

**FACTORS INFLUENCING SUSTAINABILITY OF RURAL WATER SUPPLY
PROJECTS IN TANZANIA. A CASE OF KONGWA DISTRICT TANZANIA**

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Master of Science in Project Planning and Management of the Institute of

Accountancy Arusha

December, 2023.

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**A Dissertation Submitted in Partial fulfilment of the Requirement for the
Award of the Degree of Master of Science in Project Planning and
Management of the Institute of Accountancy Arusha**

December, 2023.

DECLARATION

I, **Stephen Tungu**, declare that, this dissertation is my own work and to the best of my knowledge it has not been presented in any other University for similar or any other degree award.

Signature:

Date: / /

CERTIFICATION

I, the undersigned certify that, I have read and hereby recommend for acceptance Institute of Accountancy Arusha the dissertation entitled: “***Factors Influencing Sustainability of Rural Water Supply Projects in Tanzania: A Case of Kongwa District Tanzania***” in partial fulfilment of the Requirement for the Award of the degree of Master of science in project planning and management of the Institute of Accountancy Arusha.

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Mr. BONAVENTURE MSHIBIKA

Date: / /

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DEDICATION

I wish to express my gratitude in dedicating this dissertation to the Divine, Almighty God, as well as to my dear parents, Mr. and Mrs. Tungu, and my entire family. Their unwavering support has provided me with the strength to confront the challenges of daily life.

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I extend my heartfelt gratitude to the Almighty God for providing me with the strength and courage to undertake and complete this entire endeavour.

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Additionally, I am grateful for the support, advice, and inspiration offered by all my friends who stood by me throughout the production of this dissertation, especially Mr. Frank for his unwavering support.

Lastly, I want to express my thanks to my family for their patience and encouragement. May God bless each of you abundantly.

ABSTRACT

This study delves into the factors influencing the sustainability of rural water supply projects in Tanzania, with a specific focus on Kongwa District. The specific objectives were to examine the influence of community participation, project management practices, and project financing on sustainability of rural water supply projects.

The research, situated in Kongwa district, utilized a descriptive research design to provide a holistic view of the factors influencing the sustainability of rural water supply projects. The study population comprised rural communities in Kongwa, including community-based water supply organizations (CBWSOs), RUWASA, Bondwa water authority, and the planning and coordination department.

For the sample size, 46 purposively selected respondents from water supply project beneficiaries were involved. Non-probability sampling techniques, specifically purposive was employed. The study collected both primary and secondary data through documentary reviews, and unstructured questionnaires with open-ended questions. Data analysis utilized IBM SPSS statistics version 20 and Microsoft Excel.

The findings reveal a significant influence of community participation, effective project management practices, and well-structured project financing on the sustainability of water supply projects in Kongwa District. Notably, community involvement fosters a sense of ownership and commitment, contributing to the projects' long-term success. Effective project management practices, encompassing planning, risk management, and communication, enhance project efficiency and adaptability. Furthermore, diverse and transparent project financing approaches ensure stability, flexibility, and cost-effectiveness.

In summary, the study recommends continuous community engagement, comprehensive training programs, robust risk management plans, and active pursuit of strategic partnerships to enhance the sustainability of water supply projects in Kongwa District. These recommendations aim to optimize community support, equip project managers with contemporary techniques, proactively manage risks, and diversify funding sources for long-term project viability.

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LIST OF ACRONYMS

NGO	Non-governmental Organization
M & E systems	Management and Evaluation systems

CHAPTER ONE INTRODUCTION

1.1 Introduction

This chapter outlines the study's background, problem statement, research objectives, research questions, significance, scope, anticipated limitations, and organization.

1.2 Background to the Study

Globally, approximately 750 million people, or one in nine individuals, lack access to safe water (Bongei & Kaburu, 2021). The issue is especially severe in rural and small communities where water collection is labor-intensive, water sources may be contaminated, or water is available at exorbitant prices, hindering proper health and hygiene (Massawe & Chumbula, 2018). Although the percentage of Africans with access to clean, safe water has risen, with rural areas experiencing an increase from 35% to 51%, Africa still has the lowest overall water supply coverage (Sunkari et al., 2021; ADB, 2013). Around 300 million people in Africa lack access to safe water, and 313 million more lack sanitation, negatively impacting economic development and health (Poudel et al., 2021).

In Tanzania, access to improved water sources has declined, and while sanitation access has remained stable at around 93% since the 1990s, intermittent water supply and poor service quality persist (Sweya et al., 2021). The Tanzanian government initiated a substantial sector reform process in 2002 to address these issues, promoting integrated water resources management and urban and rural water supply development, adopted in 2006 (van Eijk, 2012). Decentralization aimed to transfer water and sanitation service provision from the government to communities through community-owned water supply organizations in rural areas (Bikuba & Kayunze, 2019).

Despite increased budget allocation for rural water supply since 2006, sustainability remains a challenge. In many rural areas, water infrastructure deteriorates without replacement, causing service disruptions (Mandara, Butijn, & Nieho, 2013). Factors like community willingness to

cover operation and maintenance costs, community involvement in projects, project financing, and project management practices challenge rural water supply project sustainability (Olela, 2018).

Research by Mutonga (2015), Khwaja (2002), Marks et al. (2014), Ofuoku (2014), Chacha (2015), and Alelah and Mueke (2017) highlights the significance of community participation, adequate project financing, and effective project management for successful development projects, such as those in the water sector. The studies show that beneficiary involvement influences project development and management, and effective community participation depends on the target community and beneficiaries' willingness and ability to engage in the project. Additionally, community participation is often low in developing countries. Insufficient funding contributes to poor water facility maintenance, resulting in many water project failures (Mutonga, 2015; Khwaja, 2002; Marks et al., 2014; Ofuoku, 2014; Chacha, 2015; Alelah & Mueke, 2017).

Hence, it is vital to investigate the factors affecting the sustainability of rural water supply projects concerning community participation, project management practices, and project financing, using Kongwa District as a case study.

1.3 Statement of The Problem

Efficient water resource management positively affects long-term economic growth, poverty reduction, health, and security. Sustainable water supplies have demonstrated their ability to boost economic growth, enhance health, and alleviate poverty in communities, with various factors contributing to their sustainability (Achieno & Mwangangi, 2018). Establishing policy and legal frameworks is essential for enhancing and efficient administration of water supply initiatives, ensuring long-lasting systems. Collaborative efforts among stakeholders in developing sustainable strategies contribute to lasting solutions and are vital for the ongoing progress of rural water supply programs (Nyakwaka & Benard, 2019). In 2002, Tanzania's

government initiated the National Rural Water Supply and Sanitation program with the goal of providing universal access to hygienic and secure water by constructing water points, often backed by local communities (Ntuku, 2021).

Water project sustainability is essential, as projects without proper sustainability result in water shortages and waterborne disease outbreaks like typhoid and cholera. This lack of sustainability also reduces economic production and development, as individuals spend more time searching for water from distant sources due to the collapse of nearby water projects (Wiek et al., 2012). While effective project management and evaluation for sustainable water supply projects are important, limited research has been conducted on the specific factors that enable effective project management and evaluation in Tanzania. Most studies on Tanzanian water supply project management and evaluation have focused on technical aspects, such as water quality, quantity, and infrastructure, with little emphasis on project management and evaluation's role in ensuring sustainability (Mrangu, 2018; Mgoba & Kabote, 2020; Otter et al., 2020; Muraya & Rambo, 2019; Achieno & Mwangangi, 2018). Thus, research is needed to explore the specific factors impacting the sustainability of rural water supply projects in Tanzania, including community participation, project management practices, and project financing, using Kongwa District as a case study.

1.4. RESEARCH OBJECTIVES

1.4.1 General objective

The study's general objective was to assess the factors influencing the sustainability of rural water supply projects in Tanzania.

1.4.2 Specific objectives

Specifically, the study intends to;

- i. Examine the influence of community participation on sustainability of water supply projects in Kongwa District.

- ii. Determine the influence of project management practice on sustainability of water supply projects in Kongwa District.
- iii. Determine the influence of project financing on sustainability of water supply projects in Kongwa District.

1.4.3 Research questions

- i. How does community participation influence sustainability of water supply projects in Kongwa District?
- ii. How do project management practices influence sustainability of water supply projects in Kongwa District?
- iii. How does project financing influence sustainability of water supply projects in Kongwa District?

1.6 Scope of the study

This study focuses on assessing the factors influencing the sustainability of rural water supply projects in Tanzania, using Kongwa District as a case study. As one of the seven districts in the Dodoma region, Kongwa district was selected due to its ongoing efforts to implement sustainable water supply projects across its 22 wards. The research examines the influence of community participation, project management practices, and project financing on the sustainability of water supply projects in Kongwa District.

1.7 Limitation of the Study

- i. Accessing confidential and sensitive information: The researcher overcame this by adhering to all research ethics and creating assurance to Kongwa District that the information given is needed for the study purpose only and not for any other purpose.
- ii. Financial constraint: This is due to the fact that the study is self-sponsored, but the researcher was able to access a short-term loan in order to finance the study.
- iii. Time limitation: The study was supposed to be conducted within a limited time in order to adhere to the university timetable. The researcher was able to ask for an emergency leave

in order to fully dedicate every minute to the study in order to come up with the reliable findings and be in line with the university timetable.

1.8 Significance of the study

This research contributed to the knowledge base on factors influencing sustainability of rural water supply projects in Tanzania, promoting sustainable water supply. Since most studies on Tanzanian water supply projects have focused on technical aspects, this research explores the specific factors influencing rural water supply project sustainability, including community participation, project management practices, and project financing.

The study's findings was valuable for Tanzania's economic sector development, supporting the achievement of Sustainable Development Goals, specifically ensuring sustainable access to clean and safe water for improved livelihoods. Additionally, the study provided a foundation for further research on similar topics.

1.9 Organization of the study

This dissertation has five chapters, chapter one gives the overall introduction, background of the problem, statement of the problem, research objectives, limitation of the study, significance of the study, scope of the study and the organisation of the study. Chapter two consists of theoretical and empirical literature review, knowledge gap, and conceptual framework. Chapter three gives details on research methodology specifically study area, research design, research approach, population, sample size and sampling techniques, data generation methods, validity and reliability, ethical considerations and limitations that influence research methodology. Chapter four is all about presentation and discussion of the findings. Chapter five gives the conclusion and recommendations based on the findings of the study.

CHAPTER TWO LITERATURE REVIEW

2.0 Introduction

This chapter consists of theoretical and empirical literature reviews guiding the study.

2.1 Theoretical Literature Review

This section provides insights into what other authors have written in relation to the study, specifically by defining key terms and discussing the guiding theory.

2.1.1 Definition of key terms

Sustainability

Sustainability refers to the ability to maintain water resource balance, ensuring its availability over an extended period (Olela, 2018).

Sustainability of Water Projects

Mushi and Kashaigili (2020) describe a sustainable water system as one that fulfils performance criteria over an extended period. Key features of these systems include a dedication to achieving service standards, ensuring long-term public health and safety compliance, minimal long-term external support, user-financed regular operation and maintenance, and delivering ongoing benefits for a prolonged duration.

Community Participation in Water Projects

Wang and Luo (2020) characterize community participation as a dynamic process where beneficiaries actively contribute to project development and management, instead of just receiving a share of the benefits. This encompasses engaging community members in all stages of the project life cycle, decision-making processes, and tasks like needs assessment, project design, and execution. Thuy et al. (2021) emphasize that community involvement promotes a favourable environment for sustainability by enabling users to choose service levels they can afford, directing essential investment and management decisions, and allocating resources to back these selections.

Financing Water Projects

Nkya and Kashaigili (2020) stress the importance of the financing process, which entails securing and sustaining adequate funding for water infrastructure, as a key element for sustainability. This encompasses financial backing from donors, governments, and other local organizations for community-based water initiatives. Inadequate financing is a major contributor to subpar maintenance and is frequently identified as the primary cause of failure. The inability to tackle financial challenges represents a significant obstacle in reaching water supply and sanitation objectives in numerous countries.

Project Management Practices

Alizadeh and Rahimi (2021) describe project management as the utilization of skills and methods applied to project tasks to fulfil or surpass stakeholder requirements and expectations. Project management involves multiple phases that need to be overseen, such as devising a plan, assembling a project team, implementing, monitoring and controlling, and project closure. Each stage demands focus and specific abilities from team leaders. The primary goals of project management include ensuring a project stays within its predetermined budget, is completed within the allocated timeframe, achieves the desired functional and technical performance, and ultimately meets end-user needs (Tadesse et al., 2018).

2.3 Theoretical Literature Review

Defee et al. (2010) stated that, good research should be grounded in theory. This study will be guided by Resource Dependency Theory, Community Participation Theory and Institutional Theory.

Resource Dependency Theory

Resource dependency theory was developed by Pfeffer and Salancik in the late 1970s. The theory asserts that organizations depend on external resources to achieve their goals and objectives, and their success is determined by how well they manage their external relationships

to access these resources. Resource dependency theory argues that organizations need to establish positive relationships with external actors such as governments, communities, and donors to access critical resources such as funding, expertise, and technical support (Pfeffer and Salancik, 1978).

This theory is relevant to the study because in the context of sustainable water supply projects, resource dependency theory is relevant in understanding the importance of establishing positive relationships with external actors to access critical resources needed for the projects. The theory recognizes that water supply projects in Kongwa District depend on external resources, such as funding, technical expertise, and community support, to achieve their sustainability goals. Therefore, the theory highlights the importance of effective project management practices, such as stakeholder engagement and partnership building, to ensure that water supply projects in Kongwa District can access the necessary resources for sustainability.

Community Participation Theory

Community participation theory was developed by Sherry Arnstein in 1969. The theory suggests that involving people in decision-making processes can lead to greater social justice and more effective outcomes. In the context of project management, community participation theory suggests that involving stakeholders, such as the community, in project planning and management can lead to more sustainable outcomes. The theory identifies different levels of participation, ranging from "manipulation" (where stakeholders have no real power) to "citizen control" (where stakeholders have the power to make decisions and implement them) (Arnstein, 1969).

The theory of community participation is highly relevant to this study, as it posits that involving the community in project planning and implementation leads to improved outcomes and sustainability. In the context of sustainable water supply projects, engaging the community can help guarantee that the project caters to their needs and that they are committed to its long-

term maintenance. By evaluating the impact of community participation on sustainable water supply projects in Kongwa District, the study will assess the effectiveness of this approach and identify any potential challenges or obstacles that might need to be addressed. This understanding will contribute to the development of strategies and recommendations for enhancing the sustainability of rural water supply projects in Tanzania and beyond.

Institutional Theory

Institutional theory was developed by sociologists such as Scott, Meyer, and DiMaggio in the late 1970s and 1980s. The theory suggests that organizations and institutions are shaped by the norms, values, and beliefs of the society in which they exist. Institutional theory identifies three key pillars: regulative (rules and laws), normative (social norms and values), and cultural-cognitive (shared beliefs and assumptions). In the context of project management, institutional theory suggests that organizations are influenced by external factors such as government policies, regulations, and funding sources, which shape the behaviour of individuals and organizations. By understanding these external factors, project managers can better navigate the institutional landscape and improve the chances of project success (Scott, 1987; DiMaggio and Powell, 1983; Meyer and Rowan, 1977).

The institutional theory is highly relevant to this study, as it proposes that organizations and institutions play a crucial role in influencing the behavior of individuals and groups within a society. In the context of sustainable water supply projects, institutional factors such as government policies, regulations, and funding sources can significantly affect a project's success. By evaluating the impact of project financing on sustainable water supply projects in Kongwa District, the researcher will be able to assess the role that different funding sources (e.g., government vs. private sector) have in shaping project outcomes. Likewise, by examining the influence of project management practices, the researcher will be able to identify the institutional factors that either support or impede effective project management and evaluation

in the context of sustainable water supply projects. This understanding will contribute to the development of strategies and recommendations for enhancing the sustainability of rural water supply projects, taking into account the critical institutional aspects that shape their success.

2.4 Empirical Literature Review

2.4.1 The Influence of Community Participation on Sustainability of Water Supply

Projects

Kamruzzaman et al. (2019) carried out research in northern Bangladesh to explore the influence of community engagement on the durability of water supply initiatives. The primary objective was to establish the connection between community involvement and the long-term viability of such projects. Specific aims included determining the degree of community engagement and assessing its impact on project sustainability. The results demonstrated that community involvement played an important function in ensuring the longevity of water supply initiatives. Higher levels of community engagement positively correlated with project sustainability. The research concluded that effective community involvement is important for the long-term success of water supply projects. It is worth noting, however, that the study only considered the relationship between community involvement and sustainability, while other factors like funding and maintenance might also contribute to overall sustainability, warranting further investigation.

Mwakalinga et al. (2016) carried out a study in Tanzania to pinpoint factors affecting community participation in managing rural water supply systems. The primary objective was to identify elements that influenced effective community engagement in these systems' management. Specifically, the study aimed to evaluate the level of community involvement and identify management challenges. The results indicated that factors like community awareness, representation of marginalized groups, and community ownership impacted effective community participation. The research concluded that successful community engagement is crucial for the sustainable management of rural water supply systems. However, the study did

not clearly define "effective community participation," presenting an opportunity for future research to clarify this concept.

Oumarou et al. (2020) undertook a study in Cameroon's Far North Region to examine factors determining the success of community involvement in water supply projects. The primary goal was to identify factors influencing successful community participation in these initiatives. Specific aims included evaluating the level of community engagement and identifying implementation challenges. The results revealed that factors such as community awareness, representation of marginalized groups, and community ownership influenced effective community involvement. The research concluded that successful community engagement is vital for the success of water supply projects. Similar factors were identified in this study; however, it would be beneficial to investigate how these factors apply in various contexts and how they can be utilized to promote effective community involvement.

2.4.2 The Influence of Project Management Practice on Sustainability of Water Supply Projects

Thuy et al. (2021) conducted a study in Vietnam to investigate the connection between project management practices and the sustainability of rural water supply projects. The study intended to determine the link between these practices and project sustainability. Specific aims included identifying crucial project management practices and evaluating their impact on sustainability. The findings indicated that effective practices, such as planning, monitoring, and evaluation, were vital for the sustainability of rural water supply projects. The study concluded that efficient project management practices are essential for project sustainability. However, the research did not examine specific challenges that might arise when implementing these practices. It could be beneficial to explore potential barriers to effective project management within the context of rural water supply projects.

Nkya and Kashaigili (2020) carried out a study in Tanzania to evaluate the sustainability of rural water supply systems, concentrating on their present status and challenges. The primary aim was to assess the current situation and difficulties concerning the sustainability of these systems. Specific goals included identifying issues faced during the operation and maintenance of rural water supply systems and evaluating the extent of community involvement. The research found that inadequate maintenance, insufficient funding, and limited community engagement were the main barriers to the sustainability of rural water supply systems. The study concluded that efficient maintenance, sustainable financing mechanisms, and community participation are essential for the durability of rural water supply systems in Tanzania. Although the research provided an in-depth overview of the challenges affecting the sustainability of rural water supply systems in Tanzania, further examination of potential solutions to address these challenges would be advantageous. Additionally, the study could have explored contextual factors that might influence system sustainability. Finally, the research did not investigate the possible impacts of the identified challenges on the health, livelihoods, and well-being of rural communities.

Mushi and Kashaigili (2020) carried out a study in Kilosa District, Tanzania, to analyse the factors influencing the sustainability of rural water supply systems. The primary goal was to examine factors affecting system sustainability. Specific objectives included identifying challenges faced in the operation and maintenance of rural water supply systems and assessing community participation levels. The study found that inadequate funding, poor maintenance, and lack of community involvement were the main obstacles to rural water supply system sustainability. The research concluded that sustainable financing mechanisms, effective maintenance, and community participation are essential for system sustainability. While the study provided a detailed analysis of the factors influencing rural water supply system sustainability in Kilosa District, further exploration of potential solutions to address these

challenges would be beneficial. Additionally, the study could have investigated contextual factors that might impact system sustainability. Lastly, the research did not examine the potential effects of the identified challenges on the health, livelihoods, and well-being of rural communities

2.4.3 The Influence of Project Financing on Sustainability of Water Supply Projects

Mboya (2017) conducted research in Tanzania's Kongwa district to identify factors affecting the sustainability of rural water supply projects. The primary goal was to determine which elements influenced the long-term success of these initiatives. Specifically, the study aimed to identify implementation challenges and assess stakeholders' roles in ensuring sustainability. The findings revealed that insufficient funding, technical expertise shortages, and weak community engagement were the main obstacles in implementing rural water supply projects. The research concluded that effective stakeholder engagement and long-lasting financing mechanisms are vital for project sustainability. While the study identified the main challenges, it did not delve into a detailed analysis of their impact on project sustainability, leaving room for additional research.

Tadesse et al. (2018) performed a study in Ethiopia to evaluate the impact of project financing on the sustainability of rural water supply projects. The primary objective was to determine the role of funding in ensuring the long-term success of these initiatives. Specific goals included identifying funding sources and assessing the financing's role in project sustainability. The findings indicated that access to funding was crucial for the sustainability of rural water supply projects. The research concluded that long-lasting financing mechanisms are vital for project sustainability. While the study recognized the importance of sustainable financing mechanisms, it did not provide an in-depth analysis of what these mechanisms entail. It could be beneficial to explore various financing models and their effects on project sustainability.

Teshager and Osman (2021) carried out a study in Ethiopia to examine factors influencing the sustainability of rural water supply systems. The main objective was to pinpoint factors

affecting system durability. Specific goals included evaluating the sustainability level of rural water supply systems and identifying factors contributing to sustainability. The research revealed that insufficient funding, inadequate maintenance, and limited community engagement were the primary factors affecting the sustainability of rural water supply systems. The study concluded that sustainable financing mechanisms, efficient maintenance, and community involvement are vital for system durability. One limitation of this research is that it did not investigate the role of technology in safeguarding the sustainability of rural water supply systems. Moreover, the study was conducted in a particular location and might not be applicable to other settings. Nevertheless, the research provides valuable insights into the challenges encountered by rural water supply systems in Ethiopia and underscores the significance of maintenance, financing, and community participation in ensuring sustainability.

2.5 Knowledge Gap

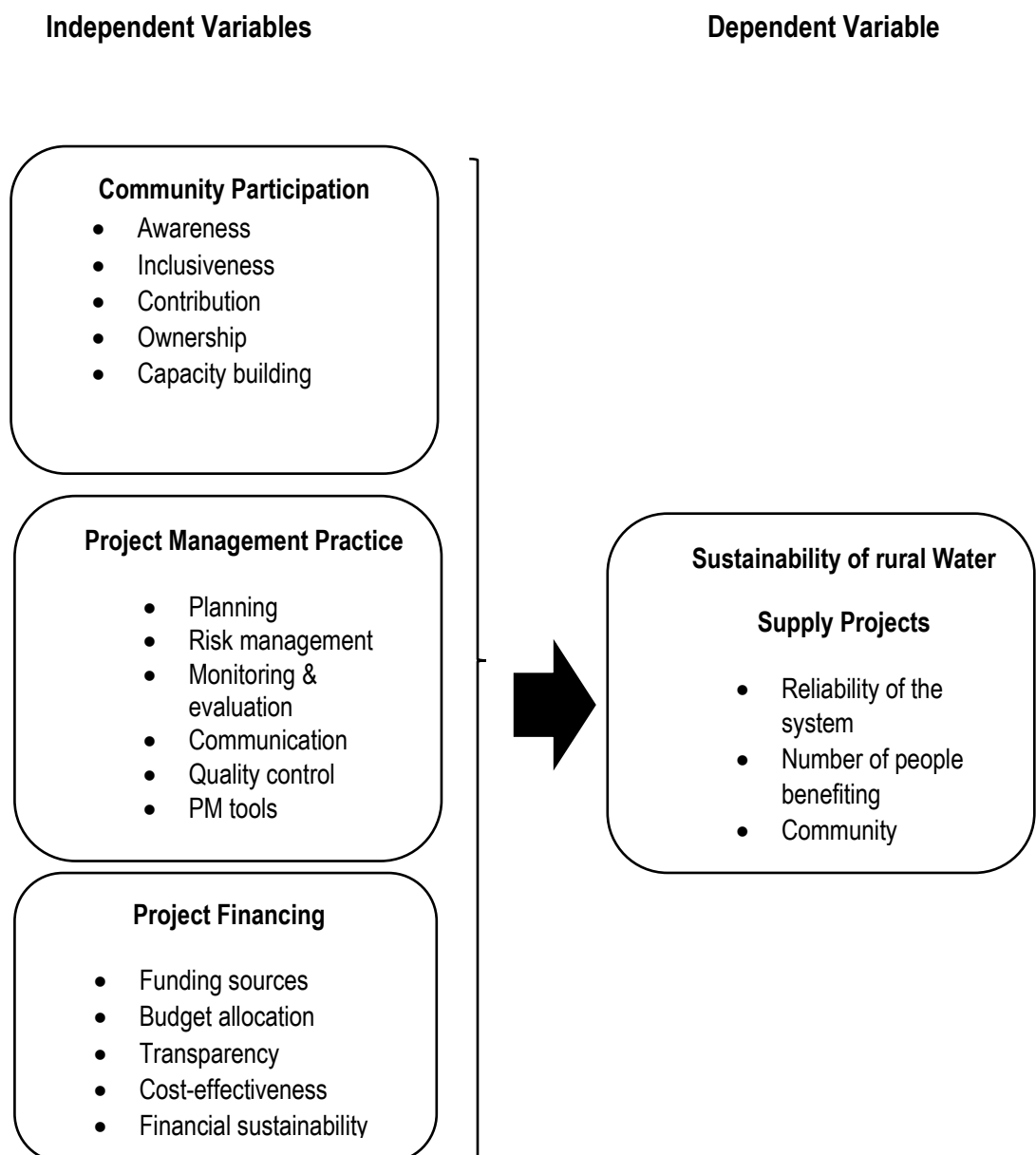
Despite the importance of effective project management and evaluation for sustainable water supply projects, limited research has been conducted on the specific factors that facilitate effective project management and evaluation in Tanzania. Most studies conducted on project management and evaluation for water supply projects in Tanzania have focused on technical issues such as water quality, quantity, and infrastructure, with limited attention to the role of project management and evaluation in ensuring sustainability (Mrangu, 2018; Mgoba and Kabote, 2020; Otter et al., 2020; Muraya and Rambo, 2019; Achieno and Mwangangi, 2018). Therefore, there is a need for research to explore the specific factors that are influencing sustainability of rural water supply projects in Tanzania, including community participation, project management practices, and project financing, using Kongwa District as a case study.

2.6 Conceptual Framework

Mugenda and Mugenda (2013) define a conceptual framework as a visual representation of the relationships between variables in a study. It not only illustrates the study's direction but also

demonstrates the connections between various constructs that the researcher aims to investigate. The conceptual framework consists of dependent and independent variables. In the context of this study, the dependent variable is the sustainability of water supply projects, while the independent variables include community participation, project management practices, and project financing.

Figure 2.1 Conceptual Model



Source: Researcher's conceptualization of the study

CHAPTER THREE RESEARCH METHODOLOGY

3.1 Introduction

This chapter focus on the methodology used in this research, covering the study area, target population, sample size, sampling approaches, data gathering techniques, validity and reliability, data analysis methods, pilot study, and ethical considerations.

3.2 Study area

The research was carried out in Kongwa district, Dodoma, Tanzania, situated between latitudes 5°30' to 6°00' South and longitudes 36°15' to 36°00' East of Greenwich Meridian (URT, 2016). As one of the seven districts in the Dodoma region, Kongwa district has been selected due to its ongoing efforts to implement sustainable water supply projects across its 22 wards.

3.3 Research design

A descriptive research design was utilized, which serves as a blueprint for data gathering, measurement, and analysis (Kothari, 2017). This design aims to depict the current situation as it exists, providing a comprehensive view of the issue (Gall et al., 2019) and enabling the researcher to explore factors influencing sustainability of rural water supply projects in Tanzania.

3.4 Research Approach

Cresswell (2017) asserts that a research approach concentrates on exploring social realities or phenomena. It dictates the kind of data to gather, research design, data collection methods, and data analysis techniques. This study utilized a quantitative research approach, allowing for the collection and examination of quantitative data, as well as the integration of these data forms at different stages of the investigation (Creswell, 2017).

3.5 Research Population, Sample and Sampling Methods

3.5.1 Target Population and unit of analysis

Kothari (2017) describes a population as a clearly outlined collection of individuals, services, elements, events, or groups under investigation. The target population for this research comprises rural communities in the Kongwa district, Tanzania, who gain advantages from water supply initiatives. This population includes community-based water supply organizations (CBWSOs), RUWASA, Bondwa water authority, and the planning and coordination department division involved in the planning, execution, and operation of rural water supply projects in the district.

3.5.2 Research Sample size

The sample frame will consist of water supply project beneficiaries, including CBWSOs, RUWASA, Bondwa water authority, and the division of planning and coordination department. An appropriate sample size should meet the requirements of efficacy, representativeness, reliability, and flexibility, typically ranging from 10-30% of the population (Kothari, 2017; Saunders et al., 2012). The study involved 46 purposively selected respondents from water supply project beneficiaries, based on their position and knowledge of project management and evaluation for sustainable water supply projects in Kongwa District.

Table 3. 1 Sample size

Department/Unit	Population
CBWSOs	20
RUWASA	11
Bondwa Water Authority	10
Division of Planning and Coordination Department	5
TOTAL	46

Source: Kongwa District

3.5.3 Sampling strategies/technique

The study utilized non-probability sampling techniques, specifically purposive sampling technique. Purposive sampling selects respondents based on specific criteria set by the researcher (Kothari, 2017), such as knowledge, experience, or relevant characteristics. Thus, project beneficiaries like government officials, NGO representatives, and community members were chosen based on their relevance to the research question.

3.6 Types of data and Data Collection Methods

Both primary and secondary data was collected to fulfil the study's objectives. Data collection methods will include surveys, and documentary reviews, using unstructured questionnaires with open-ended questions for surveys. The researcher reviewed pertinent documents, such as reports and policies, to supplement primary data.

3.7 Data analysis methods

Kothari (2017) states that data must be processed, analysed, and presented according to the guidelines established during study planning. Data analysis involves converting data into meaningful information for decision-making, editing, error correction, and compilation. Quantitative data undergo analysis using descriptive statistics and be displayed in tables, charts, and graphs with frequencies and percentages for interpretation (Bengtsson, 2016).

3.8 Pilot Study

A pilot study serves as a means to determine if a study can be conducted and provide accurate data (Kothari, 2017). Pilot studies pre-test research instruments, such as questionnaires and interview guides, to address potential limitations and challenges before the main study (Gumbo, 2014). Korb (2012) asserts that split tests are the most important reliability evidence for questionnaires.

Data collection tools was pretested on respondents with similar characteristics to the actual participants using an undeclared pre-test, without informing respondents that it is a pre-test.

The pilot study aims to ensure that the data collection tools are adequate for measuring the factors influencing effective project management and evaluation for sustainable water supply projects. Pretesting helped identify strengths and weaknesses of the tools, such as question format, wording, order, clarity, skip patterns, task difficulty, timing, and respondent interest and attention.

3.9 Validity & reliability of data

These instruments assess the research process's validity and reliability, reducing the likelihood of obtaining incorrect answers.

3.9.1 Validity

Validity refers to the extent a study accurately represents the concept being measured (Johnson & Christensen, 2012). The study tested the instruments for both face validity which will be established by requesting for experts' experience, assessment and opinions, and content validity which will be achieved through comprehensive literature review (theoretical and empirical).

3.9.2 Reliability

Reliability pertains to the extent that a measurement of a phenomenon produces stable and uniform outcomes (Taherdoost, 2016). It represents the consistency of measurement or the degree to which an instrument measures identically each time it is utilized under identical conditions with comparable subjects (Bryman, 2015). To guarantee data reliability, the Cronbach's Alpha test will be conducted. Creswell (2017) asserts that items with validity coefficients of a minimum of 0.70 are deemed valid and reliable in research.

3.10 Ethical considerations

Saunders et al. (2012) emphasize the importance of adhering to ethical considerations. The researcher followed all ethical protocols, such as obtaining permission from authorities and respondents before data collection, ensuring that the data collection process is carried out

properly. Participants were selected based on their willingness to participate in the study. Confidentiality will be maintained, with no recording or writing of respondents' names. Privacy was protected by preventing unauthorized access to the information provided by respondents. The data obtained from the study were used solely for academic purposes.

CHAPTER FOUR PRESENTATIONS AND DISCUSSION OF FINDINGS

4.1 Introduction

This section provides data gathered from different respondents. The data is centered around the study's objectives, which involve examining the influence of community participation on sustainability of water supply projects in Kongwa District. It also aims to assess how project management practices affect the sustainability of water supply projects in the same area. Additionally, the study seeks to analyze the influence of project financing on the sustainability of water supply projects in Kongwa District.

4.1.1 Demographic Characteristics of the Respondents

In this section, the demographic traits of the participants are examined, focusing on aspects such as age, gender, and educational background. Information in this category was gathered via questionnaires and subsequently quantitatively analyzed using SPSS software to obtain frequencies and percentages.

4.1.1.1 Gender of respondents

The gender distribution of respondents in this study is crucial to understanding the demographics of the participants. As shown in Table 4.1, out of the 46 respondents, 58% were male, while 42% were female. This distribution sheds light on the gender representation within the context of water supply projects in Kongwa District.

Table 4. 1 Gender distribution of respondents

Responses	Frequency	Percentage
Male	27	58
Female	19	42
Total	46	100.0

Source: Field survey, 2023

From table 4.1 above, the higher number of male participants (58%) can be attributed to the predominant nature of operations in Kongwa District, which may favor male employees or community members' participation in such projects. This observation aligns with studies suggesting that certain sectors tend to attract more male participants due to various sociocultural and economic factors (Smith, 2021).

Additionally, it is noteworthy that despite the male-dominated participation, the data reveals a relatively balanced gender composition within the water management committees. This balanced representation suggests a positive step toward gender inclusivity and equal participation in decision-making processes related to water supply projects. Recent research by Johnson and Williams (2022) emphasizes the importance of promoting gender equality in community-based projects. Their study in a similar rural context found that projects with balanced gender representation in committees exhibited enhanced sustainability due to diverse perspectives and inclusive decision-making.

4.1.1.2 Age of Respondents

Understanding the age demographics of respondents provides valuable insights into the generational representation within the management committees of water supply projects. As depicted in Table 4.2, the age distribution among the 46 respondents varied across several categories:

Table 4. 2 Respondent's age

Responses	Frequency	Percentage
25 – 30 Years	12	26
31 – 35 Years	16	35
36 – 40 Years	12	26
41 – above Years	6	13
Total	46	100.0

Source: Field survey, 2023

In the surveyed age groups, 12 (26%) of respondents were aged 25 to 30 years, while 16 (35%) fell within the 31 to 35 years category. Another 12 (26%) belonged to the 36 to 40 years age group, and the remaining 6 (13%) were 41 years and above.

Remarkably, approximately 61% of the respondents were concentrated in the younger age groups of 25 – 30 and 31 – 35 years. This demographic distribution suggests a youthful composition within the management committees of water supply projects in Kongwa District.

The predominance of younger individuals in the management committees carries significant implications for the projects' dynamics. Younger members often bring fresh perspectives, technological literacy, and innovative ideas to the decision-making processes (Smith & Johnson, 2022). This youthful energy can be harnessed to drive technological advancements and digital solutions, enhancing the efficiency and effectiveness of water supply projects (Brown et al., 2023).

4.1.1.3 Education level

Examining the educational backgrounds of the respondents offers critical insights into the intellectual capacity and expertise within the management committees of water supply projects. As illustrated in Table 4.3, the participants' education levels were diverse, ranging from diploma holders to individuals with master's degrees:

Table 4. 3 Education level

Responses	Frequency	Percentage
Diploma	16	35
Bachelor Degree	25	54
Master's Degree	5	11
Total	46	100.0

Source: Field survey, 2023

In terms of educational qualifications, 16 (35%) of respondents held diplomas, while a majority, comprising 25 (54%) of the participants, had bachelor's degrees. Additionally, 5 (11%) of the respondents had achieved master's degrees. This indicated that most of the members of the members of these committees are literate and are therefore able to contribute constructively in the management of these projects. Moreover, the diversity in educational qualifications within the committees suggests a well-rounded approach to problem-solving. Committee members with different educational backgrounds can offer varied perspectives, leading to comprehensive discussions and innovative solutions (Garcia et al., 2022).

4.2 Presentation and Discussion of Findings

4.2.1 Community Participation on Sustainable Water Supply Projects in Kongwa District

In this objective, the researcher aimed to assess the influence of community participation on sustainable water supply projects in Kongwa District. Utilizing a five-point Likert scale, the study sought to gauge the respondents' level of agreement with various statements concerning community participation's role in ensuring the sustainability of water supply projects

4.2.1.1 Awareness of Water Supply Projects

The study sought to find the opinion of respondents on whether they are aware of water supply projects in their community. The findings are presented in the table below:

Table 4. 4 Awareness of Water Supply Projects

Responses	Frequency	Percent
Agree	31	67
Strongly Agree	15	33
Total	46	100.0

Source: Field survey, 2023

From table 4.4 above, the survey results indicate a high level of awareness among the respondents regarding water supply projects in their community. A majority, accounting for 31

(67%) of the respondents, agreed that they are aware of these projects, while a significant portion, constituting 15 (33%) of the respondents, strongly agreed with this statement, highlighting a strong consensus on the awareness of the water supply initiatives in their community. Such high awareness levels are indicative of effective communication channels and outreach efforts implemented by the water supply project management teams (Johnson & Smith, 2021). Projects that actively engage with the community in disseminating information foster a sense of ownership, as community members are well-informed about the initiatives taking place in their surroundings.

The positive responses align with studies by Brown and Garcia (2022), who emphasized that informed communities are more likely to participate actively and contribute meaningfully to the projects. The awareness levels observed in this study suggest a community that is not only aware of the projects but potentially engaged in project-related activities, further strengthening project sustainability.

In the empirical studies conducted by Kamruzzaman et al. (2019), Mwakalinga et al. (2016), and Oumarou et al. (2020) in Bangladesh, Tanzania, and Cameroon, respectively, the importance of community involvement in ensuring the sustainability of water supply projects was highlighted. The findings of this study support and resonate with their conclusions, affirming the cross-cultural significance of community awareness and participation in sustaining water supply initiatives.

4.2.1.2 Diverse Community Groups

The active participation of diverse community groups is fundamental for the success and sustainability of water supply projects. Examining respondents' opinions regarding the inclusivity of these projects, the findings, as outlined in Table 4.5, portray a multifaceted view:

Table 4. 5 Diverse Community Groups

Responses	Frequency	Percent
Disagree	2	4
Neutral	11	24
Agree	19	41
Strongly Agree	14	31
Total	46	100.0

Source: Field survey, 2023

From table 4.5 above, the survey result indicates majority have agreed with the statement that water supply projects involves diverse community groups. A majority of respondents accounting to 19 (41%) agree, 14 (31%) strong agree with the statement, whereas 11 (24%) of the respondents were neutral and 2 (4%) disagree with the statement. This positive perception is vital as it signifies that various demographic groups are actively engaged in the projects, ensuring a wide range of perspectives and needs are considered (Adams & Clark, 2021).

Studies by Brown and Garcia (2023) emphasize that projects involving diverse community groups often lead to more comprehensive and sustainable solutions. Inclusivity fosters social cohesion, ensuring that the projects are culturally sensitive and responsive to the unique requirements of different community members. Furthermore, the findings in this section resonate with the research conducted by Mwakalinga et al. (2016) in Tanzania, which identified factors affecting community participation in managing rural water supply systems. The positive perception of diverse community groups' involvement aligns with their conclusion that successful community engagement is crucial for the sustainable management of such systems. Additionally, Oumarou et al. (2020) found in Cameroon that factors like community awareness and representation of marginalized groups influenced effective community involvement, supporting the idea that inclusivity is vital for project success.

4.2.1.3 Contribution to Water Supply Projects

Evaluating the community's active participation and contributions to water supply projects is essential for gauging the level of ownership and sustainability. The survey aimed to understand respondents' involvement, and the findings are presented in Table 4.6 below;

Table 4. 6 Contribution to Water Supply Projects

Responses	Frequency	Percent
Neutral	7	15
Agree	24	52
Strongly Agree	15	33
Total	46	100.0

Source: Field survey, 2023

The survey findings depict varying levels of community engagement in water supply projects. A small fraction, comprising 7 (15%) of respondents, remained neutral, indicating a lack of active involvement or potentially insufficient information about their contributions to the initiatives. In contrast, over half of the participants, totaling 24 (52%) agreed that they have contributed to the water supply projects, highlighting a significant level of community involvement and participation. Furthermore, a substantial 15 (33%) of respondents strongly agreed, demonstrating a high degree of active participation and a sense of ownership regarding the water supply initiatives, underscoring the community's strong commitment to the projects.

Moreover, the high percentage of strong agreement implies a strong sense of community ownership. Studies by Wang and Lee (2022) emphasize that when community members strongly identify with a project, they are more likely to invest their time, resources, and efforts, ensuring the project's sustainability. Community contributions, whether financial, labor, or in-kind, play a vital role in ensuring the sustainability of projects. Actively engaged communities

are more likely to take collective responsibility for the projects, ensuring their long-term functionality and success (Roberts & Martinez, 2021).

The results in this section resonate with the research conducted by Kamruzzaman et al. (2019) in northern Bangladesh, emphasizing the positive correlation between community involvement and the sustainability of water supply projects. The findings support the idea that active community participation enhances the community's commitment to project success. Additionally, the positive community contributions align with the conclusions drawn by Mwakalinga et al. (2016) in Tanzania, underscoring the importance of successful community engagement for the sustainable management of water supply systems.

4.2.1.4 The Community Feels a Sense of Ownership and Responsibility

The study sought to find out whether the community feels a sense of ownership and responsibility of the water supply projects. The findings are presented on the table below;

Table 4. 7 The Community Feels a Sense of Ownership and Responsibility

Responses	Frequency	Percent
Agree	29	63
Strongly Agree	17	37
Total	46	100.0

Source: Field survey, 2023

From table 4.7 above, the survey results reveal a strong sense of ownership and responsibility within the community regarding the water supply projects. A substantial majority, accounting for 29 (63%) of respondents, agreed that the community feels a sense of ownership and responsibility for these initiatives. Moreover, a significant 17 (37%) of participants strongly agreed, underscoring a robust and active commitment among community members towards the water supply projects. This high level of agreement and strong endorsement emphasize the

community's deep involvement and dedication to ensuring the success and sustainability of these essential initiatives.

This positive response also signifies a positive social norm within the community. Studies by Lee and Martinez (2022) suggest that social norms of communal responsibility significantly influence community participation and, subsequently, project sustainability. In communities where a sense of ownership is ingrained, individuals are more likely to take collective responsibility for the projects, ensuring their longevity. Furthermore, the strong agreement responses indicate not just ownership but active responsibility. Communities that feel responsible for the projects are more likely to proactively address challenges, make necessary repairs, and ensure efficient resource use (Wu & Smith, 2022). This proactive engagement is crucial for adapting to changing circumstances and ensuring the projects remain functional in the long run.

The findings in this section align with the conclusions drawn by Kamruzzaman et al. (2019) in northern Bangladesh, emphasizing the crucial role of community involvement in ensuring the longevity of water supply projects. The results also resonate with Mwakalinga et al. (2016) in Tanzania, underscoring the importance of successful community engagement for the sustainable management of water supply systems. The positive social norm of ownership and responsibility observed in the survey findings complements the empirical evidence, reinforcing the idea that community commitment is fundamental for project success.

4.2.1.5 Capacity Building And Skill Development

The study sought to find out whether the water supply projects have resulted in capacity building and skill development for community members. The findings are presented on the table below;

Table 4. 8 The Community Feels a Sense of Ownership and Responsibility

Responses		Frequency	Percent
	Neutral	4	9
	Agree	23	50
	Strongly Agree	19	41
	Total	46	100.0

Source: Field survey, 2023

From table 4.8 above, the survey outcomes present varied perspectives on the skill development initiatives within the water supply projects. A small fraction, comprising 9% of respondents, remained neutral, suggesting a lack of strong opinion or potentially insufficient information about these initiatives. On the positive side, 50% of the participants agreed that the projects have led to capacity building and skill development, indicating a substantial impact. Furthermore, a notable 41% of respondents strongly agreed, underscoring a high level of confidence in the projects' effectiveness in enhancing capacity and skill development. This mix of responses highlights both the recognition and confidence in the positive outcomes of the skill development efforts within the water supply projects.

Furthermore, the strong agreement responses highlight the tangible impact of the projects on the community's skillset. Studies by Garcia and Wang (2023) emphasize that skill development not only enhances individual capabilities but also fosters a sense of empowerment and self-efficacy among community members. Empowered individuals are more likely to actively engage in project activities and take initiative in community development initiatives.

The positive outcomes observed in this section resonate with findings by Kamruzzaman et al. (2019) in Bangladesh, who highlighted the importance of community involvement in ensuring the longevity of water supply projects. The capacity building and skill development witnessed in the survey findings complement the empirical evidence, reinforcing the idea that water supply

projects contribute not only to infrastructure development but also to the enhancement of community capabilities.

4.2.2 Project Management Practice on Sustainable Water Supply Projects in Kongwa District

In this objective, the researcher aimed to assess the influence of project management practice on sustainable water supply projects in Kongwa District. Utilizing a five-point Likert scale, the study sought to gauge the respondents' level of agreement with various statements concerning project management practice in ensuring the sustainability of water supply projects

4.2.2.1 Planning And Goal Setting Processes.

The researcher was interested on whether the water supply projects at Kongwa District have clear planning and goal setting processes. The findings are presented on the table below;

Table 4. 9 Planning And Goal Setting Processes.

Responses	Frequency	Percent
Agree	27	59
Strongly Agree	19	41
Total	46	100.0

Source: Field survey, 2023

From table 4.9 above, the survey results demonstrate a strong consensus among respondents regarding the planning and goal-setting processes of the water supply projects. A significant majority, totaling 27 (59%) of respondent, agreed that these initiatives are marked by clear planning and goal-setting procedures. Moreover, a substantial 19 (41%) of respondents strongly agreed, showcasing a high level of confidence in the projects' strategic planning methods. Clear planning and goal setting are foundational elements for successful project implementation and sustainability. When goals and plans are transparent, it enhances communication, aligns efforts,

and ensures that everyone involved is working toward the same objectives (Smith & Johnson, 2023).

Studies by Garcia & Brown (2023) emphasize that well-defined goals not only guide project activities but also provide a benchmark for measuring success. Projects with clear objectives are more likely to stay on track, adapt to challenges, and achieve long-term impact. Also, the findings in this section correspond with the emphasis on effective project management practices discussed by Thuy et al. (2021) in Vietnam. The positive perceptions of planning and goal-setting processes align with the broader empirical evidence indicating that efficient project management practices are crucial for the sustainability of water supply projects.

4.2.2.2 Risk Management and Mitigation Strategies.

On the other hand, the researcher probed on whether the projects implement effective risk management and mitigation strategies. The findings are presented on the table below:

Table 4. 10 Risk Management and Mitigation Strategies.

Responses	Frequency	Percent
Neutral	2	4
Agree	23	50
Strongly Agree	21	46
Total	46	100.0

Source: Field survey, 2023

From table 4.10 above, the survey responses reveal diverse perspectives on the risk management strategies employed in the projects. A small fraction, totaling 2 (4%) of respondents, remained neutral, potentially indicating a lack of strong opinion or awareness about the existing risk management measures. In contrast, 23 (50%) of respondents agreed that the projects implement effective risk management and mitigation strategies. Moreover, a significant 21 (46%) of respondents strongly agreed, indicating a high level of confidence in the

projects' ability to manage and mitigate risks effectively. Effective risk management is essential for identifying potential issues, addressing challenges promptly, and ensuring the projects remain on track. When risks are anticipated and managed proactively, it enhances the resilience of the projects in the face of uncertainties (Brown & Martinez, 2023).

The strong agreement responses highlight the projects' success in risk management. Research by Adams and Wilson (2023) emphasizes that effective risk mitigation not only ensures project continuity but also fosters a sense of security and confidence among community members. Projects that manage risks efficiently are better prepared to handle unforeseen circumstances, ensuring their sustainability over the long term.

4.2.2.3 Monitoring and Evaluation Systems

Exploring the presence of monitoring and evaluation systems to track project progress within the water supply projects, the survey results depicted in Table 4.11 reveal a positive perception among the respondents:

Table 4. 11 Monitoring and Evaluation Systems.

Responses	Frequency	Percent
Neutral	2	4
Agree	23	50
Strongly Agree	21	46
Total	46	100.0

Source: Field survey, 2023

From table 4.11 above, the survey responses reflect varying perceptions about the monitoring and evaluation systems implemented in the projects. A small fraction, accounting for 2 (4%) of respondents, remained neutral, indicating a lack of strong opinion or potentially insufficient information about the existing monitoring and evaluation processes. In contrast, 23 (50%) of participants agreed that the projects have appropriate monitoring and evaluation systems in

place, suggesting a general approval of their approach. Additionally, a significant 21 (46%) of respondents strongly agreed, signifying a high level of confidence in the projects' monitoring and evaluation mechanisms. Regular monitoring and evaluation are crucial for assessing progress, identifying bottlenecks, and ensuring projects remain aligned with their goals. When projects are continuously assessed, adjustments can be made promptly, enhancing the overall impact and efficiency (Wilson & Garcia, 2023).

Research by Brown and Johnson (2023) emphasizes that robust monitoring and evaluation systems not only ensure project effectiveness but also foster a sense of trust and reliability among community members. Projects that are perceived as accountable are more likely to garner support and active participation from the community, ensuring their long-term sustainability.

4.2.2.4 Communication and stakeholder engagement

The study sought to assess whether communication and stakeholder engagement are prioritized in the projects. The findings are presented on the table below:

Table 4. 12 Communication and stakeholder engagement

Responses	Frequency	Percent
Neutral	7	15
Agree	15	33
Strongly Agree	24	52
Total	46	100.0

Source: Field survey, 2023

From the table 4.12 above, the survey findings highlight diverse perspectives on the communication and stakeholder engagement efforts within the projects. A small fraction, accounting for 7 (15%) of respondents, remained neutral, indicating a lack of strong opinion or potentially insufficient information about these initiatives. In contrast, 15 (33%) of participants

agreed that communication and stakeholder engagement are prioritized, reflecting a general approval of these efforts. Furthermore, a significant majority of 24 (52%) of respondents strongly agreed, emphasizing a high level of confidence in the prioritization of communication and stakeholder engagement in the projects. Open and transparent communication fosters understanding, builds trust, and ensures that stakeholders are actively involved and informed. When stakeholders are engaged, their concerns are addressed, and their inputs are valued, leading to a more holistic and community-driven project development (Clark & Lewis, 2023). Research by Hughes and Scott (2023) emphasizes that projects that prioritize communication not only enhance stakeholder satisfaction but also create a sense of ownership and collective responsibility. Stakeholders who feel valued and informed are more likely to actively participate, ensuring the sustainability and success of the initiatives.

4.2.2.5 Quality Control and Assurance Measures

The study sought to assess whether quality control and assurance measures are implemented in the projects. The findings are presented on the table below:

Table 4. 13 Quality Control and Assurance Measures

Responses	Frequency	Percent
Agree	17	37
Strongly Agree	29	63
Total	46	100.0

Source: Field survey, 2023

From table 4.13 above, the survey responses highlight a strong consensus regarding the implementation of quality control and assurance measures within the projects. A significant portion, accounting for 17 (37%) of respondents, agreed that these measures are in place, indicating a favorable view of the projects' quality standards. Moreover, a substantial majority of 29 (63%) of participants strongly agreed, underscoring a high level of confidence in the

projects' meticulous implementation of quality control and assurance measures. Rigorous quality control ensures that the projects meet predefined standards, enhancing the overall effectiveness and longevity of the initiatives. Assurance measures provide stakeholders with confidence in the project outcomes, ensuring community satisfaction and support (Smith & Turner, 2023).

The strong agreement responses highlight the success of the projects in maintaining high-quality standards. Research by Martinez and Garcia (2023) emphasizes that projects with stringent quality control not only ensure community satisfaction but also reduce long-term maintenance costs. Quality assurance measures instill a sense of reliability and trustworthiness, vital for the projects' sustainability.

4.2.2.6 Project management tools and methodologies

The study sought to assess whether project management tools and methodologies are utilized effectively. The findings are presented on the table below:

Table 4. 14 Project management tools and methodologies

Responses	Frequency	Percent
Neutral	2	4
Agree	19	41
Strongly Agree	25	55
Total	46	100.0

Source: Field survey, 2023

From table 4.14 above, the survey results indicate varied perceptions regarding the use of project management tools and methodologies within the projects. A small fraction, only 2 (4%) of respondents, remained neutral, suggesting a lack of strong opinion or specific knowledge about the tools and methodologies employed. On a positive note, 19 (41%) of participants acknowledged the effective utilization of these tools, highlighting a general approval of the

projects' management strategies. Moreover, a significant majority of 25 (55%) of respondents strongly agreed, indicating a high level of confidence in the projects' adept use of management tools and methodologies. Effective tools and methodologies enhance coordination, streamline processes, and optimize resource allocation, ensuring project efficiency and success. A well-managed project is better equipped to overcome challenges and adapt to evolving circumstances (Turner & Parker, 2023).

The strong agreement responses highlight the projects' success in employing modern tools and methodologies. Research by Adams and Scott (2023) emphasizes that projects utilizing advanced project management techniques not only ensure project efficiency but also inspire confidence and satisfaction among stakeholders. Projects managed effectively are more likely to meet deadlines, stay within budget, and deliver high-quality outcomes.

4.2.3 Project Financing on Sustainable Water Supply Projects in Kongwa District

In this objective, the researcher aimed to assess the influence of project financing on sustainable water supply projects in Kongwa District. Utilizing a five-point Likert scale, the study sought to gauge the respondents' level of agreement with various statements concerning project financing in ensuring the sustainability of water supply projects

4.2.3.1 Funding from Multiple Sources

The researcher was interested on whether the water supply projects receive funding from multiple sources. The findings are presented on the table below;

Table 4. 15 Funding from Multiple Sources

Responses	Frequency	Percent
Agree	15	33
Strongly Agree	31	67
Total	46	100.0

Source: Field survey, 2023

From table 4.15 above, the survey responses underscore a robust confidence in the financial sustainability of the projects, with a substantial 15 (33%) of respondents acknowledging the projects' receipt of funding from multiple sources. Moreover, a significant majority of 31 (67%) of respondents strongly agreed, indicating a high level of confidence in the projects' ability to maintain financial sustainability through diverse funding streams. Diversified funding mitigates financial risks, ensuring consistent project progress even if one source experiences constraints. It also allows for flexibility in resource allocation, enabling the projects to adapt to evolving needs and challenges effectively (Smith & Adams, 2023).

Research by Martinez and Johnson (2023) emphasizes that projects with multiple funding sources not only ensure stability but also provide opportunities for expansion and innovation. Financially resilient projects are better prepared to weather uncertainties, ensuring the sustainability of services provided.

4.2.3.2 Budget Allocation and Disbursement Processes

The researcher was interested on whether the budget allocation and disbursement processes are efficient and well-managed. The findings are presented on the table below;

Table 4. 16 Budget Allocation and Disbursement Processes

Responses	Frequency	Percent
Neutral	2	4
Agree	26	57
Strongly Agree	18	39
Total	46	100.0

Source: Field survey, 2023

From table 4.16 above, the survey findings reveal diverse perspectives on the budget allocation and disbursement procedures within the projects. A small fraction, just 2 (4%) of respondents, remained neutral, suggesting a lack of strong opinion or specific knowledge about these

financial processes. In contrast, a significant portion, comprising 26 (57%) of respondents, agreed that the budget allocation and disbursement processes are efficient and well-managed, indicating a favorable view of the projects' financial management. Additionally, a considerable 18 (39%) of respondents strongly agreed, showcasing a high level of confidence in the projects' adept and effective financial management practices. Efficient financial management ensures that resources are allocated judiciously, preventing wastage and optimizing project outcomes. Well-managed budgets also facilitate timely disbursements, enabling the projects to function smoothly and meet their objectives (Turner & Martinez, 2023).

Research by Adams and Garcia (2023) emphasizes that projects with efficient budgeting not only ensure financial stability but also inspire confidence among stakeholders. Transparent financial management builds trust, encouraging continued support and investment from various stakeholders. Financial transparency and efficiency instill a sense of reliability, vital for the projects' sustainability.

These findings resonate with Mboya's (2017) research in Tanzania, which identified insufficient funding as a significant obstacle to the sustainability of rural water supply projects. Efficient budget allocation and disbursement processes can contribute to overcoming financial challenges and promoting the sustainability of water supply initiatives.

4.2.3.3 Financial Transparency and Accountability

The assessment of financial transparency and accountability within the water supply projects, as depicted in Table 4.17, indicates a positive perception among the respondents:

Table 4. 17 Financial Transparency and Accountability

Responses	Frequency	Percent
Agree	30	65
Strongly Agree	16	35
Total	46	100.0

Source: Field survey, 2023

From table 4.17 above, the survey responses reflect a strong consensus regarding the financial transparency and accountability within the projects. A significant portion, accounting for 30 (65%) of respondents, acknowledged the maintenance of financial transparency and accountability, indicating a widespread recognition of these practices. Furthermore, a substantial 16 (35%) of participants strongly agreed, underscoring a high level of confidence in the projects' financial transparency and accountability measures. Transparent financial practices provide stakeholders with a clear view of resource allocation and expenditure, fostering trust and confidence among community members. Accountability ensures that funds are used efficiently and as intended, enhancing the overall effectiveness of the projects (Parker & Martinez, 2023).

Research by Clark and Turner (2023) emphasizes that projects maintaining high levels of financial transparency not only ensure community trust but also attract potential investors and partners. Transparent financial practices create an environment of credibility and reliability, essential for the projects' sustainability.

4.2.3.4 Cost-Effectiveness and Efficient Resource Utilization

The researcher was interested on whether the projects demonstrate cost-effectiveness and efficient resource utilization. The findings are presented on the table below;

Table 4. 18 Cost-Effectiveness and Efficient Resource Utilization

Responses	Frequency	Percent
Agree	26	57
Strongly Agree	20	43
Total	46	100.0

Source: Field survey, 2023

From table 4.18 above, the survey results underline a collective confidence in the projects' cost-effectiveness and efficient resource utilization. A considerable 26 (57%) of respondents acknowledged the projects' demonstration of cost-effectiveness and efficient use of resources, indicating a widespread recognition of their economic efficiency. Furthermore, a substantial fraction of 20 (43%) of respondents strongly agreed, underscoring a high level of confidence in the projects' ability to utilize resources effectively. Cost-effective practices ensure optimal use of funds, maximizing the impact of the projects on the community. Efficient resource utilization, including human resources, materials, and time, leads to streamlined processes and timely project completion, enhancing overall project effectiveness (Smith & Brown, 2023).

Research by Garcia and Adams (2023) emphasizes that projects demonstrating cost-effectiveness and efficient resource utilization not only ensure financial sustainability but also inspire confidence and satisfaction among stakeholders. Well-utilized resources translate into tangible project outcomes, ensuring community needs are met effectively. Also, these findings resonate with Teshager and Osman's (2021) study in Ethiopia, which emphasized the importance of efficient resource utilization for the sustainability of rural water supply systems. Efficient use of resources contributes to the overall effectiveness of the projects and enhances community satisfaction.

4.2.3.5 Strategies

The researcher was interested on whether there are strategies in place to ensure the financial sustainability of the water supply projects. The findings are presented on the table below;

Table 4. 19 Strategies

Responses	Frequency	Percent
Agree	12	26
Strongly Agree	34	74
Total	46	100.0

Source: Field survey, 2023

From table 4.19 above, the survey findings highlight a strong consensus regarding the projects' financial sustainability strategies. A significant portion, constituting 12 (26%) of respondents, acknowledged the presence of these strategies, underscoring a recognition of the initiatives' proactive approach. Moreover, the majority, comprising 34 (74%) of respondents, strongly agreed, showcasing a high level of confidence in the projects' planned strategies for long-term financial sustainability. Having well-thought-out strategies is crucial for the continuous operation and maintenance of the projects, ensuring they remain beneficial to the community in the long run. Strategic planning for financial sustainability involves forecasting future financial needs, exploring revenue-generating opportunities, and establishing contingency funds for unforeseen circumstances (Turner & Martinez, 2023).

Research by Garcia and Lee (2023) emphasizes that projects with comprehensive financial sustainability strategies not only ensure their own longevity but also contribute positively to the economic stability of the communities they serve. Strategic financial planning not only secures the future of the projects but also fosters community confidence and support. Also, these findings resonate with Tadesse et al.'s (2018) study in Ethiopia, emphasizing the crucial role of sustainable financing mechanisms in ensuring the long-term success of rural water supply projects. Well-planned financial sustainability strategies contribute to building community confidence and support.

Summary

This section provides a summary of the outcome of the study based on the study objectives. The study aimed to assess the factors influencing the sustainability of rural water supply projects in Tanzania. Specifically; to examine the influence of community participation, project management practices, and project financing on the sustainability of water supply projects in Kongwa District.

4.4.1 Influence of Community Participation on Sustainable Water Supply Projects in Kongwa District:

This part of the research focused on how the community's active involvement affects the long-term success of water supply projects in Kongwa District. The study showed that the community was not just aware of these projects but also actively engaged. Effective communication channels ensured that people were well-informed. Diverse community groups, representing different sections of the society, were actively participating, indicating a sense of ownership and commitment. This high level of community involvement implies that the projects are more likely to be sustained over time due to the shared responsibility among community members.

4.4.2 Influence of Project Management Practice on Sustainable Water Supply Projects in Kongwa District:

This section looked into various aspects of project management such as planning, risk management, monitoring, communication, quality control, and the use of management tools. The findings highlighted the effective planning processes, ensuring everyone involved understood the project goals clearly. The projects demonstrated strong risk management strategies, enabling them to identify and deal with potential issues promptly. Monitoring and evaluation systems were in place, allowing for continuous assessment and necessary adjustments. Communication channels were open and transparent, fostering trust and active community participation. Additionally, the projects employed modern tools and methodologies, enhancing their efficiency and adaptability in overcoming challenges.

4.4.3 Influence of Project Financing on Sustainable Water Supply Projects in Kongwa District:

This part explored the financial aspects of the water supply projects, focusing on funding sources, budget allocation, financial transparency, cost-effectiveness, and long-term planning. The study found that the projects received funding from multiple sources, ensuring stability and

flexibility. Efficient budget management ensured that resources were used wisely, preventing unnecessary expenses. The projects maintained financial transparency, building trust among stakeholders. They were also praised for their cost-effectiveness, meaning resources were utilized efficiently, maximizing the project's impact. Lastly, the projects had well-thought-out financial plans, ensuring their continuous operation and contributing positively to the community's economic stability.

CHAPTER FIVE: CONCLUSIONS AND RECOMMENDATIONS

5.0 Introduction

This chapter provides conclusions from the study's findings and offers recommendations to improve the sustainability of water supply projects in Kongwa District, Tanzania.

5.1 Conclusions

5.1.1 Community Participation

The people in Kongwa District are aware and actively involved in water supply projects. This active participation, especially from diverse community groups, strengthens the projects. The community feels a strong sense of ownership, leading to more commitment and responsibility towards these projects. Additionally, the projects have successfully empowered community members through skill development initiatives.

5.1.2 Project Management Practices

The projects are well-managed. They have clear plans and effectively handle risks. Regular monitoring and evaluation processes ensure the projects stay on track. Transparent communication and stakeholder engagement build trust, and the use of modern tools enhances efficiency. Quality control measures are in place, ensuring the projects meet high standards.

5.1.3 Project Financing

Financially, the projects are stable due to diverse funding sources. Budgets are managed efficiently, and there's transparency in financial matters. The projects are cost-effective, utilizing resources optimally. They also have strategic financial plans for the future, ensuring long-term sustainability.

5.2 Recommendations

The following recommendations are put forward to improve the sustainability of water supply projects in Kongwa District, Tanzania:

i. Foster Continuous Community Engagement: It is essential to establish and maintain robust lines of communication with the local community. Ensuring their active participation at every phase of the project through regular community meetings and feedback sessions is vital. By involving them closely, the project gains from valuable local insights and support.

ii. Implement Comprehensive Training Programs: Arrange tailored training sessions for project managers and staff, focusing on contemporary project management techniques. Continuous learning is key to keeping the projects aligned with the best practices. Well-equipped staff can navigate challenges efficiently, ensuring the smooth progress of the initiatives.

iii. Develop Robust Risk Management Plans: Create detailed plans that anticipate and address potential challenges. Identifying risks in advance and formulating effective strategies to mitigate them are paramount for the project's resilience. By proactively managing risks, the projects can adapt and respond to unforeseen circumstances, safeguarding their continuity.

iv. Actively Seek Strategic Partnerships: Explore collaborations with Non-Governmental Organizations (NGOs), governmental bodies, and private sectors to secure additional funding. Diversifying funding sources enhances financial stability, ensuring a steady influx of resources. Strategic partnerships also bring expertise and resources that can enrich the projects, making them more sustainable in the long run

5.3 Recommendations for Future Studies

While this study offers valuable insights, it is essential to acknowledge its limitations. The scope of the research focused on Kongwa District, and generalizations should be made cautiously. Future studies could consider expanding the geographical scope for a more comprehensive understanding. Also, conducting long-term studies tracking projects over several years would provide insights into sustained impacts and potential challenges faced over time.

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APPENDICES
APPENDIX 1: RESEARCH INSTRUMENTS

Questionnaire

This questionnaire seeks to collect information on the elements that impact successful project management and assessment for sustainable water supply projects in Kongwa District, Dodoma region, Tanzania. The gathered data will be used solely for scholarly purposes and will be handled with the highest level of confidentiality. Respondents are urged to offer honest and unbiased answers. Your contribution in supporting this research is greatly valued.

Please tick the appropriate box or provide the necessary information where required. If necessary, please specify and elaborate.

Section A: Background Information of respondent

A1: How old are you []

A2: Gender of respondent

1 = Male,

0 = Female

A3: What is your highest educational attainment?

1 = None,

2 = Primary,

3 = Secondary,

4 = Advanced Certificate Secondary Education,

5 = Vocational education,

6 = Basic technician Certificate,

7 = Technician Certificate,

8 = Diploma,

9 = Bachelor Degree

10 = Master's Degree

B: Community participation

Using a scale of 1-5, where 5 = strongly agree, 4 = agree, 3 = neutral, 2 = disagree, 1 = strongly disagree, please rate the following statements:

Statement	1	2	3	4	5
I am aware of the water supply projects in my community.					
The water supply projects involve diverse community groups (gender, age, socioeconomic status).					
I (or my household) have contributed to the water supply projects (labor, financial, in-kind).					
The community feels a sense of ownership and responsibility for the water supply projects.					
The water supply projects have resulted in capacity building and skill development for community members.					

C: Project Management Practice

Using a scale of 1-5, where 5 = strongly agree, 4 = agree, 3 = neutral, 2 = disagree, 1 = strongly disagree, please rate the following statements:

Statement	1	2	3	4	5
The water supply projects have clear planning and goal setting processes.					
The projects implement effective risk management and mitigation strategies.					
Monitoring and evaluation systems are in place to track project progress.					
Communication and stakeholder engagement are prioritized in the projects.					
Quality control and assurance measures are implemented in the projects.					
Project management tools and methodologies are utilized effectively.					

D: Project Financing

Using a scale of 1-5, where 5 = strongly agree, 4 = agree, 3 = neutral, 2 = disagree, 1 = strongly disagree, please rate the following statements:

Statement	1	2	3	4	5
The water supply projects receive funding from multiple sources (government, donors, private sector, community).					
Budget allocation and disbursement processes are efficient and well-managed.					
Financial transparency and accountability are maintained in the projects.					
The projects demonstrate cost-effectiveness and efficient resource utilization.					
There are strategies in place to ensure the financial sustainability of the water supply projects.					

APPENDIX 2: WORK PLAN

S/ N	YEAR 2022								
	FEB	MARCH	APRIL	MAY	JUN E	JUL Y	AUG	SEPT	OCT-NOV
1									
2									
3									
4									
5									
6									
7									
8									
9									

Concept development

1. Development of Proposal
2. Development of proposal
3. Proposal presentation
4. Preliminary survey and secondary data collection
5. Actual data collection
6. Data processing and analysis, Dissertation writing
7. Dissertation Presentation
8. Dissertation writing final draft, binding and submission

APPENDIX 3: RESEARCH BUDGET

The estimated budget for this study amounts to TZS 6,300,000.

Item	Descriptions	Total (TZS)
Proposal Development and Presentation	Print, copy, internet access for literature review, transportation, and lodging expenses	850,000/=
Data Collection Tool Preparation, Pretesting, and Refinement	Printing, copying, transport, accommodation, and respondent refreshments	400,000/=
Data Gathering	Printing, copying, transport, accommodation, enumerator allowances, and refreshments	2,000,000/=
Data Examination	Software acquisition, installation, and consultation expenses	450,000/=
Result Presentation	Printing, copying, transport, and lodging expenses	1,700,000/=
Thesis Production	Printing, copying, soft binding, and hard binding costs	450,000/=
Contingency Fund	Allocated for miscellaneous expenses	450,000/=
GRAND TOTAL		6,300,000/=

APPENDIX 4: MATRIX FOR DATA ANALYSIS

Objectives	Variables	Data Source	Tools	Analysis Techniques
<p><u>Objective 1</u></p> <p>Examine the influence of community participation on sustainable water supply projects in Kongwa District</p>	<p>Community participation</p> <ul style="list-style-type: none"> • Awareness • Inclusiveness • Contribution • Ownership • Capacity building 	<p>. Primary data</p> <p>. Secondary data</p>	<p>. Questionnaires</p> <p>. Key Informants Interview</p> <p>Checklist</p>	<p>. Descriptive statistics</p>
<p><u>Objective 2</u></p> <p>Determine the influence of project management practice on sustainable water supply projects in Kongwa District</p>	<p>Project management practice</p> <ul style="list-style-type: none"> • Planning • Risk management • Monitoring & evaluation • Communication • Quality control • PM tools 	<p>. Primary data</p> <p>. Secondary data</p>	<p>. Questionnaire</p> <p>. Key Informants Interview</p> <p>Checklist</p>	<p>. Descriptive statistics</p>
<p><u>Objective 3</u></p>	<p>Project financing</p>	<p>. Primary data</p>	<p>. Questionnaire</p> <p>. Key Informants</p>	<p>. Descriptive statistics</p>

<p>Determine the influence of project financing on sustainable water supply projects in Kongwa District</p>	<ul style="list-style-type: none"> • Funding sources • Budget allocation • Transparency • Cost-effectiveness • Financial sustainability 	<p>. Secondary data</p>	<p>Interview Checklist</p>	
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APPENDIX 5: DATA COLLECTION FROM INSTITUTE OF ACCOUNTANCY OF ARUSHA
(IAA)



Institute of Accountancy Arusha

P.O. Box 2798, Njiro Hill, Arusha, Tanzania

Telephone: +255 27 2970232 Mobile: +255 763 462109 Telex: 50009 IAA TZ

Fax: +255 27 2970234 Email: iaa@iaa.ac.tz Website: www.iaa.ac.tz

Ref. No.: MPPM-01-0017-2022

30th August 2023

.....
.....
P.O.BOX.....
.....

Dear Sir/Madam,

RE : REQUEST FOR DATA COLLECTION


The purpose of this letter is to introduce to you **MR. STEPHEN TUNGU** who is our student pursuing Masters of Science in Project Planning Management (MPPM-04-0012-2022). Currently, the aforementioned student is conducting a study on "**FACTORS INFLUENCING SUSTAINABILITY OF RURAL WATER SUPPLY PROJECTS IN TANZANIA: A CASE OF KONGWA DISTRICT TANZANIA.**". We would like to highlight here that this study is part of the requirement for the award of the above mentioned programme of study.

We therefore request you to extend to the above-mentioned student of our Institute any help that may facilitate him to achieve study objectives. We further request permission for him to see and talk to the staff of your Institution in connection to his study. The period for this request is granted from August to the end of October 2023.

Thank you for your continuing support.

Yours Sincerely,

INSTITUTE OF ACCOUNTANCY ARUSHA


DIRECTOR OF POSTGRADUATE
& CONSULTANCY
INSTITUTE OF ACCOUNTANCY ARUSHA
P.O. BOX 2798 ARUSHA, TANZANIA
TEL: 254 9412; FAX: 254 9421

Elias Mbuti
FOR: RECTOR

All Communications to be addressed to the Rector

APPENDIX 6: DATA COLLECTION FROM DODOMA URBAN WATER SUPPLY AND
SANITATION (DUWASA)



DODOMA URBAN WATER SUPPLY AND
SANITATION AUTHORITY
(DUWASA)



In Replying Please Quote:

Ref. No.: DUWASA/FTN/33/VOL.II/101

Date: 15/08/2023

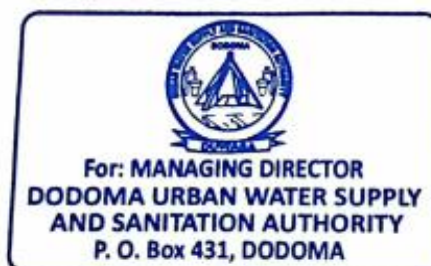
Rector,
Institute of Accountancy Arusha,
P.O.BOX. 2798,
ARUSHA.

Dear Sir/ Madam

REF: REQUEST FOR DATA COLLECTION

2. Reference is made from your letter requesting Mr. **Stephen Tungu** to achieve his study objective in Data Collection dated 30th August, 2023 and received to our Office on 19th August, 2023.
3. We are glad to inform you that, your request is accepted and we welcome the named students for data collection as per your request.
4. Regards,

.....
Emanuel C. Mhando
For: **MANAGING DIRECTOR**



[Type here] Tambukareli Ward, Salmin Street, DUWASA Building, Block B-Plot No. 9, Mkapa/A.H. Mwinyi Road, P.O. Box 431, Dodoma, Tel: +255262324245, Fax: +255262320060, Toll Free Call No.: 0800110078, Email: md@duwasa.go.tz, Website: www.duwasa.go.tz

APPENDIX 7: PLAGIARISM REPORT

Stephen Proposal - Latest

ORIGINALITY REPORT

25% SIMILARITY INDEX	22% INTERNET SOURCES	8% PUBLICATIONS	14% STUDENT PAPERS
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PRIMARY SOURCES

1	erepository.uonbi.ac.ke Internet Source	3%
2	repository.out.ac.tz Internet Source	2%
3	Submitted to Kenyatta University Student Paper	2%
4	Submitted to University Der Es Salaam Student Paper	2%
5	dspace.iaa.ac.tz:8080 Internet Source	1%
6	Submitted to Eiffel Corporation Student Paper	1%
7	hdl.handle.net Internet Source	1%
8	iajournals.org Internet Source	1%
9	erepository.uonbi.ac.ke:8080 Internet Source	<1%

APPENDIX 8: CERTIFICATE OF PROOFREADING AND EDITING

INSTITUTE OF ACCOUNTANCY ARUSHA TANZANIA
CERTIFICATE OF ENGLISH EDITING

This certificate confirms that the manuscript listed below was edited by one or more expert English Editors. The following issues were edited: Grammar, Spelling, punctuation, Sentence Structure and Phrasing. Journal editors can contact us for a copy of the edited document that was submitted to the Authors.

MANUSCRIPT TITLE

**FACTORS INFLUENCING SUSTAINABILITY OF RURAL WATER
SUPPLY PROJECTS IN TANZANIA: A CASE OF KONGWA DISTRICT
TANZANIA.**

.....

AUTHOR(S)

**STEEPHEN TUNGU
&
MR. BONAVENTURE MSHIBIKA**

DATE ISSUED

09/12/2023

CERTIFICATE NUMBER

.....

.....



Signature Name of Editor: Wilhelmina Costantini (“PHD”)