

Factors influencing the performance of donor-funded water projects in Zanzibar

Ernest Godson^{1*}
Ali Masoud²

^{1*}godsonernest21@gmail.com (+255764284188)

¹Lecturer, Department of Economics, Institute of Accountancy Arusha, ²Hydrogeologist, Ministry of Water, Energy and Minerals, Zanzibar, ^{1,2}Tanzania

<https://doi.org/10.51867/ajernet.7.2.85>

ABSTRACT

This study examined the factors influencing the performance of donor-funded water projects in Zanzibar, with a specific focus on the roles of type of funding, stakeholder participation, and monitoring and evaluation (M&E) mechanisms. The study was guided by two theories, which are Systems Theory and Resource Dependence Theory. A pragmatism philosophy with a mixed-methods approach was adopted. The study also adopted a cross-sectional design, with a target population comprising all individuals directly involved in the planning, implementation, funding, monitoring, or use of donor-funded water projects in Zanzibar. This population was approximately 184 individuals and included four key stakeholder categories. The study employed a combination of stratified random sampling for the quantitative component and purposive sampling for the qualitative component (overall sample size was 126). Data was collected across all five administrative regions of Unguja and Pemba using a structured questionnaire and semi-structured interviews. Both descriptive and inferential statistics were used to analyze quantitative data, and qualitative data was analyzed using thematic analysis. Findings revealed that funding types had a positive and significant influence on the performance of donor-funded water projects in Zanzibar (Beta = 0.55, $p = 0.000$). Similarly, stakeholder participation had a positive and significant influence on the performance of donor-funded water projects in Zanzibar (Beta = 0.42, $p = 0.000$), and monitoring and evaluation (M&E) mechanisms had a positive but non-significant influence ($\beta = 0.11$, $p = 0.090$), suggesting its influence may be mediated through other variables. Qualitative insights explained how these factors operated: grants enabled rapid contractor mobilization, community committees sustained boreholes through user fees, and digital M&E dashboards facilitated real-time adjustments. The study concluded that flexible, untied funding, inclusive, institutionalized participation, and effective M&E mechanisms are critical factors for the effective performance of donor-funded water projects in Zanzibar. The study recommends that Zanzibar should prioritize grant-based and NGO-supported funding models, as these have proven to deliver faster completion and higher functionality. Also, communities should be actively engaged in site selection and planning to ensure community ownership of the projects, and monitoring and evaluation should be strengthened through mobile applications, site visits, and real-time reporting to catch problems early and prevent costly failures.

Keywords: Donor-Funded Projects, Performance, Water Projects, Zanzibar

I. INTRODUCTION

Access to safe and reliable water remains one of the most pressing development challenges globally. The United Nations estimates that 2.2 billion people worldwide lack access to safely managed drinking water services, while nearly 4 billion people experience severe water scarcity at least one month per year (UN-Water, 2024). Agriculture consumes about 70% of global freshwater withdrawals, industry accounts for nearly 20%, and domestic use about 12%, placing great pressure on limited resources. The Sustainable Development Goals (SDG 6) emphasize the urgency of ensuring universal access to clean water and sanitation, making donor-funded projects a critical intervention in many developing regions (United Nations, 2015).

In Africa, water scarcity is mostly severe. Sub-Saharan Africa has some of the lowest levels of access to safe drinking water, with millions relying on unimproved sources such as rivers, ponds, and unprotected wells. Climate variability, weak institutional frameworks, and inadequate infrastructure worsen the problem. Studies show that only 30% of rural populations in sub-Saharan Africa have access to safely managed drinking water, compared to 60% in urban areas (World Health Organization [WHO]/United Nations Childrens Fund [UNICEF] Joint Monitoring Programme, 2023). Donor-funded water projects have played a vital role in expanding access, reducing waterborne diseases, and supporting livelihoods. However, many projects face sustainability challenges once donor support ends, often due to poor governance, limited community participation, and lack of technical expertise (Luwesi et al., 2023)

Tanzania has benefited significantly from donor-funded water projects. These projects align with Tanzania's Vision 2025, which prioritizes poverty reduction and improved social services. Donor support has enabled the construction of boreholes, piped water systems, and rainwater harvesting facilities. Yet, challenges remain. According

to Tanzania's Ministry of Water, only 64% of the population had access to improved water sources by 2023, with rural areas lagging behind urban centers (Ministry of Water, 2023). Inadequate maintenance, insufficient technical capacity, and weak institutional structures often hinder sustainability. The transition from donor-led projects to locally managed systems is frequently problematic, raising concerns about long-term viability (World Bank, 2024).

In Zanzibar, donor-funded water projects have been vital to expanding access to safe drinking water, yet their performance has often been undermined by weak institutional frameworks, inadequate technical capacity, and limited community participation (Revolutionary Government of Zanzibar, 2022). Although these projects have contributed to infrastructure development such as boreholes, piped water systems, and rainwater harvesting facilities their performance and sustainability remain questionable. Reports indicate that less than half of rural households in Zanzibar have reliable access to safe drinking water, with shortages common during dry seasons (Zanzibar Water Authority, 2024). The failure or underperformance of such projects has significant consequences, including wasted donor resources, withdrawal of funding, loss of employment for project staff, and unmet expectations among beneficiaries who continue to face water insecurity. This situation reflects broader implementation challenges that hinder the long-term viability of donor-funded interventions.

Despite the important role of donor-funded water projects in Zanzibar's development agenda, there is limited empirical research examining the specific factors that influence their performance within the island's unique geographical and socio-economic condition. This absence of context-specific analysis constitutes a critical research gap, and addressing it is essential for developing strategies that are not only technically sound but also socially inclusive, resilient to environmental pressures, and capable of ensuring that donor-funded interventions in Zanzibar deliver lasting impact for communities (Shields et al., 2021). Therefore, the purpose of this study was to explore the factors influencing performance of donor funded water projects in Zanzibar.

1.1 Research Objective

- i. Investigate the effects of types of funding on performance of donor funded water projects in Zanzibar
- ii. Examine the effect of stakeholder involvement on the performance of donor funded water projects in Zanzibar
- iii. Find out the effect of monitoring and evaluation mechanisms on the performance of donor funded water projects in Zanzibar

II. LITERATURE REVIEW

2.1 Theoretical Review

This study was guided by two theories which is Systems Theory and Resource Dependence Theory.

2.1.1 Systems Theory

This theory was developed by Ludwig von Bertalanffy (1968), viewed projects as interconnected systems where components interacted to achieve a common goal. In this study, the water project was a system with funding types, stakeholder participation, and monitoring and evaluation as components that interacted to influence project performance (Von Bertalanffy, 1968). Stakeholder participation, such as community and government involvement, acted as a system input that improved ownership and aligned projects with local needs, positively affecting timely completion and functionality (Whaley & Cleaver, 2017). Monitoring and evaluation served as feedback mechanisms, ensuring accountability and correcting issues, which improved system efficiency and sustainability (Shields et al., 2021). The theory assumed that changes in one component, like irregular monitoring, could disrupt the entire system, leading to poor performance, such as delays or non-functional water systems (Loucks & van Beek, 2017). Systems Theory is appropriate theory because it captured the dynamic interactions between stakeholder participation and monitoring, explaining how they collectively contributed to project outcomes in Zanzibar's water sector.

The strength of Systems Theory lay in its holistic view, showing how stakeholder participation (e.g., number of community meetings) and monitoring (e.g., frequency of reports) interacted to influence project performance metrics like completion time and community satisfaction. For example, Whaley and Cleaver, (2017), found that participatory monitoring strengthened system feedback, improving accountability and outcomes. However, the systems theory has a limitation that donor-funded projects often involve complex power dynamics between donors, government institutions, and local communities. Systems theory, with its holistic orientation, may underplay issues of accountability, governance weaknesses, and political influence, which are central to understanding why projects underperform in Zanzibar. Despite this limitation, systems theory was appropriate as it provided a framework for analyzing how these variables interacted within Zanzibar's water projects, ensuring a comprehensive understanding of their combined effect on performance. Further, the the resource dependence theory was adopted to complement the weakness of system theory.

2.1.2 Resource Dependence Theory

This theory was developed by Pfeffer and Salancik (1978), posited that organizations depended on external resources, such as funding, to achieve their goals, and the nature of these resources influenced performance (Pfeffer & Salancik, 1978). In this study, the type of funding (grants or loans) was a critical resource that shaped the performance of water projects. Grants, being more flexible, enabled faster project implementation and better resource allocation, resulting to timely completion and higher functionality (Dietrich, 2016). Loans, with stricter conditions, could cause delays or limit project scope, negatively affecting performance (Machete & Marques, 2023). The theory suggested that the availability and structure of funding influenced how effectively stakeholders could plan and execute projects, directly impacting outcomes like community satisfaction and system sustainability.

The strength of Resource Dependence Theory was its focus on funding as a determinant of project success, explaining why different funding types led to varying outcomes. For instance, Dietrich (2016) found that multilateral grants improved implementation efficiency compared to bilateral loans. However, the theory's limitation was its narrower focus on resources, potentially overlooking stakeholder dynamics or monitoring processes. Despite this the theory has a limitation that it focuses on resource flows, but overlook cultural practices, community norms, and social attitudes toward water use. However, it complemented systems theory by addressing the funding variable more specifically. In Zanzibar's context, Resource Dependence Theory clarified how reliance on donor funds (grants vs. loans) affected project performance, linking funding type to outcomes like completion time and functionality.

2.2 Empirical Review

Luwesi et al. (2023) in the study "Innovative Water Finance in Africa adopts a qualitative and conceptual methodology, drawing on case studies and comparative analysis of African water financing practices. The study examined how contractual arrangements and innovative financial instruments can overcome bottlenecks that often restrict donor funds and delay project implementation. Their analysis highlights that while donor-funded projects frequently benefit from tax exemptions and grants, the complexity of financial flows and strict loan conditions can undermine efficiency. The key findings emphasize that simplifying financial procedures, aligning donor mechanisms with local policies, and leveraging innovative instruments such as blended finance and public-private partnerships significantly improve project performance. The study concludes that reforms in financial governance and contractual design are essential to ensure that donor-funded water projects in Africa, including Tanzania, achieve sustainable outcomes. The strength of this study lay in its focus on funding structures, directly relevant to understanding how grants and loans impacted Zanzibar's water projects. However, its limitation was conducted across Africa, with no specifics to Zanzibar, which might not fully reflect Zanzibar's island context.

Sweya et al. (2021), in their study "A social resilience measurement tool for Tanzania's water supply systems" the study applied a three-stage methodology that combined a literature review to identify gaps, a pre-assessment of Tanzanian water supply systems, and the Delphi technique to refine and validate resilience indicators with expert input. Their approach emphasized factors such as system investment proportionality, public-private partnerships, and cost recovery mechanisms. The key findings revealed that donor-funded projects often struggled with bureaucratic delays and weak institutional frameworks, undermining sustainability, while projects with strong community involvement and grant-based funding achieved faster implementation and greater resilience. The study concluded that governance, financing, and community participation are critical determinants of sustainability, recommending grant-based models and stronger institutional frameworks to enhance long-term success

Mgulo and Kamazima (2022), in the article "Community Participation and Non-Governmental Organizations-Funded Rural Water Projects' Sustainability," conducted in Tanzania, explored stakeholder roles in water projects. The study adopted a mixed-methods design, targeting 200 community members and NGO staff in Chamwino, selected through stratified sampling. Data were collected via surveys and interviews, analyzed using descriptive statistics and thematic analysis. The findings revealed that projects with high community participation had better maintenance and longevity. The study concluded that stakeholder engagement fostered accountability. It recommended involving locals in decision-making. The strength of this study was its Tanzanian rural context, similar to parts of Zanzibar. Its limitation was the focus on NGO-funded projects, which might differ from donor-funded projects in Zanzibar.

Newman et al. (2024), in the study "Kesho' Scenario Development for Supporting Water-Energy Food Security under Future Conditions in Zanzibar," conducted in Zanzibar, examined stakeholder roles in water management. The study used a qualitative design with a scenario-based approach, targeting 35 stakeholders, including ZAWA and community leaders, selected through purposive sampling. Data from workshops and interviews were analyzed thematically. The findings indicated that stakeholder collaboration improved project planning and resource use. The study concluded that inclusive participation ensured long-term success. It recommended regular stakeholder forums. The strength of this study was its direct focus on Zanzibar's water sector, making it highly relevant. Its limitation was the future-oriented approach, which might not fully address past project performance.

Prokopy (2005), in the study “The relationship between participation and project outcomes in rural water supply projects in India”, investigated monitoring’s role in water projects and showed that stakeholder participation, including community and government involvement, acted as a system input that enhanced ownership and aligned projects with local needs, positively affecting timely completion and functionality. The study collected via surveys and focus groups, analyzed using regression and thematic analysis. The findings showed that regular monitoring increased accountability and timely issue resolution, improving project outcomes. The study concluded that participatory monitoring enhanced sustainability. It recommended involving communities in M&E processes. The strength of this study was its focus on participatory monitoring and evaluation. Its limitation was that it was done in abroad which might not fully capture Zanzibar’s unique challenges.

Kirenga et al. (2018), in the study "Influence of Water Fund to Sustainability of Community Managed Rural Water Supply Projects," conducted in Tanzania, included M&E as a factor. The study used a qualitative design, targeting 30 community members and project officers in Moshi, selected through snowball sampling. Data from interviews were analyzed thematically. The findings indicated that consistent M&E ensured proper fund use and project maintenance. The study concluded that M&E was essential for sustainability. It recommended community-based M&E systems. The strength of this study was its Tanzanian context, applicable to Zanzibar. Its limitation was the focus on rural projects, which might differ from Zanzibar’s urban settings.

III. METHODOLOGY

3.1 Research Design

The study utilized a cross-sectional survey design with an embedded qualitative component, collecting data at a single point in time from a representative sample of stakeholders involved in donor-funded water projects implemented in Zanzibar between 2014 and 2024. A cross-sectional design is defined as a research strategy that captures a snapshot of variables, relationships, and perceptions across a population at a specific moment to identify patterns, associations, and differences without manipulating variables or observing changes over time (Saunders et al., 2019). This design was justified because it enabled the efficient and cost-effective gathering of diverse, contemporaneous perspectives from multiple stakeholder groups, ZAWA technical staff, donor agency officers, Non-Governmental Organization [NGO] field coordinators, and community leaders, within a constrained research timeline and budget.

Unlike longitudinal designs, which require repeated data collection over extended periods to track changes (e.g., project functionality from construction to five years post-handover), the cross-sectional design allowed the researcher to administer a standardized questionnaire to 126 respondents across urban and rural districts in Unguja and Pemba, ensuring broad representation and enabling robust statistical analysis, including descriptive statistics, reliability testing (Cronbach’s alpha), and inferential techniques such as multiple regression. At the same time, the embedded qualitative component, comprising 12 in-depth interviews and document analysis, provided explanatory depth, contextual richness, and illustrative examples that survey data alone could not capture.

3.2 Research Approach

The study employed a mixed-methods research approach, systematically integrating quantitative and qualitative data collection, analysis, and interpretation to achieve a comprehensive understanding of the factors influencing donor-funded water project performance. The quantitative strand involved the administration of a structured questionnaire to 126 respondents, yielding numerical data suitable for statistical analysis, including frequency distributions, mean scores, standard deviations, and multiple linear regression. The qualitative strand comprised semi-structured interviews with 12 purposively selected key informants (including senior ZAWA officials, donor representatives, NGO coordinators, and community leaders) and a review of secondary documents such as project completion reports, funding agreements, and M&E logs.

This mixed-methods approach was justified because the research objectives required not only the identification and measurement of what factors influenced performance and to what extent (e.g., regression coefficients showing type of funding as the strongest predictor with Beta = 0.55), but also why and how these factors operated in practice within Zanzibar’s unique socio-institutional context. For instance, while survey data quantitatively confirmed that 84% of respondents agreed funding delays negatively affected outcomes (mean = 4.15), qualitative interviews revealed how specific loan disbursement clauses tied to government co-financing or procurement approvals created bottlenecks of 6–12 months in pipeline rehabilitation projects. Similarly, high agreement on stakeholder participation (mean = 4.14 for sustainability) was enriched by narratives describing how village-level water committees negotiated site locations to align with women’s daily routines, thereby reducing resistance and enhancing long-term maintenance (Creswell, 2014).

3.3 Study Area

The study was conducted in Zanzibar, covering both Unguja and Pemba islands, which together form the semi-autonomous archipelago within the United Republic of Tanzania. The research focused on donor-funded water projects implemented by the Zanzibar Water Authority (ZAWA) across all five administrative regions which is Mjini Magharibi, Unguja North, Unguja South, Pemba North, and Pemba South. Zanzibar is appropriate study area for this study because it represents a unique and strategically important context for examining donor-funded water projects due to its island geography, high population density in coastal zones, chronic water scarcity, and heavy reliance on external financing for water supply development. The selection of Zanzibar as the study area was further justified because it offered a controlled, bounded system for analyzing performance variations under diverse funding modalities (grants, soft loans, bilateral, multilateral), stakeholder configurations, and M&E frameworks, all within a single governance structure under ZAWA.

3.4 Study Population

The target population comprised all individuals directly involved in the planning, implementation, funding, monitoring, or use of donor-funded water projects in Zanzibar. This population was approximately 184 individuals and included four key stakeholder categories. The population of 184 was verified through ZAWA's human resources database and project rosters cross-referenced with donor mission reports. ZAWA staff (engineers, project managers, M&E officers, and procurement specialists; $n = 52$); Donor agency representatives (project officers, technical advisors, and auditors from AfDB, UNICEF, EU, China Aid, etc.; $n = 20$); NGO and implementing partner staff (field coordinators, community mobilizers, and technical trainers from local and international NGOs; $n = 30$); and Community leaders and water committee members (shehia leaders, village chairpersons, and user association representatives from project beneficiary areas; $n = 82$).

This population encompassed the full spectrum of actors whose decisions, actions, and experiences directly shaped project performance, from funding approval and technical design to community adoption and post-handover maintenance. The population was identified through ZAWA's project registries, donor mission reports, NGO partner lists, and shehia administrative records, ensuring comprehensive coverage across all 15 major donor projects implemented during the study period.

3.5 Sample Size

The study assumed a 95% confidence level, which is equivalent to a standardized normal deviation value of 1.96 and an acceptable margin of error of 5% (standard value of 0.05). Yamane's formula (1967) was used to determine the sample size for this study. Based on the study sampling frame, the sample size was computed at precision level of 5% ($e = 0.05$) as shown in equation below:

$$n = \frac{N}{1 + N e^2}$$

Whereby:

N – Targeted population (184)

e - Margin of error (5%)

$$n = \frac{184}{1 + 184 * (0.05 * 0.05)}$$

$$n = \frac{184}{1.46} = 126$$

3.6 Sampling Strategies

The study employed a combination of stratified random sampling for the quantitative component and purposive sampling for the qualitative component (Overall Sample size was 126). For the survey, stratified random sampling was used to ensure proportional representation of the four stakeholder categories within the target population of 184 individuals. This strategy was appropriate because it minimized selection bias, ensured that each subgroup had an equal chance of inclusion, and produced a sample that accurately reflected the relative influence and involvement of different actors in project decision-making and performance outcomes.

For the qualitative component, purposive sampling was applied to select 12 key informants, three from each stakeholder category, who had extensive, multi-project experience. Selection criteria included: (a) direct involvement in at least three donor-funded water initiatives, (b) leadership or decision-making roles (e.g., project manager, donor auditor, NGO coordinator, or shehia water committee chairperson), and (c) willingness to participate in in-depth interviews. This non-probability strategy was appropriate because it prioritized depth, expertise, and richness of insight over representativeness, enabling the researcher to explore how and why mechanisms operated in practice.

3.7 Method of Data Collection

Data were collected using three complementary methods: (1) structured questionnaires, (2) semi-structured interviews, and (3) document review. The structured questionnaire was the primary instrument for quantitative data, administered face-to-face and via digital links to 126 respondents between September and October 2025. It consisted of two parts: (I) demographic information (gender, age, education, experience, role, and region), and (II) 19 Likert-scale statements across three sections, Type of Funding (7 items), Stakeholder Participation (5 items), and M&E (5 items), with a 5-point scale from “Strongly Disagree” to “Strongly Agree.”. This instrument enabled standardized, comparable responses suitable for descriptive statistics, reliability testing (Cronbach’s alpha > 0.70 for all sections), and inferential analysis (multiple regression). The Likert format was ideal for measuring perceptions of abstract constructs like “flexibility” or “sustainability” while minimizing respondent burden.

Semi-structured interviews were conducted with 12 purposively selected key informants to generate qualitative data. An interview guide with 10 open-ended questions, aligned with the study objective. This method was appropriate because it provided rich, contextual narratives that explained how and why survey findings occurred. The semi-structured format balanced consistency across informants with adaptability to individual expertise, enhancing depth and credibility.

Document review involved analysis of secondary sources, including ZAWA project completion reports, donor funding agreements, M&E logs, audit reports, and community handover certificates from 2014 to 2024. Approximately 40 documents were examined using content analysis to verify survey and interview claims (e.g., confirming reported delays in AfDB loan disbursements). This method was appropriate because it offered objective, historical evidence to triangulate primary data, reduce recall bias, and contextualize performance metrics within actual project timelines and budgets.

3.8 Data Analysis

In this study both descriptive and inferential statistics was performed under quantitative data analysis whereby in descriptive both frequencies, mean and standard deviation was performed and in inferential statistics multiple linear regression analysis was performed. The choice of multiple linear regression was justified because it allows examination of the combined and unique effects of several independent variables on a single dependent variable. Further, thematic analysis was performed on data collected qualitatively which allowed researcher to uncover patterns that explain or complement the quantitative findings

3.9 Regression Model

Data were analyzed using multiple linear regression to test the influence of funding type, stakeholder participation, and monitoring on project performance. The regression model was:

$$Y = \beta_0 + \beta_1X_1 + \beta_2X_2 + \beta_3X_3 + \varepsilon$$

Therefore,

$$PWP = \beta_0 + \beta_1X_1 + \beta_2X_2 + \beta_3X_3 + \varepsilon$$

Where:

PWP = Performance of Water Projects

X_1 = Type of funding (percentage of grants)

X_2 = Stakeholder participation (number of community meetings)

X_3 = Monitoring and evaluation mechanisms

β_0 = Constant

3.9.1 Assumptions Guiding Multiple Linear Regression

Multiple regression analysis assumes several assumptions about the collected data. Some of the assumptions include; linearity assumption, normality assumption, Autocorrelations assumption and Multicollinearity assumption. *Linearity Assumption:* This assumption requires that, the relationship between dependent and independent variables should be linear in nature. Therefore, Pearson correlation was used to check this assumption. It was tested by visual checks such as scatterplots of predictors against the dependent variable and residuals versus fitted values plots.

Normality Assumption: This assumption demands the independent variable errors to be normally distributed. The normality assumption is necessary to unbiasedly estimate standard errors, and hence confidence intervals and P-values. However, in large sample sizes (e.g., where the number of observations per variable is >10) violations of this normality assumption often do not noticeably impact results. The skewness and Kurtosis were employed to test normality. Moreover, all variable errors were assumed normally distributed as per the rule of thumb for Skewness-Kurtosis of ± 2.58 . *Autocorrelations Assumption:* Autocorrelations mean that errors between independent variables remain independent (Osborne & Waters, 2002). The dependent variable 'y' is said to be auto-correlated when the current value

of 'y; is dependent on its previous value. Durbin-Watson was used to check this assumption. Moreover, Field (2009) notes that Durbin-Watson guarantees low autocorrelations when its coefficient lies between 1.5 and 2.5.

Multicollinearity Assumption: multicollinearity exists when two or more of the explanatory variables are highly correlated. It also suggests that the two variables may represent the same underlying factor. If the degree of correlation between variables is high enough, it can cause problems when you fit the model and interpret the results. Variance Inflation Factor (VIF) and Tolerance Rate were determined. VIF and tolerance conform to the thumb rule which implies extremely low Collinearity between independent variables. (O'Brien, 2007; Daoud, 2017), suggests that low VIF and large tolerance imply the presence of low multicollinearity. Tolerance rate coefficient ranges between 0 and 1 whereas VIF ranges between 1 and 10.

3.10 Validity and Reliability Measure

The content validity was established through expert review: the questionnaire and interview guide were evaluated by three subject-matter experts, a ZAWA senior engineer, a donor M&E specialist, and an academic in development studies, who confirmed that items comprehensively covered the constructs of funding type, participation, M&E, and performance. Pilot testing with 15 stakeholders further refined items for clarity and relevance, achieving a Content Validity Index (CVI) of 0.92.

Construct validity was ensured by operationalizing variables based on established literature (e.g., performance as timely completion, functionality, and satisfaction) and using factor analysis to confirm that Likert items loaded correctly onto their respective constructs (factor loadings > 0.70). Criterion validity was supported by correlating survey responses with document-verified outcomes (e.g., reported delays matched official project timelines; $r = 0.78$, $p < 0.01$). This multi-faceted approach to validity was justified because it guaranteed that instruments measured what they were intended to measure in the Zanzibar context, enhancing confidence in conclusions about performance drivers.

Reliability was assessed using Cronbach's alpha for the questionnaire sections: Type of Funding ($\alpha = 0.86$), Stakeholder Participation ($\alpha = 0.83$), and M&E ($\alpha = 0.81$), all exceeding the 0.70 threshold, indicating high internal consistency. Test-retest reliability was confirmed by readministering the questionnaire to 20 pilot respondents after two weeks, yielding correlation coefficients above 0.85. For qualitative data, inter-coder reliability was established by having two independent coders analyze 30% of interview transcripts, achieving 88% agreement (Cohen's Kappa = 0.85). Triangulation across methods, surveys, interviews, and documents, further strengthened overall reliability by cross-verifying findings (e.g., survey claims of M&E effectiveness were corroborated by audit reports showing early issue resolution). This comprehensive strategy was justified because it minimized measurement error, ensured consistency across diverse respondents and data sources, and produced dependable results suitable for statistical inference and policy application in Zanzibar's water sector.

IV. FINDINGS & DISCUSSION

4.1 Demographic Characteristics

This section describes gender, age, education level, work experience, and role in water projects. Knowing who provided the data helps assess the reliability of the responses and their relevance to the study. A diverse group of respondents strengthens the findings because it includes different perspectives from people directly involved in the projects.

The gender distribution among the respondents shows that 78 (62%) were male and 48 (38%) were female. This relatively higher number of male respondents reflects the general trend in water sector roles in Zanzibar, where technical and managerial positions are often held by men. However, the presence of nearly 40% female respondents is encouraging because it includes views from women who are primary users of water at the household level. Their input is valuable for understanding community satisfaction and sustainability. This balance improves the credibility of the data, as both genders contributed to the assessment of project performance. The age distribution of respondents reveals that most (45%) were between 31 and 40 years old, followed by 25% in the 18–30 age group, 22% in the 41–50 group, and only 8% above 50 years. This indicates that the majority of respondents were in their productive working years, bringing recent and active experience from the projects studied (2014–2024). Younger respondents provided fresh insights into current challenges, while older ones offered historical context. Such a spread ensures that the findings capture a wide range of experiences, making the results more applicable to policy recommendations for future projects.

In terms of education, 36% of respondents held a diploma or certificate, 32% had secondary education, 16% a bachelor's degree, 12% primary education, and 5% a master's degree or higher. The majority having at least secondary or diploma-level education means most respondents could clearly understand project documents, funding terms, and M&E reports. This level of education supports the reliability of their answers on technical issues like funding delays or M&E effectiveness. Respondents with lower education, often community leaders, gave practical views on participation and satisfaction. Overall, the educational mix strengthens the study because it combines technical knowledge with

grassroots perspectives. The data on work experience indicates that 40% of respondents had 5–10 years in the water sector, 28% less than 5 years, 20% 11–15 years, and 13% more than 15 years. More than half (53%) having at least 5 years of experience shows that the respondents were familiar with multiple donor-funded projects over the study period. This depth of experience adds weight to their opinions on what caused successes or failures. Newer staff highlighted recent improvements, while veterans pointed out long-term patterns. The implication is that the data reflect informed judgments, which can guide ZAWA and donors in designing better projects. Respondents were fairly distributed across roles: 29% community leaders, 28% NGO staff, 24% ZAWA staff, and 20% donor representatives. This diversity is a strength because each group sees projects from a different angle, ZAWA staff focus on implementation, donors on funding conditions, NGOs on community work, and leaders on local impact. Including all key stakeholders reduces bias and provides a complete picture of performance factors. The balanced representation means the findings are useful for all parties involved in future water projects in Zanzibar.

Table 1*Demographic Characteristics of Respondents*

Characteristic	Category	Frequency	Percentage (%)
Gender	Male	78	62
	Female	48	38
Age (years)	18–30	32	25
	31–40	56	45
	41–50	28	22
	Above 50	10	8
Education Level	Primary	15	12
	Secondary	40	32
	Diploma/Certificate	45	36
	Bachelor's Degree	20	16
	Master's Degree or above	6	5
Work Experience (years)	Less than 5	35	28
	5–10	50	40
	11–15	25	20
	More than 15	16	13
Role in Projects	ZAWA Staff	30	24
	Donor Representatives	25	20
	NGO Staff	35	28
	Community Leaders	36	29

4.2 Presentation of Descriptive Findings**4.2.1 Type of funding on performance on donor-funded water projects**

The type of funding is essential in understanding how financial resources shape project timelines, functionality, and overall success in donor-funded water projects. This section presents descriptive statistics on respondents' views regarding the influence of funding type (grants, loans, bilateral, multilateral, NGO-based, etc.) on project performance.

Table 2*Funding*

Statement	Strongly Disagree (1)	Disagree (2)	Neutral (3)	Agree (4)	Strongly Agree (5)	Mean	Std. Dev.
1. The type of funding directly influenced the success of the project.	5 (4%)	8 (6%)	15 (12%)	62 (49%)	36 (29%)	3.93	0.92
2. Funding delays negatively affected project outcomes.	3 (2%)	6 (5%)	12 (10%)	55 (44%)	50 (40%)	4.15	0.85
3. Bilateral funding led to more efficient project execution than other types.	10 (8%)	18 (14%)	28 (22%)	50 (40%)	20 (16%)	3.42	1.10
4. Projects with community-based funding had stronger local ownership.	4 (3%)	9 (7%)	18 (14%)	60 (48%)	35 (28%)	3.91	0.89
5. NGO-based funding was more flexible than government-based funding.	6 (5%)	10 (8%)	22 (17%)	57 (45%)	31 (25%)	3.77	0.97
6. Multilateral funding sources provided better oversight and accountability.	8 (6%)	14 (11%)	25 (20%)	52 (41%)	27 (21%)	3.60	1.05

The results indicate that majority of respondents recognized the critical role of funding type in determining project success. For Statement 1, 78% (49% agree + 29% strongly agree) believed that the type of funding directly influenced project success, with a mean score of 3.93. This high agreement suggests that stakeholders experienced clear differences in outcomes based on whether funds came as grants, soft loans, or commercial loans. The low standard deviation (0.92) shows consistent views across roles, implying that both technical staff and community members observed similar patterns in how funding affected timelines and quality. On the other hand, an overwhelming 84% (44% agree + 40% strongly agree) confirmed that funding delays negatively affected project outcomes, yielding the highest mean score of 4.15. This reflects real challenges faced in Zanzibar, where disbursement delays from loan agreements or donor approvals disrupted construction schedules and increased costs. The tight standard deviation (0.85) indicates strong consensus, particularly among ZAWA staff and donor representatives who handle financial flows.

Further, the result on whether projects with community-based funding had stronger local ownership revealed that 76% (48% agree + 28% strongly agree) agreeing that community-based funding led to stronger local ownership, with a mean of 3.91. Respondents likely drew from projects where small grants were channeled through village committees, resulting in better maintenance of boreholes and pipes. Similarly, statement on whether, NGO-based funding was more flexible than government-based funding showed 70% agreement (45% agree + 25% strongly agree) that NGO-based funding was more flexible than government-based funding (mean 3.77). NGO funds often allowed quick adjustments for community needs, unlike rigid government budgets. Statement whether multilateral funding sources provided better oversight and accountability had the lowest mean (3.42), with only 56% agreement on bilateral funding being more efficient, indicating mixed experiences, some bilateral donors imposed heavy reporting, slowing progress.

The quantitative findings clearly demonstrate that the type of funding plays a central role in shaping the performance of donor-funded water projects in Zanzibar. The high mean scores for Statements 1 and 3 (3.93 and 4.15) confirm that stakeholders attribute much of a project's success or failure to how funds are structured and released. Grants, which do not require repayment, allow project teams to focus on implementation without the pressure of interest or strict covenants, leading to faster completion and higher functionality. In contrast, loans, especially soft or commercial ones, often come with procurement rules, audits, and disbursement tied to milestones, which cause bottlenecks. For instance, the strong agreement on funding delays (84%) matches documented cases where EXIM Bank or AfDB loans for pipeline rehabilitation were held up by tender re-evaluations or currency fluctuations, pushing timelines beyond 2024 targets. This not only raises costs but also erodes community trust, as people wait longer for water access.

In qualitative findings, four themes emerged from qualitative data: (1) flexibility as enabler, (2) ownership through involvement, (3) early warning through M&E, and (4) bureaucratic barriers" A ZAWA project manager explained:

"... With grant funding from China Aid for the Wells Drilling Project, we received the full amount upfront and could drill 18 boreholes in under 18 months. There were no repayment worries, so contractors worked continuously, and communities saw results quickly. But when we switched to a soft loan for the North Unguja pipeline, every payment required donor approval and matching government contribution, which delayed pipe laying by almost a year. The difference in speed and stress was huge..." (Respondent 4, ZAWA Engineer, Stone Town, 15/09/2025)

This quote illustrates how grants enabled proactive planning, while loans create reactive hurdles. The implication is that ZAWA should advocate for more grant components in future agreements to minimize delays and maximize output. Another respondent, who was a donor representative, highlighted flexibility:

"...Multilateral grants from UNICEF or the EU allow us to reallocate up to 20% of the budget without new approvals, perfect for sudden needs like replacing a broken pump. But bilateral loans from Japan or Korea lock funds into specific line items. Once, we couldn't shift money from civil works to community training because the loan agreement forbade it, and the training suffered. Flexibility directly translates to better community satisfaction..." (Respondent 7, Donor Agency Officer, Dar es Salaam, 18/09/2025)

Here, the link between funding flexibility and stakeholder outcomes is evident. NGO-based or community-managed funds scored high (Statement 5, mean 3.91) because they involve locals in budgeting, fostering ownership. A community leader shared:

"...In our village, a small grant from an NGO let us decide where to place the water kiosk. We chose near the school, and now children don't miss classes fetching water. With the big government loan project, decisions came from town, and the tap stand ended up far from homes. People still walk long distances. When funds pass through us, we protect the system like our own..." (Respondent 12, Shehia Leader, Pemba, 22/09/2025)

The lower agreement on bilateral efficiency (Statement 4, mean 3.42) reflects bureaucracy. Respondents reported that bilateral donors require extensive reporting, delaying minor changes. Overall, the evidence strongly supports prioritizing grants and flexible models to enhance timely completion, functionality, and satisfaction, key

performance indicators in Zanzibar's water sector. These insights guide policymakers to negotiate funding terms that align with local capacities and urgent needs.

4.2.2 Stakeholder Participation and Performance on Donor-funded Water Projects

Stakeholder participation is essential in understanding how involvement from communities, government, donors, and NGOs affects the sustainability and acceptance of donor-funded water projects. This section presents descriptive statistics on respondents' views regarding the influence of stakeholder participation on project performance.

Table 3
Stakeholder Participation

Statement	Strongly Disagree (1)	Disagree (2)	Neutral (3)	Agree (4)	Strongly Agree (5)	Mean	Std. Dev.
1. Stakeholder participation positively influenced project outcomes.	3 (2%)	5 (4%)	12 (10%)	65 (52%)	41 (33%)	4.10	0.81
2. Projects with active community involvement were more sustainable.	2 (2%)	4 (3%)	10 (8%)	68 (54%)	42 (33%)	4.14	0.76
3. Lack of stakeholder engagement led to implementation challenges.	4 (3%)	6 (5%)	14 (11%)	60 (48%)	42 (33%)	4.03	0.88
4. Stakeholder participation improved transparency and accountability.	5 (4%)	7 (6%)	15 (12%)	62 (49%)	37 (29%)	3.94	0.91
5. Engaging stakeholders reduced resistance to project activities.	3 (2%)	8 (6%)	16 (13%)	64 (51%)	35 (28%)	3.97	0.86

The results indicate that stakeholder participation creates psychological ownership, which theory suggests increases willingness to contribute to maintenance. This was strongly viewed as a key factor in improving project performance across all measured aspects. For Statement on stakeholder participation positively influenced project outcomes, 85% of respondents (52% agree + 33% strongly agree) confirmed that participation positively influenced outcomes, with a high mean score of 4.10. This reflects experiences where joint planning and feedback sessions helped align project goals with local needs, leading to better functionality and user satisfaction. Similarly, the statement on projects with active community involvement were more sustainable received the highest overall support, with 87% agreement (54% agree + 33% strongly agree) and a mean of 4.14, emphasizing that active community involvement made projects more sustainable. Respondents likely recalled cases where villagers contributed labor for pipe laying or formed water committees, ensuring systems were maintained long after donor exit. The very low variation (Std. Dev. 0.76) suggests this was a near-universal observation, especially in rural Pemba and Unguja areas where community management is critical for ongoing operations.

On the other hand, statement, lack of stakeholder engagement led to implementation challenges, 81% (48% agree + 33% strongly agree) agreed that lack of engagement caused implementation challenges, with a mean of 4.03. This highlights issues like misinformation, land disputes, or low adoption when communities were not consulted early. The standard deviation (0.88) indicates slight differences, possibly with technical staff seeing more logistical delays and community members noting social resistance. Statement on Engaging stakeholders reduced resistance to project activities showed 79% agreement (51% agree + 28% strongly agree) that engagement reduced resistance, with a mean of 3.97. Regular meetings and consultation-built trust, minimizing protests over site selection or construction disruptions. Statement 4 had 78% agreement (49% agree + 29% strongly agree) on improved transparency and accountability (mean 3.94), as open discussions allowed tracking of funds and progress. Qualitatively, interviews offered detailed insights into how participation works in practice. A community leader described the benefits of regular involvement:

"...In the China-Aided Wells Project, we held monthly meetings where villagers suggested drilling sites based on our knowledge of underground water. Because we were part of the decision, everyone contributed, some dug trenches, others guarded materials at night. After completion, we formed a committee to collect small fees for repairs. The boreholes are still working perfectly after five years, and people pay willingly because it's 'our project.' Without those meetings, outsiders would have drilled in the wrong places, and the wells would be dry or broken by now..." (Respondent 15, Village Chairperson, North Unguja, 25/09/2025)

This quote demonstrates how participation creates a sense of ownership that translates into sustainable maintenance, aligning with the high mean for Statement 2. The implication for ZAWA is to mandate community committees in all project designs to extend asset lifespan and reduce repair costs borne by government.

An NGO staff member emphasized transparency gains:

“...We run quarterly stakeholder forums for the ADF Water and Sanitation Project, where ZAWA shares budget breakdowns and progress photos. Communities ask questions like ‘Why is this pipe more expensive?’ and get answers on the spot. This openness stopped rumors of corruption that killed a previous project. Now, even during COVID delays, people understood and waited patiently. Transparency from participation kept morale high and accountability strong...” (Respondent 11, NGO Program Officer, Mjini Magharib, 21/09/2025)

This supports Statement 5 (mean 3.97), showing participation as a conflict-resolution tool. The overall interpretation is that stakeholder engagement is not optional but foundational for performance in Zanzibar’s context, where social cohesion and local knowledge are vital for water security. Policymakers should integrate mandatory participation frameworks, such as minimum meeting quotas and feedback loops, to replicate successes and avoid failures observed in less inclusive projects

4.2.3 Monitoring and Evaluation Mechanisms Performance on Donor-funded Water Projects

Monitoring and evaluation are an important in ensuring effective performance of donor funded water projects. This section presents descriptive statistics on respondents’ views regarding the influence of monitoring and evaluation mechanisms on performance of water projects.

Table 2

Monitoring and Evaluation Mechanisms

Statement	Strongly Disagree (1)	Disagree (2)	Neutral (3)	Agree (4)	Strongly Agree (5)	Mean	Std. Dev.
1. Effective M&E mechanisms improved project outcomes.	4 (3%)	7 (6%)	14 (11%)	64 (51%)	37 (29%)	3.98	0.87
2. Projects with strong M&E frameworks were more likely to meet their objectives.	3 (2%)	6 (5%)	12 (10%)	66 (52%)	39 (31%)	4.05	0.82
3. M&E helped identify and address implementation challenges early.	2 (2%)	5 (4%)	11 (9%)	68 (54%)	40 (32%)	4.10	0.78
4. M&E contributed to better resource allocation during the project.	5 (4%)	8 (6%)	16 (13%)	62 (49%)	35 (28%)	3.91	0.90
5. The sustainability of the project was enhanced by M&E practices.	4 (3%)	7 (6%)	15 (12%)	63 (50%)	37 (29%)	3.96	0.88

The results indicate that M&E was widely regarded as a vital tool for improving project performance, with consistently high agreement across all statements. For Statement on M&E helped identify and address implementation challenges early, 86% of respondents (54% agree + 32% strongly agree) confirmed that M&E helped identify and address implementation challenges early, achieving the highest mean score of 4.10. This suggests that regular site visits, progress reports, and audits allowed teams to spot issues like material shortages or technical faults before they escalated, preventing costly delays. The low standard deviation (0.78) reflects strong consensus among all respondent groups, from field technicians to donor auditors. The statement that projects with strong M&E frameworks were more likely to meet their objectives also showed robust support, with 83% agreement (52% agree + 31% strongly agree) and a mean of 4.05, indicating that structured M&E frameworks, such as quarterly reviews and performance indicators, kept projects aligned with goals like coverage targets and water quality standards. The tight variation (Std. Dev. 0.82) implies that stakeholders experienced similar benefits regardless of project scale or location in Unguja or Pemba.

On the other hand, the statement that effective M&E mechanisms improved project outcomes, 80% (51% agree + 29% strongly agree) agreed that effective M&E improved overall outcomes, with a mean of 3.98. Respondents valued tools like dashboards and community feedback forms that provided real-time data for decision-making. Statement 5 had 79% agreement (50% agree + 29% strongly agree) on enhanced sustainability (mean 3.96), as M&E often included post-completion audits to ensure systems remained functional. Statement that M&E contributed to better resource allocation during the project received 77% agreement (49% agree + 28% strongly agree) that M&E led to better resource allocation (mean 3.91), such as redirecting funds from underperforming activities to critical repairs. The slightly higher standard deviation (0.90) suggests minor differences, possibly with community leaders focusing on local impacts and donors on financial efficiency. Qualitatively, stakeholders provided vivid accounts of M&E in action. A ZAWA monitoring officer elaborated on early intervention:

“...In the COVID-19 Emergency Water Project, we used weekly WhatsApp updates and site photos from community monitors. When suppliers delayed chlorine tablets, we knew within days and switched to local alternatives before stocks ran out. Without that quick loop, disinfection would have stopped, risking health



outbreaks. M&E isn't just paperwork, it's the eyes and ears that keep the project alive during crises... ” (Respondent 8, ZAWA M&E Specialist, Stone Town, 19/09/2025)

This illustrates how accessible M&E tools enable rapid responses (Statement 3), turning potential disasters into manageable adjustments. Donors should prioritize funding digital platforms to scale such systems across all projects.

An NGO representative stressed objective alignment:

“...For the ADF-12 Sanitation Project, we set KPIs like ‘90% household connections in 12 months’ and reviewed them quarterly with ZAWA and villagers. When we fell behind in one ward due to rocky soil, M&E data justified hiring extra drillers instead of cutting scope. We hit the target, and the system still serves everyone. Strong frameworks force discipline and prevent corner-cutting...” (Respondent 13, NGO Monitoring Coordinator, Unguja Rural, 23/09/2025)

Here, M&E ensures accountability to goals (Statement 2, mean 4.05), fostering trust among partners. The broader lesson is integrating community indicators into frameworks for more holistic success.

A donor auditor highlighted resource optimization:

“...In multilateral-funded projects, M&E audits allow mid-term reallocations, once we moved 15% from unused equipment to community training after reports showed low uptake. This boosted sustainability because trained users fixed minor issues themselves. Without evidence-based shifts, budgets get wasted on irrelevant items...” (Respondent 5, Donor Audit Team, Dar es Salaam, 16/09/2025)

This supports Statement 4 (mean 3.91), showing M&E as a financial safeguard. Finally, a community leader linked M&E to longevity:

“...After the Wells Drilling handover, ZAWA’s annual check-ups catch problems like pump wear early. Last year, they replaced parts before breakdown, so water never stopped. If they skipped visits, we’d revert to unsafe sources. Ongoing M&E keeps our investment alive...” (Respondent 17, Water Committee Member, Pemba, 26/09/2025)

This reinforces Statement 5 (mean 3.96), emphasizing post-project M&E for enduring benefits. Overall, the interpretation affirms that adaptive, inclusive M&E is non-negotiable for performance in Zanzibar’s challenging environment. Recommendations include standardizing digital M&E, training local monitors, and extending evaluations beyond completion to secure SDG 6 outcomes.

4.4 Inferential Statistics Findings

This section presents the results of multiple linear regression analysis used to examine the combined and individual influence of the three independent variables, type of funding, stakeholder participation, and monitoring and evaluation (M&E), on the dependent variable, project performance. Project performance was measured as a composite score based on respondents’ ratings of timely completion, system functionality, and community satisfaction (on a scale derived from Likert responses). The analysis was conducted using SPSS version 27.

4.4.1 Model Summary

The model summary presents the R square, adjusted R square, and overall significance of the model. The R square value indicates the proportion of variance in the dependent variable explained by the independent variables. The adjusted R square accounts for the number of predictors in the model. A high R square and adjusted R square suggest that the model explains a significant amount of variability in performance outcomes.

Table 5

Model Summary

R	R Square	Adjusted R Square	Std. Error of the Estimate
0.88	0.77	0.76	0.42

The model explains 77% of variance ($R^2=0.77$), a large effect (Cohen's $f^2=3.35$) which is explained by type of funding, stakeholder participation, and M&E mechanisms. The adjusted R square of 0.76 is higher, confirming the model’s robustness. This high explanatory power implies that these factors are strong determinants of success in Zanzibar’s donor-funded water projects, leaving only 33% to other factors that did not feature in this study like external disruptions.

4.4.2 ANOVA

The ANOVA table assesses whether the regression model provides a better fit to the data than a model with no predictors. The sum of squares shows the variability, and the degrees of freedom (df) reflect the number of variables.

Table 6
ANOVA

Source	Sum of Squares	df	Mean Square	F	Sig.
Regression	48.32	3	16.11	91.24	0.000
Residual	21.56	122	0.18		
Total	69.88	125			

The p-value of 0.000 (less than 0.05) and high F-statistic (91.24) indicate that the model is statistically significant overall. The regression explains much more variance than random chance, validating the inclusion of the three independent variables in predicting project performance.

4.4.3 Coefficient of Regression

The coefficients table presents standardized coefficients (Beta) for each independent variable, showing their relative influence on project performance while controlling for others.

Table 7
Coefficients

Variable	Unstandardized Beta	Std. Error	Standardized Beta	t	Sig.
(Constant)	1.25	0.31	-	4.03	0.000
Type of Funding	0.58	0.09	0.55	6.44	0.000
Stakeholder Participation	0.45	0.08	0.42	5.63	0.000
M&E Mechanisms	0.12	0.07	0.11	1.71	0.090

The standardized Beta coefficient for type of funding (0.55) is the highest, meaning it has the strongest positive impact on performance, a one-standard-deviation increase in favorable funding (e.g., more grants) raises performance by 0.55 standard deviations. Stakeholder participation follows (Beta 0.42), while M&E (Beta 0.11) is positive but weaker.

4.5 Discussion

The study showed that type of funding had a positive significance influence on performance of donor-funded water projects in Zanzibar with (Beta = 0.55, $p=0.000$). This result matches what (Freire Machete & Cunha Marques, 2023) found when analysed 62 World Bank water supply and sanitation projects and found that financing type significantly influenced project performance and sustainability. Similarly, Nijhawan et al. (2022) assessed the climate resilience of community-managed water supplies in Ethiopia and Nepal, and found that community governance and institutional support were critical to sustaining water functionality under climate stress. In Zanzibar, villagers used these funds to pick borehole sites that fit their daily needs, and these kept systems working years later.

Connectedly, bilateral funding got mixed views, with lower agreement on its efficiency because of too much paperwork. This contrasts with Dreher et al. (2018), who praised bilateral aid from countries like China in enhancing technology transfer and build project efficiency. But in Zanzibar, tied rules forced buying from abroad, raising costs and slowing things down, as Brech and Potrafke (2014) highlighted that donor ideology and tied aid conditions often increase costs and reduce efficiency in recipient countries. The island's small scale makes rigid bilateral models less useful, highlighting a need for donors to adjust for local contexts. Systems Theory (Von Bertalanffy, 1968) supports this finding, as funding is an input that affects the whole system, if one part like disbursement is blocked, the entire project flow suffers.

From Resource Dependence Theory (Pfeffer & Salancik, 1978), the type of funding acts like a key resource that controls how well a project runs. Grants reduce dependence on strict donor rules, letting ZAWA and teams make quick decisions, which led to higher scores in timely completion and functionality in the regression results (Beta = 0.55). Loans, on the other hand, create heavy dependence with conditions like matching funds from the government, which often caused hold-ups in pipeline work. This theory helps explain why flexible funding scored high in the survey means, as it gives projects more control over their own path, much like how organizations survive better with reliable resources.

Further, the study found that stakeholder participation had a positive and significance influence on performance of donor-funded water projects in Zanzibar with (Beta = 0.42, $p=0.000$). This agrees with with Nijhawan et al. (2022), who found that community governance and local decision-making were critical to sustaining water points, with significantly higher functionality compared to top-down approaches. In Zanzibar, community meetings helped to choose sites wisely, and committees handled repairs with user fees, keeping boreholes functional. The study builds on this by measuring satisfaction alongside functionality, showing that participation does more than fix hardware—it builds trust and encourages use. This is in line with the study by Whaley and Cleaver (2017), who found participation and local

institutional arrangements explained a substantial share of variance in African rural water schemes which is close to this study's results. The Systems Theory (Von Bertalanffy, 1968) views participation as a key input and feedback loop in the project system. Community ideas flow in early, aligning the system with real needs, and ongoing talks provide feedback to fix issues, which matches the regression Beta of 0.42. Without this, like in some loan projects, the system breaks down with resistance or neglect. This theory explains the survey's high score on reduced resistance, as open talks prevent disruptions and keep the project balanced.

Moreover, finding indicated that monitoring and evaluation mechanisms M&E mechanisms had a positive but non-significant influence ($\beta=0.11$, $p=0.090$), suggesting its effect may be mediated through other variables. The M&E is helpful in spotting problems early and keeping projects on track, with the highest mean for early fixes. This lines up with Crawford and Bryce (2003) who reviewed international development projects and affirms that systematic M&E practices reduced delays and improved efficiency. In Zanzibar, mobile apps and site visits caught issues like pump wear fast, preventing big failures. This results also align with Theory (Von Bertalanffy, 1968) as a feedback mechanism. Regular reports and checks adjust the system, like reallocating funds at the mid-project.

V. CONCLUSION & RECOMMENDATIONS

5.1 Conclusion

The study concludes that the type of funding is the most significant determinant of project performance in donor-funded water projects in Zanzibar. Grant and NGO-based funding, characterized by flexibility, timely disbursement, and minimal repayment obligations, consistently delivered faster completion, higher functionality, and greater community satisfaction compared to loans or bilateral funding. Similarly, stakeholder involvement emerged as a critical factor for project success and sustainability. Active participation of communities, local leaders, NGOs, and donors throughout the project cycle from the planning to post-handover helped reduce resistance, enhance transparency, and ensure that systems remained functional long after completion. Finally, monitoring and evaluation (M&E) mechanisms, though statistically non-significant, play a supportive and crucial role in enhancing project outcomes. Effective M&E enables early detection of problems, better resource allocation, and alignment with objectives, thereby contributing to timely corrections and improved performance.

5.2 Recommendations

Based on the study findings, Zanzibar should adopt a phased approach to improving the performance of donor-funded water projects. In the short term, the island should prioritize grant-based and NGO-supported funding models, as these have proven to deliver faster completion and higher functionality. Communities should be actively engaged in site selection and planning to ensure that water systems meet daily needs, while monitoring and evaluation should be strengthened through mobile applications, site visits, and real-time reporting to catch problems early and prevent costly failures. In the mid-term, Zanzibar should institutionalize stakeholder participation by embedding community representatives, local leaders, and NGOs into project governance structures. Capacity-building programs for local water committees should be expanded to improve technical maintenance and financial management. Donors should also streamline bilateral funding procedures to reduce paperwork and procurement delays, making them more adaptable to Zanzibar's small-scale context.

In the long term, Zanzibar should develop a comprehensive water sector master plan that integrates donor funding strategies with national priorities to ensure sustainability beyond individual projects. This plan should emphasize resilience to climate change, saline intrusion, and tourism-driven demand. Institutional reforms should strengthen accountability and transparency in donor-funded projects, while diversifying funding sources to reduce dependency. Ultimately, embedding flexible funding models, strong community ownership, and adaptive monitoring systems will secure the long-term sustainability of water infrastructure across the islands.

Declaration of Interest

The authors declare that they do not have any known competing financial interests or personal relationships that could have appeared to influence the work reported in this paper.

Funding Declaration

This research did not receive any specific grant from funding agencies in the public, commercial, or not-for-profit sectors.

REFERENCES

- Bertalanffy, L. von. (1968). *General system theory: Foundations, development, applications*. George Braziller.
- Brech, V., & Potrafke, N. (2014). Donor ideology and types of foreign aid. *Journal of Comparative Economics*, 42(1), 61–75. <https://doi.org/10.1016/j.jce.2013.07.002>
- Chumbula, J. J., & Massawe, F. A. (2018). The role of local institutions in the creation of an enabling environment for water project sustainability in Iringa District, Tanzania. *Environmental & Socio-Economic Studies*, 6(4), 1–10. <https://doi.org/10.2478/environ-2018-0023>
- Crawford, P., & Bryce, P. (2003). Project monitoring and evaluation: A method for enhancing the efficiency and effectiveness of aid project implementation. *International Journal of Project Management*, 21(5), 363–373. [https://doi.org/10.1016/S0263-7863\(02\)00060-1](https://doi.org/10.1016/S0263-7863(02)00060-1)
- Creswell, J. W. (2014). *Research design: Qualitative, quantitative, and mixed methods approaches* (4th ed.). Sage Publications.
- Daoud, J. I. (2017). Multicollinearity and regression analysis. *Journal of Physics: Conference Series*, 949(1), 012009. <https://doi.org/10.1088/1742-6596/949/1/012009>
- Dietrich, S. (2016). Donor political economies and the pursuit of aid effectiveness. *International Organization*, 70(1), 65–102. <https://doi.org/10.1017/S0020818315000302>
- Dreher, A., Fuchs, A., Parks, B., Strange, A. M., & Tierney, M. J. (2018). Apples and dragon fruits: The determinants of aid and other forms of state financing from China to Africa. *International Studies Quarterly*, 62(1), 182–194. <https://doi.org/10.1093/isq/sqx052>
- Field, A. (2009). *Discovering statistics using SPSS* (3rd ed.). Sage Publications.
- Freire Machete, I., & Cunha Marques, R. (2023). Water supply and sanitation projects in the last decade: Project characteristics, multilateral development bank performance, and quality of results. *Journal of Water, Sanitation and Hygiene for Development*, 13(12), 986–1000. <https://doi.org/10.2166/washdev.2023.176>
- Kirenga, D., Mung'ong'o, C., & Mbwette, T. (2018). Influence of water fund to sustainability of community managed rural water supply projects: Moshi District, Northern Tanzania. *Huria Journal of the Open University of Tanzania*, 25(2), 16–36. <https://journals.out.ac.tz/index.php/HURIA/article/view/637>
- Loucks, D. P., & van Beek, E. (2017). *Water resource systems planning and management: An introduction to methods, models, and applications*. Springer. <https://doi.org/10.1007/978-3-319-44234-1>
- Luwesi, C. N., Akudugu, M. A., Peter, P. W., Nkama, F. N., Beyene, A., & Mingashanga, H. M. (2023). Innovative instruments and contractual arrangements to offset bottlenecks for financial flows in the water sector. In *Innovative water finance in Africa: Economics and principles of financial innovations for water managers* (pp. 55–79).
- Machete, I. F., & Marques, R. C. (2023). Project risks influence on water supply and sanitation sector financing opportunities. *Water*, 15(12), 2295. <https://doi.org/10.3390/w15122295>
- Mgulo, R., & Kamazima, S. R. (2022). Community participation and non-governmental organizations-funded rural water projects' sustainability: A case of Chamwino District, Dodoma Region, Tanzania. *European Journal of Medical and Health Sciences*, 4(2), 51–56. <https://doi.org/10.24018/ejmed.2022.4.2.1166>
- Ministry of Water, Tanzania. (2023). *Water sector performance report 2023*. Government of Tanzania.
- Newman, R. J. S., Enns, C., Capitani, C., Thorn, J. P. R., Courtney-Mustaphi, C. J., Buckton, S. J., Om, E. S., Fazey, I., Haji, T. A., Nchimbi, A. Y., Kariuki, R. W., & Marchant, R. A. (2024). 'Kesho' scenario development for supporting water-energy-food security under future conditions in Zanzibar. *Land*, 13(2), 195. <https://doi.org/10.3390/land13020195>
- Nijhawan, A., Howard, G., Poudel, M., Pregolato, M., Lo, Y. T. E., Ghimire, A., Baidya, M., Geremew, A., Flint, A., & Mulugeta, Y. (2022). Assessing the climate resilience of community managed water supplies in Ethiopia and Nepal. *Water*, 14(8), 1293. <https://doi.org/10.3390/w14081293>
- O'Brien, R. M. (2007). A caution regarding rules of thumb for variance inflation factors. *Quality & Quantity*, 41(5), 673–690. <https://doi.org/10.1007/s11135-006-9018-6>
- Osborne, J. W., & Waters, E. (2002). Four assumptions of multiple regression that researchers should always test. *Practical Assessment, Research, and Evaluation*, 8(1), 2. <https://doi.org/10.7275/r222-hv23>
- Pfeffer, J., & Salancik, G. R. (1978). *The external control of organizations: A resource dependence perspective*. Harper & Row.
- Prokopy, L. S. (2005). The relationship between participation and project outcomes: Evidence from rural water supply projects in India. *World Development*, 33(11), 1801–1819. <https://doi.org/10.1016/j.worlddev.2005.07.002>
- Revolutionary Government of Zanzibar. (2022). *Zanzibar Water Investment Programme 2022–2027: Supporting the implementation of the Zanzibar Development Vision 2050 towards achieving the blue economy*. Ministry of Water, Energy and Minerals. <http://faolex.fao.org/docs/pdf/taz218175.pdf>

- Saunders, M., Lewis, P., & Thornhill, A. (2019). *Research methods for business students* (8th ed.). Pearson Education Limited.
- Shields, K. F., Moffa, M., Behnke, N. L., Kelly, E., Klug, T., Lee, K., Cronk, R., & Bartram, J. (2021). Community management does not equate to participation: Fostering community participation in rural water supplies. *Journal of Water, Sanitation and Hygiene for Development*, 11(6), 937–947. <https://doi.org/10.2166/washdev.2021.089>
- Stevens, J. P. (2009). *Applied multivariate statistics for the social sciences* (5th ed.). Routledge.
- Sweya, L. N., Wilkinson, S., & Kassenga, G. (2021). A social resilience measurement tool for Tanzania’s water supply systems. *International Journal of Disaster Risk Reduction*, 65, 102558.
- United Nations. (2015). *Transforming our world: The 2030 Agenda for Sustainable Development*. United Nations.
- UN-Water. (2024). *United Nations World Water Development Report 2024: Water for prosperity and peace*. UNESCO. <https://www.unwater.org/publications>
- Von Bertalanffy, L. (1968). *General system theory: Foundations, development, applications*. George Braziller.
- Whaley, L., & Cleaver, F. (2017). Can ‘functionality’ save the community management model of rural water supply? *Water Resources and Rural Development*, 9, 56–66. <https://doi.org/10.1016/j.wrr.2017.04.001>
- WHO/UNICEF Joint Monitoring Programme. (2023). *Progress on household drinking water, sanitation and hygiene 2023 update*. World Health Organization and UNICEF.
- World Bank. (2024). *Tanzania water supply and sanitation projects: Annual update 2024*. World Bank. <https://www.worldbank.org>
- World Health Organization, & United Nations Children’s Fund. (2023). *Progress on household drinking water, sanitation and hygiene 2023 update*. WHO/UNICEF Joint Monitoring Programme (JMP). <https://washdata.org>
- Yamane, T. (1967). *Statistics: An introductory analysis* (2nd ed.). Harper and Row.
- Zanzibar Water Authority. (2024). *Annual water supply and access report 2024*. Government of Zanzibar.