity in the residuals, the researcher in this study utilized the Breusch-Pagan test, which aims to detect changes in variance within the regression residuals (Gelfand, 2015). If the p-value from this test is greater than the significance level of 0.05, then we fail to reject the null hypothesis, suggesting that homoscedasticity is present in the model Jung *et al*. (2023). Table 4.11 reveals that the p-value exceeds 0.05, indicating that the null hypothesis stands, and thus heteroscedasticity is not present in the residuals.

Table 10: Breusch-Pagan/Cook-Wisberg Test for Heteroscedasticity

Null Hypothesis (H0)	**:**Homoscedasticity exist (Constant Variance)
Chi2(1)	= 0.90
Prob> chi2	= 0.075

Regression Model Estimation

The research employed multiple regression analysis to establish the linear statistical relationship between Participatory Project Planning & Implementation, Participatory Project Monitoring, Participatory Project Communication, and Performance of RUWASA Projects.

Model Summary

Based on the model summary in table 11, the correlation coefficient (R) of 0.903 indicates a strong relationship between Participatory Project Implementation, Participatory Project Monitoring, Participatory Project Communication, and the Performance of RUWASA Projects. The regression coefficient (R^2) of 0.811 signifies that Participatory Project Implementation, Participatory Project Monitoring, and Participatory Project Communication collectively contribute 81.1% to the performance of RUWASA projects. It is possible that other factors, not addressed in this study, account for the remaining 18.9% variation in the performance of RUWASA Projects.

Table 11: Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.903[a]	.815	.811	.28069

a. **Predictors:**(Constant), Participatory Project Planning & Implementation, Participatory Project Monitoring, Participatory Project Communication

Regression Model Goodness of Fit

The study conducted an Analysis of Variance (ANOVA) to examine whether the multiple regression model was fit for the data. This helped to find out if

project performance can be predicted without relying on participatory project implementation, participatory project monitoring, and participatory project communication. The results of the Analysis of Variance (ANOVA) are shown in Table 12. The study findings provide an F test, which shows an overall test of the significance of the fitted regression model. The F value indicates that all the variables in the equation were significant, hence the overall regression model is significant. The F-statistics produced ($F = 227.394$) were significant at $p<0.05$, thus confirming the fitness of the model, and therefore, there is a statistically significant relationship between participatory project planning and implementation, participatory project monitoring, participatory project communication, and the performance of RUWASA projects. This indicates that the regression model predicts the dependent variable significantly and is a good fit for the data.

Table 12: ANOVA for Testing Multiple Regression Model

Model	Sum of Squares	df	Mean Square	F	Sig.
Regression	53.748	3	17.916	227.394	.000[b]
Residual	12.212	155	.079		
Total	65.960	158			

a. **Dependent Variable**: Performance of RUWASA Projects
b. **Predictors :**(Constant), Participatory Project Planning & Implementation, Participatory Project Monitoring, Participatory Project Communication

Multiple Regression Analysis Parameter (Beta Coefficients) Estimation

In multiple linear regression analysis, the beta coefficients represent the change in the dependent variable (Y) for a one-unit change in the independent variable (X), while holding all other independent variables constant(Yu *et al*., 2019). A positive beta coefficient indicates a positive relationship between the independent variable and the dependent variable, while a negative beta coefficient indicates a negative relationship(Vatcheva *et al*., 2016).

The significance (sig) value associated with each beta coefficient indicates whether the relationship between the independent variable and the dependent variable is statistically significant(Nair & Ganapathy, 2023). A sig value less than 0.05 is typically considered significant, suggesting that the relationship between the independent variable and the dependent variable is not due to random chance(Göktaş *et al*., 2021).

The t-test is used to determine the significance of each beta coefficient in the regression model. A t-value greater than 2 or less than -2 indicates that the beta coefficient is significantly different from zero, suggesting that the independent variable has a significant impact on the dependent variable(Ernst & Albers, 2017).

In this study, as displayed in Table 13, the t-test results for each variable under study are greater than 2, meaning that the independent variables (participatory project planning, participatory project monitoring, and participatory project communication) have a significant impact on the dependent variable (performance of RUWASA projects). In the same vein, the sig value of each beta coefficient is less than 0.05, meaning that there is a statistically significant relationship between the independent variable and the dependent variable.

Table 13: Multiple Regression Analysis Parameter Estimation Results

Model	Unstandardized Coefficients		Standardized Coefficients	t	Sig.
	B	Std. Error	Beta		
(Constant)	.279	.153		1.82	.070
Participatory Project Planning & Implementation = X_1	.365	.036	.474	10.1	.000
Participatory Project Monitoring = X_2	.242	.044	.231	5.49	.000
Participatory Project Communication = X_3	.332	.044	.355	7.62	.000

Dependent Variable: Performance of RUWASA Projects = Y

The multiple regression model equation was developed from the coefficient as shown in equation 4.1;

$$Y = .279 + .365X_1 + .242X_2 + .332X_3 \dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots 1$$

Where Y refers to the dependent variable (performance of RUWASA projects), X_1 is the participatory project planning and implementation, X_2 is the participatory project monitoring, and X_3 is the participatory project communication.

The regression coefficient results indicate that we would still realize a positive change in RUWASA Projects performance of 0.279, even if all the variables (participatory project planning and implementation, participatory project monitoring, and participatory project communication) were zero (0). Also, the findings show that a unit increase in participatory project planning and implementation will lead to a 0.365 significant increase in the performance of RUWASA projects when all other independent variables are

held constant. Meanwhile, a unit increase in participatory project monitoring will lead to a 0.242 significant increase in the performance of RUWASA projects when all other independent variables are held constant. Finally, a unit increase in participatory project communication will lead to a 0.332 significant increase in the performance of RUWASA projects when all other independent variables are held constant.

DISCUSSION OF THE FINDINGS

The Influence of Participatory Project Planning and Implementation on the Performance of Projects

The beta coefficient for participatory planning and implementation was found to be positive. This means that participatory project planning and implementation, if practiced by RUWASA in Ushetu district, could have a positive effect on the performance of water projects. In other words, an increase in participatory project planning and implementation would contribute to the performance of water projects implemented by RUWASA in Ushetu district by 0.365 (36.5%). In support of this finding, Wachaiyu (2019)found that participatory project planning contributed to a project's success as well as enabling resource deployment. Mkutano (2018)found that planning made employees and stakeholders' team up to achieve a common goal of successful project performance. The results also concurred with the findings of Kirongo and Andala (2021),who argued that the involvement of local people in the conception, execution, monitoring, and evaluation of development projects has become very central to their sustainability. Additionally, the results of the study affirm the findings ofNjogu and Wanjohi (2018),who observed that community participation in financial planning, project governance, and project operations and management had a positive influence on project performance. Akin to these findings,Maina (2018) and Abdi (2018)found that the involvement of stakeholders in project planning and implementation can enhance project performance as well as create a sense of project ownership, and their absence can lead to sustainability challenges.

The Influence of Participatory Project Monitoring on the Performance of Project

The study also found that participatory project monitoring, if practiced, could have a positive effect on the performance of water projects implemented by RUWASA in Ushetu district. The findings converge with those of Mutiso and Omwenga (2020),who found that community participation in project monitoring and evaluation showed a positive correlation with project completion and performance. Also, this finding is in line with the Ali and

Gitonga (2019) study, which found that when stakeholders participated in M&E, errors in projects were corrected in good time, reporting of activities was done promptly, and overall project performance was enhanced. This was also supported by the views of Dhakal (2023),who argued that the benefits associated with proper community participation in project planning and implementation include an assurance of the continuity of the project, timely maintenance and repair, harmony and conflict management, a strong sense of ownership of the project, better service delivery, and expansion of the project. The findings are also supported by Otieno (2016), who discovered that participatory project monitoring in general improved the Local Authority Service Delivery Action Planning (LASDAP) process and especially stakeholder relationships in Bondo sub-county, Kenya. This study is also consistent with Jamaal (2018),who found that the participatory monitoring process engages stakeholders in joint planning and assessing progress, leading to the successful completion of projects. Kadurira and Nyagah (2021),in their study conducted at Tana River County, concluded that stakeholder's involvement in monitoring and evaluation helps in the correction of errors, monitoring and evaluation guides in justifying project costs, increased response controls, monitoring and evaluation helps in identifying sustainability activity challenges, and that it fosters project sustainability progress reporting. Moreover, Aupe and Sagwa (2020),in their study at Kwanza Sub-County, Kenya, recommend that the government and other development agencies enhance stakeholder participation in project monitoring and evaluation for the sustainability of water projects.

The Influence of Participatory Project Communication on the Performance of Projects

The study also found a positive relationship between participatory project communication and the performance of RUWASA projects in Ushetu district. The results indicated that there was a strong positive relationship between communication and project outcomes. The study findings are in agreement with Nyandongo (2017), who states that communication increases success rates and improves the overall performance of projects. Also, the study is supported by Mwanyalo and Mberia (2017),who established in their study that project managers who regard communication as one of the most important factors contributing to the success of projects. In the same vein, Zulch (2014)noted that communication allows the project managers to share information with regard to quality, time, scope, and costs within the projects. Sabrie (2022),in his study of the Banaadir region of Somalia, further argues that internal communication facilitated the flow of information, which allowed for proper coordination of various activities during the

implementation of WASH projects in Somalia. The existence of relevant systems allowed for effective communication with the stakeholders during the implementation of WASH projects (Sabrie, 2022).Kiradoo (2017),in his study, noted that formal and informal tools of communication are key for a sound comprehension of the information about the projects as well as the rate of success. Moreover,Alsulaimi and Abdullah (2020)observed in their study that the flow of information in the project makes it easier to coordinate the various project activities, which may contribute to overall success.

CONCLUSION AND RECOMMENDATIONS

Conclusion

This study concludes that participatory project planning, implementation, monitoring, and communication significantly influence the performance of water supply projects. Community involvement in various aspects, such as water facility allocation, project operations, decision-making, and feedback during planning, enhances both the cost-effectiveness and sustainability of clean water supply initiatives. Moreover, engaging the community in monitoring Rural Water Supply and Sanitation Agency (RUWASA) projects leads to better performance by enabling quick identification and resolution of issues, fostering trust and cooperation between residents and project implementers, and improving accountability and transparency. The study also emphasizes the importance of effective information flow between employees and project beneficiaries for timely problem-solving. Establishing feedback mechanisms, like community meetings and suggestion boxes, ensures community voices are heard, which contributes valuable insights into project progress.

Implication of the Study Findings

Theoretically, these findings underscore the critical role of participatory approaches in project management literature, advocating for their integration into project frameworks. Practically, these insights guide policymakers and project managers in Ushutu District to prioritize participatory methods, as they are directly linked to improved project outcomes. Implementing these practices can enhance stakeholder engagement, ensure better resource allocation, and ultimately lead to more successful and sustainable RUWASA projects in the region.

Recommendations

This study recommends that for RUWASA water projects in Ushetu district to be more effective, the community must be involved in all stages of project planning, implementation, monitoring, and communication. Engaging the

community ensures that local needs are met, fosters a sense of ownership, and encourages investment in the project's success. Community insights can help identify potential challenges, improve project design, and enhance monitoring, allowing for timely issue resolution. Additionally, prioritizing participatory communication promotes knowledge sharing and better decision-making, ultimately building trust and encouraging active participation, which are essential for project success.

REFERENCES

Abdi, A. H. (2018). Monitoring and evaluation and performance of constituency development fund projects in Garissa County, Kenya (MBA Project). Kenyatta University.

Ali, Y. A., & Gitonga, A. (2019). Influence of stakeholder's role on the performance of National Government Constituency Development Fund Projects in Wajir West Constituency, Kenya. International Academic Journal of Information Sciences and Project Management, 3(3), 289–311.

Alsulaimi, A., & Abdullah, T. (2020). Management of stakeholder communication in IT project. In 2020 3rd International Conference on Computer Applications & Information Security (ICCAIS), 1–6.

AlWaer, H., Sibley, M., & Lewis, J. (2008). Different stakeholder perceptions of sustainability assessment. Architectural Science Review, 51, 48–59.

Amirrudin, M., Nasution, K., & Supahar, S. (2020). Effect of variability on Cronbach Alpha reliability in research practice. Jurnal Matematika, Statistika Dan Komputasi, 17(2), 223–230.

Anaeto, S. G., & Solo-Anaeto, M. (2010). Development communication: Principles and practice. Stirling- Horden Publishers.

Astivia, O., & Zumbo, B. (2019). Heteroskedasticity in multiple regression analysis: What it is, how to detect it and how to solve it with applications in R and SPSS. Practical Assessment, Research, and Evaluation, 24(1).

Aupe, N., & Sagwa, E. (2020). Influence of stakeholders in project Monitoring and Evaluation on sustainability of water projects in Kwanza Sub-County Kenya. Africa Journal of Technical & Vocational Education & Training, 5(1), 141–153.

Beard, V. A., & Mitlin, D. (2021). Water access in global South cities: The challenges of intermittency and affordability. World Development, 147(1), 21-30..

Campbell, C., & MacPhail, C. (2002). Peer education, gender and the development of critical consciousness: Participatory HIV prevention by South African Youth. Social Science and Medicine, 55(2), 23-32.

Chambers, R. (1983). Rural development: Putting the last first. Longman.

Chowdavarapu, I. K., & Manikandan, V. D. (2016). Data mining the water pumps: Determining the functionality of water pumps in Tanzania using SAS.

Cyper, J., & Dietz. (1997). The process of economic development. Redwook Books.

Daryanto, A. (2020). Tutorial on Heteroskedasticity using HeteroskedasticityV3 SPSS macro. The Quantitative Methods for Psychology, 16(5), 124-129.

Dhakal, V. (2023). Participation in project planning and implementation. Public Performance & Management Review, 44(3), 471–493.

Eliamringi, L., & Kazumba, S. (2017). Assessment of sustainability of rural water supply services in Tanzania: The case study of Dodoma region. Water Science & Technology: Water Supply, 17(2).34-43.

Elith, J., Bacher, S., & Buchmann, C. (2013). Collinearity: A review of methods to deal with it and a simulation study evaluating their performance. Ecography, 36(1), 27–46.

Ernst, A. F., & Albers, C. J. (2017). Regression assumptions in clinical psychology research practice-a systematic review of common misconceptions. PeerJ, 16(5), 36-49.

Freire, P. (1970). The pedagogy of the oppressed. The Seabury Press.

Gelfand, S. J. (2015). Understanding the impact of heteroscedasticity on the predictive ability of modern regression methods. Simon Fraser University.

George, D., & Mallery, P. (2016). IBM SPSS statistics 23 step by step: A simple guide and reference (14th ed.). Routledge.

Göktaş, A., Akkuş, Ö., & Kuvat, A. (2021). A new robust ridge parameter estimator based on search method for linear regression model. J Appl Stat, 48(5), 13–15.

Granovetter, D. (1992). Economic action and social structure: The problem of embeddedness (In Granovetter, M. and Swedburg, R. (eds) The sociology of economic life). Westview Press.

Hair, J. F., Hult, G. T., Ringle, C. M., & Sarstedt, M. (2022). A primer on partial least squares structural equation modeling (PLS-SEM) (3 ed.). Sage Publications.

Inagaki, N. (2007). Communicating the impact of communication for development: Recent trends in empirical research.

https://openknowledge.worldbank.org/handle/10986/6728 License: CC BY 3.0 IGO.

Kadurira, P., & Nyagah, J. (2021). Influence of stakeholder's involvement in project monitoring and evaluation on sustainability of community projects in Kenya: Case Study of Kenya Red Cross Integrated Community Projects in Tana River County. Journal of Entrepreneurship & Project Management, 5(3), 15-25.

Kamara, J. K., Galukande, M., Maeda, F., & Luboga, S. (2017). Understanding the challenges of improving sanitation and hygiene outcomes in a community-based intervention: A crosssectional study in rural Tanzania. Int J Environ Res Public Health, 14(602), 1–16.

Kimisha, N. H. (2015). Community participation in public water supply projects, a case of Kiwalani Ward, Ilala Municipality (Masters Dissertation). , Dodoma [The University of Dodomad]. http://hdl.handle.net/20.500.12661/1868

Kiradoo, G. (2017). The impact of communication in managing the quality and timely delivery to ensure project success. International Journal of Advanced Research in Engineering and Technology, 8(6), 131–136.

Kirenga, D. A. T., Mung'ong'o, C. G., & Mbwette, T. S. A. (2018). Influence of water fund to sustainability of community managed rural water supply projects: Moshi district, northern Tanzania. Huria Journal, 25(2).44-49.

Njogu, M., & Wanjohi, M. (2018). Influence of community participation on project performance of Ruiri Water Projects, Meru County, Kenya. International Academic Journal of Information Sciences and Project Management, 3(2), 331–344.

Nyandongo, K. (2017). The impact of communication on project performance: An empirical study. Applied Information Systems.4 (2), 66-69.

Oduor, J., & Murei, L. (2020). Community participation in Monitoring and Evaluation and sustainability of rural piped water supply projects: A case of Siaya County, Kenya. IOSR Journal Of Humanities And Social Science (IOSR-JHSS), 25(4), 29–38.

Otieno, J. (2016). Perceived effect of participatory monitoring and evaluation on the Local Authority Service Delivery Action Planning (LASDAP) process in Bondo sub-county, Kenya (Masters Dissertation). Egerton University.

Penderis, S. (2012). Theorizing participation: From tyranny to emancipation. The Journal of African & Asian Local Government Studies, 1(3), 1–28.

Rahim, S. A. (1994). Participatory development communication as a dialogical process (in S. A. White, K. S. Nair and J. Ascroft (eds),

Participatory Communication Working for Change and Development). Sage Publications.

Riaz, A. (2017). Significance of communication and project management processes in public sector projects. Proceedings of International Academic Conferences.

Rushagika, B. (2015). Community participation and sustainability of water projects in ishaka- bushenyi municipality; a case of Ishaka division water project (Masters Dissertation). Uganda Management Institute.

Sabrie, A. (2022). Participatory project practices and performance of Water, Sanitation, and Hygine projects: A case of Polish Humanitarian Action project in Banaadir region, Somalia (Masters Dissertation). University of Nairobi.

Safari, I. (2024). Toward development vision 2050: Making better life for every Tanzanian achievable.

Sam, B. (2018). Influence of stakeholder's participation on performance of public projects in Rwanda: A case study of Water, Sanitation and Hygiene (WAH) project in Musanze district (Masters Disseration). Mount Kenya University.

Shayo, W. (2020). Determinants of effectiveness of monitoring and evaluation systems of agriculture related NGOs in Morogoro Municipality, Tanzania. Sokoine University of Agriculture.

Sugal, D. A. (2017). An assessment of the factors influencing the effective implementation of the CDF projects in Balambala Constituency. (A master's project). United States International University.

Taber, K. S. (2018). The use of Cronbach's Alpha when developing and reporting research instruments in science education. Res Sci Educ, 48, 1273–1296.

The United Republic of Tanzania. (2019). The water and sanitation Act, 2019. https://faolex.fao.org/docs/pdf/tan199085.pdf

Thomas, P. (1994). Participatory development communication: Philosophical premises (in S. A. White, K. S. Naire and J. Ascroft (eds), participatory communication: Working for change and development.). Sage Publications.

Tonya, E. (2015). Assessing the implications of technology on sustainability of rural water supply in Dodoma, Tanzania. Open University of Tanzania.

URT. (2024). Water. Ushetu district council. https://ushetudc.go.tz/maji

USAID. (2024). Global waters strategy country plan 2023. https://www.globalwaters.org/sites/default/files/tanzania_gws_hpc_plan_2023.pdf

Uwamahoro, J., & Ogbe, A. (2021). Project management practices and project performance of selected hydropower projects in Musanze district, Rwanda. Global Scientific Journal (GSJ), 10(11).56-63.

Vatcheva, K., Lee, M., McCormick, J., & Rahbar, M. (2016). Multicollinearity in regression analyses conducted in epidemiologic studies. Epidemiology (Sunnyvale), 6(227).23-29.

Wachaiyu, V. W. (2019). Monitoring and evaluation factors influencing success of development projects: A case of Starehe Sub-County, Kenya (Master's Thesis). University of Nairobi.

World Bank. (2023). Universal access to water and sanitation could transform social and economic development. Tanzania Economic Update. https://www.worldbank.org/en/country/tanzania/publication/tanzania-economic-update-universal-access-to-water-and-sanitation-could-transform-social-and-economic-development

Yu, L., Sevilimedu, V., Vogel, R., & Samawi, H. (2019). Quasi-likelihood ratio tests for homoscedasticity in linear regression. Journal of Modern Applied Statistical Methods, 18(1), 25-36.

Zulch, B. G. (2014). Communication: The foundation of project mnagement. Procedia Technology, 16 (1), 1000–1009.