DETERMINANTS OF SUSTAINABILITY OF COMMUNITY BASED FLOOD MANAGEMENT PROJECTS IN NYATIKE, MIGORI COUNTY CASE: LOWER GUCHA MIGORI WATER RESOURCE USERS ASSOCIATION

BY

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DECLARATION

This research project report is my original work, and has never been presented for any degree award in any other University or institution of higher learning.

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SUPERVISOR

This research project report has been submitted for examination with my approval as the University of Nairobi supervisor.

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DEDICATION

This research project is dedicated to my loving family for their encouragement and contributions in providing moral support.

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ABBREVIATIONS AND ACRONYMS

UNHCR	United Nations High Commission for Refugees
O&M	Operation and Maintenance
UNICEF	United Nations Children's Funds
M&E	Monitoring and Evaluation
NGO	Non-Governmental Organizations
WRA	Water Resource Authority
EMDAT	International Emergency Disaster Database
CRED	Centre for Research on the Epidemiology of Disasters

ABSTRACT

Community based approaches for community development in projects management, have emerged as the best tools for achieving project sustainability. Project sustainability in flood management and prevention can be achieved if only change agents can adopt community-based approaches that embrace participation and involvement of the communities in designing, planning, implementation, and monitoring and evaluation. The main purpose of the study was to examine the sustainability of community based flood management projects in Lower Gucha Migori Water Resource Users Association in Nyatike, Migori County. The specific objectives were to examine the role of public participation in sustainability of community based flood management projects, to determine the role of funding in sustainability of community based flood management projects in Nyatike, to assess the effect of information dissemination in sustainability of community based flood management projects in Nyatike, and to examine expertise in sustainability of community based flood management projects in Nyatike, Lower Gucha Migori Water Resource Users Association, Migori County. This study adopted descriptive research design. The study target population was key stakeholders in Nyatike, Lower Gucha Migori Water Resource Users Association who are estimated to be 821. Simple random sampling technique was used to select 269 respondents as the sample size. The questionnaire was self-administered through drop and pick from the respondents. Data collected was mainly quantitative and analyzed by descriptive analysis. The descriptive statistical tools help the researcher to describe the data and determine the extent to be used. The Data analysis used was SPSS. The study found that community participation influences sustainability of flood management projects. The findings indicated that the level of access to information influences sustainability of community based flood management projects. According to the findings funding affects sustainability of flood management projects in Nyatike, Migori County. There is need for adequate funds for implementing of flood management projects according to the designs and plans. Trained members of Water Resource Users Association are more efficient while operating the water structures thus minimizes any breakdowns during maintenance or operation. The study recommends that county leadership and committee members of Lower Gucha Migori Water Resource Users Association ought to ensure that the major stakeholders are involved in the community based flood management project to allow them to own the projects. It is also recommended that Water Resource Users Association should ensure that management committees are formed and members adequately trained. The researcher acknowledges the fact that the study was limited to Nyatike, Migori County and not the entire country it is therefore recommended that further studies be conducted to establish the factors influencing sustainability of community based flood management projects in other counties.

CHAPTER ONE

INTRODUCTION

1.1 Background to the Study

Floods are one of the most common natural hazards, causing devastating impacts worldwide. Previous studies have indicated that increased exposure of people and assets, as a result of population increase and economic growth has caused more damage due to weather related natural disasters including flooding according to Adger (2006). In addition climate change may increase the frequency or magnitude of flooding Amell & Lloyd (2014). The impact of flooding is especially harmful in developing countries due to low levels of flood protection, for example 6,648 flood fatalities were recorded in 2013 in India and Nepal, while the Philippines has suffered from recurring flooding that caused more than 100 fatalities every year between 2011 and 2013 and prolonged flooding in Thailand in 2011 caused serious economic losses as stated in the EMDAT (2016). Developed countries have also suffered from flooding; in Europe the Danube flooded in 2013, as did the Kinu River in Japan 2015 however, flood loss and damage, especially in terms of numbers of fatalities are generally less severe in developed versus developing countries due to historical efforts to mitigate flood impacts as posited by Docy, Daniels & Murray (2013).

According to Hansen & Sato (2011) globally the precipitation has increased in some areas and decreased in others causing drought in some areas and flooding in others, moreover, polar ice melts and as a consequence the sea level rises and wetlands and floodplains will become more vulnerable to floods therefore abiding rains, reckless melting of glaciers, and mounting temperature are widely debated flood risk sources.

Consequently, each year, floods of varied magnitude and scale prevail in different parts of the world. According to Khamal & Rehman (2010) floods prevailed in India, China, and Pakistan in mid-2010 memorizing a damage of unprecedented scale. Colombia and Australia were reported victims to devastating flooding in the same year. Many other countries including Uganda, Namibia, Mozambique, South Africa, Mexico, Columbia, Brazil, United States, China, Korea, Pakistan, India, Thailand, Philippines, and Cambodia witnesses high material damage and causalities associated to floods. In 2012, "killer floods," inducing more than 50 fatalities each, occurred in Madagascar, Niger, and Nigeria in Africa; Bangladesh, China, India, North and South Korea, the Philippines, and Russia in Asia; and Argentina, the United States, and Haiti in America.

According to Alfred Opere (2013) floods and droughts associated with extreme climate events have very devastating effects on almost all socio-economic activities and are very common in many parts of Africa. Floods in its immediate form can inundate farms and villages and disrupt transportation networks ultimately affecting food security and market distribution systems. In Kenya the hazards and impacts of floods were demonstrated by the 1997/1998 El nino episodes leading to severe loss of life and property.

Society has become more vulnerable to natural hazards. Although floods are natural phenomena, human activities and human interventions into the processes of nature, such as alterations in the drainage patterns from urbanization, agricultural practices and deforestation, have considerably changed the situation in whole river basins. In the same time, exposition to risk and vulnerability in flood-prone area have been growing constantly.

Floods sway by basin drainage conditions like preexisting level of water in river followed by ice or snow cover, status and characteristics of soil (moisture contents in soil and permeability), existence of dams and reservoirs, and urbanization rate in the region. Hasty failures of impeding structures evolve floods, landslides, and compact conveyance channel of water (Williams, 2003).

Community based approaches for community development in projects management, have emerged as the best tools for achieving project sustainability. According to UNHCR (2008), a community-based approach is a way of working in partnership with persons of concern during all stages of project cycle. In this paper, we define community-based approaches as strategies that extend individual needs to the community and ensure consolidation of efforts among community members in advancing their effort towards community driven projects. Community-based approaches recognize the resilience (ARC, 2001), capacities, skills and resources of people concerned, and build on these to deliver protection and solutions that support the community's own goals (UNHCR, 2008).

Project sustainability is one of the most critical challenges for all grassroots, national and international development agencies. Globally, billions of shillings have been spent in communities to enhance the living situation of the people. The concept of sustainability can be seen within time and changing social, economic and political contexts. According to Williams, (2003), sustainability is reflected in the capacity of the community to cope with change and adapt to new situations. A project that is seen as worth sustaining today may not be so in future. Notwithstanding, substantial resources have been allocated to developing and maintaining community-based programs for children, youth and families, relatively little is known about how these programs are sustained and what factors lead to their failure. Quite often, the typical

community-based program has a relatively short life once its original funding base expires (Schorr, 2007). Inadequate information and understanding of what sustains community based programs has led to various researches focusing on how community projects can be sustained past their initial funding base and increase their longevity in addressing the needs of the community

In relation to implementation of projects, sustainability is the probability that a project shall continue long after the outside support is withdrawn. Consequently, while thinking of project sustainability, three things must be born in mind; the community, project results and external assistance. A project is sustainable if the community/beneficiaries are capable on their own without the assistance of outside development partners, to continue producing results for their benefit for as long as their problem still exists.

It is apparent that project sustainability in flood management and prevention can be achieved if only change agents can adopt community-based approaches that embrace participation and involvement of the communities in designing, planning, implementation, and monitoring and evaluation. Additionally, contribution of social capital and local leadership from the community

Community participation is an important factor for the sustainability of projects as it is the genuine involvement of local people as active participants and equal partners whose concerns and experience are intrinsic to the project's success. Community awareness and involvement in project planning and implementation are important elements in the sustainability of a project. Many scholars suggest encouraging active community participation at all levels of project design and implementation Bamberger & Cheema, (2000) for sustaining those programs.

Participation in projects ensures that the development activities are based upon indigenous knowledge and are more relevant to locals. Karl, (2000) asserts that local people understand their problems better and can therefore use their skills and resources to find flexible solutions that are tailored to suit their unique needs. Oakley et al. (2008) opines that in order for the development efforts to have sustainable changes in the poor people's lives, they must take into account local values. Generally, from the authors view, stakeholder analysis should be done to ensure all parties/actors are actively involved in all stages of project management cycle. This is in concurrence with (Rudqvist and Woodford-Berger, 2006) that the community will help to detect problems during implementation at early stages before they escalate into major sources of conflict and wastefulness. As Karl (2000) puts it, local people's judgments of what constitutes success, give a more pragmatic view about what works and what does not work. Consequently, interventions will be successful and sustainable when people have a voice in determining their objectives, to support their implementation, to evaluate their outcomes, and to make indigenous knowledge available (Rudqvist and Woodford-Berger, 2006).

Involving all relevant community leaders and agencies facilitates sustaining programs (Goodman & Steckler, 1989; Shediac- Rizkallah & Bone, 2008). The level of community support determines whether a project becomes established, how quickly and successfully it consolidates, and how it responds and adapts to meet changing needs. It is therefore important that involving local communities start at the identification phase, when decisions are being made about what type of project is required to address their priority need. Sustainability cannot be achieved without their involvement and support and thus, stakeholder analysis is paramount to be able to identify the key actors who should be involved in every stage of project management cycle. Stakeholders, both men and women, should actively participate, hence having the opportunity to

influence the direction and detail of design and implementation. However, it is disappointing to note that in Kenya, most donor funded projects do not give much consideration to community participation and involvement, hence becoming unsustainable. The authors argue that the determinant factors for the sustainability of any community-based project are pre and post-implementation factors.

Thus community participation in management of flood related projects is one of the major contributing factors for sustained community project because without the community, the project cannot stand on its own. One of the key rudiments in project sustainability is the availability resources that are required for community-based projects. This means, selecting resources that should be available for the projected future, minimizing the possibility of project failure once it is up and running, due to inadequate essential materials. In many cases, this will mean identifying secondary sources of those materials that can be pressed into action. Inadequate funding detracts from a project's ability to be sustained Bamberger & Cheema, (2000). However, there are many ways that funding can be linked to a project's ability to be sustained. (Holder and Moore 2000) support developing local resources for enhanced sustainability emphasizing the importance of adequate local capacities to generate funds after external funding ceases.

The capacity of local agencies to manage (or absorb) new structures, systems, ideas and funds is often not adequately assessed, and over-optimistic assumptions are often made through use of experts. Getting the management structure right requires an adequate institutional analysis during the project formulation phase and this requires specific knowledge, skills and field time.

Adequate and effective staffing is also an important factor for sustaining community-based projects. Glaser (1981) discusses the need to involve staff in decision making; Bossert (2000)

discusses the need for staff to be committed to project goals, and utilizing indigenous staff in community based projects. The lack of adequately trained personnel is a major detractor from sustaining community-based projects while providing adequate staff training for effective project delivery, supports project longevity Bamberger & Cheema, (2000). Professionals can play a number of different roles in projects, all of which require trust and good working relationships with local people and other professionals. In order to establish good rapport professionals need time, resources and authority to invest in a project. Flexibility is critical in the way professionals interpret their own and others' roles and in the activities they and the projects undertake

1.2 Statement of the Problem

Project sustainability is a major challenge not only in Kenya, but also in many developing countries. Most projects implemented at huge amounts often tend to experience difficulties with sustainability. According to an IRC Triple-S 2010 study, despite relative success in the provision of new rural water infrastructure in the last two to three decades, studies in many countries show between 30 to 40 per cent of facilities either do not function or are operating below capacity. In Kenya, about 25 to 30 per cent of the recently completed community managed rural water supply facilities will become dysfunctional in the first three years following completion. Many water related projects have failed or are operated and managed by communities. Successful community based Operation and Maintenance (O&M) of rural flood management projects therefore remains a challenge and threatens reversing the gains made in improving quality of life for populations in Kenya and especially in Nyatike, Lower Gucha Migori Water Resource Users Association, Migori County. It is against this background the study endeavored to answer the underlying causes of poor sustainability of community based flood management projects in Nyatike.

1.3 Objectives of the Study

The study was guided by the following research objectives;

i. To examine the role of public participation in sustainability of community based flood management projects in Nyatike, Lower Gucha Migori Water Resource Users Association, Migori County.
ii. To assess the effect of information dissemination in sustainability of community based flood management projects in Nyatike, Lower Gucha Migori Water Resource Users Association, Migori County.
iii. To determine the role of funding in sustainability of community based flood management projects in Nyatike, Lower Gucha Migori Water Resource Users Association, Migori County.
iv. To examine the expertise availability in sustainability of community based flood management projects in Nyatike, Lower Gucha Migori Water Resource Users Association, Migori County.

1.4 Research Questions

The study sought to answer the following research questions;

i. What is the role of public participation in sustainability of community based flood management projects in Nyatike, Lower Gucha Migori Water Resource Users Association, Migori County?
ii. Does information dissemination affect the sustainability of community based flood management projects in Nyatike, Lower Gucha Migori Water Resource Users Association, Migori County?

iii. What is the effect of funding in sustainability of community based flood management projects in Nyatike, Lower Gucha Migori Water Resource Users Association, Migori County?

iv. What is the influence of expertise availability in sustainability of community based flood management projects in Nyatike, Lower Gucha Migori Water Resource Users Association, Migori County?

1.5 Hypotheses

The study sought to satisfy the following hypotheses:

i. Ho: There is no significant relationship between public participation and sustainability of community based flood management projects

ii. Ho: There is no significant relationship between Information dissemination and sustainability of community based flood management projects

iii. Ho: There is no significant relationship between access to funds and sustainability of community based flood management projects

iv. Ho: There is no significant relationship between expertise availability and sustainability of community based flood management projects

1.6 Significance of the Study

The study provides important knowledge on the salient aspect that to the government and other private bodies that are engaged in flood management projects in Kenya. The study pinpoints the extent to which involvement of the community members and other stakeholders affect the sustainability of these projects in the flood prone regions in Kenya.

1.7 Limitations of the Study

The researcher encountered the following limitations; the key informers were not willing to disclose all the necessary information due to conflict of interest but this was solved by the researcher visiting and explaining the rationale of the study to all respondents prior to data collection which enabled getting all information required from them. The researcher personally administered questionnaire as to overcome the limitation of low literacy level of community members.

1.8 Delimitations of the Study

The study narrowed down to Lower Gucha Migori Sub-basin (North Kadem, Macalder Kanyaruanda, Got Kachola and Muhuru locations) because the area experiences floods. This was an appropriate area because of the existence of key informants such as stakeholders from Nyatike sub-County and Lower Gucha Migori water resource users association who are natives in the area and have engaged in flood management projects and initiatives therein and are well versed with the area.

1.9 Basic assumptions of the study

This research was based on the assumption that the respondents (community and key informers) in Lower Gucha Migori sub-basin understood and answered the questions in the questionnaire correctly and truthfully and willingly returned the filled questionnaire within the postulated timeframe without any external negative influence

1.10 operational definitions of terms

Community- A coherent, social group of persons with interests or rights in a particular area of land which the members have or exercise communally in terms of an agreement, custom or law (ISDR, 2003).

Community Participation: Taking part of community members in the activities of community based flood management projects from the beginning to the end.

Sustainability: Ability of community based flood management projects to continuously provide flood management services to the community water users both in the current and future generations.

Sustainable project: A project that has the ability to satisfy the consumption needs of the present without compromising the ability of the future generations to meet their needs.

Communication: Communications refers to strategically getting the message out to stakeholders (including funders) and the public about your project. Communicating about project's effectiveness helps the project gain greater visibility and builds support from stakeholders—both external to your project and within your project team.

1.11 Organization of the Study

Chapter one provides the background to the study, statement to the problem, purpose of the study, objectives of the study, limitations of the study, delimitations of the study and the definitions of significant terms.

Chapter two is a review of literature focusing on determinants of sustainability of community based flood management projects. The review discusses the four independent variables of the

study; that is public participation, funding and sustainability, effect of information dissemination on sustainability and expertise availability in sustainability of community based flood management projects.

Chapter three focuses on research methodology which gives details on research design, target population, sample size, data collection methods, data collection instruments, reliability and validity.

Chapter four presents the data analysis and discusses the findings. Finally chapter five gives attention on the summary of findings, conclusions, recommendations and major suggestions for further research.

CHAPTER TWO

LITERATURE REVIEW

2.1 Introduction

This section reviews scholarly article on sustainability of flood related projects. It also presents the theoretical framework and conceptual framework adopted by the study

2.2 Project Sustainability

Sustainability is the long-term maintenance of responsibility. It has environmental, economic, and social dimensions, and encompasses the concept of stewardship. Sustainability of flood management projects has been defined as the maintenance over time of the project benefits Hodgkin et al, (2004). Benefits from water supply projects may be expressed in several ways including health benefits indicated by a reduction in child mortality and morbidity from diarrhea diseases, or simply the number of people who have access to portable water from the project.

According to Hodgkin, as long as resources can be obtained to operate, maintain and replace the systems from whatever source, there are sustainable benefits. Sustainability is also the ability of the project through the efforts of institutions, to maintain a level of benefits to a static or expanding population after donor assistance has ceased (Hodgkin et al, 2004). Sustainability is therefore the responsible management of resource use. Its meaning might include to maintain or to support. In the water sector, sustainability has to do with sustained access to services, sustainable operation and maintenance of water facilities.

A study of community operated and managed water supplies in Yatta Division of Kenya found that there was a strong relationship between sustainability of community water

projects and technology, managerial skills of the committee members and community participation (Mwamati, 2007). The study further suggested that there was a significant relationship between government support and legislation and sustainability of community water projects. Other studies found a significant relationship between community contribution and sustainability of community managed water projects in Nyando district of Kenya (Odie, 2012). In an analysis of UNICEF supported projects in Nyando district, the study further suggested high levels of community contribution to project costs influenced sustainability of the water projects. The study further concluded that where project management committees were effective, the community managed projects were sustainable.

A report prepared for Global Programs, Field Support and Research identified several factors affecting sustainability of community managed water supplies Hodgkin et al, (2004). Institutional factors comprising national, regional, community organizations and private sector entities), and Development processes which include design, participation, operation and maintenance and M&E. Technological factors such as Suitability, acceptability, responsiveness, servicing needs, standards and costs. Contextual factors and forces which include factors beyond the control of institutions involved to change. They include environmental, demographic (population size, growth and distribution as well as health indicators such as infant mortality and morbidity from water borne diseases), socio-cultural, political, economic- (rate of inflation, employment opportunities, income generation) and technological- (skills available in the community, availability of equipment and spare parts and training opportunities relevant to the technology used).

Other factors include project organization and processes including administrative and budgeting entities. This pertains to capacity of local and regional institutions to continue development

processes that have been initiated and apply skills that have been taught. There are also donor related sustainability issues including control, collaboration, standardization, coordination, flexibility and commitment- (long term).

2.3 Empirical Review

2.3.1 Public Participation

Participation to development have been proliferating in third world countries since 1980`s, and they are now accepted components of projects design among mainstream donor agencies. The advocates and practitioners of the concept proclaim that people's empowerment, local knowledge and community ownership are indispensable ingredients of project success and sustainability. Under label such as `people's participation`, public involvement `, community participation, social mobilization`, self-help development`, and `grassroots development`, projects have been initiated on smallholder crop and livestock development, irrigation and water supply alike Bastian and Bastian, (2006).

According to Kulgan, (2004) as cited by Mwangi, (2007) community participation refers to taking part in the formation, implementation and management of initiatives by community members. It is the presence of process by which community members‟ opinions and views affects decision making at community level, Grishvilli (2003). Participation is either directly or through a legitimate intermediate institution or representatives. Good participation needs to be informed and organized. Participation of community members in development initiatives creates awareness, motivates, organizes actors and helps draw out priorities to help build long term capacities to manage and negotiate, improve accountability by bringing different actors in a good relationship.

According to Mwangi, (2006) communities hardly have adequate, complete and reliable information to support objective rational decisions. He notes that such decisions when made have to be followed and accepted by communities and that this affects implementation effectiveness mainly because a balance has to be maintained between quality and acceptability. Participation by communities in project management is reported to depend on policies, rules, norms and perceptions in addition to endowments and attributes of those affected. Low community participation is said to lead to reduced project effectiveness and thus low impact Mwangi, (2008). He adds that reduced participation may result from inadequate community involvement by partners at a point of planning.

By involving the community from the onset of project initiatives and addressing the local situation and socio-economic needs of the community, project activities could be effectively planned and even implemented. It is important to focus on both community needs and assets to ensure positivism in both project and community (Mancini, 2003). Diverse activities and practices can be labeled as community participation but each is likely to require a different degree of involvement and provoke a distinct outcome (Beyene et al, (2006).

An analysis of water projects in Indonesia, India and Sri Lanka found greater community participation is associated with better water supply and that well-designed community-based water services lead to improvements in health outcomes (Isham and Kähkönen, 2009). A review of USAID projects also argued that projects with participatory elements increased the overall effectiveness of projects particularly in building capacity for collective action (Finsterbusch and Van Wincklin, 1989).

Community involvement and participation assumes that communities will be empowered to plan, manage, operate and maintain their water facilities in the long term if they are involved in decision making right from the project planning period through implementation and eventual hand over to the community. Many projects have achieved a certain level of involvement of communities in this process. However, even among these projects challenges still persist with respect to sustainability. It may therefore be necessary to look further at the dynamics in the community in order to understand who represents what, what are the different role differentiation aspects in a specific community. It might be necessary to ask who should be involved, who makes the decisions or how are water related roles defined.

Communities however differ in many ways and attitudes and capacities of communities in one region or country cannot be generalized for all communities everywhere. There are varying poverty levels among communities, an important factor is ability to demand and pay for services. Literacy levels which are particularly low in rural Kenya may underlie the inability of the communities to sustain complex systems. Other factors such as access and affordability of spare parts also contribute to the challenges facing communities to maintaining facilities. Low literacy levels at the community also have implications for finding suitable skills needed for maintaining equipment and facility in the community or community area. It is with this variety in community settings that this study investigated the determinants of sustainability of community based flood management projects in Nyatike, Lower Gucha Migori water resource users association in Migori County.

2.3.2 Information dissemination

Timely information dissemination to all stakeholders on the imminent flooding and proposed flood management projects is critical for success of the two. Stakeholder's participation in water

resources management has not been effectively implemented in the past and even identification and categorization of stakeholders has not been carried out in most parts of the country and this is probably due to lack of proper channels of communication for their involvement. The ministry of water has usually been implementing activities without adequate involvement and participation of stakeholders including local communities in planning, management and decision making at all levels on issues related to water resources.

Schouten and Moriarty (2003) argues that the role of community is pivotal in any project as initialized following an expression of demand from the community and a continuing commitment for active engagement through planning, construction, management, and maintenance of the system.

2.3.3 Funding and sustainability

Although project sustainability requires much more than funding, having a stable funding source to support your work is one of the most important factors for sustainability. A strategic financing orientation means that project leaders know what activities they want to sustain, what resources they need to sustain those activities, and how to access those resources. It is important to consider a range of financing options. In rural community water supply most national policies require a capital contribution from the users, either in-kind (labor and local materials) or, if in cash, in the region of five percent of the capital cost. This is rarely recovered however, and so improved services are by default a gift (albeit often with some community participation in construction) from the government or NGO to the community.

There is disagreement among practitioners about whether user cash contributions to capital costs help to cement community ownership of flood management projects and so contribute to sustainability.

There are cases in which a cash contribution to capital cost is raised but then ring-fenced for the water supply, for instance by putting it into an operation and maintenance account on behalf of the community. In this way it is of direct benefit to the users. Though management of flood based management projects, the same applies in as only approach to rural water supply in which the users pay the full capital costs of new or upgraded water points is self-supply. (Rockstorm2003) notes that operation and maintenance water services worldwide costs money but insufficient funds limits the purchase and spare parts. He argues that External Agencies have been reluctant to finance operation and maintenance activities while Governments often accord it less priority yet the service users (community water users) who are the potential source of finance on the same, do not typically see water as a commodity for sale and so many a times they are unwilling to pay for it. Community capital contributions could take the form of community levies-where individuals or households in the community agree to contribute a given fee toward running and maintenance of the project.

Once a project cannot generate enough revenue from beneficiaries, its sustainability will be threatened as repairs and maintenance cannot be provided for when need arise. Misappropriation of funds collected as a result low or lack of professionalism may also contribute to poor CCCs leading to poor maintenance and thus lack of sustainability.

2.3.4 Expertise availability in Sustainability of Community Based Flood Management

Human capacity development through specialized training of project managers, staff, community members and the whole project team has been noted to be important for project success and sustainability. Campo, (2008), in an intervention model introduced in Peru for water supply considered community training as an important component in which the project used various methods of training such as audio-visuals, visual etc., argues that training on issues like

operation and maintenance empower the communities to look after water supply systems thus aiding sustainability.

Lack of community training is cited as one of the factors which could lead to breakdown and non- sustainability of flood related projects in developing countries Ademiluyi and Odugbesan, (2008). They further point out that even where full community participation or management is planned from the start, community-level committees and care takers may lose interest or trained individuals may move away. This can be a particular risk if community level organization is on a voluntary basis.

According to Mengesha, Abera and Mesganaw (2003),they posited that sustainability of drinking water supply projects in Rural of North Gondar, Ethiopia recommend that building adequate skills and capacity to maintain water sources is an essential factor to sustain the water system.

Competent operating personnel are vitally important for sustained flood management projects. Accordingly, good operator training is as essential to improving small water systems as are improved technologies, organizational fixes or regulatory oversight. Without adequately trained personnel, even a well-financed and organized system with the most advanced technology and regular compliance visits will fail to prevent floods. This agrees with observations by (Campo 2008) who argued that training on issues like operation and maintenance empower communities to look after flood management projects thus aiding sustainability. Community members must be equipped with the necessary knowledge on how to operate repair and maintain the flood management projects as this will enhance sustainability of the project.

2.4 Conceptual Framework

Conceptual frameworks possess ontological, epistemological, and methodological assumptions, and each concept within a conceptual framework plays an ontological or epistemological role. The ontological assumptions relate to knowledge of the "way things are," "the nature of reality," "real" existence, and "real" action (Guba & Lincoln, 2004). Conceptual framework is a network/interlinked system, or relationship of assumptions, expectations, beliefs. It is a tentative theory that guides the research. In this regard, sustainability of any project is affected by the participation or the involvement of the various stakeholders, funding on the flood management projects done by the agencies or the beneficiaries or the stakeholders, expertise and training of the beneficiaries as well as the information dissemination to the relevant stakeholders on their expected involvement, capital contribution and other training necessary to keep the project running.

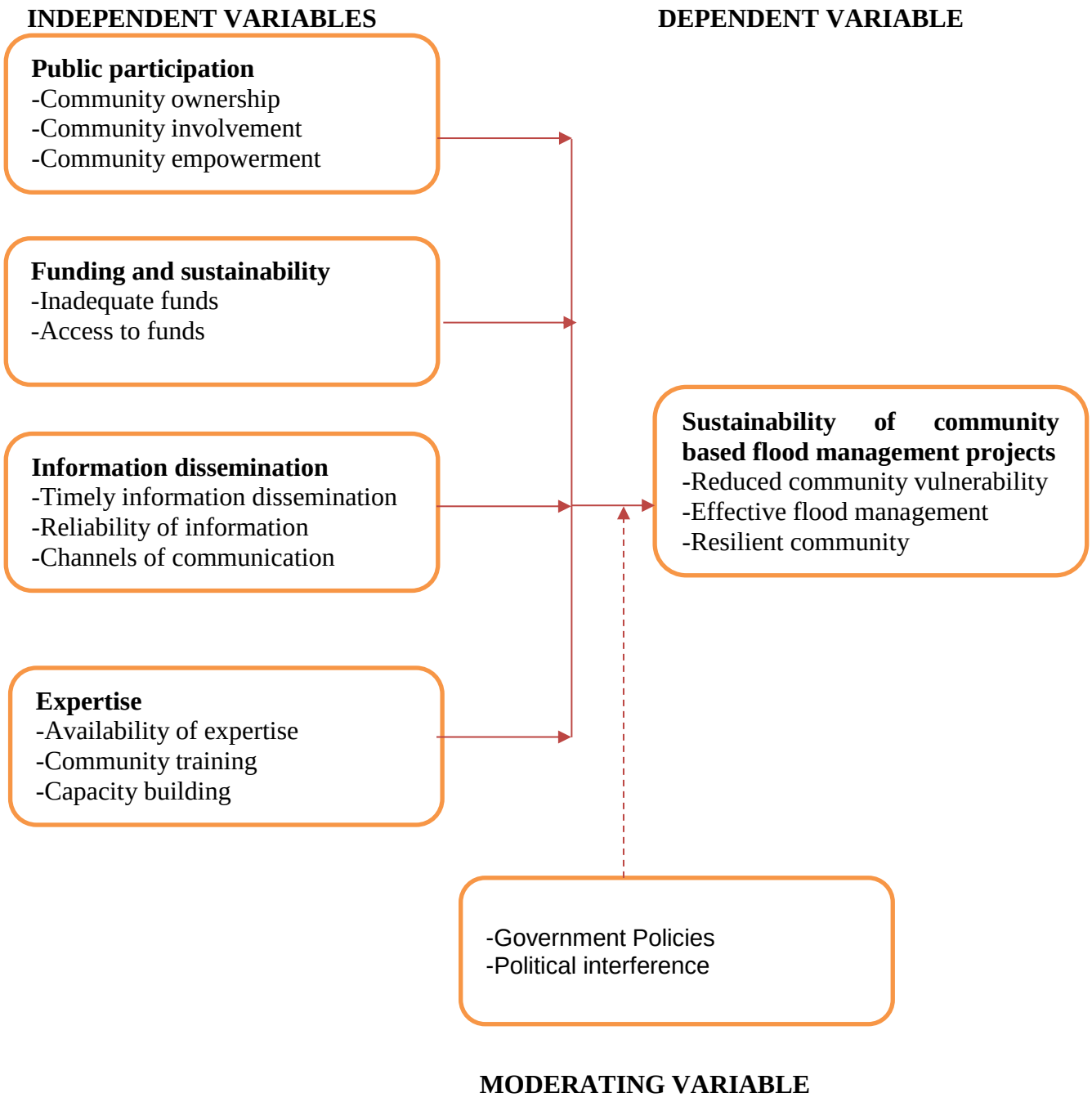

Figure1. Conceptual Framework showing the relationship between the determinants of sustainability of community based flood management projects in Nyatike, Migori County

CHAPTER THREE

RESEARCH METHODOLOGY

3.1 Introduction

This chapter discusses the method that the researcher will use to examine the determinants of sustainability of community based flood management projects in Nyatike, Lower Gucha Migori Water Resource Users Association, Migori County. The chapter discusses, the research design, target population, sampling design, sample size, data collection techniques, validity and reliability, data collection instruments, ethical considerations and data analysis.

3.2 Research Design

This study adopted descriptive survey research design. Further the study adopted quantitative and qualitative techniques in the data collection process, analysis, presentation and discussion of findings (Shuttle worth, 2008). This research design is deemed appropriate because it showed an in-depth analysis to describe the relationship between the variables.

3.3 Target Population

A population is also known as a "universe "and it refers to all the items in the field of inquiry (Kumar, 2008). In terms more direct to this research, a population can be defined as the entire group of individuals having a common characteristic (Mugenda & Mugenda, 2003). The study target population was key stakeholders in Nyatike and Lower Gucha Migori Water Resource Users Association who are 821 according to the department of environment, natural resources and disaster management and Water Resource Users register available at their office.

Table 3.1 Target population from Lower Gucha Migori

Category	Number of persons (Total Population)
Department of environment, natural resources and Disaster management Migori County	9
Water Resources Authority	19
Lower Gucha Migori Water Resource Users Association	793
Total	**821**

Source: Lower Gucha Migori Water Resource Users Association Office and Department of Environment, natural resources and Disaster management Migori County

3.4 Sampling Techniques and Sample Size

3.4.1 Sampling Techniques

Stratified random sampling technique was used in the study to ensure that other key stakeholders in Nyatike sub-County are represented while the purposive random sampling technique was used to provide an opportunity for selection of each element of the sub groups.

3.4.2 Sample Size Determination

The sample size in the study will be readjusted using Yamane Taro (1967) formula as quoted by Israel (2002).

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

Where: n= Sample size, N= Population size e= Level of Precision.
At 95% level of confidence and e=5%

$$\mathrm{n} = \frac{821}{1 + 821\ (0.05)^2}$$

$$\mathrm{n} = 269$$

Thus 269 respondents were used for the study.

3.5 Research Instrument

The instrument for data collection were the questionnaires as they are effective in gathering data over a large sample, Kombo, Tromp, (2006). The questionnaires which had both open and close-ended questions were self-administered through drop and pick from the respondents. The study also used key informants interviews to supplement information collected from the questionnaires.

3.6 Pretesting

Pre-testing of questionnaires is essential to avoid pitfalls after administering the data collection tool. Pre-testing is a screening method that allows the researcher to try the questionnaire on a smaller group of respondents initially to allow for feed-back and corrections (Zikmund & Babin, 2010). This approach helps the researcher to minimize wrong answers due to misinterpretation of questions or blanks in questionnaires due to respondents misunderstanding of questions.

Pre-testing was done in this research to ensure that the questions are relevant, clear and understandable. The pre-testing aims at determining the reliability of the research tools including the wording, structure and sequence of the questions. This pre-testing involved 10 respondents from the target population. The respondents were conveniently selected since statistical conditions are not necessary in the pilot study.

3.7 Research validity and reliability

The precision with which things are measured in a study is expressed in terms of validity and reliability. (Hopkins 2001). These two are related because if a measure is valid then it is reliable.

3.7.1 Validity

Validity represents how well a variable measures what it is supposed to measure Hopkins (2001). Validity is the accuracy and meaningfulness of inferences, based on the research results. Face, construct and content validity were measured by seeking the opinion of lecturers and other professionals on the adequacy of the research instruments in achieving the objectives of the study. Based on their opinions, the instruments were adjusted by deleting and adding some questions or by changing the structure or lexical density of questions as appropriate.

3.7.2 Reliability

Reliability means consistency of a measure. Furthermore, reliability refers to the range of consistency towards measures obtain almost same or the exactly same results are consistent in repeated testing (Cherry, 2013). Therefore, internal consistency reliability was conducted to test the reliability and consistency of the results.

To establish reliability of the questionnaires therefore, the split half technique was used. The researcher gave questionnaires to the sample group. At random, the researcher divided the scored items into two groups each subject's total score from the two groups of items were computed and the scores correlated from all the subjects and it was satisfactory.

3.8 Data Collection Procedure

To achieve the objectives of the study, both primary and secondary data was collected. The secondary data was obtained from comprehensive archived sources namely published material, journals internet resources, while primary data was collected by the use of questionnaires and by interviews with key informants who were stakeholders from Nyatike. Before processing the responses, the completed questionnaires were edited for completeness and consistency. The data

was then coded to enable the responses to be grouped into various categories. Data collected was mainly quantitative and was analyzed by descriptive analysis. The descriptive statistical tools help the researcher to describe the data and determine the extent to be used. The Data analysis used SPSS and Microsoft excel. The data was presented using tables and charts to summarize responses. For further analysis and comparison, the generated quantitative reports were subjected through tabulations, percentages, measure of central tendency and chi square.

3.9 Ethical considerations

Ethical considerations in research can be defined as ensuring that the researcher conforms to the standards of conduct of the authorities in the area of research. Examples of ethical issues that may arise are voluntary participation of respondents, deception to participants, anonymity and confidentiality of information given, analysis and reporting, harm or danger to participants and any other professional code of ethics expected (Babbie, 2011). To ensure that the research is done in an ethical manner according to the expectations of all authorities, a letter from University of Nairobi was obtained. Also, due to sensitivity of some information collected, the researcher holds a moral obligation to treat the information with utmost propriety. Further, since the respondents might be reluctant to disclose some information, the researcher needs to reassure the respondents of use and confidentiality of the information given.

CHAPTER FOUR

DATA ANALYSIS AND PRESENTATION

4.1 Introduction

Data analyzed was summarized in line with the research objectives and appropriate frequency tables inserted for presentation. The analysis was conducted in order to assess how various determinants influenced sustainability of community based flood management projects in Nyatike**,** Migori County. The analysis begins with a description of the demographic profile of the respondents, which gives the reader an insight into demographic trends typical of any representative sampling of community water resource users and their leaders and presented in form of percentages and frequency tables.

4.2 Questionnaire Return Rate

A total of 269 questionnaires were administered local community water resource users association. However, out of a total of 269 questionnaires sent, 235 were returned for data analysis yielding a response rate of 87.36%. This response rate was representative and conforms to Mugenda and Mugenda (1999) stipulation that a response rate of 50% is adequate for analysis and reporting; a rate of 60% is good and a response rate of 70% and over is excellent. This high response rate was achieved as a result of proper co-ordination with the local leaders; chiefs and assistant chiefs and sensitizing the community on the importance and purpose of the study. This response rate is adequate for analysis and reporting.

4.2: Demographic data of Respondents

This section presents the demographic data of the local community members. The demographic data of the local community members was based on their gender, age group and level of education

4.2.1: Respondents' Gender

To establish the gender of the local community water resource users, they were asked to indicate their gender.

Table 4.1: Distribution of Respondents Gender

Gender	Frequency	Percentage
Male	103	43.83
Female	132	56.17
Total	235	100.0

Majority 132 (56.17%) of the water resource users were female while 103(43.82%) of local community members were male an indication that gender bias is an issue in participation in community based flood management projects in Lower Gucha Migori Water Resource Users.

4.2.2 Classification of Respondents by Age

The information in table 4.2 shows the number of responses by age. From the table shown, most of the respondents 98 (41.7%) were aged between 18-25 years and 26-35 years which accounted for 62(26.4%) in both cases of the total respondents. This finding indicates that majority of the respondent 41.7% are between 18-25 years. This shows that majority of the project beneficiaries were youths. The data shows that community members participating in community based flood management projects are relatively young and hence deemed as energetic and hence could positively be involved in the project.

Table 4.2: Distribution of local Community Members by Age

Age Group	Frequency	Percentage
18-25	98	41.7
26-35	62	26.4
36-45	35	14.9
46-55	25	10.6
Over 56 years	15	6.4
Total	**235**	**100.0**

4.2.3 Classification of Respondents by Level of Education

The respondents were asked to state their levels of education, the results as indicated in table 4.4

Table 4.3 Community Members' Education Status

Level of Education	Frequency	Percentage
Primary Certificate	108	46.0
Secondary Certificate	52	22.1
College Diploma	24	14.9
University Degree	16	6.8
Non-formal Education	35	14.9
Total	**235**	**100.0**

Table 4.3 shows that 108(46.0%) of the members had primary education, 52(22.1%) of members had secondary education, 24(14.9%) of the members had acquired college diploma, 16(6.8%) of the members had a university degree and while 35(14.9%) of the members had non-formal education. The data shows that majority of the community members had lower level of education (primary) which could hinder their effective sustainability of community based flood management projects in Lower Gucha Migori Water Resource Users. This indicates that majority

of the respondents either understand or are competent enough to address or provide credible information related to the research questions by virtue of their education level.

4.3 Role of public participation in sustainability of community based flood management projects.

This study sought to investigate the influence of public participation in sustainability of community based flood management projects in Nyatike, Lower Gucha Migori Water Resource Users Association, Migori County.

The researcher sought to establish whether the community members were aware of the functions of community based flood management projects in Nyatike, initiated in Migori County. Table 4.4 presents their responses**.**

Table 4.4 Community Awareness of the community based flood management projects

Response	Frequency	Percentage
Yes	87	37.0
No	148	63.0
Total	235	100.0

According to the findings, 87(37.0%) of the respondents were aware of the sustainability of community based flood management projects in the ward while 148(63.0%) of the respondents indicates were not aware of the community based flood management projects.

The researcher sought to establish whether the community members participated in planning of sustainability of community based flood management projects funded by the county government of Migori and the national government. The results were as indicated in table 4.5.

Table 4.5 Responses on Community Participation in sustainability of community based flood management projects

Response	Frequency	Percentage
Yes	40	17.02
No	195	83.0
Total	235	100.0

The findings show that majority 195(83.0%) of the community members did not participate in community based flood management projects, while 40(17.02%) indicated that they have participated in community based flood management projects.

The study sought to find out the opinions of the respondents in regard to who makes decisions during the planning and implementation flood management projects in the area of study, roles played by community members and the presence of water management committee at the ward level. The findings are as indicated in table 4.6;

Table 4.6: Decisions during the planning and implementation flood management projects

Response	Frequency	Percentage
County Government officials	143	60.9
Member of the County Assembly	52	22.1
Water Resources Committee	24	14.9
Village Elders	16	6.8
Total	**235**	**100.0**

Table 4.6 shows the findings on who made the decision on selection of planning and implementation flood management projects in Nyatike, 143 (60.9%) agreed that decision was made by county government officials, 52(22.1%) by the MCA, 24(14.9%) water resource

management committee at ward level, 16(6.8%) by the village elders. This indicates that community participation in planning and implementation flood management projects is low in the area of study. Village elders and water resources management committees should play a vital role in community flood management projects. The stakeholders indicated that the community is not well represented during consultations, decision making, implementation and M&E of planning and implementation flood management projects.

The researcher further sought to establish whether the community participation has any influence on sustainability of flood management projects in Nyatike. The results were as indicated in table 4.7.

Table 4.7 Whether Community Participation influence sustainability of flood management projects

Response	Frequency	Percentage
Yes	47	20.0
No	188	80.0
Total	235	100.0

The results shows that majority 188(80.0%) of the respondents were of the opinion that community participation influences sustainability of sustainability of flood management projects. The study further found that 47(20.00%) of the respondents indicated that community participation does not influence sustainability of sustainability of flood management projects.

The study sought to establish the extent to which community participation influences sustainability of flood management projects in Nyatike. The results are as indicated in table 4.9

Table 4.8 Community participation and sustainability of flood management projects

Response	Frequency	Percentage
Very great extent	108	46.0
Great extent	16	22.1
Moderate extent	14	19.1
Less extent	52	6.8
Not sure	45	6.0
Total	**235**	**100.0**

The study found that community participation was of importance in the sustainability of flood management projects and this was evident in how the respondents rated this factor. 46% said community participation influenced sustainability of flood management projects to a very great extent, 22.1% indicated that community participation influenced sustainability of flood management projects to a great extent, 19.1% of the respondents indicated that community participation influenced sustainability of flood management projects to a moderate extent, while 6.8% of the respondents indicated that community participation influenced sustainability of flood management projects to a less extent and lastly 6.0% were not sure . These findings reveal that community participation influence sustainability of flood management projects to a very great extent.

The findings revealed that community participation influenced sustainability of community based flood management projects in Lower Gucha Migori Water Resource Users Association to a very great extent. The findings concur with the findings of Rimbera (2012), Mbajiwe P. (2009) and Vincent R. (2012) who found out that community participation is a very paramount factor in community water projects if they are to be sustainable. The findings also revealed that project

facets at which community participation greatly influence community based flood management projects in Lower Gucha Migori Water Resource Users sustainability were; project initiation, implementation and monitoring & evaluation. This implies that community members need to be involved at all levels of the community based flood management projects in order to enhance their sustainability and this agrees with the findings of Ibrahim (2011) which revealed that community participation at all stages of the project is one of the major factor that influence implementation of sustainable community based flood management projects in Kenya. Kumar (2002) asserted that community participation is a key instrument in creating self-reliant and empowered communities and this enhance ownership of community initiatives hence their sustainability.

4.4 Role of information dissemination on sustainability of community based flood management projects.

The respondents were asked to identify the communication channels through which they receive or relay information to community members on planning and implementation of flood management projects Nyatike, Migori County. Their response was as shown in table 4.10

Table 4.9: Frequency Distribution of the Communication Channels used to Disseminate Information on flood management Projects

Response	Frequency	Percentage
Local Radio	98	42.0
Notice board	62	26.4
Word of the mouth	35	14.9
Barazas	34	14.5
Total	**235**	**100.0**

According to the findings in table 4.18, 98 (42.0%) of the respondents mentioned local radio as the channel of communication used in communicating to the community members on community based flood management projects in Nyatike, Migori County, 62(26.4%) mentioned notices at ward's office as the major source of information, 35(14.4%) use word of the mouth to send information to the stakeholders and beneficiaries while 34(14.4%) mentioned ward barazas as the main channel of communication to the local community. None of the respondents mentioned communication through the use of social media, newspapers, websites, letters, mobile phones and the e-mails. Thus the findings show that the channels of communication used to send information are inadequate and ineffective.

The researcher sought to establish the level of information access among stakeholders involved in the process of community based flood management projects in Nyatike, Migori County

Table 4.10: Level of information access among Stakeholders and community based flood management projects

Response	Frequency	Percentage
Very high	21	9.0
High	38	16.0
Moderate	21	9.0
Very Low	122	52.0
Low	33	14.0
Total	**235**	**100.0**

The findings in table 4.19 indicates that 21(9.0%) of the respondents indicated that the levels of access to information of community based flood management projects is very high while 38(16.0 %) indicated that the level of was high, 21(9.0%) indicated moderate level of

information access, 122(52%) of the respondents indicated that community access to information was very low while 33(12.0%) indicated that the level of access to information was low. Majority of local leaders stated that they had nothing to do with community based flood management projects; they are regarded as the government prerogative. The low level of access to information could be attributed to inability to access relevant information and limited interaction between the project implementers and community members on issues related to community based flood management projects.

The researcher sought to establish the extent to which access to information affected sustainability of community based flood management projects in Nyatike, Migori County. On a scale of rating, respondents were asked to indicate the extent to which they agreed or disagreed with the following statements. (Scale of 1-5 where 1= strongly disagree; 2 = disagree; 3 =weakly agree; 4 =agree; 5 = strongly agree).

Table 4.11: Influence of access to information on sustainability of community based flood management projects

Level of access to information	**SD**	**D**	**N**	**A**	**SA**
Access to information influences sustainability community based flood management projects.	23 (9.8%)	21 (9.0%)	19 (8.0%)	56 (23.85)	116 (49.3%)
Access to information does not influence sustainability of community based flood management projects	132 (56.2%)	18 (7.7%)	8 (3.4%)	34 (14.5%)	43 (18.3%)
Community of higher access to information influence sustainability	4 (1.7%)	20 (8.5%)	2 (0.9%)	38 (16.2%)	171 (72.8)%
Community of lower access to information influence more effectively sustainability of flood management projects	125 (53.2%)	6 (2.6%)	8 (3.4%)	25 (10.6%)	71 (30.2%)

Key: SD=Strongly Disagree, D=Disagree, N=Neutral, A=Agree, SA=Strongly Agree

According to the findings in table 4.20, 116 (49.3%) of the respondents strongly agreed that the level of access to information influences sustainability of community based flood management projects. 132 (56.2%) of the respondents strongly disagreed that level of access to information does not influence sustainability of community based flood management projects while 171 (72.8%) of the respondents strongly agreed that community of higher level of access to information influence more effectively sustainability of flood management projects.

4.5 The role of funding in sustainability of community based flood management projects

4.5.1 Funding and flood management projects

The respondents were asked to agree whether funding affects sustainability of flood management projects. The results are as indicated in table 4.13.

Table 4.12 Funding and flood management projects

Response	Frequency	Percentage
Yes	28	10.0
No	192	81.7
Not sure	15	6.4
Total	**235**	**100.0**

According to the findings, 28(10.0%) of the respondents indicated that funding affects sustainability of flood management projects in Nyatike, Migori County, 192(81.7%) indicated that funding affects sustainability of flood management projects while 15(6.4%) of the respondents were not sure.

4.5.2 Major Source of funding for flood management projects

The study sought to establish whether the community water resource users in Nyatike, Migori County raises funds for the flood management projects. The results are as indicated in table 4.13

Table 4.13: Major Source of funding for flood management projects

Major source of income Frequency	**Frequency**	**Percentage**
Government	130	55.31
Donors	60	25.53
Community Contributions	35	14.89
Other sources	10	4.25
Total	**235**	**100.0**

The national government is the major contribute as accounted for by 130(55.31%) while 60(25.53%) indicated that it was the donors and non-government while respondents representing 35(14.89%) indicated that it was community members who meet the implementation costs. Other sources of additional funding are 10(4.25%) shown in table 4.13. This shows that most flood management projects had strategies in place to obtain additional funding. The key informants also indicated the community members make their contributions in cash or in kind during implementation and maintenance of water projects. In kind contributions involve contributing locally available materials, unskilled labor and land among others.

4.5.3 Sustainability of flood management projects and project funding

The study sought to explain the extent to which sustainability of flood management projects in Nyatike area was influenced by project funding.

Table 4.14 Role of funding on sustainability of flood management projects

Response	Frequency	Percentage
Very great extent	122	52.0
Great extent	38	16.1
Moderate extent	42	17.9
Less extent	33	14.0
Total	235	100

The study found that project financing was of importance in the sustainability of flood management projects. The majority indicated that 122(52.0%) were of the opinion that funding had role in sustainability of flood management projects to a very great extent, 38(16.1%) indicated that project funding influenced sustainability of flood management projects to a great extent, 42(17.1%) of the respondents indicated that project funding influenced sustainability of flood management projects to a moderate extent, while 33(14.0%) of the respondents indicated that funding influenced sustainability of flood management projects to a less extent. The findings reveal that project funding has a major role in the sustainability of flood management projects to a very great extent.

4.6 Expertise availability and sustainability of community based flood projects

Respondents were asked three categories of questions in relation to expertise's influence and a number of responses were given as below:

4.6.1 Training Workshops and Seminars for flood management projects

The study sought to find out whether Lower Gucha Migori Water Resource Users Association (LGMWRUA) and Migori County hold training workshops and seminars on planning,

implementation and sustainability of flood management projects. Their response were as shown in table 4.15

Table 4.15 Response on Training Workshops and Seminars for flood management projects

Response	Frequency	Percentage
Yes	28	10.0
No	192	81.7
Not sure	15	6.4
Total	**235**	**100.0**

According to the findings in table 4.13, 28(10.0%) of the respondents indicated that Migori county holds community capacity workshops and seminars on planning, implementation and sustainability of flood management projects in Nyatike , 192(81.7%) indicated that it does not hold training workshops and seminars while 15(6.4%) of the respondents were not sure. The local leaders indicated that there was low attendance. The findings further indicate that there are no specific training workshops and seminars for sustainability of flood management projects. The findings further pointed out that there was poor attendance in the workshops therefore this may have contributed to low sustainability.

4.6.2 Number of flood management projects Training Workshops and Seminars

The researcher sought to establish the number of times capacity workshops on sustainability of flood management projects in Nyatike, Migori County. The results are as shown in table 4.16

Table 4.16: Training Workshops and Seminars on flood management projects

Response	Frequency	Percentage
Annually	108	46.0

2-3 times a year	16	6.8
4 or more times a year	14	6.0
Never	52	22.1
Not sure	45	19.1
Total	**235**	**100.0**

According to the findings, 108(46.0%) of the respondents indicated that training workshops were held once in a year, 16(6%) indicated 2-3 times a year, 14(6.0%) indicated 4 or more times a year, 52(22.1%) indicated that none has been held and 45(19.1%) were not sure. This implies that the time is not adequate for the community members to fully gain from the capacity building workshops and seminars.

4.6.3 Training on operations and maintenance of community based flood management projects

The researcher sought to find out if community members are trained on operations and maintenance or management of community based flood management projects in Nyatike, Migori County. The results are as indicated in table 4.17

Table 4.17: Responses on Training on operations and maintenance of community based flood management projects

Response	Frequency	Percentage
Yes	66	72.0
No	169	28.0
Total	235	100.0

As reflected in table 4.17, 66(28.0%) of the respondents, agreed that they are trained on operations and maintenance or management of community based flood management projects in

Nyatike, Migori County, while 169(72.0%) indicated that they have never been trained and therefore capacity building is still lacking. The community further expressed the feeling that they are not capacitated to participate in development processes due to the inadequate knowledge which should prepare them for their responsibilities.

The Key informants highlighted that there is a need for workshops and training which intends to educate communities why it is crucial to partake in development programmes taking place in the area. It is, therefore, the burden of the county government of Migori to capacitate and empower Lower Gucha Migori Water Resource Users Association in order to improve sustainability of flood management projects in the study area.

The key informants claimed that they had never been empowered in the development procedures and project processes. The community believes that ward committees are relevant people who should be capacitated with procedures and processes of community development and their participation needed. White (1982) in Theron (2005:20) supports the assertion that citizen participation can lead to capacity building and empowerment especially at an organizational level.

The researcher sought to establish the effectiveness of training workshops and seminars on management of community based flood management projects. The results are as shown in table 4.18**.**

Table 4.18: Responses on Effectiveness of Community Capacity Building on community based flood management projects

Response	Frequency	Percentage
Very effective	42	17.9
Effective	20	8.5
Fairly effective	38	16.1
Ineffective	122	52.0
Not sure	13	5.5
Total	**235**	**100.0**

According to the findings in table 4.16, 41(17.9%) of the respondents indicated that capacity building workshops of community members in flood management projects were very effective, 20(8.5%) said that they are effective, 38(16.1%) of the respondents indicated that that it was fairly effective, 122(52.0%) indicated that it was ineffective while 13(5.5%) were not sure. Majority of the stakeholders argued that the capacity building workshops experience poor attendance of the key stakeholders and community beneficiaries. These findings imply that the training workshops have not provided opportunities for community members to acquire enough technical skills.

4.7 The Relationship among the Variables

The chi-square test was used to determine the relationship between independent and dependent variables.

4.7.1 Hypothesis testing (1): Public participation and sustainability of community based flood management projects

Ho: There is no significant relationship between public participation and sustainability of community based flood management projects in Nyatike, Migori County.

A chi-square test was conducted to examine whether there was a significant relationship between public participation and sustainability of community based flood management projects in Nyatike, Migori County. The results are as indicated in table 4.19

Table 4.19 Hypothesis Testing Using the Chi-Square

O	E	(O-E)	(O-E)2	(O-E)2/E
108	47	61	3,721	79.17
16	47	-31	961	20.45
14	47	-33	1,089	23.17
52	47	05	25	0.53
45	47	-02	04	0.09
235				Σ (O-E) 2/E =123.41

Calculated $\chi 2C = 123.41$

V = 5 – 1 = 4 V = degrees of freedom = 5 fraction

$\chi 2$ a=0.05 = 9.49 at 4 degrees of freedom and 5% level of confidence.

Since the calculated Chi-square $\chi 2C$=123.41 is greater than the critical value $\chi 2$=9.49, then the H0 is rejected. Thus, there was a significant relationship between public participation and sustainability of community based flood management projects in Nyatike, Migori County.

4.7.2 Hypothesis testing (2): Information dissemination and sustainability of community based flood management projects

Ho: There is no significant relationship between Information dissemination and sustainability of community based flood management projects in Nyatike, Migori County.

A chi-square test was conducted to examine whether there was a significant relationship between information dissemination and sustainability of community based flood management projects in Nyatike, Migori County. The results are as shown in table 4.20

Table 4.20: Hypothesis Testing Using the Chi-Square

O	E	(O-E)	(O-E)2	(O-E)2/E
23	47	-24	576	12.26
21	47	-26	676	14.38
19	47	-28	784	16.68
56	47	09	81	1.72
116	47	69	4,761	101.30
235				Σ (O-E) 2/E =146.34

Calculated $\chi 2C = 146.34$

V = 5 – 1 = 4 V = degrees of freedom = 5 fraction

$\chi 2$ a=0.05 = 9.49 at 4 degrees of freedom and 5% level of confidence.

Since the calculated Chi-square of $\chi 2C=146.34$ is equal to the critical value $\chi 2=9.49$, then the H0 is rejected. Thus, there was a significant relationship between information dissemination and sustainability of community based flood management projects in Nyatike, Migori County.

4.7.3 Hypothesis testing (3): Funding and sustainability of community based flood management projects

Ho: There is no significant relationship between funding and sustainability of community based flood management projects in Nyatike, Migori County.

Chi-square test conducted to examine whether there was a significant relationship between funding and sustainability of community based flood management projects in Nyatike, Migori County. The results are as indicated in table 4.21

Table 4.21: Hypothesis Testing Using the Chi-Square

O	E	(O-E)	(O-E)2	(O-E)2/E
122	58.75	63.25	4,000.6	68.7
38	58.75	-20.75	430.6	7.3
42	58.75	-16.75	280.6	4.8
33	58.75	-25.75	663.1	11.3
				Σ (O-E) 2/E =92.1

Calculated $\chi 2C = 92.1$

V = 4– 1 = 3 V = degrees of freedom = 4 fraction

$\chi 2$ a=0.05 = 7.82 at 3 degrees of freedom and 5% level of confidence.

Since the calculated Chi-square of $\chi 2C=29.4$ is greater than the critical value $\chi 2=7.82$, then the H0 is rejected. Thus, there was a significant relationship between funding and sustainability of community based flood management projects in Nyatike, Migori County.

4.7.4 Hypothesis Testing (4): Expertise availability and sustainability of community based flood management projects.

Ho: There is no significant relationship between expertise availability and sustainability of community based flood management projects.

Chi-square test conducted to examine whether there was a significant relationship between expertise availability and sustainability of community based flood management projects. The results are as shown in table 4.22.

Table 4.22 Hypothesis Testing Using the Chi-Square

O	E	(O-E)	(O-E)2	(O-E)2/E
42	47	-5	25	0.53
20	47	-27	729	15.5
38	47	-09	81	1.7
122	47	75	5,625	119.7
13	47	-34	1,156	24.6
235				Σ (O-E) 2/E =162.03

$\chi 2C = 162.03$

V = 5 – 1 = 4 V = degrees of freedom = 5 fraction

$\chi 2$ = a= **9.49** at 4 degrees of freedom and 5% level of confidence.

Since the calculated chi-square value of $\chi 2C=162.03$ is greater than the critical chi-square value $\chi 2=9.49$ at 5% level of confidence, we reject the null hypothesis. Thus, there was a significant relationship between expertise availability and sustainability of community based flood management projects in Nyatike, Migori County.

CHAPTER FIVE

SUMMARY OF FINDINGS, CONCLUSIONS AND RECOMMENDATIONS

5.1 Introduction

This chapter summarizes the finding of the study, draws conclusions and makes recommendations necessary for formulation and the way forward. Data analyzed was summarized in line with the research objectives and appropriate frequency tables inserted for presentation. The analysis was conducted in order to assess how various determinants influenced sustainability of community based flood management projects in Nyatike, Migori County. The chapter also contains suggestions of further studies that may be carried out in the future.

5.2 Summary of Findings

A total of 269 questionnaires were administered local community water resource users. However, out of a total of 269 questionnaires sent, 235 were returned for data analysis yielding a response rate of 87.36%. This response rate was adequate for analysis and reporting.

The first objective was to investigate the influence of public participation in sustainability of community based flood management projects in Nyatike, Lower Gucha Migori Water Resource Users Association, Migori County. The results shows that majority 188(80.0%) of the respondents were of the opinion that community participation influences sustainability of sustainability of flood management projects. The study further found that 47(20.00%) of the respondents indicated that community participation does not influence sustainability of sustainability of flood management projects.

The study sought to establish the extent to which community participation influences sustainability of flood management projects in Nyatike. The study found that community participation was of importance in the sustainability of flood management projects and this was evident in how the respondents rated this factor. 46% said community participation influenced sustainability of flood management projects to a very great extent, 22.1% indicated that community participation influenced sustainability of flood management projects to a great extent, 19.1% of the respondents indicated that community participation influenced sustainability of flood management projects to a moderate extent, while 6.8% of the respondents indicated that community participation influenced sustainability of flood management projects to a less extent and lastly 6.0% were not sure . These findings reveal that community participation influence sustainability of flood management projects to a very great extent.

The findings revealed that community participation influenced sustainability of community based flood management projects in Lower Gucha Migori Water Resource Users Association very great extent. The findings concur with the findings of Rimbera (2012), Mbajiwe P. (2009) and Vincent R. (2012) who found out that community participation is a very paramount factor in community water projects if they are to be sustainable. The findings also revealed that project facets at which community participation greatly influence community based flood management projects in Lower Gucha Migori Water Resource Users sustainability were; project initiation, implementation and monitoring & evaluation. This implies that community members need to be involved at all levels of the community based flood management projects in order to enhance their sustainability and this agrees with the findings of Ibrahim (2011) which revealed that community participation at all stages of the project is one of the major factor that influence

implementation of sustainable community based flood management projects in Kenya. Kumar (2002) asserted that community participation is a key instrument in creating self-reliant and empowered communities and this enhance ownership of community initiatives hence their sustainability.

The second objective was to establish the role of information dissemination on sustainability of community based flood management projects. According to the findings in table 4.20, 116 (49.3%) of the respondents strongly agreed that the level of access to information influences sustainability of community based flood management projects. 132 (56.2%) of the respondents strongly disagreed that level of access to information does not influence sustainability of community based flood management projects while 171 (72.8%) of the respondents strongly agreed that community of higher level of access to information influence more effectively sustainability of flood management projects.

The third objective was to establish the role of funding in sustainability of flood management projects. According to the findings, 28(10.0%) of the respondents indicated that funding affects sustainability of flood management projects in Nyatike, Migori County, 192(81.7%) indicated that funding affects sustainability of flood management projects while 15(6.4%) of the respondents were not sure. The national government is the major contribute as accounted for by 140(59.57%) while 60(25.53%) indicated that it was the donors and non-government while 13 of the respondents representing35 (14.89%) indicated that it was community members who meet the implementation costs. This shows that most flood management projects had strategies in place to obtain additional funding. The key informants also indicated the community members

make their contributions in cash or in kind during implementation and maintenance of water projects. In kind contributions involve contributing locally available materials, unskilled labor and land among others.

The study found that project financing was of importance in the sustainability of flood management projects. The majority indicated that 122(52.0%) were of the opinion that funding had role in sustainability of flood management projects to a very great extent, 38(16.1%) indicated that project funding influenced sustainability of flood management projects to a great extent, 42(17.1%) of the respondents indicated that project funding influenced sustainability of flood management projects to a moderate extent, while 33(14.0%) of the respondents indicated that funding influenced sustainability of flood management projects to a less extent. The findings reveal that project funding has a major role in the sustainability of flood management projects to a very great extent.

The fourth objective was to establish the role of expertise on the sustainability of flood management projects in Nyatike, Migori County. The study sought to find out whether Lower Gucha Migori Water Resource Users Association (LGMWRUA) and Migori County hold training workshops and seminars on planning, implementation and sustainability of flood management projects. According to the findings in table 4.13, 28(10.0%) of the respondents indicated that Migori county holds community capacity workshops and seminars on planning, implementation and sustainability of flood management projects in Nyatike , 192(81.7%) indicated that it does not hold training workshops and seminars while 15(6.4%) of the respondents were not sure. The local leaders indicated that there was low attendance. The findings further indicate that there are no specific training workshops and seminars for

sustainability of flood management projects. The findings further pointed out that there was poor attendance in the workshops therefore this may have contributed to low sustainability.

Majority of the respondents, 66(28.0%) agreed that they are trained on operations and maintenance or management of community based flood management projects in Nyatike, Migori County, while 169(72.0%) indicated that they have never been trained and therefore capacity building is still lacking. The community further expressed the feeling that they are not capacitated to participate in development processes due to the inadequate knowledge which should prepare them for their responsibilities.

The Key informants highlighted that there is a need for workshops and training which intends to educate communities why it is crucial to partake in development programmes taking place in the area. It is, therefore, the burden of the county government of Migori to capacitate and empower Lower Gucha Migori Water Resource Users Association in order to improve sustainability of flood management projects in the study area.

The key informants claimed that they had never been empowered in the development procedures and project processes. The community believes that ward committees are relevant people who should be capacitated with procedures and processes of community development and their participation needed. White (1982) in Theron (2005:20) supports the assertion that citizen participation can lead to capacity building and empowerment especially at an organizational level.

According to the findings in table 4.16, 41(17.9%) of the respondents indicated that capacity building workshops of community members in flood management projects were ineffective, 38(16.1%) of the respondents indicated that that it was fairly effective, 122(52.0%) indicated that it was ineffective while 33(14.0%) were not sure. Majority of the respondents argued that the capacity building workshops experience poor attendance of the key stakeholders and community beneficiaries; it is attended by few county government officers because they are given allowances to attend. These findings imply that the training workshops have not provided opportunities for community members to acquire enough technical skills.

A chi-square test was conducted to examine whether there was a significant relationship between public participation and sustainability of community based flood management projects in Nyatike, Migori County. Since the calculated Chi-square $\chi 2C=123.41$ is greater than the critical value $\chi 2=9.49$, then the H0 is rejected. Thus, there was a significant relationship between public participation and sustainability of community based flood management projects in Nyatike, Migori County.

A chi-square test was conducted to examine whether there was a significant relationship between information dissemination and sustainability of community based flood management projects in Nyatike, Migori County. Since the calculated Chi-square of $\chi 2C=146.34$ is equal to the critical value $\chi 2=9.49$, then the H0 is rejected. Thus, there was a significant relationship between information dissemination and sustainability of community based flood management projects in Nyatike, Migori County.

Chi-square test conducted to examine whether there was a significant relationship between funding and sustainability of community based flood management projects in Nyatike, Migori County. Since the calculated Chi-square of $\chi 2C=29.4$ is greater than the critical value $\chi 2=7.82$, then the H0 is rejected. Thus, there was a significant relationship between funding and sustainability of community based flood management projects in Nyatike, Migori County.

The last chi-square test conducted to examine whether there was a significant relationship between expertise availability and sustainability of community based flood management projects Since the calculated chi-square value of $\chi 2C=162.03$ is greater than the critical chi-square value $\chi 2=9.49$ at 5% level of confidence, we reject the null hypothesis. Thus, there was a significant relationship between expertise availability and sustainability of community based flood management projects in Nyatike, Migori County.

5.3 Discussions

This section presents a discussion of the findings and compares and contrasts these findings with other scholarly studies done on the same topic.

5.3.1 Role of public participation in sustainability of community based flood management projects.

The results show that community participation influences sustainability of sustainability of flood management projects. The study sought to establish the extent to which community participation influences sustainability of flood management projects in Nyatike. The study found that community participation was of importance in the sustainability of flood management projects. These findings reveal that community participation influence sustainability of flood management projects to a very great extent. The findings revealed that community participation influenced

sustainability of community based flood management projects in Lower Gucha Migori Water Resource Users Association very great extent. The findings concur with the findings of Rimbera (2012), Mbajiwe P. (2009) and Vincent R. (2012) who found out that community participation is a very paramount factor in community water projects if they are to be sustainable. The findings also revealed that project facets at which community participation greatly influence community based flood management projects in Lower Gucha Migori Water Resource Users sustainability were; project initiation, implementation and monitoring & evaluation. This implies that community members need to be involved at all levels of the community based flood management projects in order to enhance their sustainability and this agrees with the findings of Ibrahim (2011) which revealed that community participation at all stages of the project is one of the major factor that influence implementation of sustainable community based flood management projects in Kenya. Kumar (2002) asserted that community participation is a key instrument in creating self-reliant and empowered communities and this enhance ownership of community initiatives hence their sustainability. Community participation forms the basis for community empowerment as observed by Mazibuko, (2007).

5.3.2 Role of information dissemination on sustainability of community based flood management projects.

The second objective was to establish the role of information dissemination on sustainability of community based flood management projects. The findings indicated that the level of access to information influences sustainability of community based flood management projects. Majority of local leaders stated that they had nothing to do with community based flood management projects; they are regarded as the government prerogative. The low level of access to information could be attributed to inability to access relevant information and limited interaction between the

project implementers and community members on issues related to community based flood management projects.

5.3.3 Role of funding in sustainability of flood management projects.

According to the findings funding affects sustainability of flood management projects in Nyatike, Migori County. The national government is the major contributor of flood management projects followed by donors, non-government and community members respectively who meet the implementation costs. This shows that most flood management projects had strategies in place to obtain additional funding. The study found that project financing was of importance in the sustainability of flood management projects. The findings reveal that project funding has a major role in the sustainability of flood management projects to a very great extent.

5.3.4 Role of expertise on the sustainability of flood management projects

The fourth objective was to establish the role of expertise on the sustainability of flood management projects in Nyatike, Migori County. The findings indicated that Migori County conducted a few community capacity workshops and seminars on planning, implementation and sustainability of flood management projects in Nyatike. However there were no specific training workshops and seminars for sustainability of flood management projects. The findings further pointed out that there was poor attendance in the workshops therefore this may have contributed to low sustainability of community based flood management projects in the study area. The community further expressed the feeling that they are not capacitated to participate in development processes due to the inadequate knowledge which should prepare them for their responsibilities. These findings imply that the training workshops have not provided opportunities for community members to acquire enough technical skills. It is, therefore, the burden of the county government of Migori to empower Lower Gucha Migori Water Resource

Users Association in order to improve sustainability of flood management projects in the study area. White (1982) in Theron (2005:20) supports the assertion that citizen participation can lead to capacity building and empowerment especially at an organization level. Lack of community education and training on technology used is one of the factors which could lead to breakdown and non- sustainability of community based flood management projects in developing countries as observed by (Ademiluyi and Odugbesan, 2008).

5. 4 Conclusion of the study

The researcher concludes that community participation influences sustainability of flood management projects. This increases community ownership of community based flood management projects thus enhancing their willingness to effectively manage these projects after implementation.

The findings indicated that the level of access to information influences sustainability of community based flood management projects. The low level of access to information could be attributed to inability to access relevant information and limited interaction between the project implementers and community members on issues related to community based flood management projects.

According to the findings funding affects sustainability of flood management projects in Nyatike, Migori County. The national government is the major contributor of flood management projects followed donors, non-government and community members respectively who meet the implementation costs. There is need for adequate funds for implementing of flood management projects according to the designs and plans. Trained members of Water Resource Users

Association are more efficient while operating the water structures thus minimizes any breakdowns during maintenance or operation.

5.5 Recommendations for the study

Based on the findings the following are the recommendations of the study:

First the stakeholders and the community should be involved and consulted from the start of projects identification, planning, implementation and in the monitoring and evaluation process. The county leadership and committee members of Lower Gucha Migori Water Resource Users Association ought to ensure that the major stakeholders are involved in the community based flood management project to allow them to own the projects. The members should also be encouraged to contribute either in cash or by providing locally available materials during implementation and post implementation periods.

Second, operation and maintenance of any community based flood management projects need funding and the members of Lower Gucha Migori Water Resource Users Association should be encouraged to contribute towards the same in order to avoid rendering the project unsustainable after implementation and handover to the community as they wait on well-wishers who may not be available.

Third, there is need for the county government of Migori and Water Resource Users Association to embrace effective channels of communication and information management system that will facilitate the participation of community members in operation and management of community based flood management projects.

Fourth, training of Lower Gucha Migori Water Resource Users Association members on flood management projects operation and maintenance is very crucial. It is recommended to the flood management committees that untrained community members should not be entrusted to manage these projects as this can lead to mismanagement. It is also recommended that Water Resource Users Association should ensure that management committees are formed and members adequately trained.

5.6 Suggestions for Further Research

The researcher acknowledges the fact that the study was limited to Nyatike, Migori County and not the entire country it is therefore recommended that further studies be conducted to establish the factors influencing sustainability of community based flood management projects in other counties. Taking the limitations and delimitations of the study, the following were suggestions for further research:

i. An analysis of the influence of culture on sustainability of flood management projects.
ii. Another study to be carried out to investigate challenges facing the sustainability of community based flood management projects in Kenya.
iii. Influence of project management team on the sustainability of community based flood management projects in Kenya.

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APPENDIX I:

LETTER OF TRANSMITTAL

ADERO CLOY ANYANGO,
UNIVERSITY OF NAIROBI

TO WHOM IT MAY CONCERN

Dear Sir/Madam,

RE; SUSTAINABILITY OF COMMUNITY BASED FLOOD MANAGEMENT PROJECTS IN NYATIKE, MIGORI COUNTY CASE: LOWER GUCHA MIGORI WATER RESOURCE USERS ASSOCIATION

I am currently undertaking a Master of Arts Degree in Project Planning and Management in the University of Nairobi. In fulfillment of my project; i am researching on the sustainability of community based flood management projects in Nyatike, Migori County case: lower Gucha Migori water resource users association. You have been selected to help in this study. I do humbly request you to allow me to interview you. The information being sought is meant for research purposes only and will not be used against anyone. The researcher will ensure that a feedback reaches all those who participated. No names of individuals will be needed.

Thank you in advance.

Yours sincerely,

Cloy Anyango Adero

APPENDIX 2: RESEARCH QUESTIONNAIRE

DATA COLLECTION TOOL

QUESTIONNAIRE WITH OPEN AND CLOSED ENDED QUESTIONS

This questionnaire is formulated for the study purpose only and information given is confidential. Fill /tick the appropriate answer or response in the space provided

do not write you name

SECTION A: SOCIAL DEMOGRAPHIC INFORMATION

1. What is your gender? Male ( ) Female( )s

2. What is your age bracket? (Tick as appropriate)

18 – 24 years	[ ]	25 - 30 years	[ ]
31 - 34 years	[ ]	35 – 40 years	[ ]
41 – 44 years	[ ]	45 – 50 years	[ ]
Over 51 years	[ ]		

3. What is your marital status? (Tick as applicable)

Single	[ ]	Married (without kids)	[ ]
Married with kids	[ ]	Others-specify……	[ ]

4. What is your highest education level that you have attained?

Certificate training	[ ]
Diploma	[ ]
Advanced Diploma	[ ]
Bachelor's Degree	[ ]
Postgraduate	[ ]

SECTION B: PUBLIC PARTICIPATION

1. Are you aware of any flood management project in this region?

Yes	[ ]
No	[ ]

2. Have you ever been involved in any flood management project or any project?

Yes	[ ]

No [ ]

3. If yes to the above question, who makes decisions on planning and implementation of flood management projects?

4. Are you aware of the community participation in flood management projects?

   Yes [ ]

   No [ ]

5. Do you agree that greater community participation is associated with better flood management projects?

   Yes [ ]

   No [ ]

6. Do what extent that community participation has influenced sustainability of flood management projects

   ( ) Very great extent

   ( ) Great extent

   ( ) Moderate extent

   ( ) Less extent

7. Which phase or aspect of community participation has been involved in flood management projects in this area.

Phases	**Tick( )**	**Reasons(s)**
a) Identification phase		
b) Planning phase		
c) Implementation phase		
d) Evaluation of outcome(s)phase		

SECTION C: FUNDING AND SUSTAINABILITY

8. Do you agree that funding affects sustainability of flood management projects in this region?

   Yes [ ]

No [ ]

9. How does your county raise funds for sustainability of flood management projects?

   Through Donors [ ]

   Through Community Fundraising [ ]

   Through Government [ ]

   Other (please specify)…… ……

10. In any of the public projects you have been involved in, have you ever or willing to contribute to their management?

    Yes [ ]

    No [ ]

11. Do you agree that Community capital contributions spur community ownership of flood management projects and can contribute to sustainability?

    Yes [ ]

    No [ ]

12. Do you agree operation and maintenance of flood management projects worldwide costs money but insufficient funds limits the purchase of spare parts and can lead to their unsustainability?

    Yes [ ]

    No [ ]

13. Do you agree that community capital contributions could take the form of community levies-where individuals or households in the community agree to contribute a given fee toward running and maintenance of the flood management project

    Yes [ ]

    No [ ]

SECTION D: INFORMATION DISSEMINATION

14. What is the method of communication through which you mostly get information on flood management activities?
15. Please list the stakeholders who offer support on flood management issues
16. Does adequate, complete and reliable information affect your community participation in community based flood management projects?

Yes [ ]

No [ ]

17. If the answer in (15) above is yes to what extent does it affect your community participation in flood management projects?

18. How has the level of awareness affected community participation in community based flood management projects?

Level of access to information	**Strongly Disagree**	**Disagree**	**Neutral**	**Agree**	**Strongly Agree**
Access to information influences sustainability community based flood management projects.					
Access to information does not influence sustainability of community based flood management projects					
Community of higher access to information influence sustainability					
Community of lower access to information influence more effectively sustainability of flood management projects					

SECTION E: EXPERTISE AVAILABILITY

19. Have you attended any training on effective flood management?

Yes [ ]

No [ ]

If the answer in (19) above is yes please indicate the name of the training

……

20. In your own opinion are there members well trained on sustainable flood management in your institution?

.....

.....

21. Have you been trained on operations and maintenance or management community based flood management projects?

    Yes ( ) No ( ) 75

22. If yes how many times have you received trainings on operation and maintenance of community based flood management projects?

    1 – 5 ( ) 6- 10 ( ) above 10 ( )

23. To what extent has the trainings been effective in operations and maintenance of community based flood management projects?

    Very effective ( ) moderately effective ( ) Not at all effective ( ) Not sure

24. List two trainings you would consider members of Lower Gucha Migori Water Resource users association should be trained on.

    ……

    ……

Thank you for participation

APPENDIX 3

INTERVIEW SCHEDULE FOR KEY INFORMANTS

1. How community based flood management projects are there in your area of operation?

2. Out of these projects how many are complete?

3. What was the role of the community in planning, implementation and evaluation of community based flood management projects in Nyatike, Migori County

4. To your understanding what does it mean by community participation?

5. What steps were taken by the county government to make sure that the project is understood and accepted by the community?

6. How does public participation, project funding, information disseminations and, training and level of awareness affect community based flood management projects in Nyatike, Migori County?

7. What communication strategies are employed to communicate with the people during all stages of the project planning, implementation and evaluation of community based flood management projects in Nyatike, Migori County?

8. Were there enough resources to facilitate participatory planning? Explain.

9. How long does it take to put the people into discussion given their low level of understanding?

10. Do you think the community have been empowered enough to carry on the project activities? Give reasons.

11. Were there problems associated with community participation in community based flood management projects in Nyatike, Migori County**?** List them

Thank you for your co-operation