

**FACTORS INFLUENCING SUSTAINABILITY OF
COMMUNITY BASED WATER PROJECTS IN KENYA:
A CASE OF FREE THE CHILDREN FUNDED WATER
PROJECTS IN NAROK COUNTY**

BY

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**A Research Project report Submitted in Partial Fulfilment of the
Requirements for the Award of the Degree of Master of Arts in
Project Planning and Management of the University of Nairobi**

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DECLARATION

This research project is my original work and has not been submitted for any award in any university

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This research project has been submitted for examination with my approval as the University Supervisor.

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DEDICATION

This research project report is dedicated to my wife Catherine and our daughters Tessy and Grace. Thank you for your love, patience and encouragements whilst I denied you the attention needed pursuing this degree.

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ABBREVIATIONS AND ACRONYMS

FTC	Free the Children
LVSWSB	Lake Victoria South Water Services Board
M&E	Monitoring and Evaluation
UN	United Nations
UNDP	United Nations Development Programme
UNICEF	United Nations International Children's Emergency Fund
USAID	United States Agency for International Development
WEDC	Water, Engineering and Development Centre
WHO	World Health Organization

ABSTRACT

Sustainability is key for the success of any development project. It is hence crucial to clearly articulate and in cooperate all the factors that affect sustainability at the design stage of any project and later followed up through monitoring. This study sought to investigate the factors that influence sustainability of community based water projects in Kenya and specifically water projects funded by Free the Children in Narok County. The study objectives were to establish to which extent the participation of the community influence sustainability of water projects funded by Free The Children in Narok county; to examine ways in which skills of water management committees affect sustainability of Free The Children funded water projects in Narok County, to explore the extent to which choice of technology influence sustainability of Free The Children funded water projects in Narok County, to determine how monitoring and evaluation affect sustainability of Free The Children funded water projects in Narok County. The descriptive research design was used. 699 stakeholders from Free the Children funded water projects in Enelera Sub location, Narok County comprised the study population. The researcher took 10% (70 respondents) of the target population as the sample size. Cluster sampling, simple random sampling and purposive sampling methods guided the selection of subjects to be interviewed. The researcher used questionnaires as the data collection instrument. To establish the validity and reliability of the study, a pilot test was done. The validity was tested using expert opinion while the reliability was tested using the split half test where SPSS was used to compute the Cronbach reliability coefficient and a value of 0.73 was obtained. Data analysis was done through descriptive statistics which included measures of dispersion (percentages and tables) as well as measures of central tendency (Standard deviation and mean). Inferential statistics were utilized to establish the relationship and the magnitude amongst the independent and dependent variables. Results from the study indicated that the sustainability of water projects based within the community dependent on their level of involvement of the community members, it was also established that skills and knowledge of the water management committee members was important in enhancing project sustainability, the level of technology also influenced the success of the projects similar to involvement of the communities in the projects' monitoring and evaluation. This indicated that the four selected factors were all important determinants of sustainability of community based water projects. Further, the study noted the four factors significantly influenced community based water projects' sustainability. This study therefore established that project sustainability depends on the level of community participation combined with appropriate skills and knowledge, technology adopted and them being involved to monitor and evaluate the projects. The study therefore recommends that policy makers should address these issues and ensure that community based water projects are owned by the community itself. The study also recommends that the management team should be well conversant with the community needs and initiate projects that are fully supported by the community members for sustainability.

CHAPTER ONE

INTRODUCTION

1.1 Background to the Study

One of the prerequisites to good health all over the world is water. It is the most valuable resource for both domestic use and industrial processes. Access to safe water promotes hygiene, good health and minimizes conflict over water resources (Aubel, 2004). Water inadequacy has been identified as a major cause of disease and poverty around the world and enhancing water access has proven to significantly impact on the health of households and communities (WHO, 2004).

WHO/UNICEF (2004) points out that out of the total world population of almost 2.6 billion people, 42% of them lack access to safe drinking water. The United Nations Development Programme (UNDP) World Water Development Report (2006), points that lack of safe water access leads to diseases and consequently causes poor hygiene and sanitation leading to the death of 3,800 children every day. This points to the problem gravity from a global perspective.

Within rural Africa, the search of water which is a rare commodity leads to loss of 40 million hours annually (World Bank, 2012). It is also argued by the Central bureau of Statistics (2004) that roughly 31% of Kenyans get their water for drinking from communal or household pipe/tap whereas those who get water from a river, stream or open spring are 37%. The others obtain water from water vendors, wells or other sources. WHO (2004), estimates that 38% of Kenyans in 2002 did not have access to safe water for drinking. Nonetheless, considering rural areas like in Narok County, this number increases to 54%. A report by international aid agency Water Aid, by the title Saving Lives in April 17, 2012 indicated diarrhea which is attributed to poor quality sanitation and unsafe drinking water as the major cause of death for under five Sub-Saharan children and second children major killer globally.

The UN General Assembly recognition of water and sanitation as basic human rights in 2015 provided extra political motivation towards the critical goal of providing all with these important services access. With this in mind, the United Nations Sustainable development goal number six aim is to ensure that water and sanitation is available for

all and sustainably managed by the year 2030. Such will only be achieved through concerted efforts by different players. This calls upon not only the establishment of the water projects but also have in place mechanisms that guarantee projects' sustainability beyond donor funding by the community members themselves.

With more than 75% of poor population in Africa residing in rural areas the necessity to increase sustainable water provision to these areas is vital (De Regt 2005). It is for this reason that international and local NGOs, regional and national governments, developing countries as well as other organizations devote large sums of money annually towards rural water supply projects implementation (Gebrehiwot, 2006). Conversely, failure of the projects shortly after donor support leads to lack of benefit realization to community.

Peter, Kirui and Cyrillah (2015) argue that a key challenge in Kenya and various developing countries is sustainability of projects. Majority of the projects that cost colossal implemented amounts are oftenly faced with sustainability problems. Major donors such as the World Bank, USAID, DFID as well as other bilateral aid agencies have expressed concerns over projects' sustainability. As much as there is a significant progress in implementation of projects, their sustainability after implementation is somewhat disappointing since very few projects are sustained.

According to Niyi and Felix (2007), the key causes for low level of sustainability of water projects include unsustainable financing mechanisms; inappropriate policy or legislation; ineffective management systems; insufficient institutional support; and lack of technical support as well as community involvement. Lack of project ownership by stakeholders and beneficiaries has plunged the community projects in huge financial challenges which in turn threaten their sustainability and lead to their collapse (Williams (2003).

Philip et al. (2008) noted that numerous factors account for poor sustainability. Some of these factors could be addressed right at the project design stage while the rest could be identified and corrected through monitoring during implementation. Thus, it is consequently essential to clearly articulate factors affecting sustainability and are integrated at the project designing phase whereas other issues be tracked during monitoring.

1.2 Problem Statement

WHO/UNICEF (2004) report indicates that Kenya has experienced many let-downs in relation to water supply projects in the rural and particularly in pastoral communities like in Narok County during the last three decades. Narayan (2010) and Philip et al. (2008) noted that between 2002 and 2007, the Kenyan government spent a significant amount of money to alleviate the problem of water supply through development of rural-based water projects. These efforts were boosted by the many donor funded community water projects. In spite of these efforts to increase access, many rural water supplies completed have either stopped operating or are not operating optimally. IRC Triple-S (2010) study notes that, despite the relative success made in the last 3 decades in providing new rural water, studies conducted in many countries indicated that 30 to 40 per cent of these facilities are either operating below capacity or are not functional. In Kenya, recently accomplished water supply facilities within communities that may be dysfunctional in the first three years after completion account for about 25 to 30 per cent.

Many studies have indicated low levels of sustainability among water supplies projects in sub-Saharan African rural areas (Gebrehiwot, 2006). Most African water point's failure rate was estimated at 30-60% by the UN Joint Monitoring Program. In Kenya, a study done in Siaya district show that from eighty water projects constructed by various development agencies in the last decade, 90% were non-functional by the year 2006. Similarly, in Nyando District, UNICEF rehabilitated more than 100 failed water projects in 2009 before initiating new ones (Oraro, 2012).

Safe water access is a basic human need necessary for both the wellbeing and social economic development of the rural populations in Kenya. In Narok County, Free The Children supports donor driven initiatives whose goal is to ensure improved community access to safe and clean water for drinking. The organization has drilled boreholes and built water Kiosks across the communities. However it has been noted with dismay that in spite of this organization's effort to increase water access, most of these rural water supplies completed have either stopped operating, operate below capacity or are not operating optimally. This has resulted in loss of service to Narok County rural populations. Sustainability of these water projects has thus become a major concern to the implementing agency, Community members, Water committees and other

stakeholders. It is due to this reason that this study seeks to avert this situation through identifying community based water projects sustainability factors. This is first step towards finding long term solutions to this challenge (Free the Children, 2016).

1.3 Purpose of the Study

The study sought to investigate factors which influence water projects' sustainability among Kenyan communities and specifically Narok County water projects funded by Free The Children.

1.4 Objectives of the Study

1. To establish the extent to which community participation influence sustainability of Free The Children funded water projects in Narok county.
2. To examine ways in which skills of water management committees affect sustainability of Free The Children funded water projects in Narok County.
3. To explore the extent to which choice of technology influence sustainability of Free The Children funded water projects in Narok County.
4. To determine how monitoring and evaluation affect sustainability of Free The Children funded water projects in Narok County.

1.5 Research Questions

1. To what extent does the participation of the community influence the sustainability of Free The Children funded water projects in Narok county?
2. How does the skills of water management committees influence sustainability of Free The Children funded water projects in Narok County?
3. To what extent does the choice of technology influence sustainability of Free The Children funded water projects in Narok County?
4. How does monitoring and evaluation influence sustainability of Free The Children funded water projects in Narok County?

1.6 Significance of the Study

It was hoped that the major beneficiaries to the findings of this study would include the water management committee members, Community beneficiaries and Free The Children. The Water management committee members are directly engaged in the daily

running and management of the projects. Their knowledge of the factors influencing sustainability of water projects would be enhanced hence improved management. Free The Children also fully appreciate the underlying crucial issues before the initiation of any project. This would ensure that during the project design all ideas and recommendations are incorporated for the success of the project. Also while the gains seem to be very major to the Water management committee members and Free The Children, the major beneficiary to all this may be the community members through guaranteed continued supply of clean and safe drinking water.

The policy makers may also benefit from the study findings which highlight the factors which influence the sustainability of the Kenyan community based water projects. It is anticipated to be of significance to the government and other agencies undertaking water projects within communities. The researcher and other further researchers may also use the findings from the study to carry out further research.

1.7 Delimitations of the Study

The study was confined to the investigation of the factors that influence Kenyan community based water projects' sustainability and will only focus on projects within Narok County funded by Free The Children. Only four independent variables are focused in this study, that is, Community participation, skills of water management committee members, choice of technology and monitoring and evaluation and discussed how they relate to the dependent variable.

For the researcher to get the necessary information, the data was collected through questionnaires administered to the identified sample within the area of study. The samples were drawn from Community beneficiaries, Water management committee members and Free The Children Staff.

1.8 Limitations of the Study

The study limitations are defined as elements of a study that may not be under the control of the researcher.

The study was only limited to sustainability factors to community based water projects funded by Free the Children in Narok County. Generalization of the findings of this study to other areas may pose a limitation since projects in different areas are faced

with different challenges and hence the factors selected for this study may not necessarily influence the sustainability of projects in other areas. Nevertheless, the study methodology and the study findings would be helpful to other areas.

Majority of the interviewees were not able to understand English. Where possible interpretation was done in Kiswahili which ensured that they comprehended the Questionnaires.

The area of intervention was characterized by poor networks especially a result of rains rendering some roads impassable. The researcher sought assistance from Free The Children for transport logistics.

Since the study adopted a survey design, data collection from the huge number of respondents proved very difficult. To manage this, the researcher enlisted the services of research assistants to support in data the collection.

1.9 Basic Assumptions of the Study

The study assumed that;

1. The study sample size well represented the water projects funded by Free The Children.
2. The respondents were expected to turn up and cooperate and were honest in giving the required information

1.10 Definitions of Significant Terms

Community based projects: This refers to projects undertaken for and with and for the community that address their aspirations, local needs and interest. For the study it was water projects in Narok County funded by Free The Children organization.

Community participation: This denotes the community's contribution and it imparts an ownership sense as well as enhancing sustainability of their development projects

Evaluation: This refers to the organized and unbiased valuation of design, results and implementation of ongoing and completed project, programme or policy aimed at determining the relevance, objectives fulfilment, effectiveness, development efficiency, impact as well as sustainability

Monitoring: This is a continuous function whose primary aim to provide the main stakeholders and the management in an ongoing intervention with early indicators of progress, lack of progress in the results achievement.

Project: A project is defined as any undertaking with an objective of addressing human needs and projects

Skills: It is learning to carry out a task with pre-determined results often within a given amount of time

Sustainability: Is used to refer to capability of any project to continuously address the community necessities with the ability of extending further than the involvement of the donor support

1.11 Organization of the Study

The first chapter entailed background of the study, statement of the problem, study purpose, objectives, questions for research, study significance, study delimitation and limitation, study assumptions, significant terms definition and organization of the study. In addition, in the second chapter, the following has been covered; introduction, the dependent and independent variables, Conceptual framework, theoretical framework, gaps in literature review and Summary of the literature review. Chapter three contained the following under research methodology: Introduction, Target population, research design, sampling procedure and sample size, research instruments, Pilot testing, reliability and validity of the instruments, data collection and analysis procedures and methods respectively, ethical issues and variable definition.

CHAPTER TWO

LITERATURE REVIEW

2.1 Introduction

The chapter focuses on literature review linked to this study which examined several literature sources; journals, reports as well as books on each of the independent variables identified for the study. This was undertaken to ascertain the state of knowledge around each variable and its effect on the research topic. The chapter also contains gaps of literature review and summarizes the Literature reviewed as well as conceptual and theoretical and frameworks.

2.2 Sustainability of Community based Water Projects

A Wash Technical report by Hodgkin (1994) defined the capacity of any project to expand and/or maintain benefits flowing at a specified level longer after inputs of a project cease as sustainability. As highlighted by Mihelcic et al. (2003) the plan of industrial and human arrangements to guarantee the use of natural resources as well as cycles by humans don't cause diminishing of quality of life as a result of human health, damages in economic prospects, environment or antagonistic effects on social circumstances denotes sustainable development .

According to Ingle (2005) a strategic approach to implementation which entails four key elements, future Orientation: which assumes change of things maximization of benefits envisaged as a result of modification; exterior emphasis: that recognizes project environment assortment and the many dimensions influencing the project outcomes, which includes politics, technology, economics and society ensures sustainability. Environmental fit: this entails scheduling the project and its setting, which includes objectives, strategies, mission, resources and structures; and the process alignment: which entails planning as well as managing primacies advanced within a cycle of cognizant and cautious learning as reality fluctuates.

Peter et al. (2015) argue that project sustainability is not only a key Kenyan but also developing counties challenge. Majority of the projects implemented with massive amounts of money often tend to experience sustainability difficulties. Major donors such USAID, World Bank, DFID as well as other bilateral aid agencies have expressed

worries over project sustainability. Despite a significant improvement trend of project implementation, very few are sustained post-implementation which is a disappointing reality.

Water supply sector literature for the past three decades indicate that the sustainability of rural water supply constructions is positively related with maintaining public participation in small-scale initiatives (Davis and Liyer, 2002). The users' involvement to plan, implement, operate, protect and maintain water supply systems is fundamental for sustainability. The Community contributions could be financial, equipment, local materials, human labor as well as decision making and meetings related to project (Davis and Liyer, 2002). For sustaining community-managed water projects meaningful participation is required at the project cycle stages coupled with continuous external support after commissioning of the project (Whittington et al. 2009).

2.3 Community participation and sustainability of Community based water projects

Bretty (2003) states participation as a process of empowering people in partnership with others able to support them to; isolate their needs and problems, mobilize resources, and assume the responsibility of planning, managing, controlling and assessing the individual and collective actions they themselves decided. According to Oakley (1991) participation entails development of abilities and skills which endows the rural individuals to negotiate, voice up or to better manage current development systems.

Mikkelsen (2005) argues that conventionally, participation was viewed as passive, interactive or active where active participation gives the community members an open chance to actively take part at all project stages. Making decisions and other crucial activities, such as projects' evaluation, monitoring and management are carried out by the beneficiaries. In passive participation, the community is only updated on happenings as they maintain a distance and does not interfere. Interactive participation happens when individuals jointly analyze, plan on how the target community members will improve their current structures and take charge of their own development process. Community participation in their development projects ensures more efficiency and effectiveness in implementing, identifying, monitoring as well as evaluation of their development projects as a result of their capacity building. (Davids et al., 2009).

From 1980s sustainability in relation to development activities started becoming important to donors, government and development theorists according to Scoones, (2007). The significance of the view of sustainability is evident by how sustainability is utilized as one of the five measures used to evaluate development interventions (Brown, 1998). Additionally, more concern on project sustainability comes from the rising pressures by the domestic constituencies to radically cut or possibly stop foreign aid programs altogether (Brown, 1998). The pressures have caused donor organizations, development workers and governments to start thinking of the value of aid and the effectiveness provided over the past decades to Third World countries. The development workers and donor organizations are worried that the aid given seems to have few positive effects to the beneficiary countries. Mostly, the benefits from the development programs or projects seem to end after the foreign assistance or the government withdrawing the assistance. The World Bank and USAID post evaluation reports indicate that most of development interventions present low sustainability levels after the project completion (Goldsmith and Brinkerhoff, 1992, p.369).

This has generated the need for donors and governments to finance projects which enables the beneficiaries to be independent in the future at some point rather than giving unsustainable charity that causes dependency on donors and governments (Bossert, 1990). The growing community capacity to maintain their project benefits and fulfill their own needs contributes to hunger and poverty eradication in the long-term (Picciotto, 2002).

It is essential for the community to take part for sustainable development to be achieved (Pearce 1994). The people themselves should define sustainable development which represents a continuous process of self-realization and enablement and be focused through participation. Lack of community involvement affects project sustainability as they are unlikely to be responsible for what they don't own (Redclift, 1992).

2.4 Skills of water management committees and the water projects sustainability

It is crucial for Project Managers to be equipped with requisite management skills for the proper running and management of any development project. Thite (2001) also points out that it is also necessary for them to have technical expertise as required by the project. McDade (2004) argued that respectable management warrants project

existence and sufficiency of local resources for continuity of the project without external resources. It involves offering leadership to achieve certain laid objectives.

Duncan (1996) and Martin et al., (2004) both agree that Project management undertakings denotes the ability to define the scope of the project and gather the requirements, manage resources and appropriate training concerns within a project, technical architectural advice, identification of general and specific project management practices as well as procedures for escalation, estimation of project budget and schedule, managing and ascertaining project risks, preparing mitigation plans for risk, safeguarding adherence to organizational quality framework, ensuring effective management of change control, and reporting to the various stakeholders the status of the project.

Both Kirsch (2000) and Thite (2001) points out that management committees ought to assume leadership role in relation to project management. It is anticipated that the management committees should exhibit a profound knowledge of the project objectives in progress (Bloom, 2006). Through this they are able to guide and lead the project to fruition.

McDade (2004) argue that good leaders are considered as persons with respectable management abilities by which they steer organizations to success. Chemers and Mahar (2004) argued that management entails organizing, planning, staffing, controlling and directing. On the other hand leadership basically is about influence and could be grounded on a range of factors other than ones' position or formal authority (Andriessen and Drenth, 2007).

Project managers have to influence all that they interact with so that project sustainability can be achieved; therefore they need not only to possess good management skill but leadership skills as well. The Managers of projects usually interact with a lot of stakeholders, and thus they don't only manage their superiors and peers, internal project teams, but also their clients, through non-technical skills which might not be imitated easily. These comprise but not limited to tactic and organizational knowledge of handling people within the management, leadership and customer handling skills as well as in the organizational structure (Kirsch, 2000).

According to Kirsch (2000) the success of managing a project needs both soft and hard skills. The hard skills encompass project management and technology experience, domain expertise and technological skills, domain expertise. Soft skills are not tangible, are principally concerned with management and working through persons to foster intra and inter organizational “relationships.” These skills consist of limited tactic and organizational understanding in managing individuals in an administrative structure, customer handling, management and leadership abilities (Lee et al., 1995). Both transformational and technical skills are needed for information technology managers as highlighted by Thite (1999). As a matter of fact, both soft and hard skills are essential in realizing higher performance levels.

2.5 Technology choice and sustainability of the community based water projects

Through Water Projects implementation, it's very important for the stakeholders to think critically about the choice of their technology. Many studies and reports have documented the influence or effect of choice of technology on sustainability of community managed rural water supplies (Lewis, 2005). Sector professionals have used several terms to define simple and affordable technologies that can be easily adapted to the local circumstances and sustained by communities; these among others entail Village level maintenance and operation, progressive, appropriate and alternative technology, self-help and Low -Cost technology as well as technology represented by a human face (Laufer, 2007).

As noted by Laufer (2007) using “sustainable technology within the community level” should integrate choice of suitable technology and incorporate Operation and Maintenance (O&M) within projects' development from start. A water systems performance analysis in several countries established that performance was evidently higher in communities where the households made informed choices on the system type as well as required service level (Laufer, 2007).

According to Harvey and Reed (2002), among technical factors suggested to contribute to sustainability of services are selection of technology, technical capacity, technology complexity of the system to address the demand and deliver the desired level of service, the required skills required to maintain and operate the system, accessibility and availability, cost of spare parts as well as the overall maintenance and operation cost.

The technology complexity and design of the system obviously affect the relative weighting of such factors. For example the hand pumps type standardization, spare parts, institutional arrangements and private sector support for local repairs from the government to support community managements were all underlined to be crucially important factors in projects' sustainability within Africa according to a current research by WEDC.

Ogus (2004) points out that Sustainability of facilities provided is enhanced through the private sector involvement in providing direct services to the communities and underlining adequate recovery of costs and sound financial management within the community-based organizations. All of the above evolve within an institutional and legal framework and thus policies and strategies to support sustainability must be clear at national level.

According to Moronge and Kwena (2015), Settlement pattern of a community also influences the choice of water supply technology and operation and maintenance. For example, a hand pump would serve minimal population in a settlement structure where households are located on individual farms. Ground water characteristics also influence choice of technology. For example, the choice between a hand pump based system and a diesel powered system will be influenced by the size and depth of the ground water and demand or population to be served. An approach that has been ignored yet could give positive results is the prioritization of resource utilization. Allocation of resources is not sufficient. But being accompanied by transparency and accountability, there could be better use of the limited resources to meet the ever increasing procurement needs.

A performance gap exists between companies that embrace technology and those that resist it (Hopkins & Brynjolfsson, 2010); therefore, innovation is usually closely connected with technologies. Similarly, community projects that embrace technology exhibits better performance and sustainability than those that doesn't. Accordingly, sustainability driven by technology depends largely on the effective management of the innovation process, and managers should continue to identify, develop, protect, and allocate capabilities and resources to realize sustainable economic gain (Amit & Schoemaker, 1993).

2.6 Monitoring and evaluation and sustainability of community based water projects

According to Khan and Hare (2005) sustainability of projects funded by Non-governmental organizations (NGO) are founded upon strong programmatic approach, sound institutional base, sufficient funds. The NGO needs to establish the internal systems, work culture, structure that support positive organizational image, strong leadership and positive organizational image, within the institutions to foster the belief of the willingness of the people to support services and products which they regard valuable, and expedite plans development for sustainability.

Monitoring and evaluation (M&E) is increasingly being isolated as an important tool in achieving economic, environmental and social sustainability globally. Within the international and national levels, the sustainability indicators besides the M&E criteria are very crucial in identifying, monitoring, reporting on social, ecological and economic trends, which would influence the advancement towards practices, goals and policy influencing (Behn, 2003). McCoy et al (2005) argue that to secure the effectiveness of the approach, there is need for highly trained M&E personnel. Additionally, provision of adequate resources through budgetary allocation is necessary for evaluation. The developed budget for monitoring and evaluation should be contained in the overall project budget so as to provide due recognition of the place of monitoring and evaluation function in project management.

Monitoring as such enhances decision making through the management of the project implementation phase and hence securing the project success (Crawford and Bryce, 2003). Further, monitoring puts an emphasis on the ability to be accountable and transparent in the use of resources to stakeholders such as the beneficiaries, donors, and the community where the project implementation takes place. On the other hand, evaluation offers a project assessment for effectiveness in realizing the relevance, goal and an on-going project sustainability (McCoy, 2005). Evaluation relates the effect of the project as planned through the project plan (Shapiro, 2004).

Participatory monitoring and evaluation according to Philip et al (2008) is a fundamental part of participatory design and the implementation process of a project. This performs well when the project planning all through the final evaluation process

is carried out in a participatory way. A substantial variance exists amongst participatory monitoring and evaluation and the orthodox M&E as the beneficiaries, community and the people engaged in the project designing and implementation get equally engaged to evaluate and monitor project throughout its duration.

2.7 Theoretical framework

It refers to a group of interrelated concepts founded around theories and represents a logical set of prepositions, resulting and reinforced by evidence or data. A theoretical framework explains reasons for a certain phenomenon and is founded on certain philosophies. The assumptions within a phenomena can also be used to describe a theoretical framework (Kombo and Tromp 2006). This study was guided by the Stakeholders' theory.

Stakeholder theory reasons that benefits gained propels each authentic group or persons to partake in the projects' or firms' activities. It also states that the significance of the stakeholders' interests are not obvious (Donaldson, and Preston, 1995). It values both external and internal stakeholders who comprise of managers, employees, owners, customers, financiers, governments, suppliers, special interest groups and the community. The theory also underscores that the participation of the stakeholders is also a benefit to them. This theory, therefore, assist in understanding the significance of participation of the community for success of their water projects. Involvement of all stakeholders ensures effective and efficient project management and resources to maximize outputs.

The community contribution towards improving their livelihood and especially the disadvantaged and poor has not been agreed upon by project planners and professionals. In some cases, the value of community contribution is completely dismissed whereas it is believed to be the 'magic bullet', that guarantees improvements specifically in the poverty alleviation context by others. In spite of non-agreement, the participation of the community should be promoted continually as vital to development. Despite the waxing and waning of advocacy for participation currently, it is perceived by UN agencies, many NGOs and governments as critical to planning of a programme and alleviation of poverty (World Bank, 1996).

2.8 The Conceptual Framework

The conceptual framework refers to a pictorial representation in which descriptive categories are placed systematically within a broad structure of categorical propositions, statements of the relationship between two or more empirical properties that should be rejected or accepted (Stone & Archibald, 1993) and is comprised of depended and independent variables. The predictor or criterion variable which represents that which the researcher desires to explain is the dependent variable. On the other hand, the exploratory or independent variable is assumed to effect changes in the dependent variable. (Scoy, 2002).

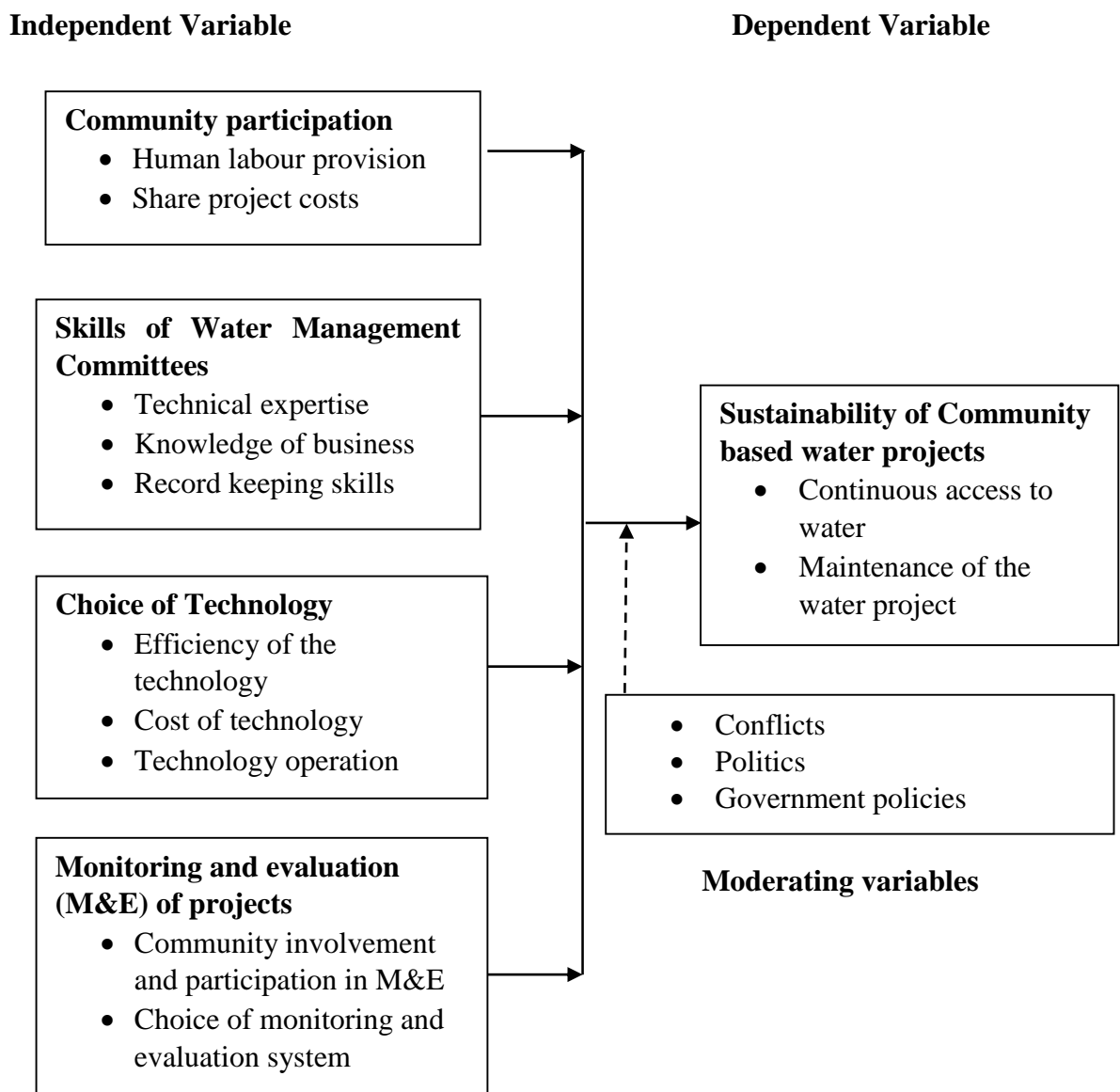


Figure 1. The study Conceptual framework

2.8.1 Community participation and the sustainability of community water projects

Sincere engagement of resident persons as equal partners and active contributors was identified by Admassu et.al, (2002) as a fundamental contributing factor to the projects' sustainability since their experience and concerns are intrinsic to its realization. The support level of the community defines project establishment, how fast and successfully it consolidates as it adapts and responds to meeting the fluctuating necessities (USAID, 2009). According to Williams (2003), the stakeholders and community let-down to embrace project possession has plunged such projects into enormous financial huddles that threaten their sustainability and consequently threatens them to stop their daily operations. Harvey and Reed (2007) in their study indicated that issues such as superficial inadequate education on sanitation and water supply, limited demand, lowly management structure and lack of ownership are associated with the low rates of sustainability of the water supply systems.

2.8.2 Skills of Water management committees and sustainability of community based water projects

Effective management by competent project managers present various roles in community based projects. According to Mbata (2006) the sustainability of any community projects require a team of highly competent managers owing to many dynamics of the project implementation. The failure of community based project is largely blamed on lack of professionalism and management skills of the project implementers owing to poor academic background. Time, authority and resources are essential for the managers to establish good rapport within a project. There is also need for flexibility in the way project leaders understand their own and others stakeholders roles in the projects they embark on (Carter et al. 1999).

2.8.3 Choice of technology and community based water projects' sustainability

The study notes that technology adoption of is key in ensuring the sustainability of community water projects as it eases maintenance and operations. The effective maintenance and operation supply systems denotes an essential constituent of water projects' sustainability. Technological innovation should be an important factor influencing the improvement of performance and therefore ensuring project sustainability. Sustainability driven by technology depends largely on the effective

management of the innovation process, and managers should continue to identify, develop, protect, and allocate capacities and resources in order to attain competitive advantage sustainably (Amit and Schoemaker, 1993).

2.8.4 Monitoring and evaluation and sustainability of community based water projects

Adoption of Monitoring and Evaluation (M&E) is very important in any development project. M&E enables those engaged with projects to assess the progress in achieving the project expectation. Monitoring is the on-going collection and analysis of data for the purpose of informing the project managers on the progress made towards established goals. The comprehensive appraisal and looking at the long-term project impacts by exposing what worked, what did not work, and what needs to be differently done in the future projects is evaluation. When planning for M&E, consideration on whether funds and staff are appropriately allocated to it is crucial as is an on-going process that requires significant levels of commitment. Another key consideration would be the stakeholders' participation during designing and accomplishment of M&E. Whereas external professionals may contribute the required expertise, the involvement of community partners provides an excellent strategy to demonstrate accountability (Hettmut, 2002).

2.9 Knowledge Gap

Several prior studies have been done focusing factors that affect the sustainability of the community based water projects. However there was no evidence of any study looking at the factors that influence the sustainability of community based water project within Narok South Sub County. Also no study has been done to establish the factors which influence sustainability of Water Projects funded by Free The Children.

Secondly most of the previous studies done on factors that influence sustainability of community based water projects show regional experiences and findings. For example, a study done by Kinyanjui and Wanyoike (2016) in Nyahururu on in which he assessed the factors that influenced the water supply projects' sustainability in the periurban found out that financial capacity, human resource capacity, technology capacity and management support influence sustainability of water projects. Similarly, a study by Kwena and Moronge (2015) in Kajiado County that investigated the determinants of

sustainability of rural water schemes using Netherlands development organization (SNV) as a study case found out that post implementation impact evaluation, sector policy, committee skills and choice of technology are key determinants of the Water Projects sustainability. Such variations noted are influenced by factors such as different literacy and poverty levels. Low literacy levels at the community can influence the skills base needed for operating the water facility while poverty levels can determine access and affordability for example of spare parts, purchase of water and thus impact the water projects' sustainability. As such, it is worth noting that factors that affect water projects' sustainability may vary between regions and therefore may generally not be easily generalized.

The current study which has sought to find the factors that affect the community based water projects' sustainability was based on four key factors which are community participation, skills of water management committee members, choice of technology, and monitoring and evaluation of water projects funded by Free The children within Narok County. It is anticipated that this study findings shall contribute to improved understanding of factors influencing Narok County community based projects' sustainability and thus increase opportunities for enhancing future reliability of rural Kenyan water projects.

2.10 Summary of Literature Review

This chapter has reviewed existing literature on sustainability. Though the government and other partners have invested huge amount of money in ensuring communities have access to clean drinking water, the benefits have not really been realized. In fact, many studies done have found out that most of these community based water projects have challenges with sustainability. This points out a clear lapse in effort to attain sustainability in community based water projects. The chapter has also discussed in length how community participation, choice of technology, monitoring and evaluation and skills of water management committee influence community based water projects sustainability. The conceptual framework has also elaborated how the dependent variable relates to the independent variables. The Stakeholder theory to a larger extends guided this study. For successful implementation of water projects, it is recommended that the donor/sponsor/financier should critically think through about how to ensure the project is sustained beyond funding.

CHAPTER THREE

RESEARCH METHODOLOGY

3.1 Introduction

This third chapter describes study methodology. It describes targeted population, research design, sampling procedure and Sample size, instruments and procedures for data collection, techniques for data analysis, definition of operational terms as well as ethical considerations.

3.2 The Research design

This study utilised a descriptive research design employed when the study problem is defined well and the researcher has some information on the same according to Mugenda and Mugenda (2003). A survey entails studying a situation the way it presents, as one attempts to explain the reason it is the way it is (Kothari, 2007). This design allows for accounting and adequate description of activities, objects and persons. The descriptive survey design does not only offer explanations and descriptions and explanations, but also predicts and identifies relationships within study variables (Kothari, 2007). This study approach is fast and affordable since it provides respondents' self-reported facts in regards to, their opinions, feelings, habits and attitudes (Kombo& Tromp, 2007).

3.3 Target population

In Kenya, Free The Children implements Water projects in Narok County. The study target population comprised of the Water management committee members, Free The Children staff and Community beneficiaries drawn from the households. One Sub location (Enlerai) with different water projects that were supported by Free The Children was purposively considered for this study. According to Census (2009) data, Enlerai Sub location has a total household population of 655. These water projects were initiated by the organization in partnership with the communities at different times.

The population distribution on table 3.1.

Table 3.1 Target population

Category	Total Population
Free The Children staff	20
Water Management Committee members	24
Community beneficiaries	655
Total	699

The results on the table shows that the population is made up of 20 staff members from Free The Children, 24 Water management committee members and 655 Community beneficiaries.

3.4 Sampling procedure and sample size

3.4.1 Sample size

10% of the target population represented the sample size. This agrees with Kothari (2004) who argued that 10% - 30% of the entire population is sufficient sample size for a descriptive research study. The respondents were 2 staff from Free The Children, 2 Water management committee members and 66 Community beneficiaries. Therefore the total number of respondents was 70 as outlined in table 3.2;

Table 3.2 Sample Size

Categories	Population	Percentage	Sample size
Free The Children Project staff	20	10%	2
Water Management Committee Members	24	10%	2
Community beneficiaries	655	10%	66
TOTAL	699	10%	70

3.4.2 Sampling procedure

This is the systematic method by which identification of individuals for study who are representatives of the larger group where they are selected as denoted by Mugenda and Mugenda (2003). The sampling entails selection of specific sum of persons or objects from a population who exhibit elements which represent characteristics of the entire group (Newman, 1998).

The study used cluster sampling, simple random sampling and purposive sampling methods in the selection of subjects to be interviewed. The cluster sampling method and Simple random methods were utilized to identify community beneficiaries among the households for study. In this case, Enelera sub location was clustered in to villages. The researcher then selected the number of villages to draw the respondents from using simple random sampling. Finally, simple random sampling was utilized to get respondents from each village. The Water Management Committee members and also Free The Children staff were purposively identified.

3.5 Research Instruments

The researcher used questionnaires as the data collection instrument. The questionnaire contains questions, which are meant for answering by the respondents in writing (Kathuri & Pals, 1999). During this study, the set questionnaires which entailed closed-ended questions to provide short and concise responses were administered to the respondents.

3.5.1 Pilot Testing

The Questionnaires were pilot tested before the actual study. A pilot study according to Kothari (2005) represents a study conducted at a small scale aimed at measuring the reliability and validity of the instruments for data collection and it is done just before the main research. Orodho (2008) argues that pilot testing exposes deficiencies within the questionnaire and vague questions. To achieve this, research questionnaires were administered to respondents from randomly selected Water Project supported by Narok South Constituency Development Fund. The researcher choose the respondents from three categories for the pilot study as follows; Staff from Narok South Constituency Development Fund, Community beneficiaries and Water management committee members.

3.5.2 Validity

Mugenda and Mugenda (2003) defines validity as the meaningfulness and accuracy of extrapolations founded on results from a research. This is also the degree to which the obtained results from data analysis essentially represent the phenomenon in the study. Therefore, validity is concerned with the accuracy with which obtained data represents the variables within the study. The application of content validity procedures was used to enhance the Validity of the research instruments. Further, research instrument validity was established by seeking for expert opinions from the supervisor, and lecturers within the Department.

3.5.3 Reliability

This is defined as the magnitude with which an instrument in research produces constant data or outcomes with repetitive attempts (Mugenda and Mugenda, 2003). Kombo and Tromp (2006) argue that reliability denotes the dependability of a research instrument to reproduce similar outcomes. Research instrument were pre-tested before the commencement of the real study to identify the reliability and validity of research instruments. The reliability was determined using the split half method. This is where the researcher uses only one test questionnaires which is coded and entered in SPSS software for test analysis. The system has an in build formula that helps to split the questionnaire items into two equal parts .The reliability for part one and that for part two was correlated to get the overall reliability.

Mugenda and Mugenda (2003) points out that the correlation coefficient gotten is referred to as “stability or coefficient of reliability”. A coefficient value of more than 0.7 for instruments yields high test-retest reliability and hence the questionnaire is said to be reliable and hence can be used for the study. The reliability for the two tests was determined using the spearman’s brown coefficient as shown in table 3.3.

Table 3.3 Reliability Statistics

Cronbach's Alpha	Part 1	Value	.711
		N of Items	19 ^a
	Part 2	Value	.599
		N of Items	19 ^b
	Total N of Items		38
Spearman-Brown Coefficient	Equal Length		.734
	Unequal Length		.734

In this study the reliability of the questionnaire was obtained as 0.734 and hence the questionnaire was considered reliable and used for further analysis.

3.6 Data Collection Procedures

Review of previous research reports (secondary data) was utilized to provide an in-depth understanding of research issues. Constructed questionnaires were used to capture primary information on the objectives. This is due to the advantage of enabling the researcher to collect respondents' first-hand information. The questionnaires were pilot tested to determine their suitability to Community beneficiaries, the Water management committee members and Free The Children Staff. The developed questionnaire entailed closed-ended questions which were administered after obtaining a letter of authorization from relevant authorities. The respondents were given a period of one week to fill the questionnaire during their free time. The researcher then collected the filled questionnaires for analysis.

3.7 Methods of Data Analysis

Analysis of collected data was done using qualitative and quantitative methods. A systemic data editing process was utilized whereby the completeness and correct filling of every returned questionnaire was checked, numbering and categorization of the data was done. Specific responses to the structured questions were assigned specific numbers to give them a numerical code.

Thereafter data analysis using the computer Statistical Package for Social Scientists (SPSS Version 20) programme (Kothari, 2007) was done. Descriptive statistics such as measures of dispersion (percentages and tables) as well as the measures of central tendency-Standard deviation and mean. Additionally, inferential statistics which includes regression and correlation were also carried out to establish the relationship nature amongst the variables and determine their relationship magnitude. It was also used to assess whether the relationship was significant or not.

3.8 Ethical Considerations

During data analysis and presentation, high integrity standards are obligatory to the researcher which is principally the use of their statistical abilities in challenges in which individual securities may unsuitably influence application or development of statistical

information (Kombo and Tromp, 2006). The following was thus observed during the research process; before conducting this study, the researcher sought the necessary authorization from relevant authorities, he also ensured respondents adequately understood the research they are participating in, the respondents were also encouraged to participate voluntarily and before administering the questionnaires, the researcher sought informed consent from respondents and ensured anonymity and confidentiality of all the information collected.

3.9 Operational Definition of the Variables

This is the explanation of the procedure used in gauging a variable (Mugenda and Mugenda, 2003).

Table 3.4 Operational definition of the variables

Objectives	Variables	Indicators	Measurement scale	Specific Tool
To establish how the community participation influence sustainability of Free The Children funded water projects in Narok county.	Independent: Community participation Dependent: Sustainability of community based water projects	<ul style="list-style-type: none"> • Human labour provision • Share project costs 	Nominal & Ordinal	Mean, Standard deviation, regression and correlation analysis
To examine how skills of water management committees affect sustainability of Free The Children funded water projects in Narok County	Independent: Skills of water management committees	<ul style="list-style-type: none"> • Technical expertise • Knowledge of business • Record keeping skills 	Nominal & Ordinal	Mean, Standard deviation, Correlation and regression analysis
To determine how the choice of technology influence sustainability of Free The Children funded water projects in Narok County.	Independent: Choice of technology	<ul style="list-style-type: none"> • Efficiency of the technology • Cost of technology • Technology operation 	Nominal & Ordinal	Mean, Standard deviation, Correlation and regression analysis
To determine how monitoring and evaluation affect sustainability of Free The Children funded water projects in Narok County.	Independent: Monitoring and Evaluation	<ul style="list-style-type: none"> • Community involvement in evaluating and monitoring exercise • The Choice of M&E system 	Nominal & Ordinal	Mean, Standard deviation, Correlation and regression analysis

CHAPTER FOUR

DATA ANALYSIS, PRESENTATION AND INTERPRETATION

4.1 Introduction

This fourth chapter highlights the analysis of collected data through the questionnaire from the Free The children staff, the Water management committee members and the Community beneficiaries. The chapter presents and interprets the results providing appropriate responses to the study research questions. The chapter is presented in three sections, the descriptive analysis indicating the summary of the responses based on percentages, standard deviation, mean and the frequency. Correlation and regression analysis were done.

4.2 Response Rate

A total of 70 questionnaires were distributed among 2 staff members, 2 water management committee members and 66 Community beneficiaries of the water projects. A total of 67 questionnaires were collected back for analysis. This represented a 97% response rate that was acceptable for analysis to be done. Babbie, (2003) indicates that a 70% and above response is acceptable for analysis in a descriptive study.

4.3 The Response on Demographic Factors

The demographic characteristics of the interviewees on gender, marital status, age and education levels were measured during the survey. The questionnaire was administered to the three categories of respondents and thus the researcher used cross tabulation in determining the responses from each group.

4.3.1 Gender of the respondents

Gender of the interviewees' was captured because it has an influence on the responses since in any community the women are the ones affected by issues of water and hence it was expected that male respondents will have a different view from the female respondents. Table 4.1 below presents the results.

Table 4.1: Respondents' Gender

Respondents' Designation		Gender		Total
		Male	Female	
Water Management Committee Members	Count	1	1	2
	%	50.0%	50.0%	3.0%
Free The Children Staff	Count	1	1	2
	%	50.0%	50.0%	3.0%
Community Beneficiaries	Count	19	44	63
	%	30.1%	69.9%	94.0%
Total	Count	21	46	67
	%	31.3%	68.7%	100%

The results in Table 4.1 shows that the Water management committee members and the Free The Children staff indicates equal representation of one male and one female for both, while for the Community beneficiaries majority 44(69.9%) were female while only 19(30.1%) were male. In total male represented 21 (31.3 %) whereas 46 (68.7%) were female .This implies that most beneficiaries who responded were female and this could be because they are usually most affected with issues of water than male.

4.3.2 Respondents' age

Data on respondents' age was collected since it also has an effect on the understanding of the water projects in the area. Table 4.2 highlights the results.

Table 4.2: Age of the respondents

Designation of Respondents		Age				Total
		20-30yrs	31-40yrs	41-55yrs	Above 55yrs	
Water management committee members	Count	0	2	0	0	2
	%	0.0%	100.0%	0.0%	0.0%	3.0%
Free the children staff	Count	0	1	1	0	2
	%	0.0%	50.0%	50.0%	0.0%	3.0%
Community Beneficiaries	Count	32	13	15	3	63
	%	50.8%	20.6%	23.8%	4.8 %	94.0%

The results shows that all the respondents from the Water management committee members were in the age bracket 31-40 years while for those in the Free The Children staff only one was in the age bracket 31-40 years, while the other respondent was in the age bracket of 41-55 years. Among the Community beneficiaries, majority of the respondents 32(50.8%) were within 20-30 yeas age bracket followed by 15 (23.8%) in

the age of 41-55 years, 13 (20.6%) aged 31-40 years and the rest 3 (4.8%) were above 55 years. In total the results shows that 33(49.2%) ranged between 20-30 years, 16 (23.9%) were aged between 41-55 years whereas 15 (22.4%) were aged between 31-40 years and only 3 (4.5%) were in the age above 55 years which infers that most were youths who take the responsibility of fetching water in the community.

4.3.3 Respondents' Marital status

It was important to establish the marital status of the respondents. The results are as in Table 4.3.

Table 4.3. Marital status of Respondents

Designation of Respondents		Marital status		Total
		Married	Single	
Water management committee members	Count	2	0	2
	%	100.0%	0.0%	3.0%
Free the children staff	Count	1	1	2
	%	50.0%	50.0%	3.0%
Community beneficiaries	Count	43	16	63
	%	50.8%	20.6%	94.0%
Total	Count	46	17	67
	%	73.0%	27.0%	100%

The results presented in Table 4.3 indicates that all the 2 Water management committee members interviewed were single, among the Free The Children staff one was single and the other one was married. Among the Community beneficiaries majority 46 (73.0%) of the respondents were married and the rest 17 (27.0%) were single.

4.3.4 Education Level

The education level of those interviewed is presented in Table 4.4.

Table 4.4: Response on education level

Level	Free The Children	Water management committee members	Community beneficiaries	Total
No education	0	0	13(19.4%)	13(19.4%)
Primary education	0	0	10(15.9%)	10(15.9%)
Secondary education	0	0	30(49.6%)	30(49.6%)
Tertiary education	2(3.0%)	2(3.0%)	10(15.9%)	14(21.9%)
Total	2(3.0%)	2(3.0%)	63(94.0%)	67(100%)

The results in Table 4.4 shows that all the respondents in the Water management committee and the staff of Free The Children had tertiary education with only 10(15.9%) of the community beneficiaries indicating the same level for education. Among the community beneficiaries most of them 30 (49.6%) had attained secondary education while 10(15.9%) had primary level and 13 (19.4%) did not have formal education. This indicates that the bulk of the respondents had attained at least Secondary education level and above thus they could understand issues influencing water projects sustainability.

4.4 Factors Influencing Sustainability of Community Based Water Projects

4.4.1 Community Participation and Project Sustainability

This study sought to establish if community participation in the water projects affects the sustainability of the projects. The respondents were requested to specify the degree to which they agree with the provided statements. The respondents were requested to rank own opinion on a 5 scale Likert where by 1= Strongly disagree, 2= disagree , 3 = not sure , 4 = Agree and 5= Strongly Agree. The responses were presented in this section where the descriptive analysis was presented, then correlation and the ordinary least square regression.

4.4.1.1 Community members involved in Water Projects for Sustainability Purposes

The study sought to establish whether the community was involved in the water projects for sustainability purposes. The responses were presented in Table 4.5

Table 4.5: Community members involved in the water projects

Designation of Respondents	Water Projects For Sustainability Purposes		Total
	Agree	Strongly Agree	
Water Management Committee Members	1 50%	1 50%	2 3%
Free The Children Staff	1 50%	1 50%	2 3%
Community Beneficiaries	29 46%	34 54%	63 94%

All respondents in agreed that community members were involved in the water projects and this enhanced the sustainability of the Water projects. This indicates that

for there to be sustainability of the projects the community members should be involved.

4.4.1.2. Community involvement in all Six stages of Project management:

The study also sought to establish if Community members' involvement in the six stages of Project management. Table 4.6 presents the results.

Table 4.6: Community members involvement in six project stages

Designation of Respondents	Community involved in all Six Stages		Total
	Agree	Strongly Agree	
Water Management Committee Members	0	2	2
		100%	3%
Free The Children Staff	0	2	2
		100%	3%
Community Beneficiaries	24	39	63
	38%	62%	94%

The results in Table 4.6 show that all the Water Management Committee members and Free The Children Staff respondents agreed strongly with the fact that Community members were involved within the Six project management stages. Among the Community beneficiaries majority of them strongly agreed (62%) while 38% agreed. This meant that Community members were engaged during the six project implementation stages which is crucial for projects' success.

4.4.1.3 Community willingness to participate in the water projects' management

The study also sought to establish whether the community members would willingly participate in their projects. The responses were summarized as shown in Table 4.7.

Table 4.7: Community willingness to participate in water projects

Designation of respondents	Community willingness to participate in Water Projects					Total
	Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree	
Water Management Committee Members	0	0	0	1 50%	1 50%	2 3%
Free The Children Staff	0	0	0	1 50%	1 50%	2 3%
Community Beneficiaries	5 8%	5 8%	3 5%	26 41%	24 38%	63 94%

From the results in Table 4.7 it is shown that all the Water management committee members and Free The Children staff agreed that the community members had the will to take part in the project management. Among the community beneficiaries it was noted that a total of 79% which formed the majority agreed that the community members were willing to participate in the water projects. This implies that the community supported the projects and hence this led to sustainability.

4.4.1.4 Community Participation Influences project Sustainability

The study sought to establish whether community participation influences project sustainability. Table 4.8 presents the results.

Table 4.8. Community participation influences project sustainability

Designation of Respondents	Participation Influence Sustainability					Total
	Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree	
Water Management Committee Members	0	0	0	2 100%	0	2 3%
Free The Children Staff	0	0	0	1 50%	1 50%	2 3%
Community Beneficiaries	5 8%	19 30%	7 11%	25 40%	7 11%	63 94%

All the committee members for water management, all the Free The Children staff and majority of the community beneficiaries 51% agreed with the statement meaning that

community participation in the project influences the project sustainability. It was also noted that 38% of the community beneficiaries disagreed that community participation influences project sustainability. A further 11% of the community beneficiaries were not sure if community participation led to project sustainability. This shows that participation influences sustainability and beneficiaries must be involved more.

4.4.1.5 Community participation enhances Projects Efficiency

The study sought to examine whether participation of the community enhanced efficiency of the water projects. Table 4.9 presented the results.

Table 4.9: Community participation enhances project efficiency

Designation of respondents	Water projects efficiency					Total
	Strongly disagree	Disagree	Neutral	Agree	Strongly agree	
Water management committee members	0	0	0	2 100%	0	2 3%
Free The Children staff	0	0	0	2 100%	0	2 3%
Community beneficiaries	1 2%	20 32%	2 3%	24 38%	16 25%	63 94%

The results in Table 4.9 show that all the members of the water management committees' representing 100% while all the Free The Children staff representing 100% agreed that community participation in the projects enhances water projects efficiency. Majority of community beneficiaries representing 63% agreed that participation of the community in the water projects make them efficient whereas 34% of the community beneficiaries disagreed. This denotes that the participation of the community affects the efficiency and effectiveness of water projects within the study area.

4.4.1.6 Participants Involvement in Projects Planning and Implementation

Data was collected on community members' involvement during the planning and also projects' implementation. The results are as in Table 4.10.

Table 4.10: Participants involvement in water projects’ planning and implementation

Designation of respondents	Participants involvement in planning and implementation of Water Projects				Total
	Disagree	Neutral	Agree	Strongly agree	
Water Management Committee Members	0	0	0	2	2
Free The Children Staff	0	0	1	1	2
Community	6	5	42	10	63
Beneficiaries	9%	8%	67%	16%	94%

Majority of the study respondents from all the groups who participated in the study that is Water management committee members and all Free The Children staff agreed that participants were involved during the planning as well as during the implementation of the water projects. Most of the community’s beneficiaries representing 67% and 16% agreed and strongly agreed respectively that when they participate during the planning and the implementation phases of their water projects they are likely to be sustainable. From the results it is clear that community members’ participation during the critical processes of planning and implementation of community based water projects leads to sustainability.

4.4.1.7 Enhanced continuity in operation of Water Projects

The study sought to examine whether participation of the community in the projects enhances the continuity of the project. The responses were provided in Table 4.11

Table 4.11. Community participation leads to enhanced continuity of the projects

Designation of Respondents	Enhanced continuity in operation of Water Projects				Total
	Disagree	Neutral	Agree	Strongly Agree	
Water Management Committee Members	0	0	1	1	2
Free The Children Staff	0	0	0	2	2
Community	4	3	33	23	63
Beneficiaries	6%	5%	52%	37%	94%

From the results in Table 4.11 it is shown that all the committee members and Free The Children staff agreed that there is enhanced continuity in operations of community based water projects. Majority of community beneficiaries representing 52% and 37% agreed and strongly agreed respectively that there is enhanced continuity in operations of water projects when the community is involved. This implies that involving the community in the operations of the project enhances the continuity of the project.

4.4.1.8 Collective effort in project control

The study sought to establish whether community participation leads to collective efforts in Projects control. Table 4.12 shows the results.

Table 4.12: Community Participation enhances collective effort in project control

Designation of respondents	Collective effort to control project					Total
	Strongly disagree	Disagree	Neutral	Agree	Strongly agree	
Water Management Committee Members	0	0	0	1 50%	1 50%	2 3%
Free The Children Staff	0	0	0	1 50%	1 50%	2 3%
Community Beneficiaries	5 8%	5 8%	3 5%	26 41%	24 38%	63 94%

The results in Table 4.12 show that all the water management committee members and Free The Children staff agreed that there is collective effort to control community based water projects when the community is involved in the management of the project. Majority of the community beneficiaries 41% and 38% agreed and strongly agreed respectively that there are collective efforts to control community based water projects while a total of 16% of community beneficiaries disagreed that there is collective efforts to control community based water projects. From the results it is clear that when the community is involved in management of the project there is collective efforts to control water projects hence there is sustainability.

4.4.1.9 Community participation in Project Management Minimizes Wastes

The study sought to establish whether community involvement in the projects' minimizes waste in the projects. Table 4.13 highlights the results

Table 4.13: Community participation in project management minimizes waste

Designation of respondents	Community participation in project management minimizes waste					Total
	Strongly disagree	Disagree	Neutral	Agree	Strongly agree	
Water Management Committee Members	0	0	0	1	1	2
				50%	50%	3%
Free The Children Staff	0	0	0	0	2	2
					100%	3%
Community Beneficiaries	5	19	7	25	7	63
	8%	30%	11%	40%	11%	94%

Half of the water management committee members agreed that project management minimizes wastes of resources while the rest strongly agreed with the statement. A similar response was recorded from Free the children staff where all the respondents 100% strongly agreed good project management minimizes waste of resources. Most of the community beneficiaries 40% agreed while 11% strongly agreed that community participation in project management minimizes waste of resources in the projects while 30% disagreed while 8% strongly disagreed with the statement. This implies that projects are likely to be implemented at a lower cost when the community is involved and this leads to project sustainability.

4.4.1.10 Community Participation enhances sustainability of the Water projects

The study sought whether Community participation enhances water projects' sustainability. Table 4.14 presents the results.

Table 4.14: Community participation enhances sustainability of water projects

Designation of respondents	Community participation in management					Total
	Strongly disagree	Disagree	Neutral	Agree	Strongly agree	
Water Management Committees	0	0	0	2	0	2
Members				100%		3%
Free The Children Staff	0	0	0	2	0	2
				100%		3%
Community Beneficiaries	1	20	2	24	16	63
	2%	32%	3%	38%	25%	94%

The results in Table 4.14 show that all the Water management committee members and Free the children staff agreed that community participation enhances project sustainability. It was also noted that most of community beneficiaries representing 38% and 25% agreed and strongly agreed respectively that participation of the community in the management of the their water projects leads to sustainability. This shows that community participation enhances community water based projects sustainability and they should be encouraged to participate more.

The results were also summarized using the mean and standard deviation as summarized in Table 4.15.

Table 4.15: Summary of responses using mean and standard deviation

STATEMENT	MEAN	SD
Community members were involved in the Water projects for sustainability purposes	3.63	1.112
Community members were involved in all the six stages of the Project (Conception, Planning, Implementation, Monitoring, Evaluation and Closure)	3.97	1.193
Community members were willing to participate in the Water projects	3.16	1.214
Community participation influences Project Sustainability	3.57	1.196
Community participation enhances Projects efficiency	3.78	.775
Community members were involved in the planning and implementation of the projects	3.94	.795
Community participation in the Water project has enhanced continuity in the operation of the Water Projects	4.22	.794
Community participation enhances collective effort in Project control	3.97	1.193
Community participation in project management minimizes wastes	3.16	1.214
Community participation enhances sustainability of the Water projects	3.51	1.134
Overall mean	3.69	1.062

Decision Criteria for the mean value

1-2.45	Weak effect	(< 49%)
2.46 – 3.45	Moderate effect	(50 – 69%)
3.46 – 5.0	Strong effect	(70 – 100%)

Over 70% shown by the mean value of more than 3.45 indicates that community participation had some influence on the water projects' sustainability within the study area. The results show that Community members were involved in the Water Projects for sustainability purposes since majority of the respondents (M=3.63 and SD=1.112) indicated strongly that it has an effect. This denotes a strong effect between participation of community and increased efficiency hence project sustainability.

The results also show that members of the community were engaged during six project stages (M=3.97 and SD= 1.193). This indicates that for Projects to be sustainable, community members' involvement in all stages is paramount.

It is also noted that the readiness of the Community members to participation in the Water Projects management denotes moderate influence on the projects' sustainability as specified by most of the respondents (M= 3.16 and SD=1.214). This implies that when the community members are willing to participate in project planning and implementation there is a higher chance of the project being sustainable.

On whether Community participation influences Project Sustainability majority of the respondents (M=3.57 and SD=1.196) indicated strongly that it has an effect .This shows that community participation in projects has a strong effect on project implementation and enhanced sustainability.

The results also show that Community participation enhances Projects efficiency, a vital project sustainability characteristic. The results indicate that most of the respondents (M=3.78 and SD=.775) agreed that the community participation strongly affect sustainability because it enhances project efficiency.

The results also show that majority of the respondents (M=3.94 and .795) indicated that Participants involvement in planning and implementation of the projects causes a strong effect in the sustainability of the water projects because it ensures that the projects are managed effectively.

It was also noted that enhanced Continuity in operation of water projects affects project sustainability to a strong extent given the mean of 4.22 and .794 standard deviation. In another account the respondents indicated that community participation enhances collective effort in Project control. The results shows that majority of the interviewees' specified presence of a strong effect between enhanced collective effort by community

members and the sustainability of the water projects given the mean of 3.97 and a Standard deviation of 1.193.

Further, from the results community participation in project management minimizes wastes and this leads to project sustainability. The results show that there is a moderate effect since the mean value of 3.16 and the Standard deviation of 1.214. Lastly, the results illustrate the feeling of community members that the project sustainability is affected by their participation (M=3.51; 1.134).

The overall mean of (M= 3.69; SD =1.063) indicates that community participation in the water projects enhances project sustainability to a great extent meaning that the support of the community through participation in the project is a very crucial aspect of community project sustainability. This implies that the success of community water projects is influenced by the degree of community members' participation in their management.

Further analysis to found whether the association amid Community participation and project sustainability was significant or just by chance was undertaken. Linear correlation analysis and ordinary least square regression were done to establish this relationship. Table 4.16 presents the results.

Table 4.16. Pearson's correlation

		Sustainability
Community Participation	Pearson Correlation	.402**
	Sig. (2-tailed)	.001
	N	67

Decision Criteria for the Pearson value

<0.4	Weak Correlation	
<0.6	Moderate Correlation	
>0.6	Strong Correlation	
Significant value < 0.05		very significant
Significant value > 0.05		not significant

A positive but weak correlation between community participation in the water projects and the sustainability of the Water projects is noted. However, the relationship is very significant at 95 % level of confidence (R = 0.402; P value < 0.05)

Table 4.17: Regression Coefficients

Model	Unstandardized		Standardized	t	Sig.
	Coefficients		Coefficients		
	B	Std. Error	Beta		
(Constant)	2.068	.632		3.273	.002
1 Community Participation	.538	.152	.402	3.538	.001

R = .402^a; R Square = .161; F =12.515; P value = .001^b

The regression model helps to show the magnitude of the relationship between the variables and also to establish whether the relationship that exists can be explained statistically or occurred only by chance. The results in Table 4.17 have indicated that a unit change in community participation in management of the water projects leads to a 53.8% change in community water sustainability. This change can be statistically explained since the t- statistic value is more than +2 and the p value is < 0.05.

4.4.2 Skills of Water Management Committee members and Sustainability of the Water Projects

Data on the skills of the water management committees and how it affects the sustainability of the project was collected. The respondents were requested to specify the degree to which they agree with the provided statements. The respondents were asked to rate their opinion on a 5 scale likert where by 1= Strongly disagree, 2= disagree , 3 = not sure , 4 = Agree and 5= Strongly Agree. The responses were presented in this section where the descriptive analysis was presented, then correlation and the ordinary least square regression.

4.4.2.1 Management Team adequately respond to concerns

The study sought to establish whether the management team adequately respond to concerns adequately. Table 4.18 presents the results.

Table 4.18: Response on whether management team respond to concerns adequately

Designation of Respondents		Adequate response to concerns					Total
		Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree	
Water Management Committee Members	Count	0	0	0	2	0	2
	%	0.0%	0.0%	0.0%	100.0%	0.0%	3.0%
Free The Children Staff	Count	0	0	0	1	1	2
	%	0.0%	0.0%	0.0%	50.0%	50.0%	3.0%
Community Beneficiaries	Count	2	1	3	28	29	63
	%	3.1%	1.6%	4.8%	44.0%	46.0%	94.0%

The results in Table 4.18 show that all the water management committee members 2 (100%) agreed, among the Free The Children staff 50% agreed and 50% strongly agreed meaning that there was also 100% agreement in that the water management committee members adequately respond to concerns whenever they are raised. While among the community beneficiaries 29 (46.0%) strongly agreed, 28 (44%) agreed that the water management committee responded to their concerns very adequately. This implies that the problems of the beneficiaries of the water projects were adequately addressed.

4.4.2.2 Influence of Skills possessed by the water management team on Water Sustainability

The study also sought to establish whether skills of the water management team were effective for sustainability of the projects. Table 4.19 presents the results.

Table 4.19: Influence of the Management skills on Sustainability of the Projects

Designation of Respondents		Influence of Skills to management team					Total
		Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree	
Water Management Committee Members	Count	0	0	0	1	1	2
	%	0.0%	0.0%	0.0%	50.0%	50.0%	3.0%
Free The Children Staff	Count	0	0	0	1	1	2
	%	0.0%	0.0%	0.0%	50.0%	50.0%	3.0%
Community Beneficiaries	Count	5	5	3	26	24	63
	%	8.0 %	8.0 %	5.0%	41.0 %	38.0 %	94.0%

The results in Table 4.19 show that all the Water management committee members agreed that the skills of the Water management committee members were adequate to enhance project sustainability. Similarly, all the staff of the sponsoring organization agreed. Out of the community beneficiaries 26 (41.0%) agreed while 24(38%) strongly agreed with the statement that the management team had adequate skills to enhance project sustainability. This shows that the respondents were confident that the project management team had the necessary skills to inspire the water projects' sustainability.

4.4.2.3 Response on whether Water Management Committee members have Sufficient Technical Expertise

The study sought to establish whether the Water management committee members had sufficient technical expertise for management of the water projects. Table 4.20 presents the results.

Table 4.20: Water management committee members have sufficient technical Expertise

Designation of respondents		Sufficient technical expertise					Total
		Strongly disagree	Disagree	Neutral	Agree	Strongly agree	
Water Management Committee Members	Count	0	1	0	1	0	2
	%	0.0%	50.0%	0.0%	50.0%	0.0%	3.0%
Free The Children Staff	Count	0	1	0	0	1	2
	%	0.0%	50.0%	0.0%	0.0%	50.0%	3.0%
Community Beneficiaries	Count	5	19	7	25	7	63
	%	8.0%	30.0%	11.0%	40.0%	11.0%	94.0%

The results in Table 4.20 shows mixed response on the part of the water management committee members where 50% disagreed and 50% agreed, similarly for the staff of the sponsoring organization 50% disagreed while 50% strongly agreed that the Water management committee members had sufficient technical expertise to enhance project sustainability. Among the community beneficiaries the results show that 25 (40%) agreed, 7 (11%) strongly agreed while 19 (30.0%) disagreed and 5 (8%) strongly disagreed that the Water Management committee members have sufficient technical expertise to manage the Water projects to sustainability. This generally implies that the Water management committee members have the sufficient technical expertise to manage the Water projects.

4.4.2.4 Experience in Management

On whether the management team of the water projects have experience in management to enable sustainability of the project the results as in Table 4.21.

Table 4.21: Response on experience in management

Designation of Respondents		Experience in management			Total
		Neutral	Agree	Strongly Agree	
Water Management Committee Members	Count	0	0	2	2
	%	0.0%	0.0%	100%	3.0%
Free The Children Staff	Count	0	2	0	2
	%	0.0%	100%	0.0%	3.0%
Community Beneficiaries	Count	6	37	20	63
	%	9.0%	59.0%	32.0%	94.0%

The results in Table 4.21 show that all the water management committee members strongly agreed while the staff members of the organization agreed that the management of the water projects have experience in management of the projects. On the part of the community beneficiaries majority 37 (59.0%) agreed, 20 (32.0%) strongly agreed while only 6 (9.0%) were not sure whether the management had the experience for project sustainability. This implies that the people elected to manage the water projects are experienced in management and hence ensure project sustainability.

4.4.2.5 Clear and Achievable Estimates in Project Schedule

The respondents were requested to specify their degree of agreement on whether the project committee have clear and achievable estimates in the project schedule. Table 4.22 presents the results.

Table 4.22: Clear and Achievable Estimates in Project Schedule

Designation of Respondents		Clear and achievable estimates in project schedule				Total
		Disagree	Neutral	Agree	Strongly Agree	
Water Management Committee Members	Count	0	0	1	1	2
	%	0.0%	0.0%	50.0%	50.0%	3.0%
Free The Children Staff	Count	0	0	0	2	2
	%	0.0%	0.0%	0.0%	100.0%	3.0%
Community Beneficiaries	Count	1	3	22	37	63
	%	2.0 %	5.0 %	35.0%	59.0 %	94.0%

The results on Table 4.22 show that all the staff members of the free the children and the water management committee agreed that the management of the projects have clear and achievable estimates through project schedule. Among the community beneficiaries majority 37 (59.0%) strongly agreed with the statement while 22 (35.0%) agreed with only 1 (2%) disagreeing that the project management had clear achievable estimates. This shows that the project management team was well focused as they had very clear and achievable estimates for the projects.

4.4.2.6 Experience in Risk Management

The respondents were requested to specify if the water management team had experience in risk management. Table 4.23 highlights the results

Table 4.23: Experience in Risk Management

Designation of Respondents		Experience in risk management		Total
		Agree	Strongly Agree	
Water Management Committee Members	Count	0	2	2
	%	0.0%	100%	3.0%
Free The Children Staff	Count	2	0	2
	%	100%	0.0%	3.0%
Community Beneficiaries	Count	28	35	63
	%	44 %	56 %	94.0%

The results in Table 4.23 show that all the water management committees and the Free The Children Staff agreed that the management of the water project have experience in risk management at the water projects. Among the community beneficiaries 35(56%) strongly agreed while 28(44%) agreed that the management team of the projects have experience in risk management for the water projects. This implies that the management team of the water projects understand the risks involved in the management of the projects and hence can be able to handle them.

4.4.2.7 Leadership Skills of the Water Management Committee is Satisfactory

Data to found whether the leadership skills of the water management committee are satisfactory or not was collected. Table 4.24 shows the results.

Table 4.24. Leadership Skills of the water management committee is satisfactory

Designation of Respondents		Leadership skills of the water management committee		Total
		Agree	Strongly Agree	
Water Management Committee Members	Count	1	1	2
	%	50%	50%	3.0%
Free The Children Staff	Count	1	1	2
	%	50%	50%	3.0%
Community Beneficiaries	Count	40	23	63
	%	63%	37 %	94.0%

The results in Table 4.24 show that both the water management committee members and the free the children staff agreed that the leadership skills of the water management

committee were satisfactory. While from the community beneficiaries the results shows that 40(63%) agree while 23 (37%) strongly agreed with the statement. This shows that most of the leaders on the water management committee have leadership skills and hence can be able to handle the leadership of the water projects.

4.4.2.8 Alignment of development projects with host community priorities

The study also sought to establish whether the development projects were aligned with what had been prioritised by the water management team in the host community. Table 4.25 shows the results

Table 4.25: Alignment of development projects with host communities.

Designation of Respondents		Alignment of development projects with host community priorities		Total
		Agree	Strongly Agree	
Water Management Committee Members	Count	1	1	2
	%	50%	50%	3.0%
Free The Children Staff	Count	2	0	2
	%	200%	0.0%	3.0%
Community Beneficiaries	Count	36	27	63
	%	57%	43%	94.0%
Total	Count	39	28	67
	%	59.7%	40.3%	100%

59.7% agreed and the rest 40.3% strongly agreed with the statement that alignment of development projects with host communities affects the water projects' sustainability in the area. The results show that when the development projects are aligned with the host community then the water projects are likely to be sustainable.

The summary for the descriptive responses was done using the means and the standard deviations. Table 4.26 presents the results.

Table 4.26: Summary of response using mean and standard deviation

STATEMENT	Mean	SD
Water management committee members adequately respond to concerns	4.28	.867
Skills of the Water management Committee members are adequate in sustainability of the projects	3.97	1.193
Water management committee members have sufficient technical expertise to manage the Water projects	3.16	1.214
Water management committee members have experience in management	4.24	.605
Water management committee has clear and achievable estimates in Project schedule	4.52	.660
Water Management Committee members have experience in risk management	3.78	.775
Leadership skills of the Water management committee members is satisfactory	4.22	.794
Water Management committee has increased the alignment of development projects with host communities	3.97	1.193
Overall Mean	4.02	0.913

Decision Criteria for the mean value

1-2.45	Weak effect	(< 49%)
2.46 – 3.45	Moderate effect	(50 – 69%)
3.46 – 5.0	Strong effect	(70 – 100%)

The results show that the Management team adequately respond to concerns of the water projects since majority of the respondents (M=4.28 and SD=.867) agreed with the statement. This indicates that when the management team adequately responds to the concerns of the project it has a strong effect on the sustainability of the project.

It was also noted that there is a strong effect between Management skills and sustainability of the projects since majority of the respondents (M=3.97 and SD=1.193) agreed with the statement. This implies that there is need for the water management

committee members to have the required management skills that will enhance sustainability of the project.

In regard to Management committee members having sufficient technical expertise majority of the respondents (M=3.16 and SD=1.214) indicated that the committee members have sufficient expertise and hence this influences the sustainability of the projects by a moderate effect. There is also a strong effect between the water management committees' experience in Management and the sustainability of the projects (M= 4.24 and SD=.605). This implies that when the management committee have effective management skills they are likely to make the project sustainable.

The study established that there was also a strong effect between having Clear and achievable estimates in Project schedule and project sustainability (M=4.52 and SD=.660). This shows that having clear and achievable estimated of a project has a very strong effect on the sustainability of the projects.

In this study it was also established that there was also a strong effect between experience in risk management and project sustainability (M=3.78 and SD=.775). This shows that the respondents felt that it was very necessary for the Water Management committee members to have experience in risk management.

The results also show that leadership skills of the Water management committee members is satisfactory (M=4.22; SD=.794) while on alignment of development projects with host communities (M=3.97;SD=1.193).The overall results show that the overall mean of 4.02and a standard deviation of 0.913 indicate a strong effect of skills and knowledge on the sustainability of the water projects. This implies that skills and knowledge of the water project by the management committee are very important enhancing sustainability of the project.

The relationship between the variables was tested using Pearson's' correlation analysis as shown in Table 4.27.

Table 4.27: Pearson’s correlation analysis

		Sustainability
Skills and knowledge	Pearson Correlation	-0.232
	Sig. (2-Tailed)	.059
	N	67

Decision Criteria for the Pearson value

<0.4	weak correlation	
<0.6	Moderate correlation	
>0.6	Strong Correlation	
Significant value < 0.05		very significant
Significant value > 0.05		not significant

The results shows that the skills of the water management committees is negatively correlated with the sustainability of the water projects (R = -0.232; P value > 0.05). This indicates that though the water management committee members need managerial skills to effectively run the projects as shown by the mean value that shows that management skills have a strong effect on project sustainability, but its Pearson’s correlation coefficient shows management skills of the committee have a weak and negative correlation with project sustainability. This implies that the kind of skills required for the sustainability of water projects varies among the various stakeholders hence the negative correlation.

The regression model was done and presented in Table 4.28 to establish the magnitude of influence that skills and knowledge have on sustainability of community projects.

Table 4.28: Regression Coefficients

Model	Unstandardized Coefficients		Standardized Coefficients	t	Sig.
	B	Std. Error	Beta		
1					
(Constant)	5.867	.817		7.182	.000
Skills and knowledge	-.379	.197	-.232	-1.923	.059

R= -0.232^a; R Square =.054; F = 3.697;P value = .059^b

The regression model shows the magnitude of the relationship between the variables and also to establish whether the relationship that exists can be explained statistically or occurred only by chance. From Table 4.28, it is clear that the relationship between

the skills and knowledge of the various people involved in the management of the project can be explained by 5% change in sustainability of the project. The results also indicated that a unit change in skills and knowledge of the water management committee leads to a -37.9% change in community water sustainability hence the model is said to be a good predictor of project sustainability. Since the t value is between -2 & +2 it implies that the relationship between Skills of the Water management committee members and Sustainability of Water Projects is just by chance. This is also confirmed by the P value which is > 0.05. This implies that skills and knowledge of the water management committee is important but it may not bring about project sustainability unless other factors are put into consideration.

4.4.3 Influence of the choice of Technology on project sustainability

The third objective sought to examine whether the choice of the technology for the project affected the project and enhanced sustainability. The results from the three categories were presented.

4.4.3.1 Technology Used for Operating Your Water Project

The study sought to establish whether the technology used for operating the water project was appropriate to enhance project sustainability. Table 4.29 presents the results.

Table 4.29: Happy with technology used for operating the water project

Designation of Respondents		Technology used for operating your water project			Total
		Strongly Disagree	Agree	Strongly Agree	
Water Management Committee Members	Count	0	0	2	2
	%	0.0%	0.0%	50%	3.0%
Free The Children Staff	Count	0	2	0	2
	%	0.0%	50%	0.0%	3.0%
Community Beneficiaries	Count	4	49	10	63
	%	6%	78%	16%	94.0%

The results on Table 4.29 shows that all the management committee members and the Free The Children staff were happy with the technology used. Similarly majority

of the respondents from the community beneficiary were also happy with the technology being used for the water projects. This implies that the respondents were able to use the type of technology and hence were sure of the sustainability of the water projects.

4.4.3.2 Whether Technology is Cost Effective

The respondents were requested to specify whether the technology utilized in the water projects was cost effective. Table 4.30 shows the results.

Table 4.30: Technology is Cost Effective

Designation of Respondents		Technology is cost effective				Total
		Disagree	Neutral	Agree	Strongly Agree	
Water Management Committee Members	Count	0	0	2	0	2
	%	0.0%	0.0%	100%	0.0%	3.0%
Free The Children Staff	Count	0	0	1	1	2
	%	0.0%	0.0%	50%	50%	3.0%
Community Beneficiaries	Count	31	4	25	3	63
	%	49%	6%	40 %	5%	94.0%

The results on Table 4.30 show that according to the water management committee and the Free The Children staff they felt that the technology used in the water projects was cost effective. Among the community beneficiaries most of them 49% disagreed while 40 % agreed that the technology used was cost effective. This implies that most of the respondents felt that the technology used is cost effective.

4.4.3.3 Community involvement in the choice of technology

The study tried to find out if the community members were engaged in the choice of the technology to be used. Table 4.31 indicates the results.

Table 4.31: Community involvement in the choice of the Technology

Designation of Respondents		Community involvement in the choice of technology					Total
		Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree	
Water Management Committee Members	Count	0	0	0	2	0	2
	%	0.0%	0.0%	0.0%	100%	0.0%	3.0%
Free The Children Staff	Count	0	0	0	1	1	2
	%	0.0%	0.0%	0.0%	50%	50%	3.0%
Community Beneficiaries	Count	12	19	1	28	3	63
	%	19%	30%	2%	44%	5%	94.0%

The results on Table 4.31 shows that all the water management committee members agreed with the statement that the community was involved in the choice of the technology to be used in the water project. Similarly, all the free the children staff also agreed that the community was involved in the choice of the technology. There was mixed response from the community beneficiaries where by 44 % agreed while 30% and 19 % disagreed and strongly disagreed with the statement . This indicates that the beneficiaries of the water projects at the community level were not fully informed of the choice of the technology used at the project.

4.4.3.4 Technology Influences Sustainability of your water projects

Data on whether the technology chosen influences the sustainability of the water projects was collected. Table 4.32 denotes the responses

Table 4.32: Technology influences sustainability

Designation of Respondents		Technology influences Sustainability					Total
		Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree	
Water Management Committee Members	Count	0	0	0	1	1	2
	%	0.0%	0.0%	0.0%	50%	50%	3.0%
Free The Children Staff	Count	0	0	0	0	2	2
	%	0.0%	0.0%	0.0%	0.0%	100%	3.0%
Community Beneficiaries	Count	5	6	6	22	24	63
	%	8%	10%	10%	35%	38%	94.0%

The results in Table 4.32 shows that majority of the respondents from the water management committee and the free the children staff agreed with the statement that technology has an influence on the sustainability of the water project. The same was observed from the respondents of the community beneficiaries where by 38% and 35% strongly agreed and agreed respectively with the statement that technology influences sustainability of the water projects . This implies that when the choice of technology is not appropriate the chances of the water project not becoming sustainable is very high.

4.4.3.5 Adoption of Technology is Key in Sustainability

It was also important to establish whether adoption of technology is a key factor in sustainability of the water projects. The results were presented in Table 4.3.3

Table 4.33: Adoption of technology and sustainability of the project

Designation of Respondents		Adoption of technology is key in sustainability			Total
		Neutral	Agree	Strongly Agree	
Water Management Committee Members	Count	0	2	0	2
	%	0.0%	100%	0.0%	3.0%
Free The Children Staff	Count	0	2	0	2
	%	0.0%	100%	0.0%	3.0%
Community Beneficiaries	Count	10	44	9	63
	%	26 %	70 %	14 %	94.0%

The results in Table 4.33 show that all the water management committee and the Free The Children staff agreed that the adoption of technology is key to the sustainability of the project because it eases operations and maintenance. Among the community beneficiaries majority 70% also agreed with the statement meaning that adopting appropriate technology was very important in the management of the water projects because of operational and maintenance costs that are easy to manage.

4.4.3.6 Use of modern technology has helped to curb poor management

Regarding the use of modern technology to curb poor management the responses were presented in Table 4.34.

Table 4.34: Use of modern technology has helped to curb poor management

Designation of Respondents		Use of modern technology has helped to curb poor management		Total
		Agree	Strongly Agree	
Water Management Committee Members	Count	1	1	2
	%	50%	50%	3.0%
Free The Children Staff	Count	2	0	2
	%	100%	0.0%	3.0%
Community Beneficiaries	Count	58	5	63
	%	92 %	8 %	94.0%

The results in Table 4.34 show that all the respondents agreed that use of modern technology has helped to enhance management of the water projects. This indicates that all the three stakeholders appreciated the technology being used in the management of the water projects.

4.4.3.7 Advantages offered by technologies

The study sought to establish whether the advantages offered by technologies in terms of enhancing productivity depend upon its integration in to the projects' objectives.

Table 4.35 presents the results.

Table 4.35: Advantages offered by technology in project productivity

Designation of Respondents		Advantages offered by technologies					Total
		Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree	
Water Management Committee Members	Count	0	0	0	2	0	2
	%	0.0%	0.0%	0.0%	100%	0.0%	3.0%
Free The Children Staff	Count	0	0	0	1	1	2
	%	0.0%	0.0%	0.0%	50.0%	50.0%	3.0%
Community Beneficiaries	Count	2	1	3	28	29	63
	%	3 %	2%	5%	44%	46%	94.0%

The results in Table 4.35 shows that both the water management committee members and the free the children staff agreed that there was more project productivity as the technology could be integrated in the system. Similarly majority of the respondents from among the community beneficiaries 46% and 44 % strongly agreed and agreed respectively that the technology enhances productivity of the project if it is well integrated. This implies that all the respondents who are stakeholders of the water projects appreciate the usefulness of technology in enhancing productivity.

4.4.3.8 Sustainability of Water Projects Depends on Technology

The study also sought to find out whether technology used in projects enhanced sustainability of the project. Table 4.36 depicts the results.

Table 4.36: Technology Influences Sustainability of Water Projects

Designation of Respondents	Sustainability of water projects depends on technology					Total	
	Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree		
Water Management Committee Members	Count	0	0	0	1	1	2
	%	0.0%	0.0%	0.0%	50%	50%	3.0%
Free The Children Staff	Count	0	0	0	1	1	2
	%	0.0%	0.0%	0.0%	50%	50%	3.0%
Community Beneficiaries	Count	5	5	3	26	24	63
	%	8.0%	8.0%	5.0%	41.0%	38%	94.0%

The results in Table 4.36 show that there was a general agreement that technology enhances the sustainability of the projects. All the water management committee members and the staff agreed while majority of the community beneficiaries 41% and 38% agreed and strongly agreed respectively. This indicates that for the water projects to be sustainable the right technology has to be integrated in the project.

4.4.3.9 Technological Innovation has enormous influence on community based Water Projects' sustainability

The study sought to establish whether technological innovation has enormous influence on community based water projects. Table 4.37 shows the results.

Table 4.37: Technological innovation influence community based water projects' sustainability

Designation of Respondents	Technological innovation has enormous influence on community based water projects					Total	
	Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree		
Water Management Committee Members	Count	0	1	0	1	0	2
	%	0.0%	50%	0.0%	50%	0.0%	3.0%
Free The Children Staff	Count	0	1	0	0	1	2
	%	0.0%	50%	0.0%	0.0%	50%	3.0%
Community Beneficiaries	Count	5	19	7	25	7	63
	%	8%	30%	11%	40%	11%	94.0%

The results on Table 4.37 show that there is mixed response from all the respondents on whether technological innovation influences community water projects. The results shows that 50% of the staff and water management committee disagreed while the rest 50% agreed with the statement. It was also noted that 40% of the community beneficiaries agreed, while 30% disagreed with the statement. This means that technology innovation has an effect on project sustainability but the effect might not be very enormous.

4.4.3.10 Information about water projects send to members through new technology

The study also sought to find out whether information about the water projects is send to members through new technology. Table 4.3.8 highlights the results.

Table 4.38: Members get information through new technology.

Designation of Respondents		Information about water projects through use of new technology				Total
		Disagree	Neutral	Agree	Strongly Agree	
Water Management Committee	Count	2	0	0	0	2
Members	%	100%	0.0%	0.0%	0.0%	3.0%
Free The Children Staff	Count	1	0	1	0	2
Community Beneficiaries	%	50%	0.0%	50%	0.0%	3.0%
	Count	32	14	11	6	63
	%	51 %	22 %	17 %	10 %	94.0%

From the results presented in Table 4.38 it is noted that all the water management committee members disagreed that members were being communicated to through new technology. Among the Free The Children staff 50% disagreed while the rest 50% agreed with the statement while among the community beneficiaries majority 52% disagreed with the statement , 22% were neutral , 17% agreed and only 10% strongly agreed with the statement, this demonstrates that members did not receive communication about the project through new technology.

These results were summarised in Table 4.39, using the means and the standard deviations and the interpretation thereof provide as per the decision criteria.

Table 4.39: Summary of responses using mean and standard deviation

Statement	Mean	SD
Happy with the Technology used in the operation of the Water Projects	4.00	.853
Technology used for operating Water projects was cost effective	3.07	1.063
Community involvement in the choice of technology makes it more effective	2.94	1.313
Technology Influences Sustainability of Your Water Projects	3.91	1.240
Adoption of Technology is Key in Sustainability of projects	3.99	.536
Use of Modern Technology has helped To Curb Poor Management in projects	4.09	.288
The technology adopted offers many Advantages	4.28	.867
Sustainability of Water Projects Depends on Technology adopted	3.97	1.193
Technological Innovation has Enormous Influence on sustainability of Community Based Water Projects	3.16	1.214
Information about water projects is sent to members through new technology	3.70	1.030
Overall mean	3.71	0.96

Decision Criteria for the mean value

1-2.45	weak effect	(< 49%)
2.46 – 3.45	moderate effect	(50 – 69%)
3.46 – 5.0	strong effect	(70 – 100%)

On whether technology used for operating the water project was effective, the mean and standard deviation was computed besides the frequencies and percentages. Most of the interviewees' were happy with the technology used for operating the water project since the mean response were (m=4.00 and a standard deviation = .853). This shows that understanding of the technology used in a project by the people involved has strong effect on the sustainability of that project.

The results also show that majority of the respondents (M=3.07 and SD=1.063) indicated that the technology used in management of water projects is cost effective hence had a moderately strong effect on the sustainability of the project. On whether the community is involved in the choice of the technology for the water project most

of the respondents ($M=2.94$ and $SD=1.313$) agreed that it was important and hence it influenced sustainability of the project though to a moderate effect.

The results also show that technology influences sustainability of water projects to a great extent since majority of the respondents ($M=3.91$ and $SD=1.240$) indicate that there is a strong effect between the technology and sustainability of the project.

Similarly, the study results revealed a strong effect between adoption of technology and sustainability of water projects as it eases operations and maintenance ($M=3.99$ and $SD=.536$).

On whether the use of modern technology has helped to curb poor management in projects majority ($M=4.09$ and $SD=.288$) agreed that there was a strong effect between the two variables meaning that for there to be sustainability in the projects then modern technology should be adopted to ensure effective control.

Majority ($M=4.28$ and $SD=.867$) agreed that the technology adopted offers many advantages which leads to project sustainability. This integration has a strong effect on the sustainability of the project. The results show that majority of the interviewees agreed that sustainability of water project depends on technology used in the project ($M=3.97$ and $SD=1.193$). This indicates that sustainability of the water projects is strongly influenced by the technology applied at the project.

Regarding the effect of technological innovation on community based water project majority of the respondents ($M= 3.16$ and $SD=1.214$) agreed which also indicates that technological innovation affects sustainability of the projects greatly. Lastly the results showed that most respondents ($M=3.70$ and $SD= 1.030$) agreed that community members get information about water projects through use of new technology. This again indicates that technology has a strong effect on the sustainability of the projects. This implies that with the right technology most water projects can be sustained. The overall results shows that majority of the respondents ($M=3.71$ and the $SD=0.96$) agreed with the statements indicating that technology has a strong influence on the projects' sustainability in the study area.

The Pearson's correlation analysis was also done to establish the relationship between technological innovations and the sustainability of community projects. Table 4.40 presents the results

Table 4.40: Pearson’s Correlation analysis

	Statement	Sustainability
Technology	Pearson Correlation	-.029
	Sig. (2-Tailed)	.815
	N	67

Decision Criteria for the Pearson value

<0.4	weak correlation	
<0.6	Moderate correlation	
>0.6	Strong Correlation	
Significant value < 0.05		very significant
Significant value > 0.05		not significant

The results in Table 4.40 show that there is a very weak and negative correlation between the level of technology used at the water projects and the sustainability of the projects. This implies that the sustainability of the water projects might not necessarily be influenced by the level of technology used in the project ($R = - 0.029$; p value = 0.815).

Regarding the magnitude of the relationship the study used the ordinary least square regression analysis. Table 4.41 depicts the results

Table 4.41. Regression analysis for technology and project sustainability.

Model		Unstandardized Coefficients		Standardized Coefficients	T	Sig.
		B	Std. Error	Beta		
1	(Constant)	4.430	.560		7.912	.000
	Technology	-.034	.146	-.029	-0.236	.815

$R = .029^a$; R Square =.001 ; $F =.055$; P value =.815^b

The regression model results presented in table 4.41 helps to show the magnitude of the relationship between technology and project sustainability. It also helps to evaluate whether the relationship can be explained statistically or occurred only by chance. Table 4.42 results indicated that a unit change in technology used in management of the water projects leads to a – 3.4% change in community water project sustainability. This change is also occurring just by chance since t - statistic value is more than -2 and the p

value is >0.05. This clearly shows that having the right technology alone might not lead to project sustainability unless other factors are considered.

4.4.4 Influence of monitoring and evaluation on the sustainability of Community based water projects

The fourth objective sought to establish the effect of monitoring and evaluation on the sustainability of water projects. The respondents were requested to specify their opinion on various statement items of the degree to which they agree or disagree with the statements. The results were presented in this section.

4.4.4.1 Community Members Involvement in Monitoring and Evaluation

On whether the community members are involved in the Monitoring and Evaluation process. Table 4.4.2 presents the responses.

Table 4.42: Community member’s involvement in Monitoring and Evaluation

Designation of Respondents		Community members involvement in Monitoring and Evaluation			Total
		Strongly Disagree	Agree	Strongly Agree	
Water management committee members	Count	0	0	2	2
	%	0.0%	0.0%	100%	3.0%
Free The children staff	Count	0	2	0	2
	%	0.0%	100%	0.0%	3.0%
Community beneficiaries	Count	17	21	25	63
	%	27 %	33 %	40 %	94.0%

The results in Table 4.42 showed that all the water management committee members and the Free The Children staff members agreed that the community members are involved in M&E of the projects. Among the community beneficiary’s majority 40% strongly agreed and 33% agreed with the statement that community members are involved in the M&E of the water projects while 27% strongly disagreed. This implies that to a great extent community members were involved in the M&E of the water projects within the study area.

4.4.4.2 Awareness of the Monitoring and Evaluation system

The respondents were requested to indicate if they were aware and understood the M&E system used in the projects. Table 4.43 presents the results

Table 4.43: Awareness of the M&E System Used

Designation of Respondents		Awareness of the Monitoring and Evaluation System				Total
		Strongly Disagree	Disagree	Agree	Strongly Agree	
Water management committee member	Count	0	0	0	2	2
	%	0.0%	0.0%	0.0%	100%	3.0%
Free the children staff	Count	0	0	1	1	2
	%	0.0%	0.0%	50%	50%	3.0%
Community beneficiaries	Count	12	24	16	11	63
	%	19 %	38 %	26 %	17 %	94.0%

The results in Table 4.43 showed that among the community beneficiaries there was mixed reaction on the understanding of the M&E system used in the projects. A total of 57% disagreed while only 43% agreed they were familiar with the M&E system used. All the other staff agreed that they understand the system used in M&E, this was expected because the people in management are the ones involved in the process and hence should be in a position to understand the M &E system used.

4.4.4.3 High level of community participation in Monitoring and Evaluation of the Water Project

The study sought to establish whether there is high level of community participation in Monitoring and Evaluation of the Water Project. Table 4.44 shows the results

Table 4.44: High Level of community participation in Monitoring and Evaluation

Designation of respondents		Level of community participation			Total
		Neutral	Agree	Strongly agree	
Water Management Committee Members	Count	0	1	1	2
	%	0.0%	50.0%	50.0%	3.0%
Free The Children Staff	Count	0	1	1	2
	%	0.0%	50.0%	50.0%	3.0%
Community Beneficiaries	Count	40	4	19	63
	%	63.0 %	6.0 %	31.0 %	94.0%

The results in Table 4.44 show that half of the water management committee agreed that there is high level of Community Participation in M&E of the Water Project while the rest strongly agreed with the statement. Similar answers were also from the funding organization. Among the Community beneficiaries, 31% strongly agreed, 6% agreed with this statement. However 63% of the Community beneficiaries were not sure with the degree of Community Participation in water projects' M&E.

The results on Table 4.44 show that most of the community beneficiaries were not aware of the level of participation in the M&E of the water projects. This indicates that though they participated but they are not sure to what extent. All the other respondents indicated that they understood the level of participation by the community members.

4.4.4.4 Monitoring and Evaluation Influence Sustainability of the water projects

On whether the respondents felt that M& E influences project sustainability. Table 4.4.5 shows the results

Table 4.45. Influence of Monitoring and Evaluation on Sustainability of Water Projects

Designation of Respondents		M&E influence on sustainability of water projects			Total
		Strongly Disagree	Agree	Strongly Agree	
Water Management Committee Member	Count	0	1	1	2
	%	0.0%	50.0%	50.0%	3.0%
Free The Children Staff	Count	0	1	1	2
	%	0.0%	50.0%	50.0%	3.0%
Community Beneficiaries	Count	7	23	33	63
	%	11.0%	37.0%	52.0%	94.0%

The results in Table 4.45 show that most of the community beneficiaries to the water project 52% strongly agreed and 37% agreed with the statement that M&E influences sustainability of the water projects. Again the management of the water projects and the staff of free the children all agreed that M&E of water projects influences sustainability of the projects.

4.4.4.5 Community involvement in baseline survey

The study sought to establish whether the community was involved in the base line survey to establish the water projects. The results were presented in Table 4.46

Table 4.46: Involvement of the community in baseline survey.

Designation of Respondents		Community involvement in Baseline Survey		Total
		Agree	Strongly Agree	
Water Management	Count	1	1	2
Committee Member	%	50%	50%	3.0%
Free The Children	Count	2	0	2
Staff	%	50%	50%	3.0%
Community	Count	37	26	63
Beneficiaries	%	%	%	94.0%

The results on Table 4.46 show that all the respondents who participated agreed that the community members were involved in the base line survey for the selection of the water projects. This indicates that the community members approved the project in the initial strategies.

4.4.4.6 Community was consulted on the best location for the project

On whether the community was consulted on the best location for the project. Table 4.47 highlights the results.

Table 4.4.7: Community was consulted on the location of the project

Designation of Respondents		Community was consulted on location			Total
		Neutral	Agree	Strongly Agree	
Water Management	Count	0	1	1	2
Committee Members	%	0.0%	50%	50%	3.0%
Free The Children	Count	0	1	1	2
Staff	%	0.0%	5.0%	2.3%	3.0%
Community	Count	18	42	3	63
Beneficiaries	%	28 %	67 %	5%	94.0%

The study sought to establish whether the community was consulted on the location of the project. All the water management committee members and the free the children staff agreed with the statement while for the community beneficiaries , 67% agreed only 5 strongly agreed and the rest 28% disagreed with the statement . This shows that there was consultation from the community on where the project was to be located.

4.4.4.7 Community Involvement in Setting up the Goals

The study also sought to establish whether community was involved in the setting of goals, objectives and activities for the project. The results are presented in Table 4.48.

Table 4.48: Community is involved in settings goal and objectives

Designation of Respondents	Community involvement in setting up goals			Total	
	Neutral	Agree	Strongly Agree		
Water Management Committee Member	Count	0	1	1	2
	%	0.0%	50.0%	50.0%	3.0%
Free The Children Staff	Count	0	1	1	2
	%	0.0%	50.0%	50.0%	3.0%
Community Beneficiaries	Count	21	41	1	63
	%	33.0 %	65.0 %	2.0%	94.0%

Apart from only 33.0% of the community beneficiaries who were not sure of the statement that community members are involved in the setting of goals and objectives of the project all the other respondents agreed that the community members were involved. This indicated that the community was involved in the setting of the objectives and activities of the water projects.

4.4.4.8 Community involvement in formulating action plan

The study sought to establish whether the community was involved in formulating action plans for the project. Table 4.49 indicates the results.

Table 4.49: Community involvement in formulating action plan

Designation of Respondents	Community involvement in formulating action plan			Total	
	Neutral	Agree	Strongly Agree		
Water Management Committee Members	Count	0	2	0	2
	%	0.0%	100%	0.0%	3.0%
Free The Children Staff	Count	0	0	2	2
	%	0.0%	0.0%	100%	3.0%
Community Beneficiaries	Count	17	15	31	63
	%	27%	24 %	49 %	94.0%

The results presented in Table 4.49 show that majority of the respondents in all categories agreed that the community was involved in the formulation of the projects actions plans. Only 27% from the community beneficiary's category were not sure

whether the community was involved in the formulation of the action plans. This implies that most of the water projects are likely to succeed because the community is involved.

4.2.6.9 Community sets up committee to oversee project management

The study sought to find out whether the community sets up a committee every year to oversee the management of the project. Table 4.50 denotes the results.

Table 4.50: Community sets up committee to oversee project management

Designation of respondents	Setting up committee to oversee management			Total	
	Neutral	Agree	Strongly agree		
Water Management Committee Members	Count	0	1	1	2
	%	0.0%	50%	50%	3.0%
Free The Children Staff	Count	0	2	0	2
	%	0.0%	100%	0.0%	3.0%
Community Beneficiaries	Count	5	30	28	63
	%	8 %	48 %	44%	94.0%

Majority of the respondents were in agreement with the fact that the community sets up committee to oversee the management of the project every year. This indicates that the water projects are likely to be sustainable because the community is involved in its management.

4.2.6.10 Community participation leads Water Projects sustainability

The study also pursued to find out whether the participation of the community leads to water projects' sustainability. Table 4.51 highlights the results.

Table 4.51. Community participation leads to Water Projects sustainability

Designation of Respondents	Community participation leads to Water projects Sustainability					Total	
	Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree		
Water Management Committee Members	Count	0	0	0	2	0	2
	%	0.0%	0.0%	0.0%	100%	0.0%	3.0%
Free The Children Staff	Count	0	0	0	1	1	2
	%	0.0%	0.0%	0.0%	50%	50%	3.0%
Community Beneficiaries	Count	2	1	3	28	29	63
	%	3%	2%	5%	44%	46%	94.0%

Majority of the respondents were in agreement with the statement that community participation in project leads to project sustainability ;100% for the water management committee, 100% of the free the children staff and a total of 90% of the community beneficiaries. The results indicate that the organization involves the community members in the management of the projects and this influences the project sustainability.

Table 4.52 gives a summary of means and standard deviation

Table 4.52: Summary of response using mean and standard deviation

Statement	Mean	SD
Community Members are Involvement in Monitoring and Evaluation of the Water Project	3.64	1.612
Community was aware of the Monitoring and Evaluation system used in the Water Projects	2.96	1.482
There is high level of community participation in M&E of the Water Project	3.72	.918
M&E Influence Sustainability of the water projects	4.21	1.200
The Community was involved in the Baseline Survey	4.40	.494
Community was consulted on the best location for the project	3.75	.532
The Community was involved in Setting up the Goals of the Project	3.70	.523
The Community was involved in formulation of the action plan	4.24	.836
The Community every year sets up committee to oversee management of the Water Projects	4.34	.641
Community participation leads to sustainability of the Water Projects	3.95	.832
Overall mean	3.89	0.907

Decision Criteria for the mean value

1-2.45	weak effect	(< 49%)
2.46 – 3.45	moderate effect	(50 – 69%)
3.46 – 5.0	strong effect	(70 – 100%)

The results in the table show that there was a generally high level of agreement among the respondents on whether monitoring and evaluation influences the sustainability of the water project. Majority of the respondents ($M = 4.34$; $SD = 0.641$) agreed that the community every year sets up committee to oversee management of the water projects. This shows that there is a strong effect between the sustainability of the projects and when a committee is set up to oversee the management of the projects. The results also show that majority of the respondents ($M = 4.24$; and $SD = 0.836$) agreed that the community was involved in formulation of the action plan and hence project sustainability.

It was also noted that majority of the respondents ($M = 4.40$; and $SD = 0.494$) indicated that community was involved in baseline survey/needs assessment to establish water project. This indicated that involving the community in baseline survey/ needs assessment strongly affects projects sustainability. Most of the respondents agreed that Monitoring and evaluation influences sustainability of Water project ($M = 4.21$; $SD = 1.200$) meaning that it has a strong effect on sustainability of the project. The results also shows that majority of the respondents ($M = 3.95$; $SD = 0.832$) strongly agreed that the community contributes to the project in form of labour, finances and other material contributions, hence this affects project sustainability. That there is an avenue for the community to suggest ways of improving the projects through monitoring and evaluation. It was also noted by majority of the respondents strongly agreed that the community was consulted on the best location for the water project ($M = 3.75$; $SD = 0.532$) indicating that it has a strong effect on the sustainability of the water projects.

The results also shows that majority of the respondents ($M = 3.70$; $SD = 0.532$) agreed that the community was involved in setting up the goals, objectives and activities of the project and hence this involvement had a strong effect on the sustainability of the water projects. On whether there is high level of community participation in Monitoring and Evaluation of the water project, majority of the respondents ($M = 3.72$; $SD = 0.918$) agreed with the statement meaning that this involvement has a strong effect on the sustainability of the projects. On whether the community members are involved in monitoring and evaluation of the water project majority ($M = 3.64$ and $SD = 1.612$) agreed with the statement meaning that involvement had a strong effect on the sustainability of the projects. Lastly, the study established that only ($M = 2.96$;

SD=1.482) indicated that they were aware of monitoring and evaluation system in place for the Project. This indicates that there was a moderate effect between awareness of the monitoring and evaluation of the projects and the sustainability of the water projects. The overall mean of 3.89 and Standard Deviation 0.907 indicates that monitoring and evaluation has a strong effect on the sustainability of the projects.

The Pearson's correlation analysis to test the relationship between the variables was presented in Table 4.53.

Table 4.53: Pearson's Correlation analysis

	Statement	Sustainability
	Pearson Correlation	0.178
Monitoring and Evaluation	Sig. (2-Tailed)	0.150
	N	67

Decision Criteria for the Pearson value

<0.4	weak correlation	
<0.6	Moderate correlation	
>0.6	strong correlation	
Significant value < 0.05		very significant
Significant value > 0.05		not significant

The results show that there is a weak but positive correlation between the monitoring and evaluation of a project and its sustainability. The results reveal that the influence of monitoring and evaluation on project sustainability might not be significant if the factor is taken alone without considering other factors (R=0.178 ; p value = 0.150).

Table 4.54. Ordinary linear regression analysis

Model	Unstandardized Coefficients		Standardized Coefficients	t	Sig.
	B	Std. Error	Beta		
(Constant)	3.709	.407		9.117	.000
1 Monitoring and Evaluation	.152	.104	.178	1.458	.150

R = .178^a, R Square = .032; F =2.127; P value = 0.150

The results show that there is a weak insignificant but positive relationship between monitoring and evaluation and the water project sustainability. The results show that a unit change in monitoring and evaluation leads to a 15.2% change in sustainability of the project based on the beta value (B). Since the t value is between -2 & +2 it implies that the relationship between monitoring and evaluation and Sustainability of Water Projects is just by chance. This is also confirmed by the P value which is > 0.05. The F statistic value indicates that the model cannot confidently explain the relationship between monitoring and evaluation as a stand-alone factor influencing sustainability of water projects.

The analysis for multiple regressions was done and presented in Table 4.55. The aim was to establish whether the four factors considered for this study combined had an effect on the sustainability of the project;

Table 4.55: Multiple regression analysis

Model	Unstandardized Coefficients		Standardized Coefficients Beta	t	Sig.
	B	Std. Error			
(Constant)	2.561	1.131		2.263	.027
Community Participation	.597	.165	.446	3.620	.001
Skills and Knowledge	-.128	.243	-.078	-.527	.600
Technology	-.259	.202	-.221	-1.285	.204
Monitoring and Evaluation	.204	.111	.238	1.829	.072

R = 0.496; R square = 0.246; F value = 5.059; P value = .001^b

The results show that there is a very significant, positive but weak relationship between the four factors; Community Participation, Skills and Knowledge, Technology and Monitoring & Evaluation on the sustainability of the water projects. The results further noted that in the combined model the level of sustainability of a project improves by 24.6% if the four factors are considered for the project. The results further show that project sustainability is a complex process and there are other underlying factors not considered in this study that also plays a very significant role in the process. By considering the constant value of 2.561 which indicates that if the four factors

considered in the study are held constant then the water projects will still show some level of sustainability.

The results also show that community participation has a positive effect on the sustainability of the projects since the $B=.597$, $t=3.620$ and $p\text{-value}=.001$. It is also noted that monitoring and evaluation has a positive effect on sustainability of the water projects with a beta value (B) of 0.204. However, the relationship is just by chance since t value 1.829 and the P - value is 0.072 showing that there is a weak significance between the variables.

The results also show that skills & knowledge and technology influence the sustainability of the water projects just by chance as seen by the small beta values (-.128 and -.259) respectively and the small t statistic values which lie between +2 and -2 that is (-.527 and -1.285) respectively. The p - value > 0.05 is an indication that the effect of skills & knowledge and technology on sustainability of water projects is not significant. Despite the disparity in the results the overall study model ($R = 0.496$; R square = 0.246; F value = 5.059; P value = .001) indicates that the four factors combined together give a very significant effect on project sustainability. Hence those project managers who wish to enhance their project sustainability must be able to see to it that the management team has the right skills and knowledge, technology and monitoring and evaluation.

CHAPTER FIVE

SUMMARY OF THE FINDINGS, DISCUSSION, CONCLUSIONS AND RECOMMENDATIONS

5.1 Introduction

This fifth chapter discusses the findings summary, gives the conclusion based on the summary, draws recommendations and gives areas for further studies identified in the course of the study. This study's purpose was to investigate the factors influencing sustainability of community based water projects in Kenya with specific reference to water projects funded by Free The Children in Narok County. The study sought to examine the following research objectives; To establish the extent to which community participation influences sustainability of Free the Children funded water projects in Narok County, to examine ways in which skills of water management committees affect sustainability of Free the Children funded water projects in Narok County, to explore the extent to which choice of technology influence sustainability of Free the Children funded water projects in Narok County and to determine how monitoring and evaluation influence sustainability of Free the Children funded water projects in Narok County.

The study adopted a descriptive design and targeted employees from Free The Children in Narok County, the Water management committees from each of the various water projects and the community beneficiaries. Collected data was analyzed through inferential and descriptive statistics. The summary of the results was presented in the following section 5.2.

5.2 Summary of findings

69.9% of respondents were female while the rest were male which indicated that more female were involved in the water projects than male and this could be because women are more involved in domestic issues where water is very important. The results also shows that most them were aged below 45 years which implies that most of the respondents were young and middle aged women who have the responsibility of fetching water in the community. Majority 73.0% of the respondents were married and hence needed water for their family's livelihood. On educational level majority (49.6%) of the community members had attained secondary education and hence were

in a position to understand the challenges they face due to inadequate water in the area of study.

5.2.1 Community Participation level and Project Sustainability

The study sought to establish whether community participation in the water projects affects the sustainability of the projects. It was established that all the respondents agreed that the community was involved in the water projects for sustainability purposes. It was noted that the community was fully involved at all stages in the project cycle and this enhanced the sustainability of the projects. It was also noted that majority of the respondents 79% agreed that community members were willing to participate in the projects. This shows that the community fully supported the water projects leading to sustainability. On whether community participation influences project sustainability all the free the children staff and majority of the community beneficiaries 51% agreed again showing that the community fully participates in the projects and hence leads to sustainability.

Majority of the respondents 63% also noted that participation of the community in the water projects makes them efficient. Similarly, the results indicated that most community beneficiaries that is 70% agreed that participation of community members in the water projects influences the sustainability of the projects. The results indicated that community members were involved in the planning and implementation of the water projects which indicated that participation of community members in planning and implementation of community water based projects leads to sustainability and also their participation leads to enhanced continuity of the project. Majority of the respondents also noted that when there are collective efforts in the control of the community based water projects', the projects are likely to be sustainable. This was further clarified by the information that when the community is involved in the management of the water projects there is minimization of waste and this influences sustainability of the project.

The results also have indicated that all the committee members and free the children staff agreed that community participation enhances project sustainability. It was also noted that majority of community beneficiaries representing 63% agreed that community participation in the management of the community water based projects leads to sustainability. The overall mean of ($M= 3.69$; $SD =1.062$) indicates that

community participation in the water projects has a strong effect on project sustainability. The results further indicated that there is a positive correlation between community participation in project management and the sustainability of the water projects. The analysis revealed that 53.8 % of a change in sustainability of community water projects could be explained by community participation in the management of the projects.

5.2.2 Influence of skills of the water management committees on sustainability of the water projects.

The study sought to establish whether the skills of the water management committees affect the sustainability of the project. The results showed that most of the respondents 64.2% agreed that the water projects were managed by project committees. The results also showed that majority of the respondents felt that management committee involved in the management of the projects have relevant skills, can adequately respond to the problems of the water projects' beneficiaries to deal with the challenges and concerns of the members. The results also revealed that majority of the respondents agreed that the skills of the management team were adequate to enhance project sustainability. This indicates that the respondents were confident of the skills and knowledge of the management team to the project. It was also noted that most of the respondents agreed that the management team had the expertise and experience required for project sustainability. It was also revealed that project management team have clear achievable estimates, indicating that the team was focused as they had very clear and achievable estimates for the projects.

The study also revealed that most of the respondents agreed that water project management committee have experience in project risk management. The respondents also agreed that the projects management team had the required leadership skills, the team is able to align development projects with host community and this contributes to the sustainability of the water projects in the area. Further analysis indicated that there was a relationship between the level of skills of the water management committees and sustainability of the projects though the relationship is negatively correlated and not significant. The results shows that with a mean of 4.02 and a standard deviation of 0.913 indicate that there is a strong effect of skills and knowledge on the sustainability of the water projects. The results show that a change in skills and knowledge of the water

management committee influences sustainability of the water project although the change is not significant. Further analysis showed that 37.9 % change in sustainability of community water projects can be explained by the skills and knowledge possessed by the water management committee.

5.2.3 Influence of the choice of Technology on Water projects' sustainability

The third objective sought to examine whether the choice of the technology for the project affected the project and enhanced sustainability. The results show that majority of the respondents were happy with the technology being used at the water projects. This implies that the respondents were able to use the type of technology and hence were sure of the sustainability of the water projects. The technology used in the water projects was also considered cost effective. The results also shows that the water committee members agreed that the community was involved in the choice of the technology to be used in the water project, however, there were mixed results from the beneficiaries of the water projects at the community level about their involvement in the choice of the technology used at the project. It was also agreed that technology has an influence on the sustainability of the water project. It was also noted that most of the respondents agreed that the adoption of technology is key to the sustainability of the water projects because it eases operations and maintenance.

It was also noted that adopting appropriate technology was very important in the management of the water projects because of operational and maintenance costs that are easy to manage. It was also noted that use of modern technology has helped to enhance management of the water projects. The results also show that project productivity improves depending on the technology integrated in the system. This implies that the water projects appreciate the usefulness of technology in enhancing productivity. The results also show that there was a general agreement that technology enhances the sustainability of the projects. Similarly, technology innovation has an effect on project sustainability but the effect might not be very significant. Technology was also noted to influence how communication was being done to the members and it eases operations and maintenance. This implies that technology has an influence on the sustainability of the water projects in the study area. Further analysis was done using Pearson's correlation analysis and the results showed that relationship between technological innovations and the sustainability of community projects was weak and insignificant however it is an important factor in enhancing project sustainability. The

overall results shows that majority of the respondents ($M=3.71$ and the $SD=0.96$) agreed with the statements indicating that technology has a strong effect on the sustainability of the community water projects in the study area. The results also indicated that technology alone only leads to a 3.4% change in sustainability of community water projects.

5.2.4 Influence of monitoring and evaluation on sustainability of water projects

The fourth objective sought to establish the effect of monitoring and evaluation on the sustainability of water projects. The results showed majority of the respondents agreed that the community members are involved in M&E of the projects. The results also showed that most of the respondents were not aware of the level of participation in the M&E of the water projects indicating that they understood the level of participation by the community members. It was also noted that majority of the respondents agreed that M&E influences sustainability of the water projects. It was also noted that the community members were involved in the base line survey for the selection of the water projects. This indicates that the community members approved the project in the initial stages.

On whether the community was consulted on the location of the project, majority of the respondents agreed that there was consultation on where the project was to be located. The results further noted that the community members are involved in the setting of goals and objectives of the project which shows that they were fully involved in the setting up of the project. The results also show that the community was involved in the formulation of the action plans. This implies that most of the water projects are likely to succeed because the community is involved. This indicates that the water projects are likely to be sustainable because the community is involved in its management. The overall results shows that with a mean of 3.89 and Standard Deviation 0.907, monitoring and evaluation has a strong effect on the sustainability of the water projects in the study area. The results show that a unit change on community involvement in monitoring and evaluation of the projects will lead to a 15.2% change in sustainability of water projects.

The analysis for multiple regressions was tested at a 95% level of confidence. The results show that there is a very significant, positive but weak relationship between the four factors; Community Participation, Skills and Knowledge, Technology and

Monitoring & Evaluation on the sustainability of the water projects. The results further noted that in the combined model the level of sustainability of a project improves by 24.6% if the four factors are considered for the project. The results show that project sustainability is a complex process and there are other underlying factors not considered in this study.

5.3 Discussion of Findings

This section discusses findings of this study and compares it to the literature reviewed.

5.3.1 Community Participation level and Project Sustainability

The study found out that the community members were involved in the water projects and this enhanced their sustainability. Findings from this study also reveal that the Community was involved in all the six stages of the project cycle thus bringing in the aspect of full involvement. These findings affirm findings by (Pearce 1994) and Redclift (1992). According to Pearce (1994), it is essential for the community to take part for sustainable development to be achieved. Redclift (1992), also argues that lack of community involvement affects project sustainability as they are unlikely to be responsible for what they don't own.

5.3.2 Influence of skills of the water management committees on sustainability of the water projects

The study established that the skills of the Water management committee members were adequate to enhance project sustainability. The study further found out that the Water management committee members have sufficient technical expertise to manage Water Projects. The findings affirm findings by Thite (2001) and Mbata (2006). Thite (2001) argues that it is necessary for the Water management committee members to have technical expertise as required by the project. Mbata (2006) points out that the sustainability of any community projects require a team of highly competent managers owing to many dynamics of the project implementation.

5.3.3 Influence of the choice of Technology on Water projects' sustainability

The study established that the community was involved in the choice of technology for operating the water projects. It further found out that the technology was cost effective and thus easy for the community members to manage it. The study also established that technology chosen influences the sustainability of water projects. This agrees with Harvey and Reed (2002) who argue that among technical factors suggested to

contribute to sustainability of services are selection of technology, technical capacity, technology complexity of the system to address the demand and deliver the desired level of service, the required skills required to maintain and operate the system, accessibility and availability, cost of spare parts as well as the overall maintenance and operation cost.

5.3.4 Influence of monitoring and evaluation on sustainability of water projects

The study established that Community members were involved in monitoring and evaluation of the Water Projects. The study further established that monitoring and evaluation influence sustainability of the water projects. This is in agreement with Crawford and Bryce (2003) and McCoy (2005). Crawford and Bryce (2003) argues that monitoring enhances decision making through the management of the project implementation phase and hence securing the project success. On the other hand, evaluation offers a project assessment for effectiveness in realizing the relevance, goal and an on-going project sustainability (McCoy, 2005).

5.4 Conclusion

The purpose of this study was to assess the factors influencing the sustainability of the community based water projects. The study considered four factors that could have an influence on the sustainability of the water projects; community participation, skills of water management committee members, choice of technology and monitoring and evaluation. The results showed that most of the respondents from the three categories agreed that the sustainability of the water projects depend on the community participation, skills of the water management committee members, choice of technology and monitoring and evaluation.

The study concludes that for the water projects to be sustainable there is need to have the community participate in all levels of project implementation. It was noted that when the community members are fully involved in the management of the projects it leads to sustainability of the water projects. Involving community in the decision making process, planning, setting the projects objectives plays a key role in enhancing project sustainability.

The study also concluded that though skills and knowledge seems to have a negative correlation with project sustainability, it is a critical factor in the management of the

community based water projects. The committee members need to have the skills and the knowledge of the project in order to effectively manage it and make it sustainable.

The study also concludes that the choice and use of technology is an important factor influencing the sustainability of the community based water projects. The involvement of the community in selecting the technology makes its adoption and use in the success of the projects.

It is also concluded that involving the community in the monitoring and evaluation process of the water projects influences its' sustainability. The results showed that community members participated through making appropriate decisions regarding the projects. This made them believe that they own the projects and hence this ensured their sustainability.

Finally the study concludes that the findings add knowledge to the existing Stakeholder theory that was adopted for the study. According to the theory every person or group legitimately participating in a project or firm's activities does so to gain benefits. The results have indicated that the benefits that the community members anticipate to get from the water projects are key to their support of the project and this brings about project sustainability.

5.5 Recommendations

5.5 .1 Policy recommendations

This study contributed a lot to the policy issues of community development and therefore it is recommended that policy should address the issues of community participation, whereby through research it is possible to understand the degree to which community members should participate in their projects for sustainability.

Policy to deal with the level of knowledge and skills needed for enhancing the management of the community development projects and hence enhance sustainability not only in water projects but also in any other type of project.

Findings on technology adoption and use for effective management of community development projects showed that technology was important in enhancing project management however there are gaps in the current policy on project management and particularly with regard to project implementation.

5.5.2 Practical Recommendations

In relation to the study findings it is recommended that project management team should ensure that they tailor their leadership styles to suite the entire project lifecycle so that each phase of the project is effectively managed.

It is also recommended that project management team must ensure that there are enough finances to ensure all phases of the project are properly managed for effective success of the project.

Community participation is also very important though not significant to the implementation process but based on the study findings it is vital to indicate that one of the key elements to ensure success of community is ownership.

Finally, the study recommends that the project team needs to clearly understand the nature of the project being implemented so that they can put in place the most appropriate strategies to ensure that the implementation process is successful.

5.5.3 Areas for further study

This study considered only four factors affecting implementation of community based water projects. There is need for a further study to look at other factors that influence community development projects.

There is also need to have a study specifically address the nature of the projects by looking at different types of community projects and understanding how the characteristics of these projects influence their sustainability.

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APPENDICES

APPENDIX I: INTRODUCTION LETTER

Joseph Munyao

P.O Box 30197 00300

Nairobi.

Dear Sir/Madam,

RE: Request for your participation in Master of Arts in Project Planning and Management research project

I'm a post graduate Student at the University of Nairobi conducting a research on "*Factors Influencing Sustainability of Community based Water Projects in Narok County. A Study of Free The Children assisted Water Projects*". This study is for academic purpose but will be useful for the government, NGOs and other private and corporate institution involved in development projects in communities.

I humbly request for your assistance and cooperation in gathering the required information as per the questionnaire. Your participation in the exercise is voluntary and so you are free to choose to or not participate. But it would be helpful if you could participate fully.

The results of this research will be completely confidential and no identification data will be collected. Some of the questions I will ask may also be quite personal and i hope they will be okay with you. If, however, you do not feel comfortable answering any questions, please feel free to say so or seek clarification where you do not understand.

Yours faithfully,

Joseph Muema Munyao

L50/77698/2015

APPENDIX II: QUESTIONNAIRE FOR WATER MANAGEMENT COMMITTEE MEMBERS, FTC STAFF AND COMMUNITY BENEFICIARIES

SECTION A: Background Information

1. What is your gender?

Male female

2. What is your approximate age?

Under 20 years Between 20-30 years 55 years and above

Between 31-40 years Over 40 years

3. What is your marital status?

Single Married Widowed

4. Indicate your highest level of education

No education Primary level Tertiary Secondary level University level

5. Designation of the respondent

Please tick which category you belong;

Water Management committee member Free The Children Staff Community beneficiary Other

SECTION B: To establish the extent to which community participation influence sustainability of Free The Children funded community based water projects

The following statements relates to how community participation influences sustainability of community based water projects. To what extent are they reflected in your community based water projects? Use scale where;

1- Strongly Disagree 2 - Disagree 3 - Neutral 4- Agree and 5- Strongly Agree.

STATEMENT	SD	D	N	A	SA
Community members were involved in the Water projects for sustainability purposes					

Community members were involved in all the six stages of the Project (Conception, Planning, Implementation, Monitoring, Evaluation and Closure)					
Community members were willing to participate in the Water projects					
Community participation influences Project Sustainability					
Community participation enhances Projects efficiency					
Community members were involved in the planning and implementation of the projects					
Community participation in the Water project has enhanced continuity in the operation of the Water					
Community participation enhances collective effort in Project control					
Community participation in project management minimizes wastes					
Community participation enhances sustainability of the Water projects					

SECTION C: To examine ways in which skills of water management committees affect sustainability of Free The Children funded water projects in Narok County

The following statements relates to how skills of water management committee affect sustainability of community based water projects. To what extent are they reflected in your community based water projects?

Use scale where;

1- Strongly Disagree 2 - Disagree 3 - Neutral 4-Agree and 5- Strongly Agree.

STATEMENT	SD	D	N	A	SA
Water management committee members adequately respond to concerns					
Skills of the Water management Committee members are adequate in sustainability of the projects					
Water management committee members have sufficient technical expertise to manage the Water projects					
Water management committee members have experience in management					

Water management committee has clear and achievable estimates in Project schedule					
Water Management Committee members have experience in risk management					
Leadership skills of the Water management committee members is satisfactory					
Water Management committee has increased the alignment of development projects with host communities					

SECTION D: To explore the extent to which choice of technology influence sustainability of Free The Children funded water projects in Narok County:

The following statements relates to how technology influence the sustainability of community based water projects. To what extent are they reflected in your community based water projects?

Use scale where;

1- Strongly Disagree 2 - Disagree 3 - Neutral 4- Agree and 5-Strongly Agree.

Statement	SD	D	N	A	SA
I'm happy with the Technology used in the operation of the Water Projects					
Technology used for operating your Water project was effective					
The Community was involved in the choice of technology					
Technology Influences Sustainability of Your Water Projects					
Adoption of technology is key in Sustainability of water projects as it eases operations and maintenance					
Use of modern technology has helped to curb poor Management in projects					
The advantages offered by technologies in terms of enhancing productivity depend upon it's integration in to the projects' objectives					
Sustainability of Water projects depends on technology adopted					
Technological innovation has enormous influence on sustainability of community based Water projects					
Information about water projects is sent to members through new technology					

SECTION E: To determine how Monitoring and Evaluation affect sustainability of Free The Children funded community based water projects:

The following statements relates to how Monitoring and Evaluation influence the sustainability of the community based water projects. To what extent are they reflected in your community based water projects?

Use scale where;

1- Strongly Disagree 2 - Disagree 3 - Neutral 4- Agree and 5- Strongly Agree

Statement	SD	D	N	A	SA
Community Members are Involvement in M&E of the Water Project					
Community was aware of the M&E system used in the Water Projects					
There is high level of community participation in M&E of the Water Project					
M&E Influence Sustainability of the water projects					
The Community was involved in the Baseline Survey					
Community was consulted on the best location for the project					
The Community was involved in Setting up the Goals of the Project					
The Community was involved in formulation of the action plan					
The Community every year sets up committee to oversee management of the Water Projects					
Community participation leads to sustainability of the Water Projects					

Thank you for your participation

APPENDIX III: RESEARCH AUTHORIZATION LETTER FROM THE UNIVERSITY



**UNIVERSITY OF NAIROBI
COLLEGE OF EDUCATION AND EXTERNAL STUDIES
SCHOOL OF CONTINUING AND DISTANCE EDUCATION
DEPARTMENT OF EXTRA-MURAL STUDIES
NAIROBI EXTRA-MURAL CENTRE**

Your Ref:

Our Ref:

Telephone: 318262 Ext. 120

Main Campus
Gandhi Wing, Ground Floor
P.O. Box 30197
NAIROBI

14th February 2017

REF: UON/CEES/NEMC/25/171

TO WHOM IT MAY CONCERN

RE: JOSEPH MUEMA MUNYAO - REG NO L50/77698/2015

This is to confirm that the above named is a student at the University of Nairobi College of Education and External Studies, School of Continuing and Distance Education, Department of Extra- Mural Studies pursuing Masters of Art in Project Planning and Management.

He is proceeding for research entitled "**factors influencing sustainability of community based water projects in Kenya**" A case of free the children funded water projects in Narok County

Any assistance given to him will be highly appreciated.

CAREN AWILLY
CENTRE ORGANIZER
NAIROBI EXTRA-MURAL CENTRE



APPENDIX IV: RESEARCH AUTHORIZATION LETTER FROM NACOSTI



NATIONAL COMMISSION FOR SCIENCE, TECHNOLOGY AND INNOVATION

Telephone: +254-20-2213471,
2241349,3310571,2219420
Fax: +254-20-318245,318249
Email: dg@nacosti.go.ke
Website: www.nacosti.go.ke
when replying please quote

9th Floor, Utalii House
Uhuru Highway
P.O. Box 30623-00100
NAIROBI-KENYA

Ref. No. **NACOSTI/P/17/11530/16655**

Date: **10th April, 2017**


Joseph Muema Munyao
University of Nairobi
P.O. Box 30197-00100
NAIROBI.

RE: RESEARCH AUTHORIZATION

Following your application for authority to carry out research on *“Factors influencing sustainability of community based water projects in Kenya. A case of free the children funded water projects in Narok County,”* I am pleased to inform you that you have been authorized to undertake research in **Narok County** for the period ending **10th April, 2018.**

You are advised to report to **the County Commissioner and the County Director of Education, Narok County** before embarking on the research project.

On completion of the research, you are expected to submit **two hard copies and one soft copy in pdf** of the research report/thesis to our office.


BONIFACE WANYAMA
FOR: DIRECTOR-GENERAL/CEO

Copy to:

The County Commissioner
Narok County.

The County Director of Education
Narok County.

National Commission for Science, Technology and Innovation is ISO 9001:2008 Certified

APPENDIX V: RESEARCH CLEARANCE PERMIT

CONDITIONS

1. You must report to the County Commissioner and the County Education Officer of the area before embarking on your research. Failure to do that may lead to the cancellation of your permit.
2. Government Officer will not be interviewed without prior appointment.
3. No questionnaire will be used unless it has been approved.
4. Excavation, filming and collection of biological specimens are subject to further permission from the relevant Government Ministries.
5. You are required to submit at least two(2) hard copies and one (1) soft copy of your final report.
6. The Government of Kenya reserves the right to modify the conditions of this permit including its cancellation without notice.



REPUBLIC OF KENYA



National Commission for Science,
Technology and Innovation

RESEACH CLEARANCE
PERMIT

Serial No.A **13703**

CONDITIONS: see back page

THIS IS TO CERTIFY THAT:

MR. JOSEPH MUEMA MUNYAO
of UNIVERSITY OF NAIROBI, 6798-300
NAIROBI, has been permitted to conduct
research in Narok County

on the topic: **FACTORS INFLUENCING
SUSTAINABILITY OF COMMUNITY BASED
WATER PROJECTS IN KENYA. A CASE OF
FREE THE CHILDREN FUNDED WATER
PROJECTS IN NAROK COUNTY**

for the period ending:
10th April, 2018

Applicant's
Signature

Permit No : NACOSTI/P/17/11530/16655

Date Of Issue : 10th April, 2017

Fee Received :Ksh 1000



Director General
National Commission for Science,
Technology & Innovation