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# PROJECT STAKEHOLDER COMMUNICATION AND IMPLEMENTATION OF WATER PROJECTS IN KENYA

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## ABSTRACT

Despite the efforts made to improve water access and management in Kenya, many communities in the region still experience inadequate access to clean and safe water. Literature has shown that stakeholder engagement and consultation are positively associated with the successful implementation of projects. Therefore, a study focusing on effect of stakeholder communication on implementation of water projects in Kenya would provide valuable insights into the unique challenges and opportunities that exist in this specific geographical and cultural context, and would fill important research gaps in the understanding of the relationship between stakeholder management and the implementation of water projects. In addition, the study assessed the moderating effect of project manager competency on the relationship between stakeholders' communication and implementation of water projects in Kenya. This study is grounded on Social Identity Theory. Cross-sectional design and positivist philosophy was used. The target population was 321 active water projects under water works development agencies in Kenya. The sample frame was 321 project staff drawn from the 321 active projects. The sample size for the study was 178 Project staff. Primary data was obtained using a structured questionnaire. Eighteen respondents from the target population were used to pilot the questionnaire. Descriptive statistics such as frequency, percentages, means, and standard deviation were used to summarize findings of the research variables. The study concludes that project stakeholder communication has a positive and significant effect on implementation of water projects in Kenya. Findings revealed that information sharing, project status report and feedback mechanism influence implementation of water projects in Kenya. The study recommends that project managers should establish transparent and consistent communication channels that ensure all relevant information is accessible to stakeholders.

**Key Words:** Project Stakeholder Communication, Project Manager Competency, Implementation of Water Projects

## Background of the Study

Water is an essential element of human, animal and plant life and therefore requires constant supply (Behailu, Pietila, & Katko, 2018). Increasing water demand in many parts of the world and the need to improve clean water supply have led to an increased interest in water use. However, the success of these projects often depends on the management of the stakeholders (Project Management Body of Knowledge (PMBOK), 2017). Regulators, donors and local communities must work together to ensure this priority, or the risk of loss of life is an inevitable consequence. Water resources such as boreholes and basins should be increased and natural water resources such as springs, rivers and lakes should be protected/conserved (Peterson, 2017). Since there is no regular rainfall every year in many parts of the world, the concept of artificial water has emerged because some communities do not have access to natural water (Beratan, 2020).

Stakeholder communication is a key aspect of stakeholder management, focusing on the timely and transparent exchange of information. Developing a communication plan tailored to the needs and preferences of different stakeholders is essential. This plan should outline the communication methods, frequency, and content suitable for each stakeholder group. Regular updates, meetings, reports, and informal interactions ensure that stakeholders are kept informed about project progress, changes, and challenges (Dagli, 2021). Effective communication builds trust and facilitates a shared understanding among stakeholders, reducing the likelihood of misunderstandings and fostering collaboration. Active stakeholders' participation is vital for the successful execution of a project. Involving stakeholders in the decision-making process and seeking their input ensures that their perspectives and concerns are considered (Hogsckola, 2021). This participatory approach not only enhances stakeholder commitment and ownership but also leads to better-informed decisions that can positively impact the project's outcome. Encouraging stakeholder involvement through workshops, feedback sessions, and collaborative platforms can harness their expertise and insights, contributing to the project's overall success (Muigai, 2021).

Globally, project stakeholder management has been widely embraced. In Japan, the performance of water supply services in many cities ranges from detailed surveys of existing water facilities, new construction/remediation projects, well-planned design work, to being directly involved as a supervisor in the project (Alegre, Baptista, Cabrera, Cubillo, Duarte, Hirner and Parena, 2016). Weak community engagement, weak security, weak recovery, political competition, weak infrastructure, weak urban planning and land titles are all challenges (McGranahan and Mitlin, 2016). Brazil has moved towards its goal of providing drinking water and sanitation by 2033, as demonstrated in the National Sanitation Plan (Pinheiro, Savoia and Angelo, 2016). But there is still a lot of work to be done: In 2015, more than 33 million Brazilians did not have safe drinking water, and more than 100 million did not have access to sewerage. Only 42% of Brazil's sewage is treated, affecting all health, the economy, the planet and biodiversity.

In Africa, management of water resources in Africa is largely dominated by the national governments, with little efforts made by local private organizations, non-governmental organizations and inter-governmental initiatives. Evidently, success of water projects is influenced by stakeholder among other factors. In Nigeria for instance, there have been very effective initiatives to create organizations to manage water resources through development planning and Federal Ministry of Water Resources. These organizations are expected to work closely with stakeholders in water projects. Interestingly, there is significant low stakeholder involvement leading to low water quality management (Amadi, Carrillo, & Tuuli, 2014). While the main role of national government in water supply is to develop national policies to lead and coordinate water management, these regulations should address the distribution of water

resources, the construction and maintenance of water projects, and the development of states' resources from all inclusive points of view, creating the need for stakeholder involvement (Alayande, Bashir, & Oyewobi, 2021). From empirical literature, it is clear that while state governments are responsible for providing safe water to the people living in their areas, local government are responsible for stakeholders and water supply and monitoring in rural areas such as open wells and boreholes (Ebekozien, Aigbavboa, & Ramotshela, 2023).

In Kenya, stakeholder communication is a crucial topic, especially when it comes to water projects as it highlights unique challenges and opportunities that arise when managing stakeholders in this specific context (Global Water Partnership, 2015). According to Maragia, Omboto and Maket (2018) in their review on stakeholder participation in water projects in Kenya, water projects are characterized by a lack of clear guidelines for stakeholder engagement, leading to challenges in successful completion of projects. While acknowledging that effective stakeholder management is essential for the success of water projects as it helps to minimize delays, conflicts, and negative impacts on local communities, it is evident that there is low stakeholders involvement in water project planning and implementation in Kenya (Kosgei, 2021).

**Statement of the Problem**

Consistent supply of adequate safe water is a necessity to communities, it is associated with better nutrition, improved health and enhanced economic activities. Machado et al. (2019) argues that water is a significant determinant of socio-economic welfare of the community. Ayeni, Soneye and Akintuyi (2012) argue that consistent supply of adequate safe water needs collaboration among stakeholders and the water resources management team. Stakeholder management plays a key role in ensuring success, optimality and sustainability in water projects as well as ensuring affordability and adequate distribution of water.

Despite water being a precious commodity, Muema and Ngugi (2021) estimates that access to water in Kenya is 32% which is way below. Worryingly, 30% to 60 % of existing water supply systems are not operational due to breakdown (Kariuki, 2015). This is attributed to failure to plan for maintenance of water infrastructure (Nzomo & Gachengo, 2021) and the fact that operation and maintenance of community water projects are given little attention (Kosgei, 2021). According to Maragia et al. (2018), unsustainability in rural water supply projects in Kenya can be blamed on low community participation levels, poor or lack of freshwater management, non-community owned projects, inadequate financial capacity, inadequate systems maintenance skills and poor construction.

Deliberate efforts have been made to improve water access and management in Kenya including enhancing community involvement, technology adoption, enhancing financing among other initiatives (Muigai, 2013). Despite these efforts, many communities still lack access to clean and safe water. Majority of households still rely on surface water sources that are often contaminated (Kosgei, 2021) with up to 60% of households reporting cases of water-related illnesses resulting probably from water contamination (Ochieng & Onyango, 2019). Furthermore, 65% of water projects still face challenges of conflicts between community groups, government agencies, and private sector entities (Nyabera, 2015) while 60% of water projects lack robust monitoring and evaluation systems (Ochieng & Onyango, 2019).

In studies in other contexts, stakeholder engagement and consultation has been identified as a determinant of successful implementation of projects. For example, Alameri (2022) in rural communities in Abu Dabi, Demirkesen and Reinhardt (2021) in Poland and Woldesenbet (2020) in Ethiopia. These studies were conducted in different project and cultural contexts and their findings cannot be generalized. Limited study has been conducted in Kenya to provide findings specific to the Kenyan context. A study in Kenya is necessary to provide a cultural-

specific understanding of the effect of stakeholder management on the implementation of water projects. To fill this gap, the current study sought to investigate the effect of stakeholder communication on successful implementation of water projects in Kenya.

## Objectives of the Study

i. To investigate the effect of project stakeholder communication on implementation of water projects in Kenya.

ii. To assess the mediating effect of project manager competency on the relationship between project stakeholder communication and implementation of water projects in Kenya

## Theoretical Review

A theoretical framework guides in understanding of research variables and relationship between them. Good research should be founded on theories that explain the variables as well as the association between them (Luft, Jeong, Idsardi, & Gardner, 2022).

## Social Identity Theory

Social Identity Theory was proposed by Tajfel and Turner in psychology by Tajfel & Turner, in 1979. Social Identity theory states that individuals form identities based on their membership in groups and that these identities contribute to conflict and group cooperation (Paruze, Danel, & Mai, 2020). In the context of project management, conflict management strategies can be used to reduce team conflicts and facilitate collaboration between different stakeholders such as owners, community members, government officials, workers and community leaders. SIT suggests that there must be differences between individuals' groups and groups, and these differences can lead to positive or negative feelings towards the group (Pahl-Wostl, 2007).

SIT has received some criticism from researchers. Some of the main criticisms of SIT are that the theory is too restrictive, too flexible, inattention to group dynamics, simplistic explanations of bias, and lack of oversight for the interaction of multiple selves (Duke, 2010). Some scholars argue that this theory does not take into account the influence of other factors such as economics, politics, and the history of conflict and cooperation (Erfurth & Bark, 2021). In addition, it has been argued that the theory does not include the effect of emotions and effects on behavior (Duke, 2010).

Social Identity Theory is widely used in understanding of conflict management and resolution, which is key in understanding of project stakeholders' conflict management. For instance, Paruze et al. (2020) present that negotiation as one of the conflict management strategies can reduce negative emotions and improve team relations in project management. In this study, the theory provides an avenue of understanding the concept of stakeholder conflict management and explains how stakeholder conflict management influences project success. It can be used to explain the effects of conflict management on the use of hydraulic activities. SIT proposes that conflict management strategies can be used to reduce conflict between teams and facilitate collaboration between different stakeholders, which leads to better collaboration and improves the project. The theory will be used to explain the impact of conflict management on water use in Kenya.

## Conceptual Framework

Mugenda and Mugenda (2019) defined the concept of conceptual framework as the hypothetical model for relationship between dependency and independence between variables. Kothari and Garg (2018) define the independent variable as the explanatory variable, the cause of the change and the dependent variable as variable that scientists want to explain. The purpose of the conceptual framework is to classify and explain the concepts in the study and to show the relationship between them.

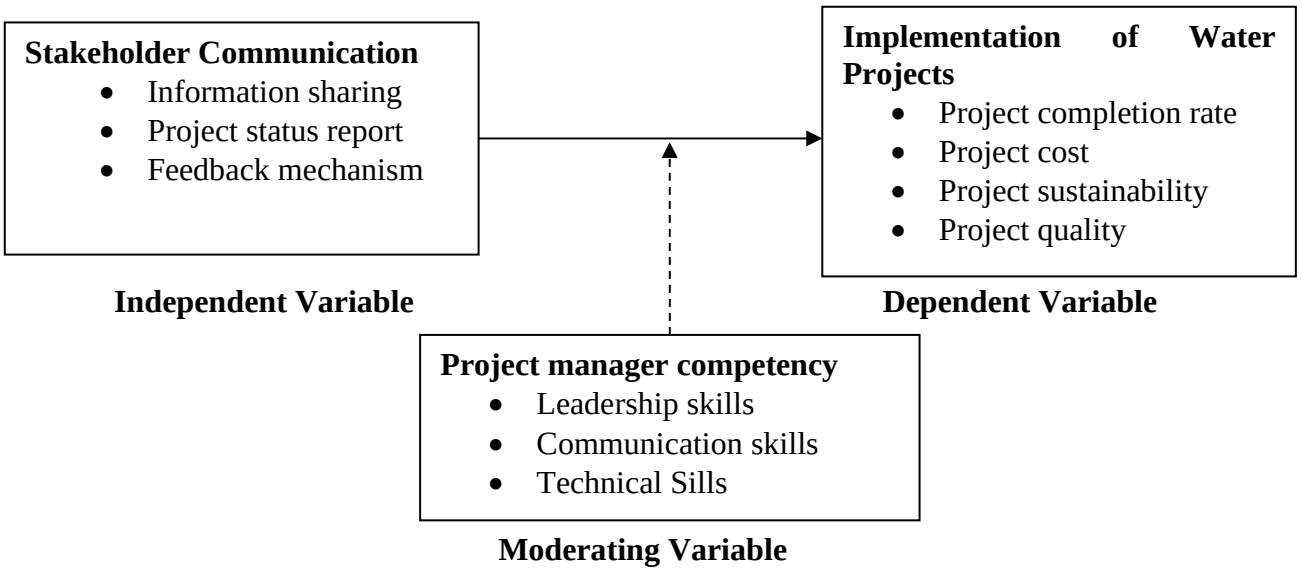


**Figure 2. 1: Conceptual Framework**

## Project Stakeholder Communication

Effective communication management in a project environment is important and when done well, connects all members of the team and help them work together to achieve goals (Kosgei, 2021). If the project manager cannot properly manage and understand communication, the results of the project will be at risk. Project communication management ensures that project information is disseminated in a timely and appropriate manner. For the project to be successful there must be clear and unambiguous communication between the project team at all levels of the project (Buertey, Amofa, & Atsrim, 2016). It includes creating communication plans for management and stakeholder, distributing information, reporting successes and sharing information (Woldesenbet, 2020).

Project stakeholder communication management covers methods and strategies for building trust and relationships among project team members as well as promoting good interpersonal and communication skills, clear communication guidelines between project team and project stakeholders (Maragia et al., 2018). Knowledge sharing in project objectives is about sharing key project partner information, including timelines and budgets. There is need for coordinating between partners to ensure effective communication throughout the project (Giangregorio, 2020). Sharing meaningful information can increase participants' understanding thereby improving project outcomes (Kosgei, 2021).

Effective project stakeholder communication management requires active listening and feedback to ensure that stakeholder messages are understood and acted upon (Ruddock et al., 2011). This includes regularly checking with stakeholders to make sure they have the information they need and addressing any questions or concerns that arise. Research shows that effective communication enhances project decision making and improves project outcomes such as operational efficiency and stakeholder satisfaction (Adom & Simatele, 2022).

Good management of project stakeholder communications also facilitates status reporting. Project status reporting refers to the process of providing regular updates about the project, including project goals, timelines, and budgets (Gable & Shireman, 2005). This enables project stakeholders to make informed decisions and take appropriate actions (Woldesenbet, 2020). In addition, regular and comprehensive reporting on project status can increase stakeholder understanding and support, thereby improving project outcomes (Alameri, 2022).

**Project Manager Competency**

Project manager competency is critical to ensure successful project delivery. It refers to knowledge, skills and abilities that predict effectively and efficiently (Müller & Jugdev, 2012). Project manager competence has an effect on the success of the project and is a key factor for project success. Leadership skills are one of the important criteria of a manager's ability. A competent project manager should be able to lead a team and motivate them to work towards a common goal (Nichol, 2020).

Leadership skills of project managers are important for motivating team members, solving problems and building relationships with stakeholders. A competent project manager provides direction, guidance and support to team members to achieve project goals. He motivates team members, provides guidance, and delegates tasks appropriately (Ahmed, Massod, & Mohamad, 2013).

Communication skills are another important aspect of a manager's competence. A competent project manager must communicate effectively with members, stakeholders and supporters. Good communication is essential in understanding the goals and objectives of the project (Project Management Institute, 2023). A competent manager should be able to convey information to stakeholders at all levels, listen well and provide feedback to members and to ensure that the working group is followed and the objectives of the project are understood by all stakeholders (Alayande, Bashir, & Oyewobi, 2021).

Technical knowledge is also an important measure of a manager's ability. Operational information enables project managers to make informed decisions and take the necessary actions to complete the project (Project Management Institute, 2023). A competent project manager should have a solid understanding of project management, its tools and techniques. A competent manager should be able to plan, execute and monitor projects effectively using management best practices (Alayande et al., 2021).

Continuous improvement of manager competence is important to ensure managers remain effective in their roles and are better able to respond to challenges. Leaders should strive to develop their leadership, communication and skills to ensure they remain relevant and effective in their roles (Ahmed et al., 2013).

**Empirical Literature Review**

**Project Stakeholder Communication Management on Successful Implementation of Projects**

Machado et al. (2019) studied critical success factors for water and sanitation projects in Brazil. According to research, good communication is highly correlated with the success of water and sanitation systems in urban India. The study was conducted in rural communities in Brazil, targeting project developers, funders, project managers and local communities. The study reported that good communication is highly correlated with the success of water and sanitation systems in urban India. A related research was done by Ngumi and Senelwa (2021) on stakeholder engagement and communication in the context of implementation of projects in Kenya, involving 128 respondents, it was clear that effective communication is relevant to the

success of water supply in rural communities. The study focused on project developers, donors, project managers and local communities.

Study by Butt et al. (2016) focused on stakeholder communication in the project management context. The study examined the role of stakeholder communication in infrastructure projects with focus on project schedule and project budget. The study reported that stakeholder's communication is very important in project change management. In addition, it enhances stakeholder sense of ownership towards the project as well as lead to improvement in project evaluation and post evaluation decisions. Yet in another study, Zwikael et al. (2022) examined how stakeholder communication can be used to enhance teamwork and project ownership, and in the end enhance project success. The study focused on the communication between stakeholders and project managers with an intention of identifying key project management areas that managers and stakeholders can collaborate in to enhance project success. The study identified project benefits, iron triangle, critical path, project uncertainty and project leadership as key areas of focus that project managers must not overlook when engaging project stakeholders.

**Project Manager Competency on Stakeholders' Management and Implementation of Water Projects**

Kariuki (2019) conducted a study on project manager competency and performance of water projects in Kenya. Research data were collected through a questionnaire. The study showed that effective project management approaches, including stakeholder engagement and negotiation skills, have a positive impact on project success. The study recommended that project managers should be trained on technical and soft project management skills, critical for teamwork and effective feedback critical in project success.

Hogsckola (2021) investigated the relationship between managerial competence and project success. This study has a quantitative research sample and the target population includes managers and stakeholders. The sample size was participants and data were collected via an online self-survey. The study analyzed the data using regression analysis and found that the project manager contributed to the success of the project.

The findings suggest that project managers should have the skills, leadership and communication skills needed to complete projects.

Armenia et al. (2019) examines the role of manager's competence in sustainable project management. The study targeted project managers involved in sustainable project management. The sample size was 150 participants and data were collected via online self-survey. This study used the structural equation model to analyze the data and found that the project manager's ability was related to the success of the project for the firm's performance. This study suggests that project managers should have skills such as cognitive skills, collaboration with stakeholders and strategic thinking to successfully implement focused sustainability projects.

Irfan et al. (2020) explored the relationship between manager's competence and project success in public projects. The sample size was 260 project engineers and data was collected through semi-structured interviews. The study reported a positive association between project management competency and project success. This study recommends that project managers have the knowledge, skills and leadership to manage stakeholders to successfully complete oil and gas projects. In a similar study, Elmezain et al. (2021) examined the relationship between manager skills and project success. The study that involved 400 project managers reported reduced project cost and enhanced project quality and time delivery.

## RESEARCH METHODOLOGY

### Research Design

According to Cooper and Schindler (2017), research design allows researchers to allocate limited resources by suggesting critical options. The research used cross-sectional research methods. This design is suitable for situations where the relationship between two variables needs to be determined over a short time (Cooper & Schindler, 2011). Cross-sectional studies are useful and therefore allow researchers to verify the existence of significant relationships between variables, while allowing more accurate analysis of data. In addition, the design provides researchers with the opportunity to capture population characteristics and test hypotheses quantitatively and qualitatively (Creswell, 2013).

### Target Population

Target population is the total number of individuals or subjects for which research data is used for analysis; he is a "universal" scientist (Kothari & Garg, 2014). In this study, the target population was 321 active projects implemented by water work development agencies. There are 321 active projects under the 9 water works development agencies. According to Cooper and Schindler (2017), a good research must have a unit of analysis and unit of observation. In the current study, unit of analysis is individual active water project while the staff involved in the study constituted the unit of observation.

### Sampling Frame

A sampling frame is a list of all the items taken from which a representative sample is obtained for research purposes (Saunders, Lewis, & Thornhill, 2016). It is a list of people in the study's population from whom a sample can be drawn (Kothari & Garg, 2014). The sample frame for this study was composed of 321 project managers drawn from the 321 active projects implemented by the water works development agencies. These personnel are selected on the basis that they are actively involved in actions and decisions that relate to stakeholder issues and project success. Similarly, they serve in management level and therefore, they can give research data on project manager competency. Table 3.1 presents the sample frame of the study.

**Table 3.1: Sample Frame**

| No. | Agency | Number of Projects |
|---|---|---|
| 1. | Lake Victoria South Water Works Development Agency | 50 |
| 2. | Lake Victoria North Water Works Development Agency | 47 |
| 3. | Tanathi Water Works Development Agency | 38 |
| 4. | Athi Water Works Development Agency | 58 |
| 5. | Coast Water Works Development Agency | 21 |
| 6. | Central Rift Water Works Development Agency | 24 |
| 7. | North Rift Valley Water Works Development Agency | 15 |
| 8. | Tana Water Works Development Agency | 38 |
| 9. | Northern Water Works Development Agency | 30 |
| | **Total** | **321** |

Source: Water Services Regulatory Board (2023)

**Sample and Sampling Technique**

A sample represents a certain percentage of the population, and the frequency distribution of the trait is similar to the distribution of the same trait in the entire population (Saunders, Lewis, & Thornhill, 2016)

**Sample Size**

Kothari and Garg (2019) explain that the sample size refers to the items selected from the population as a sample, while the sampling technique refers to the process used to select the sample. Sample size for this study was determined using Yamane (1967).

This formula used to calculate the sample size is;

$$n = \frac{N}{1+N(e^2)} \quad \text{…….. (3.1)/1.8025}$$

Where n is the sample size, N is the population size, and e is the level of precision (0.05).

When this formula is applied, the following equation is obtained;

$$n = \frac{321}{1 + 321(0.05^2)}$$

$$= 178$$

Therefore, using Yamane (1967), the sample size for this study would be 178 participants. This represents 58.7% of the study's target audience. According to Mugenda and Mugenda (2014), the sample representing at least 30% of the study population is a suitable sample for the study. Therefore, our sample was appropriate for this study.

**Data Collection Instruments**

The study collected primary data through use of questionnaires. Survey is one of the advantages of collecting data especially from many respondents and allows anonymity (Mugenda & Mugenda, 2019). Data for this study was collected with close-ended questions. In closed questions, respondents are prohibited from answering directly without further explanation, while in open-ended questions; respondents were asked for their views on the analyzed situation. Likert scale was used to allow respondents to provide their perception.

**Pilot Testing**

A pilot analysis was used to ensure the validity and reliability of the questionnaire. According to Sekaran (2013), the pilot test is a small study before the actual test focusing on testing and improving a study. According to Cooper and Schindler (2017), pilot testing is done to discover flaws in design and measurement and to provide evidence for selection of possible models. Muus and Baker-Demaray (2017) explain that the test should involve people from the project and follow data collection procedures and methods. For high sensitivity studies, the sample size should be between 1% and 10% (Mugenda & Mugenda, 2014). Therefore, this study tested the data collection tool with 18 participants (10% of the study sample) selected from the target population. The samples used in the test were excluded from the final run.

**Data Processing and Analysis**

In this study, qualitative and quantitative data was collected. Qualitative data was analyzed using content analysis and presented in text form. Quantitative data was analyzed using the Statistical Standard for Social Sciences (SPSS) version 25 program. Quantitative data was analyzed using descriptive statistics such as frequency, percentage, mean and standard deviation. Descriptive statistics allow researchers to interpret the distribution of measurements

and complete data (Sekaran & Bougie, 2016). This work also included statistical analysis of quantitative data, including analysis and regression analysis

**Correlation Analysis**

According to Saunders et al. (2018), correlation is an analytical tool that helps to identify the relationship between two or more variables. Cooper and Schindler (2017) say that the correlation (measured by the correlation coefficient) is the degree of a positive relationship between the variables. Pearson correlation coefficient was used to measure the relationship between independent and dependent variables. The correlation coefficient (r) has two properties: power and direction.

**Regression Analysis**

Multiple regression model was used to evaluate the importance of the effect of individual variables on the variables. Multiple regression analysis was used to determine how activity use is affected by four variables of participant control. Multiple regression analysis determines whether a number of variables together predict a variable and in this way tries to increase the accuracy of the estimation (Mugenda & Mugenda, 2003). Using a regression model is ideal because it can show whether there is a positive or negative relationship between independence and change (Kothari & Garg, 2014).

The multiple regression equation model is illustrated below:

$Y= \beta_0+ \beta_1X_1 +e$ ……. (3.3)

Where:

Y is the dependent variable (Implementation of water projects),
$\beta_0$ is the constant (Co-efficient of intercept)
$\beta_1$, is the slope of the regression equation,
$X_1$ is Project Stakeholder Communication,
e is an error term

The equation was solved using a statistical model where SPSS was applied to generate the value.

Moderation analysis was computed by use of hierarchical regression, whereby the relationship between stakeholder management and implementation of water projects in Kenya were computed first, followed by the introduction of Project manager competency (M). The product term, often referred to as the interaction term, was created by multiplying the summated-weighted scores of stakeholder management (X) and Project manager competency (M). The following model was used;

$Y = \beta_0 + \beta_1X + \beta_2(X*M) + \varepsilon$ …… (3.4)

Where; Y = Implementation of water projects

$\beta_0$ = constant
$\beta_6$ - $\beta_8$ = Beta coefficients
X = Project stakeholder communication
M = Project manager competency
(X*M) = interaction term
$\varepsilon$ = error term for the moderation analysis
The findings were presented in tables and figures.

## RESEARCH FINDINGS AND DISCUSSION

### Descriptive Analysis

### Project Stakeholder Communication

The first objective of the study was to examine the effect of project stakeholder communication on implementation of water projects in Kenya. Respondents were therefore asked to indicate their level of agreement with statements on project stakeholder communication and implementation of water projects in Kenya. Table 4.1 presents summary of the findings obtained.

From the results, the respondents agreed that there is timely dissemination of project information to project stakeholders (M= 3.998, SD= 1.258). In addition, the respondents agreed that there is effective communication between project team and stakeholders (M= 3.985, SD= 0.983). It was also agreed that there is consistent communication with project stakeholders at all stages of the project (M= 3.923, SD= 0.845). The study findings concur with the findings of Machado *et al.* (2017) who reported that good communication is highly correlated with the success of water and sanitation systems in urban India. A related research done by Ngumi and Senelwa (2021) reported that stakeholder's communication is very important in project change management. In addition, it enhances stakeholder sense of ownership towards the project as well as lead to improvement in project evaluation and post evaluation decisions.
The respondents agreed that there is adequate progress reporting to stakeholder throughout the project progress (M= 3.854, SD= 0.797). In addition, the respondents agreed that there is adequate reporting on project changes throughout the project (M= 3.840, SD= 0.938). Further, the respondents agreed that there is effective feedback mechanism for stakeholder concerns (M= 3.777, SD= 0.560). The results are supported by the findings of , Zwikael *et al.* (2022) who focused on the communication between stakeholders and project managers with an intention of identifying key project management areas that managers and stakeholders can collaborate in to enhance project success. The study identified project benefits, iron triangle, critical path, project uncertainty and project leadership as key areas of focus that project managers must not overlook when engaging project stakeholders

**Table 4. 1: Descriptive Statistics on Project Stakeholder Communication**

| | **Mean** | **Std. Dev.** |
|---|---|---|
| There is timely dissemination of project information to project stakeholders | 3.998 | 1.258 |
| There is effective communication between project team and stakeholders | 3.985 | 0.983 |
| There is consistent communication with project stakeholders at all stages of the project | 3.923 | 0.845 |
| There is adequate progress reporting to stakeholder throughout the project progress | 3.854 | 0.797 |
| There is adequate reporting on project changes throughout the project | 3.840 | 0.938 |
| There is effective feedback mechanism for stakeholder concerns | 3.777 | 0.560 |
| **Aggregate Score** | **3.834** | **0.932** |

**Project Manager Competency**

The second objective of the study was to assess the mediating effect of project manager competency on the relationship between stakeholders' management and implementation of water projects in Kenya. Respondents gave their level of agreement on statements on project manager competency on implementation of water projects in Kenya. Table 4.8 presents summary of the findings obtained.

From the results, the respondents agreed that project managers demonstrate the ability to inspire and motivate project team members (M= 3.996, SD= 1.008). In addition, the respondents agreed that project managers have a clear vision for the project and communicate it effectively to stakeholders (M= 3.950, SD= 1.030). It was also agreed that project managers take responsibility for project outcomes and hold team members accountable (M= 3.885, SD= 0.909). The respondents also agreed that project manager actively listen to stakeholders and seek to understand their perspectives (M= 3.868, SD= 1.258). The findings are supported by those of Kariuki (2015) who showed that effective project management approach, including stakeholder engagement and negotiation skills, have a positive impact on project success. The study recommended that project managers should be trained on technical and soft project management skills, critical for team work and effective feedback critical in project success.

The respondents agreed that project manager communicates project progress and challenges clearly and in a timely manner (M= 3.871, SD= 1.177). In addition, the respondents agreed that project manager adjust communication styles based on the needs and preferences of stakeholders (M= 3.869, SD= 0.765). Further, the respondents agreed that project managers have a thorough understanding of the technical requirements of the project (M= 3.823, SD= 0.796). The respondents also agreed that project managers have the ability to identify and mitigate technical risks (M= 3.731, SD= 0.874). The respondents further agreed that project managers possess the necessary technical skills to effectively manage the project (M= 3.723, SD= 1.129). The results are supported by the findings of Armenia *et al*. (2019) who established project managers should have skills such as cognitive skills, collaboration with stakeholders and strategic thinking to successfully implement focused sustainability projects.

**Table 4.2: Descriptive Statistics on Project Manager Competency**

| | **Mean** | **Std. Dev.** |
|---|---|---|
| Project managers demonstrate the ability to inspire and motivate project team members | 3.996 | 1.008 |
| Project managers have a clear vision for the project and communicate it effectively to stakeholders | 3.950 | 1.030 |
| Project managers take responsibility for project outcomes and hold team members accountable | 3.885 | 0.909 |
| Project manager actively listen to stakeholders and seek to understand their perspectives | 3.868 | 1.258 |
| Project manager communicates project progress and challenges clearly and in a timely manner | 3.871 | 1.177 |
| Project manager adjust communication styles based on the needs and preferences of stakeholders | 3.869 | 0.765 |
| Project managers have a thorough understanding of the technical requirements of the project | 3.823 | 0.796 |
| Project managers have the ability to identify and mitigate technical risks | 3.731 | 0.874 |
| Project managers possess the necessary technical skills to effectively manage the project | 3.723 | 1.129 |

| | | |
|---|---|---|
| **Aggregate Score** | **3.863** | **0.993** |

**Implementation of Water Projects in Kenya**

The main objective of this study is to investigate the effect of stakeholder communication on implementation of water projects in Kenya. Respondents were therefore requested to indicate their level of agreement with statements on implementation of water projects in Kenya. Table 4.3 presents summary of the findings obtained.

From the results, the respondents agreed that the water projects are completed within schedule (M= 3.950, SD= 0.689). In addition, the respondents agreed that the water projects are completed within budget (M= 3.923, SD= 0.857). It was also agreed that the water projects are completed within scope (M= 3.913, SD= 0.758). The respondents agreed that the water projects meet the required quality threshold (M= 3.885, SD= 0.766). In addition, the respondents agreed that the water projects meet set objectives and goals (M= 3.839, SD= 1.029). Further, the respondents agreed that the water projects meet project sustainability requirements (M= 3.754, SD= 0.797). The study results are supported by the findings of Alameri (2022) who established that a project is said to be successfully implemented if it is completed within the budget, within the timeframe and within the specified quality standards.

**Table 4.3: Descriptive Statistics on Implementation of Water Projects in Kenya**

| | **Mean** | **Std. Dev.** |
|---|---|---|
| The water projects are completed within schedule | 3.950 | 0.689 |
| The water projects are completed within budget | 3.923 | 0.857 |
| The water projects are completed within scope | 3.913 | 0.758 |
| The water projects meet the required quality threshold | 3.885 | 0.766 |
| The water projects meet set objectives and goals | 3.839 | 1.029 |
| The water projects meet project sustainability requirements | 3.754 | 0.797 |
| **Aggregate Score** | **3.845** | **0.862** |

The respondents were also requested to comment on successful implementation of water projects in Kenya in terms of cost and quality. From the results, the respondents revealed that One prominent example of a water project in Kenya facing cost overruns, time delays, and quality issues is the Northern Collector Tunnel Project. This ambitious initiative encountered significant cost overruns due to unforeseen geological challenges and increased labor costs. These unexpected issues not only led to higher expenses but also caused substantial delays, pushing the project's completion date beyond its original schedule. Moreover, there have been concerns regarding the quality of construction, with some questioning the durability and long-term maintenance of the tunnel infrastructure.

In addition, the respondents revealed that Mzima Springs Phase II Project experienced cost overruns primarily due to inflation and additional requirements that were not fully accounted for in the initial budget. Time delays were also a significant issue, stemming from logistical problems and procurement challenges. Additionally, the project has faced quality concerns, with reports of leaks and maintenance issues in sections of the pipeline, raising questions about the overall construction quality.

In contrast, the Thwake Multi-Purpose Water Project is an example of a water project that has successfully adhered to its budget, schedule, and quality standards. The Thwake project, which aims to provide water, irrigation, and hydroelectric power, has been noted for its effective budget management, staying within the allocated financial resources. Timely progress has been achieved through careful planning and execution, and the project has been praised for meeting high-quality standards, incorporating advanced technology and materials.

## Correlation Analysis

This research adopted Pearson correlation analysis to determine how the dependent variable (implementation of water projects in Kenya) relates with the independent variables (project stakeholder communication).

**Table 4. 4: Correlation Coefficients**

| | | Project Implementation | Project Stakeholder Communication |
|---|---|---|---|
| Project Implementation | Pearson Correlation | 1 | |
| | Sig. (2-tailed) | | |
| | N | 171 | |
| Project Stakeholder Communication | Pearson Correlation | .815** | 1 |
| | Sig. (2-tailed) | .000 | |
| | N | 171 | 171 |

From the results, there was a very strong relationship between project stakeholder communication and implementation of water projects in Kenya (r = 0.815, p value =0.000). The relationship was significant since the p value 0.000 was less than 0.05 (significant level). The findings are in line with the findings of Butt *et al*. (2016) who indicated that there is a very strong relationship between project stakeholder communication and project implementation.

## Test for Hypothesis One

The first objective of the study was to examine the effect of project stakeholder communication on implementation of water projects in Kenya. The corresponding hypothesis was:

$Ho_1$: Project stakeholder communication has no significant effect on implementation of water projects in Kenya.

A univariate analysis was therefore conducted to test the null hypothesis. From the model summary findings in Table 4.5, the r-squared for the relationship between project stakeholder communication and implementation of water projects in Kenya was 0.269; this is an indication that at 95% confidence interval, 26.9% variation in implementation of water projects in Kenya can be attributed to changes in project stakeholder communication. Therefore, project stakeholder communication can be used to explain 26.9% change in implementation of water projects in Kenya. However, the remaining 73.1% variation in implementation of water projects in Kenya suggests that there are other factors other than project stakeholder communication that explain implementation of water projects in Kenya.

**Table 4.5: Model Summary for Project Stakeholder Communication**

| Model | R | R Square | Adjusted R Square | Std. Error of the Estimate |
|---|---|---|---|---|
| 1 | .519[a] | .269 | .267 | .68365 |

a. Predictors: (Constant), Project Stakeholder Communication

The analysis of variance was used to determine whether the regression model is a good fit for the data. From the analysis of variance (ANOVA) findings in Table 4.6, the study found out that that Prob>$F_{1,159}$= 0.000 was less than the selected 0.05 level of significance. This suggests that the model as constituted was fit to predict implementation of water projects in Kenya.

Further, the F-calculated, from the table (362.83) was greater than the F-critical, from f-distribution tables (3.897) supporting the findings that Project Stakeholder Communication can be used to predict implementation of water projects in Kenya.

**Table 4.6: ANOVA for Project Stakeholder Communication**

| Model | | Sum of Squares | df | Mean Square | F | Sig. |
|---|---|---|---|---|---|---|
| 1 | Regression | 51.159 | 1 | 51.159 | 362.83 | .000[b] |
| | Residual | 23.817 | 169 | 0.141 | | |
| | Total | 74.976 | 160 | | | |

a. Dependent Variable: Implementation of water projects in Kenya
b. Predictors: (Constant), Project Stakeholder Communication

From the results in table 4.7, the following regression model was fitted.

$$Y = 1.792 + 0.497 X_2$$

($X_2$ is Project Stakeholder Communication)

The coefficient results showed that the constant had a coefficient of 1.792 suggesting that if project stakeholder communication was held constant at zero, implementation of water projects in Kenya would be at 1.792 units. In addition, results showed that project stakeholder communication coefficient was 0.497 indicating that a unit increase in project stakeholder communication would result in a 0.497 increase in implementation of water projects in Kenya. It was also noted that the P-value for information flow coefficient was 0.000 which is less than the set 0.05 significance level indicating that project stakeholder communication was significant. Based on these results, the study rejected the null hypothesis and accepted the alternative that project stakeholder communication has negative significant influence implementation of water projects in Kenya.

**Table 4.8: Beta Coefficients for Project Stakeholder Communication**

| Model | | Unstandardized Coefficients | | Standardized Coefficients | t | Sig. |
|---|---|---|---|---|---|---|
| | | B | Std. Error | Beta | | |
| 1 | (Constant) | 1.792 | .188 | | 9.523 | .000 |
| | Project Stakeholder Communication | .479 | .046 | .519 | 10.462 | .000 |

a. Dependent Variable: Implementation of water projects in Kenya

**Test for Hypothesis Two**

The second objective of the study was to investigate the effect of project stakeholder communication on implementation of water projects in Kenya. Mediation happens when the relationship between the dependent variable and the independent variables is dependent on a third variable (mediating variable). The effect that this variable has is termed as interaction as it affects the direction or strength of the relationship between the dependent and independent variable. To achieve the second research objective, the study computed moderating effect regression analysis. This (mediating effect regression analysis) also guided the study in testing the sixth research hypothesis. Project manager competency (M) was introduced as the moderating variable.

$Ho_2$: Assess the mediating effect of project manager competency on the relationship between project stakeholder communication and implementation of water projects in Kenya.

The study then used stepwise regression to establish the mediating effect of project manager competency (M) on the relationship between independent variable (X) and implementation of water projects in Kenya (Y).

From the model summary findings in Table 4.9, the first model for which is the regression between project stakeholder communication (X) without moderator, project manager competency (M) and interaction, the value of R-squared was 0.336 which suggests that 33.6% change in implementation of water projects in Kenya can be explained by changes in project stakeholder communication. The p-value for the first model (0.000) was less than the selected level of significance (0.05) suggesting that the model was significant. The findings in the second model which constituted project stakeholder communication, project manager competency and implementation of water projects in Kenya (X*M) as predictors, the r-squared was 0.568. This implies that the introduction of project manager competency in the second model led to a 0.232 increase in r-squared, showing that project manager competency positively moderates implementation of water projects in Kenya.

**Table 4.9: Model Summary for Mediating Effect**

| Model | R | R Square | Adjusted R Square | Std. Error of the Estimate | Change Statistics | | | | |
|---|---|---|---|---|---|---|---|---|---|
| | | | | | R Square Change | F Change | df1 | df2 | Sig. F Change |
| 1 | .580[a] | .336 | .334 | .65170 | .336 | 150.295 | 1 | 269 | .000 |
| 2 | .754[b] | .568 | .564 | .52727 | .232 | 79.360 | 3 | 267 | .000 |

a. Predictors: (Constant), Project stakeholder communication

b. Predictors: (Constant), Project stakeholder communication, project manager competency, Interaction (X*M)

From the model summary findings in Table 4.10, the F-calculated for the first model, was 498.688 and for the second model was 441.01. Since the F-calculated for the two models were more than the F-critical, 3.897 (first model) and 2.659 (second model), the two models were good fit for the data and hence they could be used in predicting the mediating effect of project manager competency on the implementation of water projects in Kenya.

**Table 4. 10: ANOVA for Mediating Effect**

| Model | | Sum of Squares | df | Mean Square | F | Sig. |
|---|---|---|---|---|---|---|
| 1 | Regression | 63.832 | 1 | 63.832 | 498.688 | .000[b] |
| | Residual | 21.675 | 169 | 0.128 | | |
| | Total | 85.507 | 170 | | | |
| 2 | Regression | 107.958 | 2 | 35.986 | 441.01 | .000[c] |
| | Residual | 13.622 | 168 | 0.0816 | | |
| | Total | 121.58 | 170 | | | |

a. Dependent Variable: Implementation of water projects in Kenya

b. Predictors: (Constant), Project stakeholder communication

c. Predictors: (Constant), Project stakeholder communication, project manager competency, Interaction

Further, by substituting the beta values as well as the constant term from the coefficient's findings for the first step regression modelling, the following regression model will be fitted:

$Y = 1.387 + 0.608 X$

Where X is Project Stakeholder Communication

The findings show that when Project Stakeholder Communication is held to a constant zero, implementation of water projects in Kenya will be at a constant value of 1.387. The findings also show that Stakeholder management has a statistically significant effect on implementation of water projects in Kenya as shown by a regression coefficient of 0.608 (p-value= .000).

By substituting the beta values as well as the constant term from model 2 emanating from the second step in regression modeling the following regression model was fitted:

$Y= 3.876 + 0.220 X + 0.325 M + 0.283 X*M$

Where X is Project Stakeholder Communication; M is project manager competency and X*M is the interaction term between Project Stakeholder Communication and project manager competency.

The findings show that when Project Stakeholder Communication, project manager competency, interaction (X*M) are held to a constant zero, implementation of water projects in Kenya will be at a constant value of 3.876. The model also indicated that Project Stakeholder Communication had a positive and statistically significant effect on implementation of water projects in Kenya as shown by a regression coefficient of 0.220 (p-value= 0.002). It is also seen that project manager competency had a positive and significant effect on implementation of water projects in Kenya as shown by a regression coefficient 0.325. On the other hand, interaction of implementation of water projects in Kenya and project manager competency (X*M) also had a positive and significant effect on implementation of water projects in Kenya as shown by a regression coefficient of 0.283 (p-value= 0.000).

It is therefore seen that Project Stakeholder Communication on its own has 22% effect on implementation of water projects in Kenya. However, when interacted with project manager competency, it has an effect of 28.3%. This is a clear indication that introduction of project manager competency as moderating variable has positive influence on implementation of water projects in Kenya. The study therefore rejects the null hypothesis and accepts the alternative that project manager competency has significant mediating effect on the relationship between Project Stakeholder Communication and implementation of water projects in Kenya.

**Table 4.11: Beta Coefficients for mediating Effect**

| Model | | Unstandardized Coefficients | | Standardized Coefficients | t | Sig. |
|---|---|---|---|---|---|---|
| | | B | Std. Error | Beta | | |
| 1 | (Constant) | 1.387 | .194 | | 7.163 | .000 |
| | Project Stakeholder Communication | .608 | .050 | .580 | 12.260 | .000 |
| 2 | (Constant) | 3.876 | 1.009 | | 3.841 | .000 |
| | Project Stakeholder Communication | .220 | .067 | .782 | 3.284 | .002 |
| | Project Manager Competency | .325 | .048 | .310 | 6.748 | .000 |
| | Interaction (X*M) | .283 | .065 | 1.661 | 4.357 | .000 |

a. Dependent Variable: Implementation of water projects in Kenya

## CONCLUSIONS AND RECOMMENDATIONS

### Conclusions

### Project Stakeholder Communication

The null hypothesis tested whether project stakeholder communication had a significant effect on implementation of water projects in Kenya. The study's findings revealed that project stakeholder communication is statistically significant in explaining the implementation of water projects in Kenya, and this influence was found to be positive. In other words, an improvement in project stakeholder communication positively impacts implementation of water projects in Kenya. The study concludes that project stakeholder communication has a positive and significant effect on implementation of water projects in Kenya. Findings revealed that information sharing, project status report and feedback mechanism influence implementation of water projects in Kenya.

### Project Manager Competency

The second null hypothesis tested whether Project manager competency had a significant mediating effect on the relationship between Project Stakeholder Communication and implementation of water projects in Kenya. The study's findings revealed that Project manager competency had a significant mediating effect on the relationship between Project Stakeholder Communication and implementation of water projects in Kenya, and this influence was found to be positive. In other words, an improvement in Project manager competency positively impacts implementation of water projects in Kenya. The study concludes that project manager competency has a positive and significant mediating effect on the relationship between Project Stakeholder Communication and implementation of water projects in Kenya. Findings revealed that leadership skills, communication skills and technical sills influence implementation of water projects in Kenya.

### Recommendations

### Project Stakeholder Communication

The study recommends that project managers should establish transparent and consistent communication channels that ensure all relevant information is accessible to stakeholders. This includes creating centralized platforms, such as project websites or intranet portals, where stakeholders can access up-to-date project documents, schedules, and updates. Regular informational meetings and briefings should be organized to keep stakeholders informed about project developments, changes, and upcoming activities. Effective information sharing builds trust and keeps stakeholders engaged and aligned with the project's objectives.

### Project Manager Competency

The study recommends that investing in leadership development programs is essential to equip project managers with the necessary skills to inspire and guide project teams towards achieving project objectives. Leadership training should focus on fostering strategic thinking, decision-making, and team management skills. Project managers should be encouraged to participate in leadership workshops, seminars, and mentorship programs to enhance their leadership capabilities. Additionally, providing opportunities for practical leadership experiences, such as leading cross-functional teams or spearheading community engagement initiatives, can further develop their leadership competencies.

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