PARTICIPATORY MONITORING AND EVALUATION AND SUSTAINABILITYOF WATER PROJECTS IN MATAPATO NORTH WARD, KAJIADO COUNTY

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An Applied Research Project Submitted in Partial Fulfilment of the Requirements for the Award of Masters of Arts, Monitoring and Evaluation in the Business School of Africa Nazarene University

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AFRICA NAZARENE

UNIVERSITY

DECLARATION

STUDENT'S DECLARATION

I hereby declare that this research project is my original work and has not been submitted for a degree in any other university.

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This applied research project is submitted for examination with our approval as the University Supervisor.

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DEDICATION

This study is dedicated to my parents, whose guidance and support have been the foundation upon which I've built my aspirations. To my wife, who has been a constant source of love, encouragement and sacrifice, for encouraging me to pursue my dreams. To my children, who inspire me every day to be a better person and have brought immeasurable joy and purpose into my life. May this study serve as a testament to the enduring power of love, family and perseverance.

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ABSTRACT

Participatory Monitoring and Evaluation (PM&E) has been found to have a significant influence on sustainability of water projects, particularly in rural areas. Moreover, PM&E has shown high effectiveness in community-based water projects, particularly in Kajiado County. This study aimed to assess the PM&E on sustainability of water projects in Matapato North Ward, Kajiado County. It was focused on three specific objectives: determining the influence of community involvement on sustainability of water projects in Matapato Ward, Kajiado County; assessing the influence decision making on sustainability of water projects in Matapato Ward, Kajiado County and examining the influence of capacity building on sustainability of water projects on Matapato Ward, Kajiado County. The study was guided by Social Capital Theory and the Theory of Participation, using a descriptive survey research design. The target population was 47,413, with a sample size of 397 determined by the Yamane formula. Data was collected via questionnaires, with a pilot study conducted in Dalalekutuk ward, a neighboring Ward. The reliability and validity of the instruments was tested and data was analyzed using SPSS version 23. The ultimate goal was to understand how PM&E contributes to maintaining functional water points, increasing water availability and sustaining water facilities. From the sample of 397, the study findings established 290 respondents in the study which represented a 73% response rate. Descriptive findings noted a composite mean of 3.68>3.0 for community involvement; 3.2>3.0 for decision making and 4.054>3.0 for capacity building meaning that majority of the respondents agreed that the three variables had a positive influence on water projects in Matapato North Ward, Kajiado County. After conducting Inferential analysis, the study demonstrated that community involvement had an insignificant influence on sustainability of water projects in Matapato Ward $r=0.048$, $p<0.05$; decision making had a significant and positive influence on sustainability of water projects in Matapato Ward, $r=0.232$, $p<0.01$; and finally, capacity building had a significant and positive influence on sustainability of water projects in Matapato Ward $r=0.208$, $p<0.01$. The study concluded that while community involvement may not have shown significant statistical influence in this study, decision making and capacity building are critical for the sustainability of water projects. The study recommended strengthening community participation and policy makers to use empirical data and insights from the study to make evidence based decisions that enhances project outcomes.

DEFINITION OF TERMS

Capacity Building: It is a process that aims at strengthening the capacity of community to plan, manage and sustain water initiatives effectively. It involved activities such as training, skill development, knowledge sharing and fostering partnerships to enable stakeholders to actively participate in the monitoring and evaluation of water projects.

Community Involvement: It refers to active engagements and participation of community members throughout the various stages of planning, implementing, monitoring and evaluating water projects within their locality**.**

Decision Making: It is a process through which individuals or groups assess available information, weigh alternatives and choose a course of action regarding the planning, implementation and management of water projects.

Sustainability: It constitute to the long-term ability of the water projects to effectively provide reliable access to clean water for the target population while simultaneously promoting environmental integrity, social equity and economic viability within the community.

LIST OF ABBREVIATION

ASAL	Arid and Semi-Arid Lands
ESG	Environmental Social and Government
KNBS	Kenya National Bureau of Statistics
M&E	Monitoring and Evaluation
NGOs	Non-Governmental Organizations
NSE	Nash Sutcliff's Efficiency
PM&E	Participatory Monitoring and Evaluation
SDGs	Sustainable Development Goals
SPSS	Statistical Package for Social Science
SUDs	Sustainable Urban Drainage System
SWAT	Soil and Waste Assessment Tool
SWOT	Strength, Weakness, Opportunity and Threats
WWTP	Waste Water Treatment Plant

CHAPTER ONE: INTRODUCTION AND BACKGROUND OF THE STUDY

1.1 Introduction

Water that is sustainable and pure is an essential element for human welfare and advancement. Water projects are essential for guaranteeing that people have consistent access to clean water, supporting farming activities and promoting socioeconomic development. This section outlined background information, problem statement, purpose and objectives of the study, research questions and significance of assumptions, theoretical framework and conceptual framework of the research.

1.2 Background of the Study

The unique quality of participatory monitoring and evaluation (PM&E) is a potent method emphasizing the engagement of project stakeholders during the process of observation and assessment (Ajepo, Alisop, Ebenso, Okusanyo, Okunado, and Akeju, 2022). Similarly Phor, Fawcett, Hassaballa, Nidjergou, Silouakadila, and Siku (2023), asserted that the utilization of PM&E has proven to significantly enhance project success and ensure alignment with diverse stakeholder needs. Additionally, they suggested that by giving right holders and stakeholders more authority through cooperative knowledge development and improving participants' capacity for use this information, PM&E may support the sustainability of community-based initiatives. Furthermore, by taking into account a variety of needs and values and recognizing the complexities of human-environment interactions, active involvement may improve the perception of locally relevant, comprehensive and fair community sustainability decisions.

Traditionally, PM&E have been gauged through performance metrics against predetermined indicators, utilizing standardized methods and instruments (Binnendijik, 2019). On the other hand, fresh techniques to assessing and comprehending change that are more inclusive and representational of varied viewpoints and goals are introduced via monitoring and evaluation (M&E) with participation, which includes key participants as active contributors. Yiu, Nguyen, and Saner (2020) contend further that beneficiaries' participation in monitoring and evaluation with participation increases the validity of the process and makes it easier to obtain insightful input for remedial actions. Additionally, it fosters a sense of ownership over the successful outcomes of planned initiatives.

Lian, Shi and Xu (2022) conducted a study on examination of involuntary resettlement within the context of China, focusing on the M&E process. Over the past three decades, M&E efforts have yielded significant outcomes in mitigating resettlement risks and protecting the rights of affected individuals (APs). But in that period, the resettlement environment had changed significantly, with APs' interests becoming more diverse and disparities in social classes widening. This implied that the approach to addressing resettlement hazards was to be adjusted. The authors suggested an update to the original M&E exemplar of involuntary relocation based on the experience of China. In particular, they supported the creation of distinct at-risk group monitoring systems and APs, each with a unique set of specified monitoring indications inside the larger framework. To improve the overall capacity of the assessment and increase the organic interaction between the various evaluation units, they introduced the meta-model of evaluation concerning the assessment framework. The assessment needed also to be applied to the creation of APs, general resettlement and the resettlement of risk-

susceptible populations. Participatory monitoring and assessment as well as the impact of environmental governance in China were highlighted by Dong, Wang and Zhou in 2023. Since they included local populations in the process of developing sustainable usage patterns and protecting natural resources, PM&E of sustainability initiatives has gained popularity in China in recent years. Enhancing environmental governance in the nation has been found to require public engagement as a critical component.

PM&E is a method that engages various stakeholders in overseeing and assessing project progress. An investigation by Marzo et al. (2023) on the impact of community involvement in M&E, particularly in Malaysia, revealed its positive influence on project sustainability. PM&E places a strong emphasis on the active participation of stakeholders, especially local communities, enabling them to play a crucial role in the project's success. Projects that involve communities have a higher chance of being accepted and maintained because stakeholders take ownership of them, which improves their long-term viability.

PM&E is essential to guaranteeing the longevity and effectiveness of water initiatives in South Africa. This method incorporates engaging stakeholders, such as community participants in observation and assessment procedures to collect input, opinions and indigenous comprehension (Adom & Simatele, 2022). The monitoring and assessing water projects in South Africa through participation entail involving local communities in overseeing and evaluating water resources. This strategy has proven successful in tackling concerns related to water quality and quantity while also fostering sustainable water management approaches. In conclusion, local communities are involved when it comes to managing and evaluating water resources through monitoring and assessing

water projects in South Africa through participation. This strategy has been successful in tackling problems with water quantity and quality and in advancing environmentally friendly water management techniques. It is possible to improve the sustainable management of water projects by encouraging education and awareness among local populations and incorporating them in decision-making processes.

In Nigeria, Jatto and Ekhaiakhu (2020) argued that the increasing focus on participatory methods in development has led to the acknowledgment that M&E processes should also embrace participatory principles. Traditionally, M&E has relied on external experts to evaluate performance against predetermined criteria using standardized methods and tools. As an alternative, PM&E actively incorporates important stakeholders and provides new ways to assess and comprehend changes that are more inclusive and represent the objectives and viewpoints of those who would be most directly impacted. In development circles, the idea of participation has become increasingly important, as governments, NGOs and funders support participatory methods for assessing needs and implementing programs.

A research conducted by Odongo, Nguku, and Oginga (2023) investigated the impact of PM&E on decision-making within maternal and newborn health initiatives in Mombasa County, Kenya. The results emphasized the critical role that PM&E plays in obtaining consistent, timely and reliable data that is vital for directing stakeholders' choices and actions. Furthermore, the utilization of participatory frameworks in the healthcare sector has shown to be advantageous for the efficient administration of the health system, resource distribution, and accountability.

1.2.1 Sustainability of Water Projects

Sustainability in water projects refer to the ability to maintain and enhance the quantity and quality of water resources over the long term to meet current and future human and ecological needs (Zhang & Oki, 2023). Further, Zhang and Oki, (2023) alluded the fact that it encompasses of holistic approach that intergrates environmental, economical, social, technical, and institutional dimensions. On the other hand, Scanton, et al., (2023) pointed out that achieving sustainability in water projects involves not only meeting immediate water needs but also ensures that water projects involves meeting immediate water needs and that water resources are managed in a way that preserves their availability and quality for future generations.

1.2.2. Participatory Monitoring and Evaluation

PM&E in conjunction with project management, development and social intervention, is a methodology that stresses the active participation of participants in the monitoring and assessment procedures, including beneficiaries (Brown, Kytta, & Reed, 2022). Through the involvement of those directly impacted by or participating in the project's monitoring and assessment tasks, the method aims to improve the efficacy, relevance and sustainability of programs. However, Scott and Moloney (2022) asserted that a broad spectrum of stakeholders, such as members of the community, project beneficiaries, local organizations and other pertinent players, are included in PM&E with the aim being ensuring that all viewpoints and insights are taken into consideration.

1.2.2.1 Community Involvement

Participation from the community is essential to the projects' ability to endure because it fosters inclusion, builds a feeling of ownership and guarantees that the project is in line with community requirements and principles (Zumpf et al., Estes, 2022). Involving

the community is essential to the sustainability of the initiative. Including a variety of viewpoints and local expertise into the planning process, community engagement enables improved decision-making and guarantees that sustainable initiatives are in line with the particular requirements and values of the community. According to Carius and Job (2021), being involved in the community promotes a feeling of pride, ownership and social cohesiveness as well as empowerment. This, in turn, attracts more resources and support from a larger network of companies, potential contributors, volunteers and collaborators. Involving the community would also boost its buy-in and sense of ownership which will help the initiative be implemented and maintained successfully. By educating the public and involving them directly in actions taken toward the Sustainable Development Goals (SDGs), local governments not only have a far better chance of actually making progress toward those goals, but they also ensure that those actions are customized to the local context and directly benefit the community.

1.2.2.2 Decision Making

Decision-making in project management is becoming more and more focused on sustainability. It entails taking social and environmental capital into account in addition to economic capital. A thorough project selection process that gives consideration to sustainable factors such as project cost, maturity, uncertainty, talent, experience and technological knowledge transfer is necessary for sustainable project management. Furthermore, making moral decisions is crucial for sustainable project management, according to Ma, Harstvedt, Jaradat, and Smith (2020). This is because ethical decision-making supports universal values and encourages good social and environmental benefits. With an emphasis on environmental, social and governance (ESG) concerns, sustainability is playing a bigger role in corporate decision-making. This is because

sustainability is linked to fewer risks, a stronger competitive advantage and more economic prospects.

1.2.2.3 Capacity Building

Capacity building lies in its ability to empower individuals and communities, enabling them to take charge of their development and contribute meaningfully to societal progress. As such, it is a cornerstone of sustainable development and a vital component of any strategy aimed at fostering robust community engagement. Capacity building involves the systematic enhancement of knowledge, skills and procedures crucial for making a positive impact (Ghobakhloo, Iranmanesh, Grybauskas, Vilkas, & Petraite, 2021) on society or the environment. It stands as a vital pillar of sustainability, pivotal for the enduring success of initiatives. Additionally, as noted by Ruggerio (2021), capacity building encompasses various dimensions such as assistance in fundraising, organizational viability, handling finances and leadership development and transition, strategic communication and legal support. Sustainable capacity building entails ensuring the establishment of enduring capabilities and the perpetuation of new protocols with time.

1.3 Statement of the Problem

PM&E is perceived as a procedure that includes project participants in the tracking and assessment of various initiatives, such as water-related initiatives. Additionally, PM&E aims to guarantee that projects are sustainable and fulfill the requirements of the communities they are intended to serve. According to Oduor and Murei (2020), PM&E is a technique that helps meet the goals of water projects. Specifically, it promotes sustainability and is helpful in helping community-based water projects achieve their

goals. Nonetheless, the viability of the project may be compromised by non-participation in monitoring and assessment.

Regrettably, the search results do not adequately offer current statistics regarding PM&E in Kajiado concerning water projects. Nonetheless, they do furnish insights into various studies and assessments carried out on the subject in other parts of Kenya. For instance, a study carried out in Siaya County, Kenya, revealed a favorable relationship between community involvement in M&E and the long-term viability of piped water supply initiatives in rural areas (Oduor & Murei, 2020). Similarly, a research in Migori County, Kenya, showed that M&E positively impacted water project performance (Arieko & Kisimbii, 2020). Furthermore, an evaluation of the M&E framework for the Embu Water and Sanitation Company Limited was undertaken in Kenya (Tonui, 2022). Lastly, a study conducted in Nyamira South Sub-County, Kenya, emphasized the significance of community participation in joint water system monitoring for ensuring sustainable water supply (Motari, Rambo & Nyonje, 2022). However, it's worth noting that some of these studies lack comprehensive information regarding Matapato North Ward, Kajiado County. It becomes difficult to comprehend the particular context elements impacting M&E with participation and its consequent impact on the sustainability of water projects in this area without the target research.

The researcher is often driven through the possibility that the PM&E study on sustainability of the water project would contribute to the long-term sustainability of the project, encourage stakeholder ownership and responsibility and ultimately ascertain the impact of efforts. Consequently, the study was important because it would be able to address the following issues; lack of capacity to manage community-based

water projects, addressing infancy stage of PM&E, influence the aspect of PM&E and critical role of PM&E. The study addressed the above-mentioned gaps through increasing capacity for community-based water project, providing empirical support and best practices to further PM&E techniques by thoroughly analyzing the use of PM&E inside a particular water project, highlighting the critical role of PM&E in project sustainability and mainstreaming PM&E as a standard practice in water project planning, implementation and evaluation.

1.4 Purpose of the Study

Kohler, Smith and Bhakoo (2022) emphasized that clearly defining the study's purpose is crucial as it delineates the research's goals and intentions. This aspect enables subjects to gauge the study's significance in alignment with their personal values and comprehend its anticipated outcomes. The study centered on PM&E with respect to a water project's sustainability, which fulfills several important purposes. Actively including project stakeholders in the implementation process, such as community members, is a requirement of PM&E. The purpose of the study was to evaluate the water project's efficacy and effects on the targeted community, focusing on improving the community's access to clean and safe water. It also attempted to evaluate the water project's long-term sustainability by involving the community in the implementation process. Furthermore, it sought to identify potential challenges or risks that could impede the project's sustainability.

1.5 Objectives of the Study

The study was guided by both general and specific objectives.

1.5.1 General Objective

The primary objective of the study was to assess the impact of participatory monitoring and evaluation on sustainability of water projects in Matapato North Ward, Kajiado County.

1.5.2 Specific Objectives

The study was directed by the following specific objectives;

i. To determine the influence of community involvement on sustainability of water projects in Matapato North Ward, Kajiado County.
ii. To assess the influence of decision making on sustainability of water projects in Matapato North Ward, Kajiado County.
iii. To examine the influence of capacity building on sustainability of water projects in Matapato North Ward, Kajiado County.

1.6 Research Hypothesis

The study tested the following hypotheses;

i. H_{01}: There is no significant relationship between community involvement and sustainability of water projects in Matapato North Ward, Kajiado County.
ii. H_{02}: There is no significant relationship between decision making and sustainability of water projects in Matapato North Ward, Kajiado County.
iii. H_{03}: There is no significant relationship between capacity building and sustainability of water projects in Matapato North Ward, Kajiado County.

1.7 Significance of the Study

According to the analysis by Thomas, Martin, Etnier and Silverman (2022), a study's significance is determined by its relevance, influence on the field and contribution to

the research field. The study's findings hold significant importance for stakeholders implementing water projects in Kajiado County. Community water management committees will gain valuable guidance to enhance their PM&E practices. Policymakers can develop evidence-based policies to address sustainability challenges, while stakeholders will understand key influences for effective PM&E, enabling targeted strategies and best practices. Community members will be empowered through increased involvement and trainings fostering project ownership and long-term sustainability.

1.8 Scope of the Study

Danijela and Jelena, (2020) refers to the existing boundaries and limitations that define the extent of the research. It outlines what the study investigates and what it won't. Defining the scope is crucial for researchers as it helps in focusing on specific objectives and prevents the study from becoming too broad or unmanageable. The scope of the study was focused in Matapato North Ward, Kajiado County. The study focused on water projects that were implemented between the years 2013 to 2024 purposely when devolution started in Kenya. This gave an indication whether the devolved system of governance advocates for PM&E.

1.9 Limitation of the Study

Limits of the research encompass anticipated hurdles in the research domain beyond the researcher's influence (Akanle, Ademuson, and Shittu, 2020). Thus, the study's limitations may involve employee cooperation, information accessibility and financial constraints. Establishing rapport with respondents is crucial for gaining their trust and

ensuring that data collection serves academic purposes, facilitating comprehensive information retrieval for the researcher.

Participants may have misgivings about the researcher's intentions when it comes to the study. Apprehensions over possible consequences from their employment can cause certain individuals to conceal certain details. In order to allay these worries, the researcher sent a letter of introduction clarifying that the study was being conducted only for scholarly purposes and that the information collected was not to be used for any other purpose.

1.10 Delimitation of the Study

Mugenda & Mugenda (2008) state that the research's delimitation relates to attributes that are outside the scope of the investigation and consequently, limits its scope. The researcher used primary and secondary data for the investigation. To obtain primary data, the researcher engaged with agriculture and water officers at the sub county and ward level. The researcher easily obtained the secondary data from both the department of agriculture and water because the researcher works with the department of livestock and therefore colleagues.

1.11 Assumption of the Study

The study participants primarily consisted of residents of Matapato North Ward, Kajiado County. It was expected that a significant amount of precise data would be gathered. This dependability was explained by the fact that data would be collected directly from people who live in Matapato North Ward. Consequently, it was presumed

that the respondents, possessing ample experience, effectively completed the questionnaire and participated in interviews.

1.12 Theoretical Framework

A theoretical framework is a structure that guides the researcher's study by providing a clear perspective from which to approach the research questions. It comprises concepts, theories and models that the researcher can draw upon to interpret, analyze and understand the phenomena the researcher is studying (Storberg, 2002).

1.12.1 Social Capital Theory

The 1980s saw the development of Social Capital Theory by Pierre Bourdieu and James Coleman. It centered on the sociological idea of evaluating the importance of social networks and linkages in achieving collective goals. It makes the argument that the relationships people build with one another within a community are a form of capital, similar to financial or human capital, which can be used to achieve a variety of social and economic benefits. Within the framework of PM&E of water project sustainability, Social Capital Theory holds pivotal importance in comprehending and augmenting the efficiency of grassroots endeavors within communities. The proponents of the social capital theory, that is, Bhandari and Yasunobu (2009), focused on the importance of reciprocity and trust in interpersonal interactions. They found out that establishing and preserving community trust is essential to the success and long-term viability of water projects. Conversely, PM&E entails involving people of the community in the implementation of community infrastructure. Social capital will build trust, which will promote open communication and active community involvement.

Storberg (2002) offered criticism of the Social Capital Theory, suggesting that while it emphasizes the importance of certain social capital characteristics for yielding positive outcomes, it overlooks the potential for these same traits to generate negative consequences. These drawbacks include encouraging actions that impede rather than improve economic success, creating barriers to social mobility and inclusion and dividing rather than uniting communities or civilizations. Moreover, the application of social capital theory is prone to flaws due to issues such as model specification, multicollinearity, omitted variables, multiple equilibria and the representation of cross sections as proxies for time series.

1.12.2 Cohen and Uphoff's Theory of participation

Cohen and Uphoff (1980), suggested that participation can be assessed on the basis of who participates and how participation occurs. Participation can involve planning, decision making, implementation and evaluation. Some of the factors that affect participation include the plan, the incentives, the arrangement, the scope and period for participation, and the empowerment level of the people.

Category	**Details**
Decision-making	Initial, on-going decisions, and operational
Implementation	Resource contribution, administration, coordination, and mobilization
Benefits	Personal, material, and social
Who Participates	Local residents, local leaders, government personnel, and foreign personnel
Characteristics	Age, sex, family status, education, social divisions, income level, length of residence, land tenure status
Basis of Participation	Impetus, incentives
Form of Participation	Organization, direct/indirect

Extent of Participation	Time involved, range of activities
Effect of Participation	Empowerment, interactions

This study benefitted from the concepts of theory of participation because most of the research questions touched on the key aspects of the theory. The theory informs the study on how project beneficiary involvement leads to the sustainability of programs.

1.13 Conceptual Framework

The study was based on the conceptual framework presented below. This framework illustrated how three distinct factors affected the sustainability of water initiatives in Matapato North Ward, that is, capacity building, decision-making and community involvement.

Independent Variables **Dependent Variable**

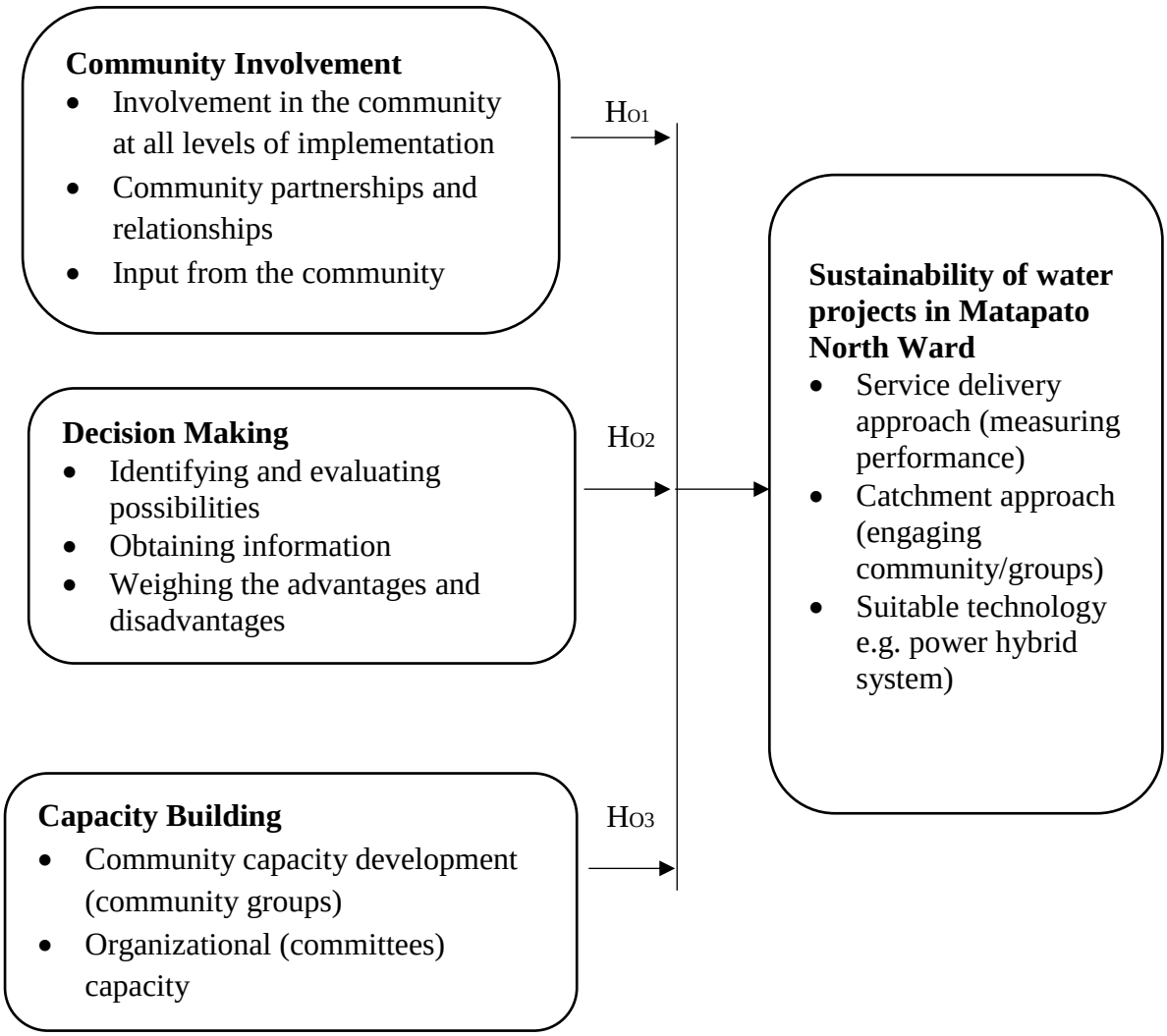


Figure 1.1 Conceptual Framework

Source: Author (2024)

CHAPTER TWO: LITERATURE REVIEW

2.1 Introduction

The empirical studies of three variables, that is, community involvement, decision-making and capacity building was covered in this chapter. It also highlighted any research gaps and gave an overview of the literature study.

2.2 Empirical Review

Empirical review involves examining and summarizing the findings of previous research based on observation or experimentation (Kozlov, 2023). Unlike theoretical reviews, which focus on abstract concepts and theories, empirical reviews deal with data and evidence collected through actual research.

2.2.1 Community Involvement on Sustainability of Water Projects

Noblega Carriquiry, Sauri and March (2020) examined community participation in implementing a Sustainable Urban Drainage Systems (SUDSs) located in Barcelona's Bon Pastor. The study emphasized the enduring problem of urban floods and the inadequate storm-water handling capacity of outdated sewage infrastructure, underscoring the growing significance of SUDSs in urban water management. Storm-water is redefined by these systems as a useful resource rather than a threat. The researchers also noted that SUDSs bring about a change in governance frameworks compared to traditional flood risk management approaches, promoting decentralization and granting communities enhanced negotiation power and new responsibilities. The aim of this study was to examine the interactions among various stakeholders involved in SUDSs and to explore the varying levels of comprehension regarding SUDSs as an emerging alternative for storm-water management infrastructure. To achieve this objective, the paper presented a case study of the Bon Pastor neighborhood in

Barcelona, Spain, which witnessed urban revitalization efforts leading to the implementation of SUDSs in 2012. Data were collected through 10 semi-structured interviews with governmental representatives, technical experts, social organizations and local residents, supplemented by reviews of relevant policy documents, grey literature and historical records documenting the neighborhood's development. The findings demonstrated the high level of community engagement both during the design phase and beyond, as sustainability emerged as a primary focus for future developments in the area. Nonetheless, they also revealed various concerns regarding maintenance and differing interpretations of the term SUDSs among the various stakeholders.

With a focus on the Yombo project in Bagamoyo District, Mussa (2020) conducted research on the effect of community involvement on sustainability of rural water delivery projects. The study sought to determine the extent to which the community was involved in the development and implementation of these initiatives, appraise the leadership's role in encouraging community involvement and investigated the function that communication plays in promoting community engagement. The results point to the influence of resource availability, leadership and communication on community involvement in rural water distribution initiatives. The results of the study show that the success of water projects in Tanzania's rural villages depends heavily on community involvement. This is primarily because the projects need community support and involvement to ensure project ownership and sustainability even after handover. The government also expects this because, in line with actual reality, it is a necessary step in providing essential services, especially water distribution in rural areas in collaboration with the local populace.

In their study, Mgulo and Kamazima (2022) investigated the durability of rural water projects supported by non-governmental organizations, using the Chamwino District in Tanzania's Dodoma area as a case study. Assessing community involvement and the durability of rural water projects in Chamwino District was the primary goal of the research. The study used a qualitative methodology and was exploratory in nature. Data from the participants was gathered for the study through focus groups and in-depth interviews. In order to gather participants' opinions on community involvement and the durability of rural water projects in Chamwino District, Dodoma Region, a purposive sampling approach was employed. Thematic analysis served as the method for data analysis, aimed at fostering community involvement in rural water projects, crucial for their long-term viability. Results indicated that insufficient community engagement, lack of support and limited involvement across project phases-from inception to evaluation via village water committees-significantly undermined the sustainability of rural water projects in Chamwino District. Thus, ensuring robust community participation, support and active involvement throughout the project lifecycle via water committees is essential for sustaining rural water projects not only in Chamwino District but also across Tanzania.

Community involvement is crucial to the long-term sustainability of county government-funded water projects in Elgeiyo Marakwet, Kenya. In Kenya's Elgeiyo Marakwet County, Biwott (2020) study examined the impact of community involvement on sustainability of county government-funded water projects. According to development experts, communities need to be actively involved in the planning, designing, resource mobilization and molding of initiatives that directly impact them in order for those programs to be successful. The study explored the impact of community

involvement on the long-term viability of county government-funded water projects in Elgeiyo Marakwet. The study aimed to ascertain the following: the effect of project identification on sustainability of water projects funded by Elgeiyo Marakwet County's county government; the effect of project planning on sustainability of water projects funded by Elgeiyo Marakwet County's county government; the effect of project resource mobilization on sustainability of water projects funded by Elgeiyo Marakwet County's county government; and the effect of oversight on sustainability of county government funded water projects in Elgeiyo Marakwet County. The research focused on a sample population of 479 individuals, consisting of 47 County Staff members, 379 community members and 53 chairpersons of community water projects. The sample size, determined through Yamane's formula was 195. Data collection involved the use of research questionnaires for community leadership members and interview schedules for both water project committee chairpersons and County Staff. Quantitative data were analyzed using IBM SPSS Version 20 while qualitative data underwent content analysis. Findings were interpreted through descriptive statistics such as frequency distribution, mean, standard deviation and percentages, as well as inferential statistics, with the Chi-square test for independence employed to ascertain the significance of relationships between variables. The study concluded that the majority of community leaders were involved in the selection of county government water projects and that community involvement in project identification significantly affects the sustainability of water projects.

2.2.2 Decision Making on Sustainability of Water Projects

Chrispim, de Souza, Scholz, and Nolasco (2020) conducted study on the framework for sustainable planning and decision making on resource recovery from wastewater as a

showcase for the Sao Paulo Megacity. The research focused on how important it is to create strategic frameworks that would aid in the process of choosing environmentally friendly methods for resource recovery. A full-scale wastewater treatment plant (WWTP) in the megacity of Sao Paulo was studied and a new framework for resource recovery strategy design, execution and assessment was adopted. The wastewater treatment utility survey, national and regional databases, as well as an examination of local laws and foreign publications, were the sources of the data. Comprehensive talks included setting up the treatment system, the makeup of the wastewater and byproducts, possible resource demands (phosphorus, energy and water), identifying stakeholders and following local laws when making decisions about resource recovery. Using particular indicators as a reference, scenario analysis was utilized to look into the best course of action for nutrient and energy recovery. Because biogas recovery and sewage sludge composting are well-established processes in the area and have strong regulatory frameworks, these solutions have shown to be very beneficial. They suggested structure functions as a simplified instrument, supporting managers in obtaining data about resource recuperation and enabling well-informed choices, in addition to improving operational effectiveness and administration.

The findings regarding framework utilization and refinement hold significance for potential applications in diverse contexts, driving public policy development and stimulating further research efforts, as evidenced by Alitane et al.'s (2022) exploration of a decision-making approach to sustainable water resource management through hydrological modeling, as demonstrated in their Central Morocco case study. Furthermore, they asserted that water is seen as a vital resource for human habitation, economic success, food security and a host of other global problems including sickness,

poverty, hunger and polluted water. As a result, both environmental resources and people are severely impacted by its degradation and improper use and therefore, hydrological management techniques can be used to solve these issues. This study aimed to simulate and quantify the components of the water balance in the R'Dom watershed in Morocco using a hydrologic model and accessible data. The Soil and Water Assessment Tool Plus (SWAT+) model was the hydrologic model that was utilized for this purpose. The streamflow model was simulated monthly from 2002 to 2016. During the calibration phase (2002–2009), the coefficient of determination (R2) and Nash–Sutcliffe efficiency (NSE) were 0.84 and 0.70, respectively. In the subsequent validation period (2010–2016), these values were 0.81 and 0.65, respectively. Analysis of the water balance in the watershed during validation showed an average annual precipitation of approximately 484 mm, with 5.75 mm attributed to agricultural irrigation development. Evapotranspiration represented 72.28% of watershed input, surface runoff accounted for 12.04%, lateral flow for 11.90% and groundwater recharge for 4.14%. Their methodology aimed to faithfully represent case studies and exploring similar environments for water resource assessment was strongly recommended. In addition, policy and decision-makers will find value in the study's results and researchers may find that using the SWAT model to simulate water balance and attain appropriate management of water resources might lead to fruitful future developments.

Evaluating the current state of water availability, quality and infrastructure in Homabay is mainly attributed by understanding the source of water, distribution systems and any existing projects. The decision-making and sustainability of World Vision community water projects in Homabay County, Kenya were the subject of a research studied by

Odhiambo and Lango (2024). Sustainable development necessitates access to clean water, which is a fundamental human right. Since community involvement promotes active engagement, local ownership and responsibility, it has been acknowledged as a critical component in accomplishing sustainable development goals. The primary aim of the research was to evaluate how decision-making impacts the sustainability of World Vision's community water projects in Homabay County. Stakeholder theory formed the basis of the study. The chosen research design was descriptive. 208 respondents were the sample population and they included local area chiefs, project managers and members of project committees. Structured questionnaires were used to gather the primary data, which was then analyzed using regression and correlation analysis as well as means and standard deviation for descriptive and inferential purposes. The sustainability of the projects was shown to be highly impacted by decision-making (Beta = 0.294, p = 0.000). The study found that community members' active participation in decision-making across project components was essential to the long-term viability and sustainability of such projects. The recommendations emphasized how important it is to give decision-making openness top priority and to guarantee the sustainability of initiatives. Prospective investigations included examining regional variations, using technology and creativity into water initiatives and carrying out long-term studies to understand processes that change over time.

Nzomo (2022) looked at a research on the sustainability of water project decisions and project planning in Machakos County, Kenya. Additionally, it was highlighted that water shortage was a typical occurrence, particularly in ASAL parts of the world, and that, in order to continue delivering water for residential and commercial use, attention must be placed on the sustainability of water projects. Finding out how project planning

and decision-making impacted the sustainability of water projects in Machakos County was the main objective of the research. The study's components included assessing how much stakeholder engagement there was, how important technology selection was, how much money was allocated to the project and how much the water committee members' managerial skills contributed to the sustainable management of water projects in Machakos County, Kenya. The study's driving theories were the Theory of Change, Resource-Based View Theory, Four Capital Model Theory and Participatory Theory. In the study, a descriptive research design was employed. Project beneficiaries from the three completed water projects, project managers, water committee members, and village elders were among the targeted demographic. The respondents who participated in the study were chosen using simple random selection and a stratified sample approach, since the population was divided into groups based on their roles. Using pilot-tested questionnaires, the researcher gathered primary data, ensuring that the results were valid and trustworthy as determined by the Cronbach Alpha test. Following the collection and importation of the quantitative data into SPSS, frequency, percentages, means and standard deviation were ascertained by descriptive analysis. Correlation analysis and multiple regression were then used to perform inferential statistics. The investigator also carried out autocorrelation, multicollinearity and normality tests as diagnostic techniques. The study concluded that project planning and decision-making were the main elements determining the sustainability of the water projects in Mavoko, Machakos County. Consequently, the study recommends that additional projects in Machakos County that seek to sustain operations make use of project planning and its constituent parts.

2.2.3 Capacity Building on Sustainability of Water Projects

Kozlov (2023) looked at a study on the creation of a sustainable plan for Eritrea's water resources system. In order to improve the sustainability of the water resources system in the Mereb-Gash basin (Eritrea), this study provided methods based on SWOT analysis. Choosing representative indicators, describing them both quantitatively and qualitatively and developing a plan were the steps in the technique used. The findings suggested that the current method for managing water resources is more affected by flaws than by advantages. Furthermore, threats are expected to have a bigger impact on the water resources system than opportunities unless the rate of change picks up speed faster than the system can adjust. Potential arises from the system's inadequate social, economic and environmental developments as well as its organizational, legal and regulatory shortcomings. Consequently, several strategies have been distinctly outlined, among which prioritizing political determination and societal mobilization to enhance hydraulic engineering infrastructures and water resource facilities emerges as the most feasible approach in the near term. This approach offers the benefit of favored techniques for technology transfer, capacity enhancement and the enhancement of water-related ecosystems, all while mitigating global threats. However, the study is limited by the absence of an inclusive participatory strategy selection process. Therefore, it is essential to undertake a comprehensive on-site assessment that incorporates a wide range of perspectives, experiences, social considerations and environmental issues.

A study on the impact of capacity enhancement on enduring viability of irrigation initiatives within Rwanda, focusing specifically on the Kirehe Watershed Management Projects was conducted by Gasagwa, (2022). Given agriculture's pivotal role in

Rwanda's economy, with irrigation serving as its cornerstone, the study delved into the interconnectedness of irrigation development within value chains, which drive transformative industries. The impact of capacity building was examined with important ramifications for the Ministry of Agriculture in Rwanda, other irrigation projects and the viability of the Kirehe Watershed Management Project. The study, which used a descriptive research approach, had 86 people as its sample size from the target population who worked for the Kirehe Watershed Management Project. Data was collected via questionnaires and IBM SPSS software Version 21 was used to help with the qualitative and quantitative analysis of the collected data. Both descriptive (mean and standard deviation) and inferential (regression and correlation) statistics were included in the analysis. The data interpretation involved the use of tables and frequencies. Regarding capacity building, the overall mean of the results was 3.88, indicating a substantial agreement among respondents regarding its impact on project sustainability. The correlation coefficient between capacity building and project sustainability was found to be r=0.929, suggesting a strong positive correlation and a significant relationship between the two variables. The statistical analysis revealed significant results, with an F value of 532.108 and a p value of 0.000, indicating a significant association between capacity building and the sustainability of the irrigation project. Additionally, the variables related to capacity building demonstrated statistical significance with a p value of 0.000 concerning project sustainability. The study showed that there was a highly significant correlation between project sustainability and capacity building. It suggests that recipients engage in active participation to further the project's sustainability.

A study by Okide (2020) examined the importance of capacity building among stakeholders in facilitating community mobilization strategies for water project implementation in South East States of Nigeria. The research employed a descriptive survey design, targeting a population of 1747 individuals, including 895 community development officers and 852 executive members of town unions across 95 local government areas in the five states. Utilizing a stratified random sampling technique, a sample of 1073 respondents from 60 local government areas were selected. The validity of the survey was confirmed through face validation by three experts, yielding a reliability coefficient of 0.85 using the Pearson Product Moment Correlation. Research questions were addressed using mean and standard deviation analysis, while hypotheses were tested using the independent t-test statistic at a significance level of 0.05. The findings demonstrated, among other things, that a reasonable level of capacity building was included into the implementation of community development projects in South East States of Nigeria. One recommendation was for state governments to make an effort to successfully raise community ownership of development projects in both rural and urban areas.

Mbatha (2021) did a study on the long-term viability and social advancement of county government-funded water infrastructure in Makueni County, Kenya. It should be noted that one of the subjects that is not well covered is project sustainability, where there is still a sizable knowledge vacuum. It also emphasized the abnormally large proportion of unsuccessful endeavors. The study's goal was to ascertain how community capacity building in Kilome Sub-County of Makueni County affected project sustainability. In order to ascertain their impact on the overall sustainability of the project, the study concentrated on community organizing approaches, bottom-up strategies, investments

in community capacity and participatory practices used by the Makueni County government when implementing water projects in the area. The study utilized stakeholder theory, resource dependency theory and utilitarianism theory to contextualize the implementation of community capacity development in project management, aiming to ensure project sustainability. Employing a probability cluster sampling technique, the research divided the sub-county into sub-wards and collected data randomly from respondents within these clusters. The sample included 114 Project Management Committees (PMCs) and 5 project staff members. Closed-ended questionnaires were utilized to gather quantitative data from respondents overseeing various water projects. Descriptive analysis was conducted to transform the data into quantifiable information. The study's findings indicated a positive correlation between the dimensions of community capacity initiatives and the sustainability of water projects funded by the Makueni County government. Capacity building initiatives are an essential aspect that plays a pivotal role in ensuring the long-term viability of projects.

A study on the importance of capacity building initiatives as a determinant of project sustainability, focusing on borehole water projects in Kitui County, Kenya was conducted by Mwanzia, Nyonje, and Mulwa (2022). The primary objective of the research was to investigate the impact of capacity building initiatives on the sustainability of public borehole water projects in Kitui County. The study aimed to assess how knowledge gained from capacity building initiatives affects the long-term success of these projects. One null hypothesis was tested to determine the significance of the relationship between the variables under study. The study targeted a population of 366,324 project beneficiaries, 396 chairpersons and 8 undertakers. A sample was

drawn from this population using a formula adding to 383 project beneficiaries and 167 chairpersons. Purposive sampling was employed to select 8 undertakers in charge of public boreholes in each sub-counties. With R2 =0.52, r=0.721, F (2,506) =39.01 at p=0.000, the hypothesis that there is no significant relationship between capacity building initiatives and sustainability of public borehole water projects in Kitui County-Kenya was therefore rejected. It is anticipated that the study's conclusions would clearly show how public borehole water projects may improve project sustainability by implementing capacity building efforts.

2.3 Summary of Literature Review

Studies on PM&E in sustainable water projects seem to indicate that community-based water efforts often don't live up to the hype. Additionally, PM&E ensures the effectiveness of water projects in accordance with its specific factors since it involves local communities in the management and control of these projects. Another objective of the need to understand water networks is the development of different guidelines and tools for participatory water quality monitoring which may strengthen mechanisms for sustainable development.

2.4 Knowledge Gap

Despite numerous studies addressing sustainability, little attention has been given to the effect of PM&E on sustainability of water projects in Matapato North Ward, Kajiado County. There seems to be a study void in the specific analysis of the effects of PM&E methodologies on sustainability results, even though existing studies may touch on M&E in general or water project sustainability. Three crucial M&E elements have been found by the researcher to have an impact on sustainability. Crucially, a

number of writers have pointed out that, although this area may be understudied, contextual considerations including community dynamics, local government systems, socioeconomic circumstances and cultural components interact with PM&E to influence sustainable outcomes. A thorough comprehension will require more investigation into these contextual nuances.

CHAPTER THREE: RESEARCH METHODOLOGY

3.1 Introduction

This chapter described the procedures and approaches that was applied to look into how PM&E affects the long-term viability of water projects in Kajiado County's Matapato North Ward. This chapter covered the following topics: research design; reason for site selection; target demographic; sample size determination; data collection techniques; data processing and analysis; and legal and ethical considerations.

3.2 Research Design

A research design, according to Dawadi, Shrestha and Giri (2021) is an essential part of any research design as it acts as a guide for the procedures that is used for data collecting and analysis. It includes choosing strategies for data analysis as well as decisions on methodology, sample procedures, objectives and data gathering. The reseacher intended to utilize a descriptive survey design study strategy. Mishra and Alok (2022) defined descriptive survey research design as a technique for methodically gathering data to characterize a population, circumstance or phenomena. The significance of descriptive survey research design was its ability to provide a detailed description of the variable distribution without assuming causality. It offered a thorough grasp of a population or phenomena, helped with resource planning and produced research ideas for additional study.

3.3 Research Site and Rationale

The research took place in Matapato North Ward, Kajiado County. The selection of this study was prompted by the realization of how critical it is to understand the factors bolstering or undermining the sustainability of water projects especially in regions

where communities' well-being and ability to maintain a standard of living depend heavily on access to clean water.

3.4 Target Population

A target population, as defined by Creswell & Creswell (2017), is the full group of individuals, occasion or organization that the researcher want to investigate. The study's target population was 47,413 inhabitants of Matapato North Ward (KNBS, 2019). According to Mugenda and Mugenda (2013), a target population is any group of individuals, instances, or things that have certain observable features. The study's target group included both men and women.

Table 3.1: Target Population

Category	**Target Population**	**Percentage**
Male	23,880	50.37%
Females	23,533	49.63%
Total	**47,413**	**100%**

***Source**: KNBS Census Report (2019)*

3.5 Study Sample Size

A sample size is the number of elements that must be chosen from the universe in order to form a sample, according to Nayak and Singh (2021). In this instance, the sample size is a subset of the population; it is a subset that is smaller than the overall population under study and shares the same features as the population. Therefore, a larger sample is more likely to contain the mean and standard deviation of the target population (Creswell & Creswell, 2017). Notably, Mugenda and Mugenda (2013) contended that a sample size of 10% to 30% of the whole population is ideal.

The researcher therefore used the Yamane formula to calculate the sample size.

$$n = \frac{N}{(1+Ne^2)}$$

Where

According to the study circumstances, n=Corrected Sample Size, N=Population Size, and e=Marginal of Error, e=0.05. In this instance, 47,413 people live in Matapato North Ward.

The following was the sample size:

Sample Size= $\frac{47,413}{1+47,413(0.05)\text{^}2} = \frac{47,413}{119.5325} = 397$

Table 3.2: Sample Size

Category	**Target Population**	**Actual Sample Size**
Male	23,880	200
Females	23,533	197
Total	**47,413**	**397**

***Source**: Author (2024)*

3.5.1 Sampling Procedure

Ngala (2018) noted that a sampling procedure is the procedure used to choose a portion of the population to take part in a study. It entails selecting a sufficient number of participants in a manner that guarantees the selected individuals are representative of the broader group from which they were selected. Men and women who live in Matapato North Ward were sampled using a stratified random sampling approach. Answers to inquiries about the aims was found by the researchers thanks to the two layers.

3.6 Data Collection

Data collection in research is the systematic process of gathering information from various sources to answer research questions, test hypotheses and evaluate outcomes. This process is a critical component of the research design, as the quality and reliability of the collected data significantly impact the study's findings and conclusions (Garg & Kothari, 2014).

3.6.1 Data Collection Instruments

Any measuring device used by researchers, including tests, questionnaires, surveys, and so on, is referred to as an instrument (Garg & Kothari, 2014). Due to the fact that research participant data consisted of words within the context of the researcher's problem, the researcher employed a main data collecting tool. In Kajiado County, this method afforded communities more freedom to respond to questions about PM&E of project sustainability, allowing them to offer detailed information on the occurrence. The researcher set aside his preconceptions by putting his thoughts on M&E procedures in the workplace or organization in writing, ensuring the validity of the data gathered. This enabled more freedom in the data collecting process. The researchers' past understanding of the phenomena as well as the participants' own experiences served as a guide.

With the use of questionnaires that included a number of questions as well as other prompts, the researcher gathered data from respondents. Additionally, the researcher conducted interviews during which he asked interviewees questions in an effort to elicit information. Interviews were conducted primarily for the sake of gathering in-depth details on respondents' thoughts, feelings and perspectives.

3.6.2 Piloting of Research Instruments

To pre-test the equipment, a pilot study was conducted prior to starting data collecting. This was carried out in order to evaluate the instruments' validity, reliability and the intelligibility of the words (Mugenda & Mugenda, 2013). Pre-testing was done in Dalalekutuk Ward, a neighboring ward to Matapato North.

3.6.3 Reliability of the Instruments

A research instruments' reliability is determined by how consistently it produces data or outcomes after several trials (Garg & Kothari, 2014). Measurement of stability, measurement of instrument internal consistency and instrument score interrater reliability was assessed using reliability estimates. According to Bryman and Bell (2015), a study is considered trustworthy if it consistently measures everything it is supposed to and a value of above 0.7 is acceptable. Reliability is affected by random error and reliability rises with increasing random error. Erroneous instrumentation, erroneous researcher scoring and other unexplained flaws can all lead to random error, which is a departure from the correct measurement. In the end, it can impact how trustworthy the information gathered is. By calculating Cronbach's coefficient alpha to assess internal consistency, the questionnaire's reliability was evaluated. The variables in this study generated a Cronbach's alpha of 0.773, therefore they passed the test of reliability of scale.

3.6.4 Validity of the Instruments

This is the extent to which theoretical justifications and empirical data bolster the suitability and sufficiency of the interpretations and decisions made in response to test results (Bryman and Bell, 2015). Notably, the degree of validity for various interpretations of the test findings varies based on the specific purpose for which the test is designed (Bryman, 2016). The process of validating quantitative instruments,

which often include pilot testing, ideally relates to the requirement of gathering and evaluating data. The accuracy with which the data is gathered represents the research variables, therefore, determines its validity. Error that is systematic, or non-random, is the main factor influencing the study. Contrarily, there were tests for construct and content validity. Theoretical groundwork regarding the construct to be tested was necessary for the assessment of construct validity and theoretical expectations must line up with measurement results. To what extent data is acquired using a certain instrument to symbolize the content of a particular notion is measured by content validity. The university supervisor assessed the instruments to make sure the material was authentic and to see if the topics included in the instrument matched what was intended. In order to prevent misunderstandings, the researcher made sure the research questions were understandable.

3.6.5 Data Collection Procedures

Primary data was gathered for the research project during the data collection phase. For the purpose of gathering primary data and details on the study's variables, survey questionnaires was distributed to all respondents who were chosen for the research. It should be noted that structured questions was included in the questionnaires. In order to augment the information gathered via questionnaires and interviews, the researcher also relied on secondary data collecting sources, which was used by consulting earlier records or materials from the department of agriculture and water.

3.7 Data Processing and Analysis

Pandey and Pandey (2021) defines data processing and analysis as gathering, modeling and transformation of data in order to identify important patterns, reach judgments and aid in decision-making. In order to satisfy the study objectives, a variety of techniques

was used to thoroughly examine the data during the data gathering phase. SPSS version 23 was used to analyze the quantitative data from the questionnaire in order to determine the frequencies and percentages of various responses. The connection between the dependent variable and independent variables like PM&E on sustainability of the water project, was assessed through multiple regression analysis to identify their mutual influence (Mugenda, 2008). The outcomes were depicted through tables, graphs and charts to effectively communicate the gathered information.

3.8 Legal and Ethical Consideration

Simply said, ethics are rules of behavior or norms that aim to direct our moral decisions regarding our actions and interactions with other people. In actuality, everyone involved in the study process need to act ethically (Mishra & Alok, 2022). Research is an activity intended to test hypotheses, allow conclusions to be reached and so build or add to generalized knowledge stated in theories, principles, and explanations of relationships (Nayak and Singh (2021). In addition to an introduction letter outlining the goal of the study and guaranteeing respondent confidentiality, Africa Nazarene University sent a letter to the researcher authorizing him to carry out the investigation. The researcher using the University introduction letter, applied for a license from the National Council for Science and Technology requesting authorization to conduct research. The researcher did set up preliminary plans with the Matapato North Ward residents two weeks prior to the material data collection, following permit acquisition. This allowed for the development of a sufficient rapport with the respondents, an increase in their confidence and awareness of the nature and purpose of the study and the clarification of their freedom to make an informed choice.

CHAPTER FOUR: DATA ANALYSIS AND FINDINGS

4.1 Introduction

In this chapter, the findings obtained were presented. The purpose of this research was to assess the PM&E on sustainability of water projects in Matapato North Ward, Kajiado County. The findings obtained were analysed against the research following objectives; to determine the influence of community involvement on sustainability of water projects in Matapato North Ward, Kajiado County; to assess the influence of decision making on sustainability of water projects in Matapato North Ward, Kajiado County and to examine the influence of capacity building on sustainability of water projects in Matapato North Ward, Kajiado County.

4.2 Presentation of Findings

The presentation of findings involved systematic and clear presentation of the results using tables, charts and narrative descriptions, to highlight key patterns, relationships and insights derived from the data.

4.2.1 Response Rate

The study sampled 397 (200M;197F) persons. Out of the 397 sampled, 290 respondents from the sample population from Matapato North Ward, Kajiado County participated in the study. This made a response rate of 73% as presented in Table 4.1. According to Mugenda and Mugenda (2003), a 50% response rate is satisfactory, 60% is good and above 70% is very good, therefore allowed the researcher to proceed with data analysis.

Table 4.1: Response Rate

Sampled	Responded	Response Rate
397	290	73%

Source: Author (2024)

4.3 Demographics of the Respondents

The study sought to investigate gender, age and education level of the respondents who participated in the study. The findings obtained are presented in the section below;

4.3.1 Gender of Respondents

The results provided indicate that 147 (50.7%) respondents were male while 143 (49.3%) of the respondents were female in Matapato North Ward, Kajiado County as shown in Figure 4.1

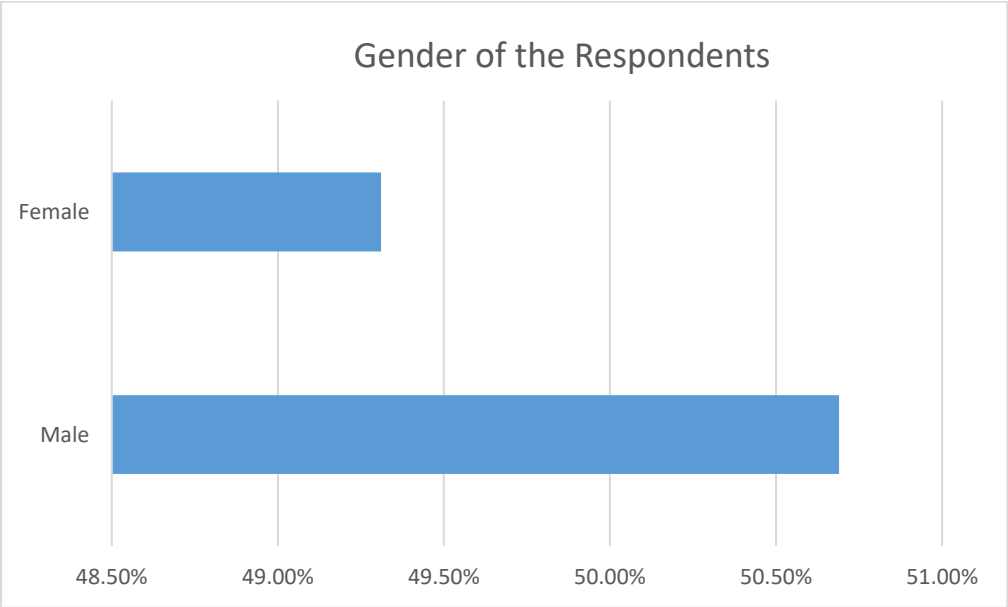


Figure 4.1: Gender of the Respondents

4.3.2 Age of the Respondents

The findings in Figure 4.2 showed the age of the respondents. The findings showed that age brackets of the respondents 21-30 years was 64 (22.1%), 31-40 years was 34 (11.7%), 41-50 years was 171 (59%) and finally above 50 years was 21 (7.2%) as shown in Figure 4.2. The study found that majority of the respondents were of the age 41-50 years (59%).

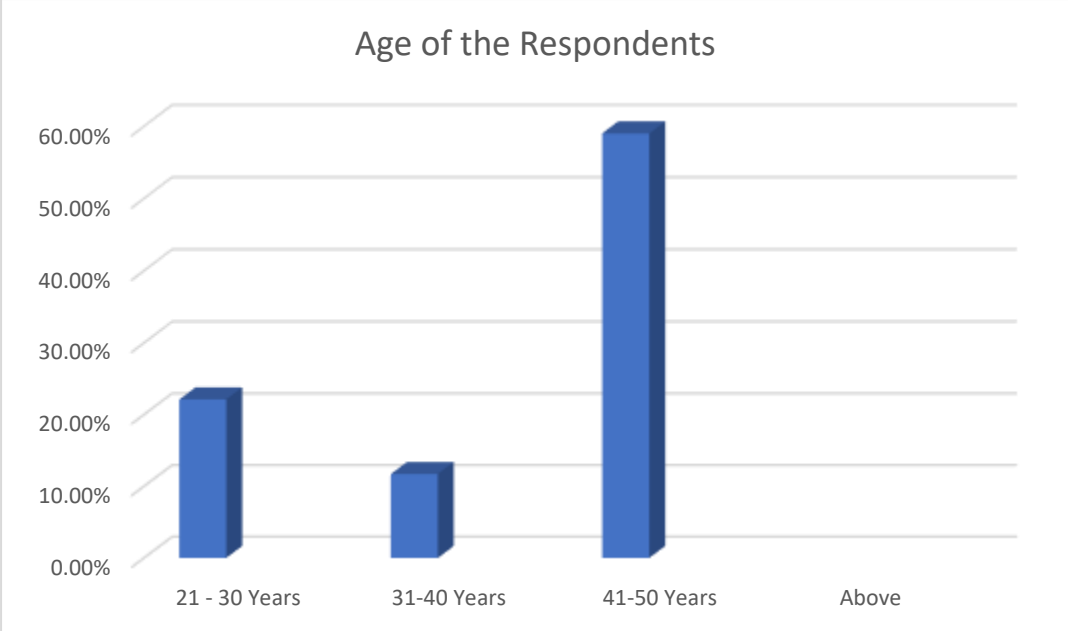


Figure 4.2: Age of the Respondents

4.3.3 Duration of Residency in Matapato North Ward

The findings of the study showed how long the respondents have been residents of Matapato North Ward. From the findings, the study showed that 34 (11.9%) of the respondents were residents for 5- 10 years, 93 (31.9%) of the respondents were residents for 11-15 years, 143 (49.3%) of the respondents were residents for 16-20 years, and finally 20 (6.9%) of the respondents were residents for over 21 years as shown in Figure 4.3.

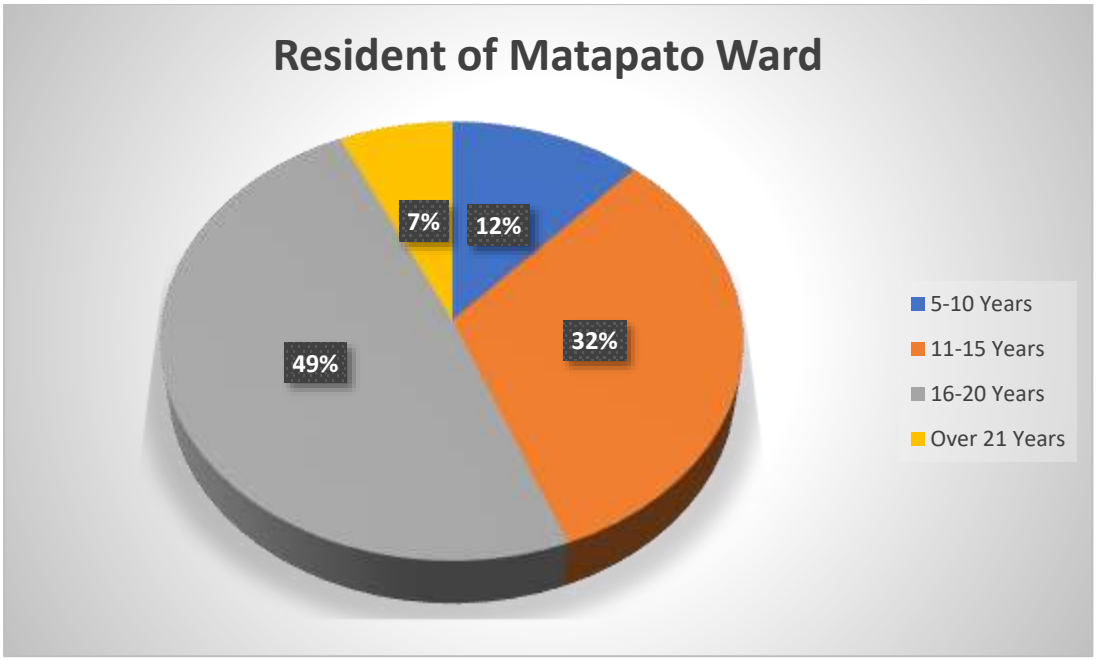


Figure 4.3: Residential Status

4.3.4 Level of Education

The findings of the study showed respondents level of education. The findings of the study showed that 15 (5.3%) of the respondents had Masters as their highest level of education, 60 (20.7%) of the respondents highest level of education was degree, 44 (15%) of the respondents highest level of education was diploma, and finally, 171 (59%) of the respondents highest level of education was secondary. The study established that respondents highest level of education was secondary as shown in Figure 4.4.

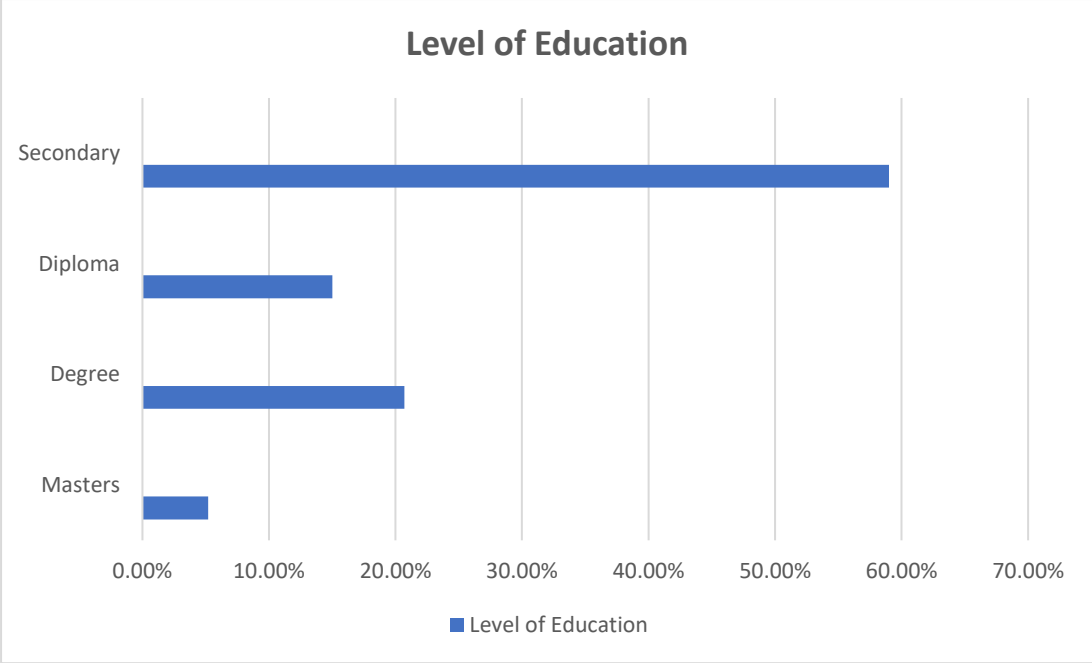


Figure 4.4: Level of Education

4.4 PM&E on Sustainability of Water Projects

The findings obtained are presented in this section. This section presents the descriptive findings of each variable of the study i.e. community involvement, decision making and capacity building as independent variables and sustainability of water projects as the dependent variable. The objective was to depict respondents' level of agreement (on a scale of 1-5 where 5-strongly agree [SA], 4-agree [A], 3-neutral [N], 2-disagree [D], and 1-strongly disagree [SD]) with various constructs under each variable of the study using frequency, percentages, mean, and standard deviation. Also, a composite mean was established to indicate respondents' overall level of agreement. A composite mean above 3.0 suggested that respondents agreed while below 3.0 suggested that respondents disagreed as discussed below.

4.4.1 Community Involvement on Sustainability of Water Projects

4.4.1.1 Descriptive Analysis

Descriptive analysis was conducted on community involvement on sustainability of water projects. The results are depicted in table 4.2 and discussed below.

Table 4.2: Community Involvement Descriptive Results

Community Involvement on Sustainability of Water Projects	**Strongly Agree**	**Agree**	**Neutral**	**Disagree**	**Strongly Disagree**	**Mean**	**Std Dev.**
To what extent do you agree that community involvement positively impacts the sustainability of water projects?	53.2	27.4	8.1	0.0	11.3	4.11	1.282
Do you believe that active participation from the local community contributes to the long-term success of water projects?	72.6	16.1	8.1	3.2	0.0	3.98	.735
How important do you think community engagement is in ensuring the ongoing maintenance and upkeep of water infrastracture?	16.1	8.1	24.2	37.1	14.5	3.26	1.280
Do you agree that involving the community in decision makingh processes regarding water projects enhances their sense of ownership and responsibility?	45.2	11.3	17.7	4.8	21.0	3.69	1.086
To what extent do you believe that community involvement fosters deeper understanding and appreciation of water	16.1	0.0	11.3	51.6	21.0	3.61	1.285

conservation practices?							
How much do you agree tha local knowledge and inputs significantly improves the effectiveness and efficiency of water projects?	21.0	0.0	14.5	38.7	25.8	3.48	1.434
Composite Mean/SD						**3.68**	**1.184**

***Source**: Author (2024)*

The findings reported in Table 4.2 of the study established a composite mean of 3.68. This result indicated that respondents agree with community involvement to influence the sustainability of water projects. The findings of the study showed that in statement (1) “To what extent do you agree that community involvement positively impacts the sustainability of water projects?” Out of 290, 53.2% of the respondents strongly agree with the statement, 27.4% fully agree with the statement, 8.1% of the respondents were neutral, 0.0% of the respondents disagreed and 11.3% of the respondents strongly disagreed with the statement with a mean of 4.11 and standard deviation 1.282. A mean higher than the composite mean suggest that majority of the respondents agreed with the statement.

In statement (2) “ Do you believe that active participation from the local community contributes to the long-term success of water projects?” Of the 290, 72.6% of the respondents strongly agreed with the statement, 16.1% of the respondents agreed with the statement, 24.5% of the respondents were neutral, 3.2% of the respondents disagreed, and none strongly disagreed with a mean of 3.98 and standard deviation .735.

A mean higher than the composite mean suggest that majority of the respondents agreed with the statement.

In statement (3), " How important do you think community engagement is in ensuring the ongoing maintenance and upkeep of water infrastracture," Out of 290, 16.1% of the respondents strongly agreed with the statement, 8.1% of the respondents agreed, 24.2% of the respondents were neutral, 37.1% of the respondents disagreed, and 14.5% of the respondents strongly disagreed with the statement with a mean of 3.26 and standard deviation 1.280. A mean lower than the composite mean suggest that majority of the respondents did not agree with the statement.

In the statement (4) "Do you agree that involving the community in decision making process regarding water projects enhances their sense of ownership and responsibility," Of the 290, 45.3% of the respondents strongly agreed with the statement, 11.3% of the respondents agreed, 17.7% of the respondents were neutral, 4.8% of the respondents disagreed, and 21% of the respondents strongly disagreed with the statement with a mean of 3.69 and standard devaition 1.086. A mean higher than the composite mean suggest that majority of the respondents agreed with the statement.

In statement (5) "To what extent do you believe that community involvement fosters deeper understanding and appreciation of water conservation practices?" Out of 290, 16.1% of the respondents strongly agreed with the statement, none of the respondents agreed, 11.3% of the respondents were neutral, 51.6% of the respondents disagreed with statement and 21% of the respondents of the strongly disagreed with the statement with a mean of 3.61 and standard deviation 1.232. A mean lower than the composite mean suggest that majority of the respondents did not fully agree with the statement.

In statement (6), "Would you say that community involvement plays a crucial role in ensuring the sustainability of water projects over time?" Of the 290 respondents, 21%

of the respondents strongly agreed, none agreed, 14.5% of the respondents were neutral, 38.7% of the respondents disagreed, and 25.8% of the respondents strongly disagreed with a mean of 3.48 and standard deviation 1.434. A mean lower than the composite mean suggest that majority of the respondents did not agree with the statement.

Further, it was evident that a mean of 3.68 is suggestive in that it indicates that high level of agreement among respondents that community involvement positively influence the sustainability of water projects. The mean and standard deviation further confirms that the majority of respondents lean towards agreeing or strongly agreeing with the statement. The distribution shows a positive skew, indicating more respondents agree than disagree.

4.4.1.2 Inferential Analysis of Community Involvement

Correlation, regression and hypothesis testing were conducted to test the relationship between community involvement and sustainability of water projects.

Hypothesis Testing

Hypothesis H_{01}: There is no significant relationship between community involvement and sustainability of water projects in Matapato North Ward, Kajiado County.

Correlation of Community Involvement

Table 4.3: Correlation Results on the Influence of Community Involvement on Sustainability of Water Projects

Variable		Sustainability of Water Projects
Community Involvement	Pearson Correlation	0.048
	Sig (2-tailed)	0.489
	N	290

**. Correlation is significant at the 0.05 level (2-tailed)

Before testing the first hypothesis, the study demonstrated a correlation analysis-strength of linear relationship-between community involvement on sustainability of water projects in Matapato Ward North in table 4.3 above. Pearson correlation was,

$r = 0.048, p < 0.05$. This suggested a very weak positive correlation and little meaningful linear relationship between community involvement and the sustainability of water projects in Matapato North Ward Kajiado County.

Regression Analysis of Community Involvement

The study, therefore, performed a regression analysis to test the hypothesis of the study as indicated in Table 4.4.

Table 4.4: Regression Results on Influence of Community Involvement on Sustainability of Water Projects

Model Summary & ANOVA					
R-Square	.002				
df	3, 286				
F-Statistics	.480				
Sig.	.489[b]				
Coeffients					
Model	Unstandardized Coefficients		Standardized Coefficient	t	Sig.
	B	Std. Error	Beta		
1(Constant)	2.163	.141		15.335	.000
Community Involvement	.030	.043	.048	.693	.489

a. Dependent Variable: Sustainability of Water Projects

b. Predictors: (Constant), Community Involvement

First, the ANOVA results demonstrated that there is a significant change between community involvement on sustainability of water projects in Matapato North Ward ($F(3,286)=.480$, $P=.489$, $R^2=.002$). However, the regression coefficient output reported insignificant positive influence of community involvement on sustainability of water projects .030, p=.489. The findings meant that the study failed to reject the null hypothesis and concluded that there is no significant influence of community involvement on sustainability of water projects in Matapato North Ward, Kajiado County.

4.4.2 Decision Making on Sustainability of Water Projects

4.4.2.1 Descriptive Analysis

Descriptive analysis was conducted on decision making on sustainability of water projects. The results are depicted in table 4.5 and discussed below.

Table 4.5: Decision Making on Sustainability Descriptive Results

Decision Making on Sustainability of Water Projects	Strongly Agree	Agree	Neutral	Disagree	Strongly Disagree	Mean	Std Dev.
Do you believe that effective decision making plays a crucial role in ensuring the sustainability of water projects?	37.1	21.0	17.7	16.1	8.1	3.39	1.347
In your opinion, does strategic decision making positively impact the long term viability of water projects?	3.2	59.7	14.5	0.0	22.6	3.21	1.269
Woul you agree that involving stakeholders in decision making enhances the sustainability of water projects?	37.1	11.3	14.5	16.1	21.0	3.02	1.361
Do you believe the transparent descion-making processes are essential for the long-term success of water projects?	21.0	41.9	8.1	14.5	14.5	3.40	1.361
Would you say that community involvement in decision making positively influences the	21.0	21.0	25.8	21.0	11.2	3.19	1.304

sustainability of water projects?		
Composite Mean/SD	**3.2**	**1.3284**

***Source**: Author (2024)*

The findings reported in Table 4.5 of the study established a composite mean of 3.2. This result indicated that respondents agree with the fact that decision making enhances the sustainability of water projects. The findings of the study showed that in statement (1) "Do you believe that effective decision making plays a crucial role in ensuring the sustainability of water projects?," Out of 290, 37.1% of the respondents strongly agreed with the statement, 21% of the respondents agreed, 17.7% of the respondents were neutral, 16.1% of the respondents disagreed and 8.1% of the respondents strongly disagreed with a mean of 3.39 and standard deviation 1.347. A mean higher than the composite mean suggest that majority of the respondents agreed with the statement.

In statement (2) "In your opinion, does strategic decision making positively impact the long term viability of water projects?" Of the 290, 3.2% of the respondents strongly agreed with the statement, 59.7% of the respondents agreed with the statement, 14.5% of the respondents were neutral, none disagreed, and 22.6% of the respondents strongly disagreed with the statement with a mean of 3.21 and standard deviation 1.269. A mean higher than the composite mean suggest that majority of the respondents agreed with the statement.

In statement (3) "Would you agree that involving stakeholders in decision making enhances the sustainability of water projects?" Out of 290, 37.1% of the respondents strongly agreed with the statement, 11.3% of the respondents agreed with the statement, 14.5% of the respondents were neutral, 16.1% of the respondents disagreed with the statement and 21% of the respondents strongly disagreed with the statement with a

mean of 3.02 and standard deviation 1.361. A mean lower than the composite mean suggest that majority of the respondents did not agree with the statement.

In statement (4) “Do you believe the transparent decision-making processes are essential for the long term success of water projects,” Of the 290 respondents, 21% of the respondents strongly agreed with the statement, 41.9% of the respondents agreed, 8.1% of the respondents were neutral, 14.5% of the respondents disagreed with the statement and 14.5% of the respondents strongly disagreed with the statement with a mean of 3.40 and standard deviation 1.361. A mean higher than the composite mean suggest that majority of the respondents agreed with the statement.

In statement (5) ‘Would you say that community involvement in decision making positively influences the sustainability of water projects?” Out of 290, 21% of the respondents strongly agreed with the statement, 21% of the respondents agreed with the statement, 25.8% of the respondents were neutral, 21% of the respondents disagreed and 11.2% of the respondents strongly disagreed with the statement with a mean of 3.19 and standard deviation 1.304. A mean lower than the composite mean suggest that majority of the respondents did not fully agree with the statement.

The composite mean of 3.2 suggest a moderate level of agreement among respondents. This implies that, on average, respondents somewhat agree that decision making processes influence the sustainability of water projects. However, this agreement is not particularly strong of overwhelmingly positive. The standard deviation of 1.3284 indicates a relatively high level of variability in the responses. This means that while the average level of agreement is moderate, individual’s responses vary widely. Some respondents may strongly agree or disagree with the statement, resulting in this higher standard deviation. The implication is that moderate composite mean shows that there

is a recognition of the impact of decision making on the sustainability of water projects, but this recognition is not unanimous or particularly strong.

4.4.2.2 Inferential Analysis of Decision Making

Correlation, regression and hypothesis testing were conducted to test the relationship between decision making and sustainability of water projects.

Hypothesis Testing

Hypothesis H_{02}: There is no significant relationship between decision making and sustainability of water projects.

Correlation of Decision Making

Table 4.6: Correlation Results of Influence of Decision Making on Sustainability of Water Projects

Variables		Sustainability of Water Projects
Decision Making	Pearson Correlation	.232**
	Sig. (2-tailed)	.001
	N	290

**Correlation is significant at the 0.01 level (2-tailed)

Second, the study demonstrated a correlation analysis-strength of linear relationship between decision-making on sustainability of water projects. The outcome provided in Table 4.6 above showed that there is a significant and positive moderate correlation between decision-making on sustainability of water projects at $r = 0.232, p < 0.01$. The results suggest there is moderate linear relationship between decision-making on sustainability of water projects.

Regression Analysis of Decision Making

A regression analysis was further conducted to test the second hypothesis of the study and the results presented in Table 4.7 below.

Table 4.7: Regression Results of Influence of Decision Making on Sustainability of Water Projects

Model Summary & ANOVA					
R-Square	.054				
df	3, 286				
F-Statistics	11.728				
Sig.	.001[b]				
Coeffients					
Model	Unstandardized Coefficients		Standardized Coefficient	t	Sig.
	B	Std. Error	Beta		
1(Constant)	1.684	.170		9.921	.000
Decision Making	.180	.053	.232	3.425	.001

a. Dependent Variable: Sustainability of Water Projects
b. Predictors: (Constant), Decision Making

The reported ANOVA findings indicated that there is a significant variation in the influence of decision making on sustainability of water projects in Matapato North Ward, Kajiado County ($F(3,286)=11.728$, $p<.001$, $R^2=.054$). Outstandingly, the regression coefficient results demonstrated a significant and positive influence of decision making on sustainability of water projects in Matapato North Ward, Kajiado County (B=.180, P=.001). The outcome displayed that the study rejected the null hypothesis and concluded that there is a significant and positive influence of decision making on sustainability of water project in Matapato North Ward, Kajiado County. The results was supported by Alitane et. al., (2022) on the significance of decision making approach to sustainable water resource management through hydrological modeling.

4.4.3 Capacity Building on Sustainability of Water Projects

4.4.3.1 Descriptive Analysis

Descriptive analysis was conducted on capacity building on sustainability of water projects. The results are depicted in table 4.8 and discussed below.

Table 4.8: Capacity Building on Sustainability Descriptive Results

Decision Making on Sustainability of Water Projects	**Strongly Agree**	**Agree**	**Neutral**	**Disagree**	**Strongly Disagree**	**Mean**	**Std Dev.**
To what extent do you believe capacity building contributes to the sustainability of water projects?	56.5	30.6	9.7	0.0	3.2	4.37	.910
How important do you think capacity building is in ensuring long-term success of water projects?	43.5	45.2	3.2	4.8	3.3	4.21	.960
Do you perceive capacity building as essential for empowerng local communities to manage and maintain water projects effectively?	41.9	35.5	14.5	0.0	8.1	4.11	.943
To what extent do you believe capacity building enhances the resilience of water projects against environmental socio-economic challenges?	33.8	35.5	19.4	8.1	3.2	3.89	1.075
Would you agree that investing in capacity building programs significantly increases the likelihood of achieving sustainability goals in water projects.	43.5	27.4	8.1	12.9	8.1	3.69	1.236
Composite Mean/SD						**4.054**	**1.025**

***Source**: Author (2024)*

The findings reported in Table 4.8 established a composite mean of 4.054. This result indicated that respondents agree with the fact that capacity building enhances the sustainability of water projects. In statement (1) “To what extent do you believe capacity building contributes to the sustainability of water projects?” From the 290 respondents, 56.5% of the respondents strongly agreed with the statement, 30.6% of the respondents agreed, 9.7% of the respondents were neutral, none disagreed and 3.2% of the respondents strongly disagreed with a mean of 4.37 and standard deviation .910. A mean higher than the composite mean suggest that majority of the respondents agreed with the statement.

In the statement (2) “How important do you think capacity building is in ensuring long term success of water projects?” Out of 290, 43.5% of the respondents strongly agreed with the statement, 45.2% of the respondents agreed with the statement, 3.2% of the respondents neutral, 4.8% of the respondents disagreed and 3.3% of the respondents strongly disagreed with a mean of 4.21 and standard deviation .960. A mean higher than the composite mean suggests that majority of the respondents agreed with the statement.

Statement (3) “Do you perceive capacity building as essential for empowering local communities to manage and maintan water project effectively?” Of the 290 respondents, 41.9% of the respondents strongly agreed with the statement, 35.5% of the respondents agreed with the statement, 14.5% of the respondents were neutral, none disagreed, and 8.1% of the respondents strongly agreed with the statement with a mean of 4.11 and standard deviation .943. A mean higher than the composite mean suggest that majority of the respondents agreed with the statement.

In statement (4) “To what extent do you believe capacity building enhances the resilience of water projects against environmental socio-economic challenges,” Out of

290, 33.8% of the respondents strongly agreed with the statement, 35.5% of the respondents agreed, 19.4% were of the respondents were neutral, 8.1% of the respondents disagreed and 3.2% strongly disagreed with 3.89 and standard deviation 1.075. A lower composite mean suggest that majority of the respondents did not fully agree with the statement.

Statement (5) "Would you agree that investing in capacity building programs significantly increased the likelihood of achieving of achieving sustainability goals in water projects," Out of 290 respondents, 43.5% of the respondents strongly agreed with the statement, 27.4% of the respondents agreed, 8.1% of the respondents neutral, 12.9% of the respondents disagreed with the statement, and 8.1% of the respondents strongly agreed with the statement with a mean of 3.69 and standard deviation 1.236. A mean lower than the composite mean suggest that majority of the respondents did not fully agree with the statement.

Moreover, the respondents exhibited a high level of agreement on the influence of capacity building on the sustainability of water projects. This indicated by a composite mean of 4.054, suggesting that, on average, the respondents strongly agree that capacity building significantly impacts the sustainability of water projects. The composite standard deviation of 1.025 implies that while there is some variation in the responses, the majority of the respondents views are clustered around the high mean value. This level of variation is moderate, indicating that although most respondents agree, there are differing opinions on the extent of the impact. Overall, the data suggest a strong consensus on the positive influence of capacity building on the sustainability of water projects in the region, despite some differences in the level of agreement among the respondents.

4.4.3.2 Inferential Analysis of Capacity Building

Correlation, regression and hypothesis testing were conducted to test the relationship between capacity building and sustainability of water projects.

Hypothesis Testing

Hypothesis H_{03}: There is no significant relationship between capacity building and sustainability of water projects in Matapato North Ward, Kajiado County.

Correlation of Capacity Building

Table 4.9: Correlation Results of Influence of Capacity Building on Sustainability of Water Projects

Variables		Sustainability of Water Projects
Capacity Building	Pearson Correlation	.208**
	Sig.(2-tailed)	.003
	N	290

**Correlation is significant at the 0.01 level (2-tailed)

The third hypothesis of the study aimed to establish whether there is no significant relationship between capacity building and sustainability of water projects in Matapato North Ward, Kajiado County. R-value was r=.208, p=.003. The study outcomes depicts a moderate linear relationship between the two variables of the study.

Regression Analysis of Capacity Building

A regression analysis was further conducted to test the third hypothesis of the study and the results presented in Table 4.10 below.

Table 4.10: Regression Results of Influence of Capacity Building on Sustainability of Water Projects

Model Summary & ANOVA	
R-Square	.043
df	3, 286
F-Statistics	9.316
Sig.	.003[b]
Coefficients	

Model	Unstandardized Coefficients		Standardized Coefficients	t	Sig.
	B	Std. Error	Beta		
1 (Constant)	1.412	.279		5.064	.000
Capacity building	.308	.101	.208	3.052	.003

a. Dependent Variable: Sustainability of Water Projects

b. Predictors: (Constant), Capacity Building

Regarding regression analysis output as depicted in Table 4.10 above, the ANOVA results revealed that there exist significant positive changes in the influence of capacity building on sustainability of water projects (F(3,286)=9.316, P=.003, R^2 =.043). Generally, the regression coefficient findings further provided that there is a significant and positive influence of capacity building on sustainability of water projects (B=.308, P=.003). The regression results, therefore, depicted that the study rejected the null hypothesis and concluded that there is a significant and positive influence of capacity building on sustainability of water projects. The study was supported by Mwanzia, Nyonje and Mulwa (2022) on the extent to which capacity building has improved the operations of public boreholds in Kitui County.

4.4.4 Sustainability of Water Projects in Matapato North Ward

Descriptive analysis was done on the sustainability of water projects and the results are discussed below.

Table 4.11: Sustainability of Water Projects Descriptive Results

Sustainability of Water Projects	**Strongly Agree**	**Agree**	**Neutral**	**Disagree**	**Strongly Disagree**	**Mean**	**Std Dev.**
The incorporation of sustainability principles in water projects is crucial for long-term environmental protection.	21.0	38.7	17.7	12.9	9.7	3.3	1.34

Water projects should prioritize sustainable practices to ensure the availability of clean water for future generations.	45.1	37.1	8.1	0.0	9.7	4.1	1.19
Sustainable water projects contribute to the overall resilience of communities against water related challenges such as drought.	40.3	33.9	12.9	8.1	4.8	3.9	1.18
The integration of sustainability considerations in water projects leads to cost-effective long term solutions.	29.0	12.9	16.1	19.4	22.6	2.9	1.56
Sustainable water management practices should be integrated into policy frameworks at all levels of governance.	53.2	16.1	16.2	9.7	4.8	3.3	1.10
Composite Mean/SD						**3.5**	**1.274**

***Source**: Author (2024)*

The findings reported in Table 4.11 of the study established a composite mean of 3.5. This result indicated that respondents agree with sustainability of water projects. In the statement (1) "The incorporation of sustainability principles in water projects is crucial for long-term environmental protection," Out of 290 respondents, 21% of the respondents strongly agreed with the statement, 38.7% of the respondents agreed, 17.7% of the respondents were neutral, 12.9% of the respondents disagreed and 9.7% of the respondents strongly disagreed with a mean of 3.3 and standard deviation 1.34.

A mean lower than the composite mean suggest that majority of the respondents did not fully agree with the statement.

Statement (2) “Water projects should prioritize sustainable practices to ensure the availability of clean water for future generations,” From the 290 respondents, 45.1% of the respondents strongly agreed with the statement, 37.1% of the respondents agreed, 8.1% of the respondents were neutral, none disagreed and 9.7% of the respondents strongly disagreed with a mean of 4.1 and standard deviation 1.19. A mean higher than the composite mean suggest that majority of the respondents agreed with the statement.

In statement (3) “Sustainable water project contribute to the overall resilience of communities against water related challenges such as drought,” Out of 290 respondents, 40.3% of the respondents strongly agreed, 33.9% of the respondents agreed, 12.9% of the respondents were neutral, 8.1% of the respondents disagreed, 4.8% of the respondents strongly disagreed with a mean of 3.9 and standard deviation 1.18. A mean higher than the composite mean suggest that majority of the respondents agreed with the statement. In a statement (4) “The integration of sustainability considerations in water projects leads to coeffective long term solutions,” From the 290 respondents, 29% strongly agree with the statement, 12.9% of the respondents agreed, 16.1% of the respondents were nuetral, 19.4% of the respondents disagreed, 22.6% strongly disagreed with the statement with a mean 2.9 and standard deviation 1.56. A mean lower than the composite mean suggest that majority of respondents agreed.

In statement (5) “Sustainable water management practices should be integrated into policy frameworks at all levels of governance,” Of the 290 respondents, 53.2% of the respondents strongly agreed with the statement, 16.1% of the respondents agreed, 16.2% of the respondents were neutral, 9.7% of the respondents disagreed and 4.8% of the respondents strongly disagreed with a mean of 3.3 and standard deviation 1.10. A

mean lower than the composite suggest that majority of the respondents did not fully agree with the statement.

The study was agreement with Kozlov (2023) research which emphasized the critical role of capacity building in the sustainability of water projects. The study highlights that enhancing the capacity of institutions and individuals involved in water management is crucial for the long term success and resilience of water infrastracture projects. Capacity building includes developing technical skills, improving administrative and financial management, and ensuring transparent and effective governance.

4.5 Summary of Findings

The general objective of this study was to assess PM&E on sustainability of water projects in Matapato North Ward in Kajiado County. The predictor variables included; community involvement, decision making and capacity building. The dependent variable was sustainability of water projects in the Matapato North Ward. The study adopted descriptive survey which was significance in providing comprehensive picture of the characteristics and behaviors of a particular population or phenomenon, which allowed the researcher to gain deeper understanding of the topic. The primary quantitative data was significant in research because it provided direct, measurable and objective information about a specific phenomenon or population. The type of data was collected firsthand by the researcher through administration of research questionnaires. Extensively, out of 397 questionnaires administered to respondents, only 290 individuals responded and returned the questionnaires which translated to 73% response rate. The study also established that in relation to the gender of the respondents, 147 respondents were male and 143 of the respondents were female, which clearly shows that both genders were well represented. The study also established that

majority of the respondents who have been residents of Matapato North Ward were 94 (32.4%) who have been there for close to 11-15 years, followed by 48 (16.6%) who have been residents for 16-20 years, 34 (11.7%) of the respondents were residents for 5-10 years and finally 20 (6.9%) of the respondents were residents over 21 years. In respect to the level of education, majority of the respondents' highest level of education was secondary at 171 (59%), followed by degree holders at 60 (20.7%), diploma level was at 44 (15.1%) and finally masters level was 15 (5.3%). The findings showed that indeed majority of the respondents had a clear understanding on PM&E and sustainability of water projects. From the descriptive results, using agree, disagree, mean, and standard deviation, evidence showed that majority of the respondents agreed that community involvement, decision making and capacity building has a significance in enhancing the sustainability of water projects. It was clearly highlighted by the fact that the composite mean was higher than the standard mean.

During hypothesis testing, the significant F-test obtained under ANOVA, alternative hypothesis (H_{A1}) shows that there was a significant relationship between PM&E (decision-making and capacity building variables) and sustainability of water projects in Matapato North Ward, Kajiado County and was accepted and the null hypothesis (H_{01}) was rejected.

CHAPTER FIVE: DISCUSSIONS, CONCLUSION AND RECOMMENDATIONS

5.1 Introduction

This chapter presents the discussions, conclusion and recommendations. The discussions give an overview of the entire work. It discusses the results and analysis carried out in the study based on the study objectives. The conclusion section answers the questions that prompted the study. The recommendation points some of the areas for development in the study and suggests areas that should be considered for further studies.

5.2 Discussions

The distribution of gender, level of education and age demographics can significantly influence the sustainability of water projects. This study underscores the importance of gender equity and age diversity in achieving effective sustainable initiatives of water projects. The study reveals a balanced representation of male and female respondents which is an encouraging sign of equitable involvement. The presence of older members, particularly those between the ages of 41 and 50, possess invaluable knowledge of historical changes and climate change adaptation mechanisms which greatly enhances community participation, decision-making and information sharing between generations. Majority of the respondents were residents of the ward for over 16 years. This meant that these residents have seen and experienced changes that have taken place over the years both socially and environmentally and therefore able to make informed decisions that benefits the community at large. The limited involvement of younger population in the study was because schools and colleges were in session. Therefore, the balanced gender representation, valuable experience of older residents and long-term community ties highlight the importance of inclusive and

intergenerational participation for the sustainability of water projects, despite the limited involvement of the younger population due to academic commitments.

5.2.1 Influence of Community Involvement on Sustainability of Water Projects

First, the study determined the influence of community involvement on sustainability of water projects in Matapato North Ward, Kajiado County. Upon conducting a regression analysis, it was evident that community involvement has an insignificant influence on sustainability of water projects in Matapato Ward, Kajiado County. The findings study accepted the null hypothesis.

This concurs with Mrangu, (2018) observation that many community-based projects in Bagamoyo failed to achieve their expected impacts and goals due to ineffective community participation, inadequate monitoring and evaluation, and financial mismanagement or delayed funding. The researcher recommended that the government and other stakeholders enforce mechanisms to ensure mutual benefits for local communities in community-based projects.

The study also concurs with Mgumia et al (2016) observation on the factors influencing community participation in water projects. The study identified several factors that determine community participation in water projects. They observed that although many factors did not achieve statistical significance, possibly due to the relatively small sample size, they are still considered likely to influence community involvement and, by extension, the sustainability of water projects. The research emphasizes that these factors should be integrated into the redesign, planning, and implementation phases of water projects to enhance community participation and ensure the projects' long-term sustainability.

5.2.2 Influence of Decision Making on Sustainability of Water Projects

The second objective of this study was to assess the influence of decision making on sustainability of water projects in Matapato North Ward, Kajiado County. Upon conducting a regression analysis, it was evident that decision making has a significant and positive influence on sustainability of water projects in Matapato Ward, Kajiado County. The findings study rejected the null hypothesis.

These findings align with the previous research by Chrispim, de Souza and Nolasco (2020) on the framework for sustainable planning and decision making on resource recovery from wastewater as a showcase for the Sao Paulo Megacity which indicated that wastewater treatment and reuse can contribute significantly to sustainable resource management. The study highlights the importance of integrating wastewater treatment into the overall water management strategy to ensure a sustainable supply of clean water and minimize pressure on natural resources.

The findings also aligns with Alitane et al., (2022) study that explored the significance of decision making approach to sustainable water resources management through hydrological modeling. The study proposed that decision making framework based on the hydrological modeling results. The framework integrated hydrological data with other factors like climate, land use and water demand the support informed water resources management decisions. The study provided a valuable framework for decision-making in sustainable water resources management which can be applied to various regions with similar hydrological and climatic conditions.

5.2.3 Influence of Capacity Building on Sustainability of Water Projects

The third objective of this study was to examine the influence of capacity building on sustainability of water project on sustainability of water projects in Matapato North Ward, Kajiado County. Upon conducting a regression analysis, it was evident that capacity building has a significant and positive influence on sustainability of water

projects in Matapato Ward, Kajiado County. The study was backed by Kozlov (2023) study on the creation of a sustainable plan for Eritrea's water resources system. The findings suggested that the current method for managing water resources is more affected by flaws than by advantages. Furthermore, threats are expected to have a bigger impact on the water resources system than opportunities unless the rate of change picks up speed faster than the system can adjust. Potential arises from the system's inadequate social, economic and environmental developments as well as its organizational, legal and regulatory shortcomings. Consequently, several strategies have been distinctly outlined, among which prioritizing political determination and societal mobilization to enhance hydraulic engineering infrastructures and water resource facilities emerges as the most feasible approach in the near term. This approach offers the benefit of favored techniques for technology transfer, capacity enhancement and the enhancement of water-related ecosystems, all while mitigating global threats. However, the study is limited by the absence of an inclusive participatory strategy selection process. Therefore, it is essential to undertake a comprehensive on-site assessment that incorporates a wide range of perspectives, experiences, social considerations and environmental issues.

The findings were also backed by Gasagwa, (2022) study on the impact of capacity enhancement on enduring viability of irrigation initiatives within Rwanda, focusing specifically on the Kirehe Watershed Management Projects. Given agriculture's pivotal role in Rwanda's economy, with irrigation serving as its cornerstone, the study delved into the interconnectedness of irrigation development within value chains, which drive transformative industries. The study showed that there was a highly significant

correlation between project sustainability and capacity building. It suggested that recipients engage in active participation to further the project's sustainability.

The findings aligns too with Okide (2020) study that examined the importance of capacity building among stakeholders in facilitating community mobilization strategies for water project implementation in South East States of Nigeria. The findings demonstrated, among other things, that a reasonable level of capacity building was included into the implementation of community development projects in South East States of Nigeria. One recommendation was for state governments to make an effort to successfully raise community ownership of development projects in both rural and urban areas.

Lastly the study was backed by Mwanzia, Nyonje, and Mulwa (2022) study on the importance of capacity building initiatives as a determinant of project sustainability, focusing on borehole water projects in Kitui County, Kenya. The study aimed to assess how knowledge gained from capacity building initiatives affects the long-term success of water projects and found out that capacity building improved project sustainability by implementing capacity building efforts.

5.3 Conclusion

The study assessed the PM&E on sustainability of water projects in Matapato North Ward, Kajiado County, focusing on three key factors: community involvement, decision-making and capacity building. The study concludes that while community involvement may not have shown significant statistical influence in this particular study, decision-making and capacity building are critical for the sustainability of water

projects. Effective strategies must incorporate these elements to enhance project outcomes and ensure their long-term success.

5.4 Recommendations

In line with the study findings and conclusions, the following recommendations can be made.

5.4.1 Practical Actions

The study encouraged active community participation in PM&E processes to ensure that water projects are managed effectively and sustainably. This can be achieved through regular community engagements and training sessions for community members and water management committee members. Through strengthening community involvement, it will ensure that communities are actively involved in all stages of the project, from planning to evaluation. This constitute participatory design, implementation, monitoring and evaluation. Moreover, there is need for fostering ownership by involving communities in decision making process and ensuring that they have a stake in the project's outcomes. This can be achieved through joint planning and goal setting with community members. Implementing these strategies can result in effective and sustainable water projects that meet the needs of local communities

5.4.2 Policy Actions

The study will provide empirical data and insights on how PM&E affects the sustainability of water projects. Policymakers can use this information to make evidence based decisions that enhances project outcomes. Therefore, understanding the impact of PM&E can help policymakers to allocate resource more effectively. They can prioritize funding for projects with strong participatory elements, ensuring better long term success and sustainability.

5.4.3 Areas for Further Study

The aim of this study was to assess the PM&E on sustainability of water projects in Matapato North Ward, Kajiado County. It is pertinent to carry out other related studies in other parts of Kenya for correlation purposes. Studies that separately focus on government related challenges as well as citizen related challenges should also be pursued.

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APPENDIX I: QUESTIONNAIRE

I am a Postgraduate Student at Africa Nazarene University, pursuing a Master's Degree in Monitoring and Evaluation (M&E). I am undertaking the research titled "**Participatory Monitoring and Evaluation and sustainability of water projects in Matapato North Ward, Kajiado County**." I would be very grateful if you could answer the questions in the questionnaires provided as honestly as possible.

Instructions: Tick where appropriate

Section A: Background Information

1. Gender Male (**)** Female **( )**

2. Age 21- 30 **( )** 31-40 **( )** 41-50 **( )** Above 50 **( )**

3 For how long have you been a resident of Matapato North Ward?

a) 5-10 years ( )

b) 10- 15 years ( )

c) 16-20 years ( )

d) Over 21 years ( )

4 Level of education

a) Masters ( )

b) Degree ( )

c) Diploma ( )

d) Secondary ( )

Section B: Measurements of Study Variables

Instructions; Tick where appropriate

Measurement of Independent variables

Community Involvement on sustainability of Water Projects	**Strongly Agree**	**Agree**	**Neutral**	**Disagree**	**Strongly Disagree**

✓ To what extent do you agree that community involvement positively impacts the sustainability of water projects? ✓ Do you believe that active participation from the local community contributes to the long-term success of water projects? ✓ How important do you think community engagement is in ensuring the ongoing maintenance and upkeep of water infrastructure? ✓ Do you agree that involving the community in decision making processes regarding water projects enhances their sense of ownership and responsibility? ✓ To what extent do you believe that community involvement fosters					

deeper understanding and appreciation of water conservation practices? ✓ How much do you agree that local knowledge and inputs significantly improves the effectiveness and efficiency of water projects? ✓ Would you say that community involvement plays a crucial role in ensuring the sustainability of water projects over time?					
Decision Making on Sustainability of Water Projects	**Strongly Agree**	**Agree**	**Neutral**	**Disagree**	**Strongly Disagree**
✓ Do you believe that effective decision making plays a crucial role in ensuring the sustainability of water projects? ✓ In your opinion, does strategic decision making positively impact the long-term					

viability of water projects? ✓ Would you agree that involving stakeholders in decision making enhances the sustainability of water projects? ✓ To what extent do you think that data driven decision making contributes to the success of water sustainability initiatives? ✓ Do you believe the transparent decision-making processes are essential for the long-term success of water projects? ✓ Would you say that community involvement in decision making positively influences the sustainability of water projects?					
Capacity Building on Sustainability of Water Projects					

✓ To what extent do you believe capacity building contributes to the sustainability of water projects? ✓ How important do you think capacity building is in ensuring long-term success of water projects? ✓ Do you perceive capacity building as essential for empowering local communities to manage and maintain water projects effectively? ✓ To what extent do you believe capacity building enhances the resilience of water projects against environmental and socio-economic challenges? ✓ How much impact do you think capacity building has on promoting behavioral change towards sustainable water					

usage and management? ✓ Would you agree that investing in capacity building programs significantly increases the likelihood of achieving sustainability goals in water projects?					

1. **Training**	**Strongly Agree**	**Agree**	**Neutral**	**Disagree**	**Strongly Disagree**
Skills and Development ✓ Employees who interact with the electronic claims system are routinely trained on new system updates and modules. ✓ Management considers training of employees as important in the improvement of the performance of the					

electronic claims systems. ✓ Training of system users is key in improving performance of the electronic claims system.					
Capacity Building ✓ Conducting a training needs assessment of the system users is key in enhancing performance of the electronic claims system. ✓ Management should ensure system users have the requisite qualifications of the position e.g., Quality Assurance officers, ICT officers,					

Accountants and Claims officers. ✓ The current number of employees interacting with the system is enough for the workload of claims processing.					

Measurement of Dependent variable

Sustainability of Water Projects	**Strongly Agree**	**Agree**	**Neutral**	**Disagree**	**Strongly Disagree**
✓ The incorporation of sustainability principles in water projects is crucial for long-term environmental protection. ✓ Water projects should prioritize sustainable practices to ensure the availability of clean water for future generations.					

✓ Sustainable water projects contribute to the overall resilience of communities against water related challenges such as drought. ✓ The integration of sustainability considerations in water projects leads to cost-effective long-term solutions. ✓ Sustainable water projects help mitigate the impacts of climate change on water resources. ✓ Sustainable water management practices should be integrated into policy frameworks at all levels of governance.					

End

Thank you for your response

APPENDIX II: RESEARCH TIMELINE

Activity	**September 2023**	**December 2024**	**January-February 2024**	**March 2024**
Topic search and approval	[√]			
Concept paper/ proposal draft	[√]	[√]		
Proposal discussion-Supervisor		[√]	[√]	
Proposal adjustments			[√]	
Proposal submission				[√]
Proposal defense				[√]

APPENDIX III: AUTHORIZATION LETTER

AFRICA NAZARENE
UNIVERSITY

May 15th, 2024

E-mail: researchwriting.mba.anu@gmail.com/ monitoringandevaluation@anu.ac.ke
NACOSTI: registry@nacosti.go.ke Tel. 0202711213

Our Ref: **22J01DMME019**
The Director,
National Commission for Science,
Technology and Innovation (NACOSTI),
P. O. Box 30623, 00100
Nairobi. Kenya

Dear Sir/Madam:
RE: RESEARCH AUTHORIZATION FOR: David Cheruiyot Adm. No.

22J01DMME019

DAVID CHERUIYOT is a postgraduate student of Africa Nazarene University in the Master ARTS IN MONITORING AND EVALUATION (MME) program. In order to complete his program, David is conducting a research entitled: **THE PROCESS OF PARTICIPATORY MONITORING AND EVALUATION ON SUSTAINABILITY OF WATER PROJECTS IN MATAPATO NORTH WARD, KAJIADO COUNTY**

Any assistance offered to him will be highly appreciated.

Yours Faithfully,

Dr. Wanjiru Nderitu

MME, Coordinator,

School of Business,

Africa Nazarene University.

APPENDIX IV: NACOSTI RESEARCH PERMIT

REPUBLIC OF KENYA

NATIONAL COMMISSION FOR SCIENCE,TECHNOLOGY & INNOVATION

Ref No: **228604**

Date of Issue: **22/May/2024**

RESEARCH LICENSE



This is to Certify that Mr.. David Kiprotich Cheruiyot of Africa Nazarene University, has been licensed to conduct research as per the provision of the Science, Technology and Innovation Act, 2013 (Rev.2014) in Kajiado on the topic: INFLUENCE OF PARTICIPATORY MONITORING AND EVALUATION ON SUSTAINABILITY OF WATER PROJECTS IN MATAPATO NORTH WARD, KAJIADO COUNTY for the period ending : 22/May/2025.

License No: **NACOSTI/P/24/35597**

228604

Applicant Identification Number

Director General
NATIONAL COMMISSION FOR SCIENCE,TECHNOLOGY & INNOVATION

Verification QR Code

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See overleaf for conditions

THE SCIENCE, TECHNOLOGY AND INNOVATION ACT, 2013 (Rev. 2014)

Legal Notice No. 108: The Science, Technology and Innovation (Research Licensing) Regulations, 2014

The National Commission for Science, Technology and Innovation, hereafter referred to as the Commission, was the established under the Science, Technology and Innovation Act 2013 (Revised 2014) herein after referred to as the Act. The objective of the Commission shall be to regulate and assure quality in the science, technology and innovation sector and advise the Government in matters related thereto.

CONDITIONS OF THE RESEARCH LICENSE

1. The License is granted subject to provisions of the Constitution of Kenya, the Science, Technology and Innovation Act, and other relevant laws, policies and regulations. Accordingly, the licensee shall adhere to such procedures, standards, code of ethics and guidelines as may be prescribed by regulations made under the Act, or prescribed by provisions of International treaties of which Kenya is a signatory to
2. The research and its related activities as well as outcomes shall be beneficial to the country and shall not in any way;
    i. Endanger national security
    ii. Adversely affect the lives of Kenyans
    iii. Be in contravention of Kenya's international obligations including Biological Weapons Convention (BWC), Comprehensive Nuclear-Test-Ban Treaty Organization (CTBTO), Chemical, Biological, Radiological and Nuclear (CBRN).
    iv. Result in exploitation of intellectual property rights of communities in Kenya
    v. Adversely affect the environment
    vi. Adversely affect the rights of communities
    vii. Endanger public safety and national cohesion
    viii. Plagiarize someone else's work
3. The License is valid for the proposed research, location and specified period.
4. The license any rights thereunder are non-transferable
5. The Commission reserves the right to cancel the research at any time during the research period if in the opinion of the Commission the research is not implemented in conformity with the provisions of the Act or any other written law.
6. The Licensee shall inform the relevant County Director of Education, County Commissioner and County Governor before commencement of the research.
7. Excavation, filming, movement, and collection of specimens are subject to further necessary clearance from relevant Government Agencies.
8. The License does not give authority to transfer research materials.
9. The Commission may monitor and evaluate the licensed research project for the purpose of assessing and evaluating compliance with the conditions of the License.
10. The Licensee shall submit one hard copy, and upload a soft copy of their final report (thesis) onto a platform designated by the Commission within one year of completion of the research.
11. The Commission reserves the right to modify the conditions of the License including cancellation without prior notice.
12. Research, findings and information regarding research systems shall be stored or disseminated, utilized or applied in such a manner as may be prescribed by the Commission from time to time.
13. The Licensee shall disclose to the Commission, the relevant Institutional Scientific and Ethical Review Committee, and the relevant national agencies any inventions and discoveries that are of National strategic importance.
14. The Commission shall have powers to acquire from any person the right in, or to, any scientific innovation, invention or patent of strategic importance to the country.
15. Relevant Institutional Scientific and Ethical Review Committee shall monitor and evaluate the research periodically, and make a report of its findings to the Commission for necessary action.

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