INFLUENCE OF MEMBERS PARTICIPATION ON PERFORMANCE OF IRRIGATION PROJECTS IN MERU CENTRAL DISTRICT, KENYA

MURIITHI JOSEPH LAWRENCE

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DECLARATION

This research project is my original work and has not been submitted for a degree in any other University.

Signature:…….. Date: ……..

Muriithi Joseph Lawrence

L50/77614/2012

This research project has been submitted for examination with our approval as University Supervisors.

Signature:…….. Date: ……..

Dr. Cecilia Nyawira Ritho

Lecturer

Department of Agricultural Economics

University of Nairobi

Signature:…….. Date: ……..

Chandi John Rugendo

Lecturer

School of Distance and Continuing Education

University of Nairobi

DEDICATION

This work is dedicated to my wife Anne Kanji and our children Ian Muthunguh and Hope Mumbi. This is the way.

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LIST OF ABBREVIATIONS AND ACRONYMS

DIO	-	District Irrigation Officer
EIA	-	Environmental Impact Assessment
FAO	-	Food and Agriculture Organization
FAO	-	Food and Agriculture Organization
GDP	-	Gross Domestic Product
GNP	-	Gross National Product
I&D	-	Irrigation and Drainage
IFAD	-	International Fund for Agricultural Development
JICA	-	Japan International Cooperation Agency
MDGs	-	Millennium Development Goals
MKEPP	-	Mount Kenya East Pilot Project
MW&I	-	Ministry of Water and Irrigation
NEMA	-	National Environment Management Authority
NGOs	-	Nongovernmental Organizations
NIB	-	National Irrigation Board
SIPMK	-	Smallholder Irrigation Program Mt Kenya region
SPSS	-	Statistical Package for Social Science
UNDP	-	United Nations Development Programme
WHO	-	World Health Organization
WRMA	-	Water Resource Management Authority
WRUA	-	Water Resource Users Association
WUA	-	Water Users Association

ABSTRACT

In Kenya, the cycle of funding of irrigation projects followed by collapse or gross underperformance soon after donors and development partners pull out such as in Bura irrigation scheme, Kibwezi, Mitunguu and Ciambaraga raises concerns both locally and internationally. This means that irrigation projects are not making their due contribution to the economy at local and national level and irrigated agricultural production is not meeting the stipulated target in growth of Gross Domestic Product. Even though it is generally thought that agricultural projects perform better when the targeted primary beneficiaries are involved in all stages of the project, empirical evidence particularly for irrigation projects is not readily available. Therefore the purpose of this study was to assess the influence of members participation on the performance of an irrigation project in Meru Central District, Kenya. The study employed a descriptive survey research design targeting 907 registered members of the 3 members managed Irrigation Projects, 15 executive management committee members and 10 ministry of water and irrigation officials in the District. A random sample of 269 registered project members was selected from the 907 members of the three irrigation projects in Meru Central District. Primary data was collected using questionnaires and interview guides. The study found that members' participation in selection of management had the greatest influence on the performance of an irrigation project in Meru Central District ($r = 0.984$) followed by members' participation in designing ($r = 0.943$), then members' participation in monitoring and evaluation ($r = 0.846$), members' participation in project identification ($r = 0.762$) while members' participation in implementation had the least effect ($r = 0.674$). The study concludes that project identification, implementation, monitoring and evaluation, selection of management and designing at both 1% and 5% level of significance explain about 60.1% of the variations in performance of irrigation projects in Meru Central District. The study recommends that participation of members in irrigation projects should be encouraged to enhance capacity to perceive their own needs. Through participation, local people identify their needs as well as the relevant goals of a program.

CHAPTER ONE

INTRODUCTION

1.1 Background of the Study

According to current estimates, by the year 2030, world population will rise from the present 6.2 billion to 8.7 billion. According to FAO (2011), almost 800 million people in developing countries face chronic malnutrition and 199 million children under the age of five suffer from acute or chronic food deficiencies. By December 2010, as many as 70 nations fell into the category of low-income food-deficit countries (FAO, 2011). Worldwide high benefits are being derived by those countries that have established sustainable irrigation systems in their arid and semi-arid regions. Currently 47.2 % of the world falls in arid climate where no crops can be grown without irrigation. Irrigation is an essential part of the package of technologies, institutions and policies that underpins increased agricultural output (FAO, 2011).

According to FAO (1997) the food security of many developing nations raises serious concerns more so because the problem is exacerbated by the rapid growth of population driving higher demand for food. In fact, the prices of foodstuffs in the world market have been rising over the years. In addition climate change is likely to increase the severity and variability of weather by disrupting existing systems of production. Such a change could require expensive investments in modifying those systems and establishing new ones to ensure food security (FAO, 1997).

Irrigation farming compared to rain-fed farming under similar conditions leads to higher gross returns per hectare, production of several harvests in a year; growing of crops that produce comparatively high yields per hectare ,with the possibility of continuous cultivation of some crops such as rice, which extends the area under cultivation (Ruthenberg, 2003). This in turn leads to increased yield per hectare which helps to boost the food security of a country. Secondly, irrigation farming allows the use of land despite the weather conditions. In developing countries particularly, irrigation farming leads to employment creation in that a relatively large number of workers per hectare are employed, enabling a relatively high income to be earned without the use of expensive equipment. Thus through irrigation, some developing countries

such as Egypt and Netherlands have been able to transform themselves from food deficit to food surplus nations and also to improve their economies (FAO, 2011).

Many civilizations have been dependent on irrigated agriculture to provide the basis of their society and enhance the security of their people. Schoups *et al.* (2006) have estimated that as little as 15-20 percent of the worldwide total cultivated area is irrigated. Judging from irrigated and non-irrigated yields, this relatively small fraction of agriculture is contributing as much as 30-40 % of gross agricultural output (FAO, 2011).

During this century there has been a dramatic increase in the area irrigated (Schoups *et al.* 2006). Most of this expansion has occurred through capital investments in infrastructure for the capture, storage, conveyance and distribution of water, and in the conversion of rain-fed areas into irrigable land. This type of development has a number of groups who have a direct concern on the performance of the irrigation system: investors, policymakers, development partners, planners, managers and users. These groups have to be able to assess the effectiveness of the systems in which they have a stake.

Clearly, irrigation can and should play an important role in raising and stabilizing food production, especially in the less-developed parts of Africa south of the Sahara. Many projects in the past (not only agricultural projects) were designed and implemented in a top-down fashion, with little or no real participation of the supposed 'beneficiaries' in designing and implementing projects. Investments have often been driven by International Financing Institutions (IFIs) and governments, and not by the demands and wishes of potential beneficiaries. Even projects specifically intended to enhance farmers' capacity for scheme management have often not succeeded, in part because of serious project design and implementation weaknesses (Shah et al. 2002).

According to Jurriens et al (2001), good management of irrigation schemes involving all the stakeholders including members is becoming increasingly recognized as an essential mean to achieve successful irrigated agriculture. It is recognized that poor performance is not only a consequence of technical performance in the design and operation of irrigation systems (although

it is sometimes an important factor), but many of the problems are based on weaknesses in the organization and management of the scheme when all the stakeholders especially the community recipients are not involved.

Kenya's population has been growing rapidly and therefore the country faces an uphill task of securing an adequate food supply. This therefore calls for increasing the agricultural production capacity to match the population growth. In addition Kenya is a signatory to the United Nations Millennium Development Goals (MDGs) which are internationally agreed targets for tracking developmental progress in member countries. MDG goal number one talks of eradicating extreme poverty and hunger by 2015. At the same time, the social pillar of Kenya's vision 2030 seeks to build a just and cohesive society with social equity in a clean and secure environment. Therefore we find that if Kenya is to achieve these goals, a lot of effort and investments needs to be directed towards the agricultural sector in order to move the country from a food deficit nation to a food surplus nation and that farming is practiced not as a subsistence or small scale venture but on a large scale and commercialised. Agriculture is the backbone of the Kenyan economy. The Agricultural sector contributed about 23% of the Gross Domestic Product (GDP) in 2006 and employs more than 80% of the labour force in formal employment, mostly women and contributes 60% of the export earnings (World Bank, 2002**)**.

The main challenge in the sector is to create the environment for increased and sustainable agricultural production through efficient management of the existing irrigated lands and expansion into new areas, to improve food security and livelihoods (Mambala, 2007). This requires development planning and mobilization of investment resources for implementation and operation of many projects over the coming decades. Weaknesses in the planning and implementation process had been identified at the Harare workshop initiating the Collaborative Program and in other forums as one of the key issues that should be addressed to facilitate increased development in the sector. There has been a growing concern that performance in the context of irrigated agriculture is less than had been anticipated. The anticipated potential through irrigation of land earlier dependent on unpredictable and unreliable rainfall has not

always been achieved, and in some respects irrigation has lost much of its glamour as an investment strategy for developing countries.

One particularly pressing resource management challenge to Kenya is to improve the performance of small-scale members managed irrigation systems. These systems will play an important role in providing food for the country's growing population. At the same time, they have the potential to waste, even degrade, vital soil and water resources. In recognition to both the promise and hazards associated with irrigation, evaluating irrigation performance has now become of a paramount importance (Government of Kenya, 2009).

The contribution of the agricultural sector declined from 33% observed in 1985 to 27% in the year 2006. On the other hand the agricultural sector grew by 4% in 1985 and 5.4% in 2006. It is also easy to notice that in the years where the Agricultural growth is high, there is also a high GDP growth rate reflecting that there is a strong correlation between agricultural growth and annual GDP growth, thus making the agriculture sector to be the engine of growth of the country's economy (Economic Survey, 2011).

Food security remains one of the biggest challenges not only in Kenya but also in other developing countries. According to Ministry of Water and Irrigation annual report, (2010), a big number of Kenyans are hunger stricken and the main way of mitigating against hunger is through practicing irrigated agriculture so as to increase food production per unit of land since rain-fed Agriculture has become very unreliable due to changing weather patterns and environmental degradation. In Kenya, the Ministry of Water and Irrigation annual report, (2010) estimates that Ksh 8 billion is invested annually in developing irrigation projects. However most of these Projects hardly serve their intended purpose because they cease to function or operate below capacity as soon as the financing agencies and development partners pull out. Irrigation farming especially for high value crops and horticultural crops has a number of challenges in that farming through irrigation requires the co-operation of several farmers and different stakeholders except in individually owned irrigation projects and flower farms. To constantly maintain and improve an irrigation holding of individual farms, communal work is required in the larger irrigation systems. To ensure its success a well-organized operation and maintenance schedule and scale of

water distribution in the schemes and among beneficiaries is required (Ministry of Water & Irrigation, 2009).

1.2 Statement of the Problem

According to the Ministry of Water and Irrigation (2010), efficiency of irrigation projects is not up to expectations. Continuous funding of irrigation projects followed by their collapse soon after donors pull out in Kenya such as Bura irrigation scheme, Kibwezi irrigation scheme and Ciambaraga irrigation project is an issue of great concern both locally and internationally. This was due to lack of proper operation and maintenance of these projects and mismanagement of water at field level due to lack of comprehensive community and or beneficiary involvement.

Government and donors' policies in ensuring sustainable projects seem inadequate due to lack of community and beneficiary participation at various stages of project identification, feasibility studies, design and indeed implementation such as formation of Water Users Associations and Water Resource Users Associations. Several studies have been conducted such as Nyangito et al, (2003), Kimani (1984), Mambala (2007), Ngigi (2002) and Njagi (2009) estimating the determinants of agricultural production in irrigation projects in Kenya. However, most of these studies did not focus on how members involvement affect performance of irrigation schemes. The influence of members involvement in promoting project performance needs to be investigated thoroughly in order to establish the relationship. This study therefore sought to establish the influence of members involvement on the performance of an irrigation project in Meru Central District Kenya.

1.3 Purpose of the Study

The purpose of this study was to assess the influence of members' participation on the performance of an irrigation project in Meru Central District, Kenya.

1.4 Objectives of the Study

This study was guided by the following objectives;

1. To establish how members full participation in project identification influence the performance of Irrigation Projects in Meru Central District

2. To examine the influence of members full participation in design on the performance of irrigation projects in Meru Central District

3. To examine the influence of members full participation in implementation on the performance of Irrigation projects in Meru Central District

4. To establish how members full participation in monitoring and evaluation influence the performance of irrigation projects in Meru Central District

5. To assess the influence of members full participation in selection of the management on the performance of irrigation projects in Meru Central District

1.5 Research Questions

The questions for this study were the following;

1. How does members' full participation in project identification influence the performance of Irrigation Projects in Meru Central District?

2. To what extent does members' full participation in design influence the performance of irrigation projects in Meru Central District?

3. What is the influence of members' full participation in implementation on the performance of Irrigation projects in Meru Central District?

4. How does members' full participation in monitoring and evaluation influence the performance of irrigation projects in Meru Central District?

5. What is the influence of members' full participation in selection of the management on performance of irrigation projects in Meru Central District?

1.6 Significance of the Study

Target communities and other stakeholders in irrigation projects will have an understanding of the value of members' participation at various stages. The findings of the study are also expected to add to the existing body of knowledge especially in the field of management of water resources at community level as well as enhancing the efforts towards the overall sustainable development. It is expected that the recommendations of the study will inform the government

on the need for policy development or review that will ensure a conducive environment for implementing sustainable irrigation projects. This will lead to improved service delivery by concerned government departments.

The findings of this study are expected to help the community development practitioners such as donors and funders in designing sustainable projects. This study will be useful to the Kenya's Ministry of water and Irrigation (MW&I) especially now as it draws up the National Irrigation Policy, International Fund for Agricultural Development (IFAD), German Financial Cooperation and JICA all of whom are involved in development of community based irrigation projects and could use the results of the research in policy formulation, decision making and practice.

The national Environment Management Authority (NEMA) and the people of Kenya at large especially the farming communities would also greatly benefit from these results especially in formulation and implementation of sub-catchment management plans.

In a nutshell, this research is geared towards addressing the perennial problem of members managed irrigation projects failure as soon as development partners hand them over to their beneficiaries despite the massive infrastructural investments. It intended to identify members' participation techniques that add value to community based irrigation projects and find ways of strengthening them to enhance sustainability.

The literature will be useful to scholars as a reference material when carrying out further research on issues of sustainability of community development projects. The intervention mechanism found in the study can be used to strengthen the already existing projects as well as incorporating them in design of new schemes/projects both locally and internationally.

1.7 Limitations of the Study

The study faced challenges in the design where some respondents did not complete the questionnaire objectively or failed to return them all together. Some respondents also tended to consult one another before completing the questionnaire thus missing out on variety of views. The study also faced challenges in the design and delimitation as a result of inaccessibility of

some respondents due to the vastness of the region and the harsh weather condition as well as poor terrain of the target area. The study was expected to face limitations of illiteracy of some farmers making data collection a daunting task. All of these limitations were mitigated against by involving the residents who understood the region to volunteer and assist in data collection.

1.8 Delimitations/Scope of the Study

The study was carried out in three main members managed Irrigation Projects of Meru Central District including Millenium irrigation project with 201 registered members, Nduruma Gakumbo irrigation project with 450 registered members and Nkabune Muguna Igoki irrigation project with 256 registered members(District Irrigation office 2011/2012 annual report). Data was collected from the target 907 registered members of the irrigation Projects, their 15 executive management committee members and the 10 Ministry of Water and Irrigation officials.

1.9 Basic assumptions of the Study

The assumptions of the study were that the sampled population represent the general population of membership of the Irrigation Projects. The researcher also assumed that the experiences of the membership of the project are representative of other irrigation projects in Kenya, the methods of data collection used were accurate and valid to enhance acquisition of the required data, the respondents were truthful and would give correct information and that the chosen respondents were willing to give the required information freely.

1.10 Definition of Significant Terms

Government Policies These are the laws and procedures formulated by government to govern the design and implementation of irrigation projects.

Involvement This refers to the act of sharing in the activities of a group. It is the condition of sharing in common with others.

Irrigation Any process, other than by natural precipitation, which supplies water to crops or any other cultivated plants. If irrigation is to

	make use of the fresh water supplies, then significantly bigger efforts has to be made to make better management of schemes and efficiency of distribution.
Members Participation	Refers to the involvement of community members throughout the project life cycle and in decision making processes and activities during needs assessment, project design and implementation.
Performance	The accomplishment of a given task measured against preset known standards of accuracy, completeness, cost, and speed.
Project	A project is a temporary endeavor with a defined beginning and end (usually time-constrained, and often constrained by funding or deliverables), undertaken to meet unique goals and objectives, typically to bring about beneficial change or added value.
Project implementation	It is the stage in the project cycle where all the planned activities are put into action.
Project Identification	It is the initial stage in the project cycle where project idea and further investigation of the idea is done.
Project Design	It is the second stage in the project cycle where the project scope is defined along with the approach to be taken to deliver the desired outcome.
Project Review	It is the stage within the project cycle where project performance is assessed to ensure the goals and objectives are achieved.
Sustainability	This refers to the capacity to maintain balance of water resources to ensure its availability over a long period of time.

1.11 Organization of the Study

This paper is divided into five chapters. Chapter One is the background and contains the background of the research. It explains the research objectives, research questions, significance

of the study, its scope and limitation and explains the general organization of the paper. Chapter Two gives the Theoretical framework, literature review and analytical framework. Theoretical framework gives some theoretical considerations of management of common property resources as well as looks at some concepts that will be used in discussing the theme of the paper. Chapter Three covers methodology, data sources and analysis. Chapter Four covers the data analysis, interpretation and presentation while Chapter Five is covering the summary, discussion, conclusion and recommendations.

CHAPTER TWO

LITERATURE REVIEW

2.1 Introduction

This chapter covers contributions from other scholars on influence of members' participation on performance of projects in Kenya and more particularly to irrigation projects. The chapter is structured into theoretical review, conceptual framework, empirical review, critique of literature and finally the knowledge gap that the study aimed to bridge.

2.2 General review

Several writers and researchers have come up with different findings on performance of projects in various fields. The study sought to review what has been done globally, in Africa and within Kenya.

2.2.1 Perspective of Project Performance Globally

Internationally, resources for social welfare services are shrinking. Population pressures, changing priorities, economic competition, and demands for greater effectiveness are all affecting the course of social welfare (Ben & Heiser, 1994). The utilization of nonprofessionals through citizen involvement irrigation programmes to address social problems has become more common place (Kaufman & Poulin, 2006). In their modern form, the concepts of community development and community participation took shape in the 1950s (Chowdhury, 1996). From the situation in the 1950s, when community development was perceived to be synonymous with community participation, the situation has now changed to one in which there appears to be no clear understanding of the relationship between the two (Abbot & Miles, 2005).

Overall project effectiveness (OPE) is a global measure of project performance, which was coded from the project evaluation reports. Although there are many dimensions of irrigation project success, they are generally highly correlated with one another, and this overall measure appears to capture project effectiveness well (Smith et al.2007). Throughout the world, the business environment within which irrigation programmes operate continues to change rapidly.

Organizations failing to adapt and respond to the complexity of the new environment tend to experience survival problems (Lee et al. 2001).

The community based irrigation project is complex in its nature because it comprises large numbers of participants such as contractors, consultants, stakeholders and regulators. Despite this complexity, these projects play a major role in the development and achievement of society's goals. Community based irrigation project contributes to about 6% of the gross national product (GNP) in industrialized countries. According to Samson and Lema (2005) with increasing higher users' requirements, environmental awareness and limited resources on one side, and high competition for irrigation business marketplace on the other side, beneficiaries have to be capable of continuously improving their performance.

Faridi and El-Sayegh (2006) reported that shortage of skills of manpower, poor supervision and poor site management, unsuitable leadership; shortage and breakdown of equipment among others contribute to delays in irrigation project completion in the United Arab Emirates. Palestine is no exception; the local community based irrigation projects is one of the main economic engine sectors, supporting the Palestinian national economy. However, many local projects report poor performance due to many evidential project-specific causes such as: unavailability of materials, excessive amendments of design and drawings, poor coordination among participants, ineffective monitoring and feedback and lack of project leadership skills (UNRWA 2006). The ever-important macro-level political and economic factors have also been related to poor projects performance (UNRWA, 2007).

2.2.2 Perspective of Project Performance in Africa

A number of studies have been conducted to examine factors impacting on project performance in developing countries. Harrison D.R (1995) examined causes of client dissatisfaction in the South African building industry and found that conflict, poor workmanship and incompetence of contractors to be among the factors which would negatively impact on irrigation project performance. Mbachu and Nkando (2007) established that quality and attitude to service is one of the key factors constraining successful irrigation project delivery in South Africa.

A research by Mutijwaa and Rwelamila (2007) showed that the South Africa Infrastructural Department (SAID) is under pressure to improve performance, that is, to deliver projects on time, on budget and to higher standard of quality. They attributed the problem to lack of skilled workers in these infrastructure departments (ID) and called for the need for a project manager in all these offices to coordinate the many on-going projects. Further, they observe that the infrastructural departments do not know whether they are achieving desired results, meeting their customer's success criteria and achieving their desired return on investment. Hence, they propose a means of assessment to evaluate progress as a means of addressing these questions. Secondly, they recommend such IDs to be project-oriented organizations (POO).

The performance of contractors in Zambia is apparently below expectation; it is not uncommon to learn of local projects that have not been completed or significantly delayed. This poor performance of many local contractors has huge implications in terms of their competitiveness (Zulu & Chileshe 2008). Coordination among project participants, however, was identified as the most significant of all the factors, having maximum influence on cost performance. Interestingly, Love et al. (2005) examined project time-cost performance relationship, and their results indicate that cost is a poor predictor of time performance. Elyamany et al. (2007) introduced a performance evaluation model for construction companies in order to provide a proper tool for the company's owners, shareholders and funding agencies to evaluate the performance of construction companies in Egypt.

The failure of many agricultural development programmes in Nigeria could be traced to poor organizational structure at the grassroots level. The rural resource-poor farmers are isolated, undereducated and lack the means to win greater access to resources and markets. FAO (1997) recorded that a study of international labour organization in (ILO) poverty oriented projects worldwide showed that the poorest farmers were excluded from activities and benefits due to the use of conventional mode of transfers aimed at boosting agricultural production and generating wealth for the rural community dwellers.

According to WHO (2004) traditionally, most tsetse control programmes in Africa have been managed and carried out by central governments through tsetse control units. However, most

such programmes have been expensive and not sustainable. However, community participation programmes has been found to be critical towards their success (Mlozi *et al*., 2006). The benefits of community participation for health programmes, including increased coverage, efficiency, effectiveness, equity, sustainability and self-reliance, are widely accepted

2.2.3 Perspective of Project Performance in Kenya

In Kenya, as in most other African countries, development policies seek to improve the conditions of the majority of rural communities. Soon after independence, Kenya under scored the importance of participation by all Kenyans in the development process (Session Paper, 1965). The paper defines community participation in terms of social responsibility by society and its members in the struggle for prosperity. This is an appreciated effort as majority of the Kenyans live in rural areas where their livelihood is mainly from agriculture, the main stay of the country's economy (Kimani & Muia, 2004). Additionally, the Kenya Development Plan of 1989-1993 carried the theme, *"Participation for Progress"* and emphasized on the importance of tapping the energies of individuals and various socio-economic entities and institutions in the economy..

In recent years, policy makers dealing with the development concerns of communities have began looking to community based projects in initiating and implementing development activities that enhance community welfare (World Bank, 2003). Kenya has experienced some participatory problems, especially in rural areas, where massive development projects are proposed and introduced in communities with little or no consultation with the people. At times individuals, especially politicians propose massive development projects, which obviously display inadequate needs assessment and planning at completion (UNDP, 2004). At other times, huge national and regional projects are initiated and a lot of emphasis placed on the material aspects of development especially visible and fiscal, without considering the central place of the people as a key resource, which needs to be nurtured and actively involved in shaping their own destiny.

The irrigation project is one such institution with a devotion to serve the community through addressing development activities that can improve the living standards of the community. This study will investigate factors that influence members' participation on performance of projects in Kenya and more particularly to irrigation project in Meru. The Irrigation project is a development arm under community based organization that is committed to building peoples' capacity to ensure that poverty has been eradicated and peoples' standards: socially and economically have been uplifted. The irrigation department is specifically tailored to look into the raising of community's life standards through provision of adequate water for both domestic and farm use. However, the main aim of establishing the project is provision of the water for farm use that will enhance farm produce (Kaufman & Poulin, 2006).

2.3 Theoretical review

This study was underpinned in the Contingency Theory postulated by Pinto and Slevin (1987). An impression created by project management practitioners and underscored by the Project Management Body of Knowledge (PMBOK) is that project management knowledge is applicable to all sorts of industries and environments (Engwall, 1992; Packendorff, 1995). Packendorff (1995) contends that such a view positions project management as a field of study which is held together by conceptions of process rationality in which differences in outcome and process are disregarded in favour of alleged similarities. This difference clearly does not only exist between industries but also within the same industry, in the case of projects. Indeed, the lack of agreement as to what factors affect project success as acknowledged by project management researchers has been blamed on the assumption by project management researchers that a universal theory of project management can be applied to all projects (Dvir et al, 1998).

Classical contingency theory suggests that different external conditions to an organization require different organizational characteristics, and that the effectiveness of the organization is contingent upon the goodness of fit between structural and environmental variables (Shenhar, Levy & Dvir 1997). These classes of behavioural theories posit that there is no one best way to organize a corporation, to lead a company or to make decisions (Fiedler, 1964; Vroom and Yetton, 1973). Alluding to this, Shenhar, Levy & Dvir (1997) posits that "one size does not fit

all", and talks of an organization concept project management. This falls in line with the philosophy of the project as a temporary organization (Packendorff, 1995; Lundin Söderholm, 1995) and so on.

The approach to poverty reduction in social fund-supported communities is a process of development-focused collaboration among various stakeholders. The underlying theory posits that collaboration increases the productivity of resources and creates the necessary and sufficient conditions for community-driven development. Community-driven development represents a people-centered approach to social change, whereby local actors take the lead in conceptualizing projects and programs that address social and economic needs. Local actors are fully involved in implementing such projects and programs. Stakeholder involvement, therefore, is a key element of development-focused collaboration. A major hypothesis embedded in this stakeholder involvement theory is that the greater the collaboration, the greater the productivity of the resources and the more favorable the conditions for community-driven development (Zulu & Chileshe 2008).

Members of communities that received social fund assistance for projects attempted to deal with local-level poverty-related problems by following a four-stage process, that is, identifying problems and priorities, motivating and mobilizing, working together and creating an enabling environment. For each stage, codes at the three levels were identified, compared and contrasted, and collapsed to produce themes (World Bank, 2003). These overarching themes, therefore, do not reflect any a priori selection by the researcher.

2.4 Project identification on performance of projects

The public involvement of stakeholders in development projects is widely recognized as a fundamental element of the process. Timely, well- planned, and well-implemented public involvement programs have contributed to the successful design, implementation, operation, and management of irrigation programme proposals (UNEP, 1996). For instance, the range of stakeholders involved in an Environmental Impact Assessment (EIA) project typically includes: the people, individuals, or groups in the local community. The proponent and other project

beneficiaries, Government agencies, Nongovernmental Organizations (NGOs) and others, such as donors, the private sectors, academics, and so forth.

Participation of the masses in development activities implies enhanced capacity to perceive their own needs. Through participation, local people identify their needs as well as the relevant goals of a program. By participating in decision making and implementation activities, local people help irrigation officials identify, their needs, strategies to meet those needs and the necessary resources required to implement the various strategies (Yadama & Mohamed, 1995). For example, community participation will be discouraged if environmental issues are given priority in agendas without addressing issues such as poverty, homelessness, health, and other basic necessities perceived to be more important by the local communities.

Community irrigation project should encourage a maximum number of people in the participation of development projects. Such involvement should give the participants full inclusion in designing, organizing and implementing activities and workshops in order to create consensus, ownership, and action in support of environmental change in specific areas. It should include people and groups rather than exclude any individuals. Public involvement is a process for involving the public in the decision making of an organization (Becker & Tukel, 1997). Participation actually brings the public into the decision- making process.

Initiating action, within parameters defined by agencies, represents a high level of participation that surpasses involvement in the decision-making process. Self-initiated actions are a clear sign of empowerment. Once clients are empowered, they are more likely to be proactive, to take initiative, and to display confidence for undertaking other actions to solve problems beyond those defined by the irrigation project. This level of participation is qualitatively different from that achieved when clients merely carry out assigned tasks (Shenhar, Levy & Dvir 1997).

Institutional options for rural water supply depend on whether water is treated as a public, private, or common property good, and on the resultant degrees of excludability (the degree to which other users can be excluded) and jointness or subtractability (the degree to which use by one affects the overall production cost of use by someone else). Similarly, the most appropriate

level of participation depends on who owns the water and on who manages the extraction and distribution of water. The degree to which water can be managed collectively depends on the ability to exclude some, but not others (Kaufman & Poulin, 2006). The degree of jointness adds complexity to and determines the participants in the negotiations. (For example, in the development of a system for piped water, users at the head and at the tail of the distribution ladder need to be involved in negotiating rules and regulations for the distribution of the water.) Moreover, the moment external agencies intervene to improve the quantity and quality of water, or to make water more accessible, issues related to rural infrastructure and technology choice come into play and add another layer of complexity to issues of decision-making and participation.

2.5 Design on the performance of projects

The community development approach emphasizes self- help, the democratic process, and local leadership in community revitalization (Barker, 1991). Most community development work involves the participation of the communities or beneficiaries involved (Smith, Levy & Dvir 2007). Thus, community participation is an important component of community development and reflects a grassroots or bottom- up approach to problem solving. In social work, community participation refers to the active voluntary engagement of individuals and groups to change problematic conditions and to influence policies and programs that affect the quality of their lives or the lives of others (Gamble & Weil, 1995).

One of the major aims of community development is to encourage participation of the community as a whole. Indeed, community development has been defined as a social process resulting from citizen participation (Smith, Levy & Dvir 2007). Through citizen participation, a broad cross- section of the community is encouraged to identify and articulate their own goals, design their own methods of change, and pool their resources in the problem- solving process (Harrison, 1995).

It is widely recognized that participation in community agricultural schemes often means no more than using the service offered or providing inputs to support the irrigation project (Smith, Levy & Dvir 2007). This is contrasted with stronger forms of participation, involving control

over decisions, priorities, plans and implementation or the spontaneous, induced, or assisted formation of groups to achieve collective goals (Arnstein, 1969; Cohen & Uphoff, 1980; Rifkin, 1990; WHO, 1991; Rahman, 1993; Smith, 1998).

The most important and complicated issue bearing on local level planning and development is community participation. Effective community participation may lead to social and personal empowerment, economic development and socio-political transformation (Kaufman & Poulin, 2006). Yet there are obstacles: the power of central bureaucracies, the lack of local skills and organizational experience, social divisions and the impact of national and transnational structures (Kaufman & Poulin, 2006).

In most developing countries, public sector agencies provide rural infrastructure. Poor public sector performance has led to a widespread search for institutional alternatives and means to increase the accountability of the public sector. In the rural water subsector, the search has been for strategies to increase users' "exit" and "voice" options and to restructure the sector so that suppliers have incentives to match the demand of users (Patanakul and Milosevic, 2009).

Well-managed irrigation projects are committed to planning. For example if the output of a project is to contain quality, then this quality must be properly planned for in the early stages of a project. When detailed planning is being done, it must be tracked or follow-up and re-planning must be done if the initial plan does not work before it is too late to do so. It is shown that personnel factor especially the project manager competence and leadership style is one of the crucial factors in irrigation project success implementation .This is true as project in itself has no essence unless it is managed by a group of people with the necessary skills, experience and qualification.

2.6 Implementation and performance of a project

The unique characteristic of a project is epitomized in the project. This has meant that every project is different, a situation which emanates from the projects own characteristics, that is, its type, its size, its geographic location personnel involved in the project, those emanating from the other subsystems within the industry, and also those from the super-system. Hence irrigation

project implementation is inherently risky and the lack of appropriate approach to addressing these risks has led to a lot of undesirable results in project implementation in the construction industry of most developing countries. Most of the problems militating against the achievement of the desired effect on the construction industry of any country have to do with the irrigation project implementation challenges, namely, the difficulty in achieving the main objectives of the project (Zhang et al., 2003). Traditionally, this is seen in the failure of the project to achieve its cost, time, quality and other targets due to inefficiencies in the implementation process. This ultimately, causes client dissatisfaction.

According to Yisa and Edwards (2002), despite the development of new alternative and less adversarial contractual arrangements, the industry continues to be affected by problems of project time and cost overruns and consequently, client dissatisfaction (Latham & Mohamed 1994). Different countries identify different factors as critical in this regard. Chimwaso (2000) research into the factors of cost overrun and came out with four related factors: variations, re-measurement of provisional works, fluctuation in the cost of labour and materials and contractual claims, that is, claims for extension of time with cost. In the case of time overruns, Zhang et al. (2003) identify 8 factors that cause delay in project implementations in China: factors related to the contractor, the design team, the project, labour, client, material, equipment and other factors. In the midst of the booming infrastructure development and urbanisation in Vietnam, LeHoai et al (2008) established that cost and time overruns top the list of problems of project implementation.

Shenhar et al (1997) model is based on the principle that projects are undertaken to achieve business results and that they must be “perceived as powerful strategic weapons, initiated to create economic value and competitive advantage and irrigation project managers must become the new strategic leaders, who must take responsibility for project business results. In their opinion, projects in future will no longer be just operational tools for executing strategy –they will become the engines that drive strategy into new directions. The second premise is about the existence of project typologies, on the slogan “one size does not fit all”. They propose that irrigation project success should be considered in four dimensions: project efficiency, Impact on

the customer, Business success, and Preparing for the future. These are to be assessed on the basis of four project types: Low-tech, Medium-tech, High-tech, and Super-high tech projects.

Vandevelde et al. (2002) summarized various works on irrigation project performance measurement which are based on the multidimensional, multi-criteria concept. In all, they identified seven dimensions: respect for time, respect for budget and technical specification, knowledge creation and transfer, contribution to business success, financial and commercial success. They merged these seven dimensioned model into a three-polar model namely, process, economic and indirect poles.

Atkinson (1999) separates success criteria into delivery and post-delivery stages and provides a "square route" to understanding success criteria: iron triangle, information system, benefits (organizational) and benefit (stakeholder community). The 'iron triangle', has cost, time and quality as its criteria (for the delivery stage). The post delivery stages comprise: the Information system, with such criteria as maintainability, reliability, validity, information quality use; Benefit (organizational): improved efficiency, improved effectiveness, increased profits, strategic goals, organizational learning and reduced waste; Benefit (Stakeholder community): satisfied users, Social and Environmental impact, personal development, professional learning, contractors profits, capital suppliers, content project team and economic impact to surrounding community. This model takes into consideration the entire irrigation project life cycle and even beyond. It thus lends itself for continuous assessment.

Patanakul and Milosevic (2009) grouped their measurement criteria into three: criteria from organizational perspective: Resource productivity, Organizational learning criteria from project perspective: time-to-market, Customer satisfaction and criteria from personal perspective: personal growth, personal satisfaction. Sadeh et al (2000) proposed a division of project success into four dimensions. These are: Meeting design goals, benefit to end user, benefit to the development organization, benefit to the defense and national infrastructure, in that order. Finally, Freeman and Beale (1992) provided technical success, efficiency of irrigation project implementation, managerial and organizational success, personal growth, completeness, and technical innovation as the main success criteria.

2.7 Monitoring and evaluation on performance of projects

Monitoring and evaluation is the process necessary for collecting, measuring, and disseminating performance information, and assessing measurements and trends to effect process improvement (PMI, 2004)). When this is done continuously, the body of knowledge suggests, it will provide the project team insight into the health of the project and highlights any areas that require additional attention. The main activities in monitoring and evaluation, according to the guide, include: Monitoring the ongoing project activities against the project management plan and the irrigation project performance baseline, influencing the factors that could circumvent integrated change control so that only approved changes are implemented.

In particular, Shaw (1999) posited that the measurement and evaluation of performance are central to control posing four basic questions that is, what has happened? Why has it happened? Is it going to continue? And what are we going to do about it? Significantly, the body of knowledge acknowledges that the integrative nature of the project management requires the monitoring and evaluation process group interaction with every other process group. In other words, monitoring and evaluation is central to irrigation project management processes.

Ofori (2001) posits that the absence of measurable targets in the development programmes to guide and assess, at intervals, the success of their implementation is a possible reason for lack of progress and the persistence of problems in the construction industry. Following a deliberate process of continuously monitoring the performance of the construction industry everywhere based on relevant indicators is, thus, at the core of the quest to develop, improve and sustain the industry.

It is the position of any project that the objective of improvement in a programme would be better achieved if the concerned project is rightly divided into its major component parts, that is, clients, construction firms, practitioners (consultants, project managers), products, the material suppliers and consumers/the publics and the other stakeholders. These will need specific indicators of measurement for monitoring and evaluation to accomplish specific purposes of interest (Kaufman & Poulin, 2006). Consequently, the performance of the project of any country will be the aggregation of the performance of its components. Thus, the improvements in the

construction industry of any country as measured by its performance at any time should be represented by the aggregation of the improvement of its components; and that the overall development of the construction industry of any country at any time should be represented by the aggregation of the developments of its components.

2.8 Selection of the management and performance of projects

The ideal way to start the project is to involve the beneficiaries and stakeholders at the initial stage and throughout the project cycle. The involvement is seen as crucial for all development projects as it facilitates collective ownership and sustainability. Besides, the success of any development of irrigation projects depends on selection of management committees. Unfortunately politicians, local leaders or a few opinion leaders in the community imposed many projects in rural areas without consulting the beneficiaries. Women in particular are least involved unless the project was meant for women only (World Bank, 2003).

According to UNDP (2000) quality of leadership was found to impact on the community participation in the development of irrigation and income generating projects. Project members felt that to enable effective participation, irrigation project planners and especially officials should be equipped with adequate participatory knowledge and skills. It was also observed that ability of a leader to influence group action depended largely on the leadership skills.

During the 1980s, worldwide economic recession and external debt forced many countries to cut back development programmes and instead give priority to structural adjustment. In the process, the number of rural poor has risen (World Bank, 2003). The result has been an increase in unemployment and poverty in countryside, causing mass exodus of rural people to the already over-crowded cities, with potentially explosive consequences.

International community has been seeking new strategies to revitalize rural development. One such a strategy is people's participation in the irrigation development process (UNDP, 2000). This means that development efforts must aim at releasing the energies of rural people and fully guarantee their share in the fruits of their efforts. This can only be achieved by enabling the poor to take charge of their lives, make full use of resources and manage their own development

activities. However, for proper development to occur, motivation, knowledge, skills, organization and willingness of the people have to be tapped. In this respect, people's will in their development process is paramount. It is, however recognized that the mobilization of the people has been the most obvious problem facing development process in many countries (UNDP, 2000).

Community participation in rural irrigation development involves an act of sharing common to all participants as stakeholders of the development process. In this case, each participant is directed towards a specific goal, which is shared by others within the development process. This is what is defined as popular participation in the development process, and which has been thought to be a positive move in the running of affairs that directly concern and affect people (Tandon, 1991). Internationally, there have been some attempts to operationalize and extend the participation of people in rural areas' development process. Over the years, participatory development approach has been a major concern for United Nations Agencies such as the International Labour Organization (ILO), World Health Organization (WHO), Food and Agriculture and Development (IFAO) and United Nations Educational Scientific and Cultural Organization (UNESCO).

2.9 Conceptual framework

Community participation has been defined as 'a process in which people take part in decision making in the institutions, programmes and environments that affect them (Heller, 2004). Community participation is usually conceptualized as a process by which members of the communities individually or collectively assume increased responsibility for assessment of their own needs, and once these are agreed upon, identify potential solutions to problems, and plan strategies by which these solutions may be realized (Bermejo & Bekui, 1993). In this study, the dependent variable would be project performance while independent variables are participation in project identification, participation in design such as selection of irrigation technology, participation in implementation, participation in monitoring and evaluation and participation in selection of the management committees.

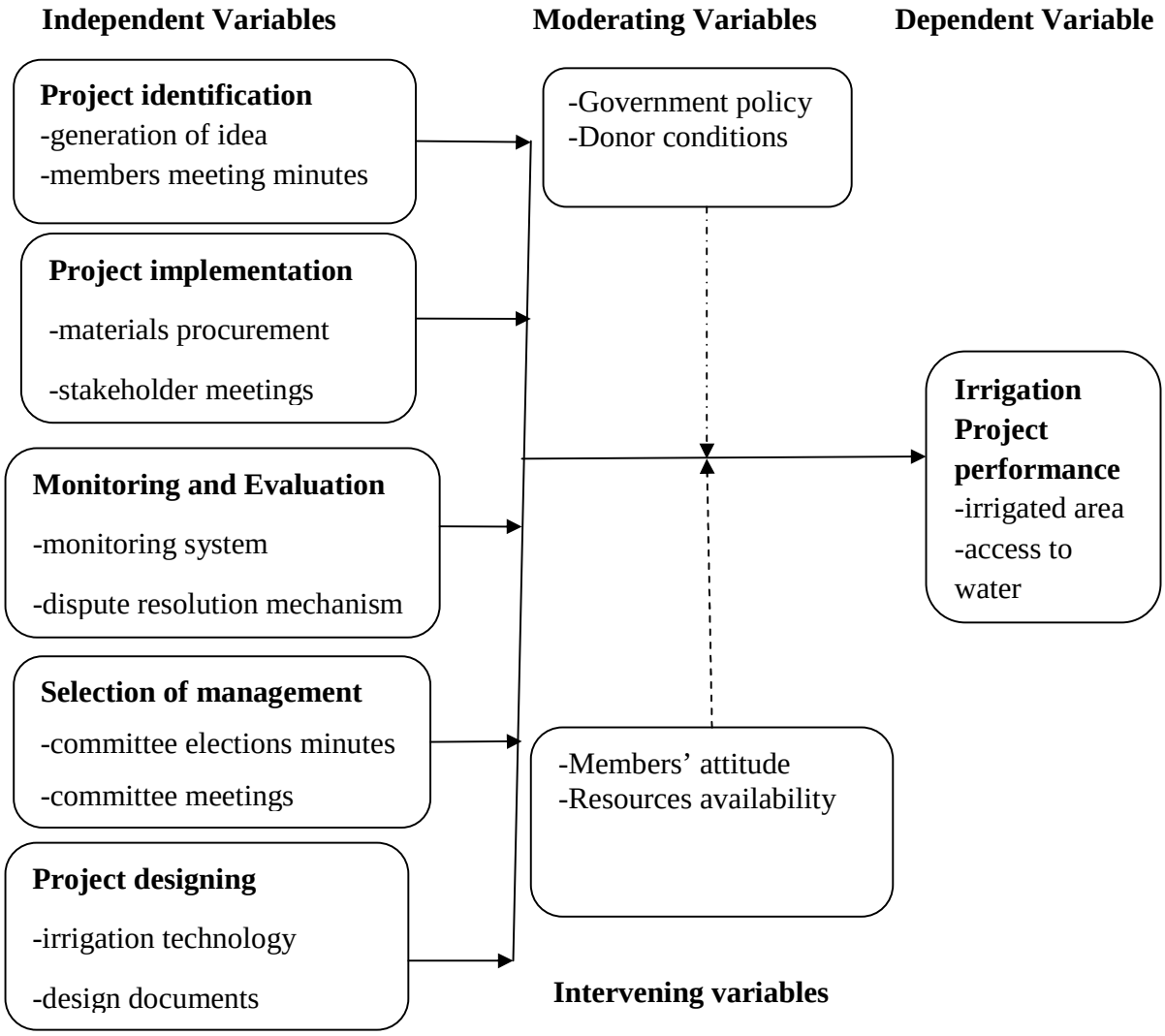

Figure 1: Conceptual framework

2.10 Summary

Irrigation project performance is often seen by many to be the leading contributor to whether an irrigation project is a success or failure. Effective irrigation project management helps to ensure projects are delivered to the agreed quality, within budget and on time (Project procurement lifecycle, 2007). However, no community based irrigation project will be effective without members participation. People's participation in decision-making and local ownership results in effective and sustainable water systems. This belief has played a central part in the shift in institutional strategies from supply-driven to demand-driven approaches, which respond to the felt needs and aspirations of users, especially the poor. However, quantitative evidence of the efficacy of participation in determining project effectiveness, relative to other factors, has been missing. This study was a step toward filling this gap.

CHAPTER THREE

RESEARCH METHODOLOGY

3.1 Introduction

This chapter provides an overview of the research methodology. It includes research design, research location, the population studied, details of the sample size and sampling procedure, instruments used, issues of validity and reliability, data collection and data analysis procedures.

3.2 Research Design

The study employed a descriptive survey research design. According to Kothari (2007), descriptive survey research design is a type of research used to obtain data that can help determine characteristics of a phenomenon in its natural setting. A descriptive survey involves asking questions (often in the form of a questionnaire) of a large group of individuals either by mail, by telephone or in person. The main advantage of survey research is that potentiality it provides when dealing with a large sample of individuals. By employing this study design, this study focused on obtaining quantitative data from a sample of irrigation project members.

3.3 Target Population

According to Mutai (2001), target population is the entire group a researcher is interested in or the group about which the researcher wishes to draw conclusions. Mugenda and Mugenda (1999) further add that a population is any set of persons or objects that possesses at least one common characteristic. The study targeted the 907 registered members of the 3 Irrigation Projects namely; Millenium with 201, Nduruma Gakumbo with 450 and Nkabune muguna Igoki with 256(District Irrigation office 2011/2012 annual report). Additionally, 25 key informants comprising 15 executive management committee members from the three projects and 10 Ministry of Water and Irrigation officials made up of 2 technical officers from the District Irrigation Office and 8 Water Resource Management Authority (WRMA) regional officials were also targeted. The project executive management committee members were involved in the study because they

were in a position of providing vital information on performance of irrigation projects as opposed to the general project members.

Table 3. 1: Target population

Irrigation project	Population	Percentage
Millenium	201	22.2
Nduruma Gakumbo	450	49.6
Nkabune muguna Igoki	256	28.2
TOTAL	**907**	**100.0**

3.4 Sample Size and Sampling Procedures

A combination of stratified sampling, simple random sampling and purposive sampling was used in this study. Stratified sampling was used to ensure representation from the three projects in the study. Through purposive sampling, the study also involved 15 executive members of the project committees. Ten (10) key informants were selected from the Ministry of Water And Irrigation through purposive sampling where the organizations' key management staff preferably technical officers were targeted. Through simple random sampling, 269 registered project members were selected from a population of 907 members of the three main irrigation projects in Meru Central District which represents 30% of the members. Therefore, a total of 294 respondents were targeted in this study. From normal distribution the population proportion was estimated to be:

$$n = \frac{Z^2PQ}{\alpha^2}$$

Where: Z is the Z – value = 1.96

P Population proportion 0.50

Q = 1-P

α = *level of significance* = 5%

n= Sample size

$$n=\frac{1.96^2 \times 0.5 \times 0.5}{0.5^2}$$

n= 384

Adjusted sample size

n.'= 384/ [1+ (384/907)]

Sample size = 269 members

Table 3.2: Sampling frame

Targeted group	**Population**	**Ratio**	**Sample**
Millenium project members	201	0.297	60
Nduruma Gakumbo members	450	0.297	133
Nkabune Muguna Igoki members	256	0.297	76
Executive committee members	15	1	15
MW&I officials	10	1	10
Total respondents			**294**

3.5 Research Instruments

Primary data was collected by the use of questionnaires and interview guides. The questionnaires were used to collect data from the members of the three irrigation projects in Meru Central District while the interview guides were used to collect data from the ministry of water and irrigation technical staff and the respective project executive management committee members. Personal interviews were used because of the advantages of the method. The method allows for

face-to-face contact with the respondents thus enabling provision of detailed data. The method allows the interviewer to clearly explain to the respondents the purpose of the study. The questionnaires and interview guides had questions on demographic characteristics, and the study variables (project identification, implementation, monitoring and evaluation, selection of management and designing). Secondary data was also collected from the Ministry of water and irrigation, various economic surveys and the statistical abstracts produced by the Government of Kenya from time to time.

3.6 Validity of the Research Instruments

Validity is the quality of a data gathering instrument that enables it to measure what it is supposed to measure. Creswell (2003) notes that validity is about whether one can draw meaningful and useful inferences from scores on the instrument. The validity measure depends on how accurate the researcher collects the data. For this reason, the researcher had formulated a questionnaire that was specifically tailored to obtain relevant and accurate response from the population. The research instruments were then piloted with 15 respondents randomly selected from the target population. On the basis of their comments, changes were made to the questionnaire to clarify wordings and increase readability. Response options were provided for most of the questions to ensure that the answers given were in line with the research questions they were meant to measure.

3.7 Reliability of Research Instruments

Reliability is a measure of the degree to which a research instrument yields consistent results or data after repeated trial (Leedy, 1997). Reliability answers the question “Are scores stable over time when the instrument is administered a second time?” (Cooper & Schinder, 2007). To ensure reliability, the researcher administered 16 questionnaires to the study area and used split-half technique to calculate reliability coefficient which should be within the recommended reliability coefficient of 0.7-1 (Nachmias & Nachmias 1996). This involved scoring two-halves of the tests separately for each person and then calculating a correlation coefficient for the two sets of

scores. The instruments were split into the odd items and the even items. Statistical Package for Social Sciences (SPSS) was used to calculate the reliability of the instrument.

3.8 Data collection procedure

After consent was given by the University of Nairobi to collect data and seeking permission from local authorities, the researcher coordinated data collection process. The researcher engaged three research assistants who assisted in data collection. The research assistants were taken through training to clearly understand the research instruments, purpose of the study and ethics of research. The researcher and research assistants administered the questionnaires and the interview guides to the respondents face to face. Locals were preferred in selecting research assistants who understood the local language to avoid communication barrier.

3.9 Data analysis techniques

Data was cleaned, coded, entered and analyzed using Statistical Package for Social Sciences (SPSS, Version 21.0). SPSS was used because it is fast and flexible and provides more accurate analysis resulting in dependable conclusions. Descriptive statistics were used to analyze. Descriptive analysis involved use of frequency distribution tables and cross tabulation which were used to generate values between dependent and independent variables used in the study. Conceptual content analysis was used for the qualitative data from the interview guide and the open ended questions in the questionnaire. In addition, the researcher used multiple regression analysis to establish the strength of the relationship between the dependent and independent variables. In addition, multiple regressions were used to measure the strength of the relationship between the dependent and independent variables.

The regression equation was:

$$Y= \beta_0+ \beta_1X_1+\beta_2X_2+ \beta_3X_3+ \beta_4X_4+ \beta_5X_5+\alpha$$

Where: Y is the dependent variable (Irrigation project performance),

β0 is the regression coefficient/constant/Y-intercept,

β_1, β_2, β_3, β_4 and β_5 are the slopes of the regression equation,

X_1 is the Participation in project identification

X_2 is the Participation in design,

X_3 is the Participation in implementation,

X_4 is the Participation in monitoring and evaluation,

X_5 is Participation in selection of the management, while

α is an error term.

3.10 Ethical considerations

While conducting the study, the researcher ensured that research ethics were observed. Participation in the study was voluntary. Privacy and confidentiality was observed. The objectives of the study were explained to the respondents with an assurance that the data provided was used for academic purpose only.

3.11 Operational definition of variables

The operationalization of variables is as shown in table 3.3;

Table 3. 3: Operationalization of variables

Objectives	Variables	Indicators	Measurement Scale	Tools of analysis	Type of analysis
-To establish how members Participation in project identification influence the performance of Irrigation Projects in Meru Central	-Members Participation in project identification	- Generation of initial idea - Members meetings minutes - Working group - Objective analysis	Nominal Ordinal Interval Ordinal	Frequency distribution tables & percentages	-Descriptive -Regression
-To examine the influence of members Participation in design on the performance of irrigation projects	-Members Participation in design	- Selection of irrigation technology - Definition of pre-requisites, inputs, outputs, participants, costs - Availabilibity of financial plan	Nominal Ratio Nominal	Frequency distribution tables & percentages	-Descriptive -Regression

in Meru Central		- Project documents preparation, drawings			
		- Community appraisal meetings minutes	Nominal		
		- Analysis of expected results	Ordinal		
			Nominal		
-To examine the influence of members Participation in implementation on the performance of Irrigation schemes/projects in Meru Central	-Members Participation in implementation	- Stakeholders meetings	Ordinal	Frequency distribution tables & percentages	-Descriptive
		- Implementation plan			
		- A system of measurement	Nominal		-Regression
		- Work schedule, progress & budget	Interval		
		- Results reports & review procedures	Ratio		
		- Good management of resources	Ordinal		
		- Involvement in procure of goods & services	Ordinal		
-To establish how members Participation in monitoring and evaluation influence the performance of irrigation schemes/projects in Meru Central	-Members Participation in monitoring and evaluation	- Physical verification	Nominal	Frequency distribution tables & percentages	-Descriptive
		- Regular project visit	Nominal		
		- Regular group discussions	Nominal		-Regression
		- Development of a workable monitoring & evaluation system			
		- Review of achievements against set objectives.	Ratio		
		- Dispute resolution mechanism	Ratio		
-To establish the influence of members Participation in selection of the management on the performance of irrigation schemes/projects in Meru Central	-Members Participation in selection of the management	- Committee members elections	Nominal	Frequency distribution tables & percentages	-Descriptive
		- Committee meetings	Interval		-Regression
	-Performance of Irrigation Projects	- water distribution	Nominal	Frequency distribution tables & percentages	-Descriptive
		- acreage covered relative to target,	Ratio		-Regression
		- farmers access to water,			
		- operation and maintenance schedule	Nominal Ordinal		

CHAPTER FOUR

DATA ANALYSIS, PRESENTATION AND INTERPRETATION

4.1 Introduction

This chapter presents the data analysis, presentation and the interpretation of the findings of the research. It provides the frequencies and the corresponding percentages and an analysis of how these findings relate to the study.

The specific objectives of the study were; to establish how members participation in project identification influence the performance of Irrigation Projects in Meru Central District, to examine the influence of members participation in design on the performance of irrigation projects in Meru Central District, to examine the influence of members participation in implementation on the performance of Irrigation projects in Meru Central District, to establish how members participation in monitoring and evaluation influence the performance of irrigation projects in Meru Central District and to assess the influence of members participation in selection of the management on the performance of irrigation projects in Meru Central District. The data collected was arranged into categories and interpreted on the basis of each research objective.

4.1.1 Response rate

Out of the 269 questionnaires sent out, a total of 184 were dully filled and returned comprising a 68.4% response rate. This is significant enough to provide reliable and valid findings for this study. This response rate was excellent and 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. The commendable response rate was only feasible after the researcher made personal calls to the respondents informing them of his intent and personally administering the questionnaires.

4.1.2 Reliability analysis

Reliability analysis was subsequently done using Cronbach's Alpha which measures the internal consistency by establishing if certain item within a scale measures the same construct. Gliem and Gliem (2003) established the Alpha value threshold at 0.6, thus forming the study's benchmark. Cronbach Alpha was calculated for every objective which formed a scale. Results showed that Project identification had the highest reliability (α= 0.852), followed by Implementation (α=0. 872), Monitoring and Evaluation (α=0.721), Selection of management (α=0.701), and Designing (α=0.724). This illustrates that all the five variables were reliable as their reliability values exceeded the prescribed threshold of 0.6 as indicated on table 4.1.

Table 4. 1: Variable reliability analysis

Variable	Cronbach's Alpha	Number of components
Project identification	0.852	5
Implementation	0.872	5
Monitoring and Evaluation	0.721	4
Selection of management	0.701	5
Designing	0.724	6

4.2 Members' socio-economic characteristics

This section presents the members' classification by gender, age, members' education level and members' period of membership in the irrigation project.

4.2.1 Irrigation project members' gender

In order to get gender distribution across the projects, members were asked to indicate their gender as indicated on Table 4.2.

Table 4.2: **Irrigation project members' gender**

Gender	Frequency	Percentage
Men	142	77.2
Women	42	22.8
Total	**184**	**100.0**

According to the findings represented in Table 4.2, majority of the members were men as indicated by 77.2% while the rest 22.8% were women. This therefore indicates that majority of the registered members according to District Irrigation Office 2011/2012 annual report of the 3 Irrigation Projects namely; Millenium, Nduruma Gakumbo and Nkabune muguna were men.

4.2.2 Farmers level of education

The members were requested to indicate their highest level of education as indicated on Table 4.3

Table 4. 3: Members' level of education

Highest education level	Frequency	Percentage
Primary	90	48.9
Secondary	88	47.8
College (Diploma/Higher Diploma)	6	3.3
Total	**184**	**100.0**

According to Table 4.3, most of the members (48.9%) had a primary level certificate, 47.8% had a secondary level certificate while 3.3% had a College certificate (Diploma/Higher Diploma).

This therefore depicts that majority of the members had at least primary level certificate of education and could therefore be trusted to read and write their views on the irrigation projects as well as making informed decisions.

4.2.3 Age of irrigation project members

The project members were also asked to indicate their age brackets. The results are on Table 4.4.

Table 4. 4: Age distribution of irrigation scheme members

Members' age	Frequency	Percentage
Under 25	4	2.2
26 – 35	38	20.7
36 – 45	58	31.5
46 – 55	30	16.3
56 and Above	54	29.3
Total	**184**	**100.0**

From the findings on Table 4.4, 31.5% of the irrigation scheme members indicated that they were aged between 36-45 years, 29.3% of the farmers indicated that they were aged 56 years and above, 20.7% of the farmers indicated that they were aged between 26-35 years, 16.3% of the farmers indicated that they were aged between 46-55 years while 2.2 % of the farmers indicated that they were aged under 25 years. These findings depict that majority of the members were experienced and had exposure in the irrigation field.

4.2.4 Period of membership in the irrigation project

In an effort to get members experience in the irrigation field, respondents were asked to indicate their respective period of project membership as indicated on Table 4.5.

Table 4. 5: Period of membership in the irrigation project in years

Number of years	Frequency	Percentage
0 – 5	114	62.0
6 – 10	52	28.3
11 – 15	18	9.8
Total	**184**	**100.0**

Regarding the period of membership in the irrigation project,62% of the farmers indicated that they had been members for between 0-5 years, 28.3% for between 6 – 10 years while 9.8% for between 11-15 years as shown on Table 4.5. From the results it is clear that majority of the farmers had been members of the irrigation project for quite a good number of years and therefore could give relevant information as sought by the study as five years is an accepted period to show results in Kenya e.g. General elections are held every five years.

4.3 Project identification

The study sought to establish how members participation in project identification influence the performance of Irrigation Projects in Meru Central District. This stage involves generation of initial project idea, formation of working groups, an analysis of project objectives and availability of members meeting minutes.

4.3.1 Members participation in identification of the irrigation project

The irrigation project members were asked to indicate if they participated in identification of their irrigation projects or not. Results are captured on Table 4.6.

Table 4. 6: Members participation in identification of the irrigation project.

Participation	Frequency	Percentage
participated	162	88.0
did not participate	22	12.0
Total	**184**	**100.0**

As depicted on Table 4.6, 88% of the members indicated that they were involved in identification of the irrigation project while 12% of the members indicated that they weren't involved in identification of the irrigation project. From the results, majority of the farmers, were involved in identification of the irrigation projects and could therefore could be trusted to give their views on specific project performance.

4.3.2 Effects of members' participation in project identification on project performance

The study required that the members state the extent to which their participation in project identification affected performance of Irrigation Projects in Meru Central District as indicated on Table 4.7.

Table 4.7: Members' opinion on extent to which their participation in project identification affected performance

Members opinion	Frequency	Percent
To a very great extent	176	95.7
To a great extent	6	3.3
To a moderate extent	2	1.1
Total	**184**	**100.0**

Table 4.7 depicts that, Most (95.7%) of the members indicated that their participation in project identification affected performance of Irrigation Projects in Meru Central District to a very great extent,3.3% of the members indicated that their participation in project identification affected performance of Irrigation Projects in Meru Central District to a great extent while 1.1% of the members felt their participation in project identification affected performance of Irrigation Projects in Meru Central District to a moderate extent. These findings infer that participation in project identification subsequently affected performance according to the members.

4.3.3 Factors of project identification

The respondents were asked to indicate the extent to which generation of initial idea, availability of members meetings minutes, formation of working groups and project objective analysis affected performance of Irrigation Projects in Meru Central District using the likert scale, where; very great extent = 5, great extent= 4, moderate extent = 3, low extent = 2 and not at all = 1. Results are captured on Table 4.8.

Table 4.8: Components of project identification

Component	Mean score	Std. Deviation
Generation of initial idea	3.8326	.17858
Members meetings minutes	4.6065	.40703
Working group	4.5130	.57707
Objective analysis	3.9413	.38033
n=184		

According to Table 4.8, respondents indicated that working group affected performance of Irrigation Projects in Meru Central District to a very great extent as shown by a mean score 4.5130. The respondents also indicated that availability of minutes of members meetings affected performance of Irrigation Projects in Meru Central District to a very great extent as shown by a mean score 4.6065.Further, the members indicated that objective analysis and generation of initial idea affected performance of Irrigation Projects in Meru Central District to a great extent

as shown by a mean score of 3.9413 and 3.8326 respectively. From these findings we can infer that formation of working groups greatly affected performance of Irrigation Projects according to the members.

4.4 Members participation in project design process

The study also sought to examine the influence of member's participation in project design process on the performance of irrigation projects in Meru Central District. The components of design include; selection of irrigation technology, definition of prerequisites, preparation of financial plan, preparation of project documents/drawings and members meetings to review proposed costs.

4.4.1 Members participation in design influence performance of irrigation projects

This study required the respondents to indicate their opinion on the extent to which members' participation in design process influenced the performance of irrigation projects in Meru Central District as indicated on Table 4.9.

Table 4.9: Members' opinion on extent to which their participation in project design influenced performance

Member's opinion	Frequency	Percentage
To a very great extent	170	92.4
To a great extent	14	7.6
Total	**184**	**100.0**

Results on Table 4.9 show that 92.4% of the respondents indicated that members participation in design influenced the performance of irrigation projects in Meru Central District to a very great extent while 7.6% of the respondents indicated that members participation in design influenced the performance of irrigation projects in Meru Central District to a great extent. These findings infer that in members' opinion, participation significantly influenced the performance of irrigation projects.

4.4.2 Factors of project design

The study also required the respondents to indicate the extent to which the following factors affect performance of Irrigation Projects in Meru Central District as indicated on Table 4.10.

Table 4.10: Components of project design

Component	Mean score	Std. Deviation
Selection of irrigation technology	3.8326	.23210
Definition of pre- requisites (inputs, outputs, participants, costs)	3.9087	.31296
Preparation of financial plan	4.6239	.53931
Preparation of project documents and drawings	4.5478	.60100
Members meetings to review proposed costs	4.6239	.53931
Analysis of expected results	3.9826	.52048
n=184		

From the study, Table 4.10 shows majority of the respondents indicated that preparation of financial plan and members meetings to review proposed costs affected performance of Irrigation Projects in Meru Central District to a very great extent as indicated by a mean of 4.6239 respectively. The respondents further indicated that preparation of project documents/drawings affected performance of Irrigation Projects in Meru Central District to a very great extent as indicated by a mean score of 4.5478.They also indicated that analysis of expected results affected performance of Irrigation Projects in Meru Central District to a great extent as indicated by a mean score of 3.9826.The respondents further indicated that definition of pre- requisites, inputs, outputs, participants, costs affected performance of Irrigation Projects in Meru Central District to a great extent as indicated by a mean score of 3.9087.The farmers however indicated that selection of irrigation technology affected performance of Irrigation Projects in Meru Central District to a great extent as indicated by a mean score of 3.8326.This findings infer that

availability of financial plan and meeting minutes subsequently affected the performance of Irrigation Projects in Meru Central District.

4.5 Members participation in project implementation

The study inquired on how members participation in project implementation influenced the performance of Irrigation projects in Meru Central District. Components of implementation include; implementation plan, stakeholders meetings, system of measurement, work schedules, results reports with review procedures, management of resources and procurement of goods and services.

4.5.1 Members participation in implementation influence performance of irrigation projects

The respondents were requested to indicate the extent to which members' participation in implementation influenced the performance of Irrigation projects in Meru Central District as indicated on Table 4.11.

Table 4.11: Members' opinion on extent to which their participation in implementation influenced irrigation project's performance

Member's opinion	Frequency	Percentage
To a very great extent	174	94.6
To a great extent	8	4.3
To a moderate extent	2	1.1
Total	**184**	**100.0**

According to table 4.11, majority of the respondents (94.6%) indicated that the members' Participation in implementation influenced the performance of Irrigation projects in Meru Central District to a very great extent, 4.3% said it influenced the performance of Irrigation projects in Meru Central District to a great extent while 1.1% indicated that the members'

Participation in implementation influenced the performance of Irrigation projects in Meru Central District to a moderate extent. From these results we can therefore infer that in members' opinion, their participation in project implementation greatly influenced the performance of irrigation projects.

4.5.2 Factors of irrigation project implementation

The study required the respondents to indicate the extent to which the following factors influenced performance of Irrigation Projects in Meru Central District as indicated on Table 4.12.

Table 4.12: Components of irrigation project implementation

Component	Mean score	Std. Deviation
Stakeholders meetings	3.0326	.23210
Implementation plan	3.1087	.31296
A system of measurement	4.5478	.50131
Work schedule & progress reports	4.6587	.52585
Results reports & review procedures	4.7804	.57114
Good management of resources	3.7283	.42201
Involvement in procure of goods & services	3.8391	.45379
n=184		

From the study findings on Table 4.12, majority of the members indicated that results reports & review procedures, work schedule, progress reports and a system of measurement influenced performance of Irrigation Projects in Meru Central District to a very great extent as indicated by a mean score of 4.7804, 4.6587 and 4.5478 respectively. The respondents also indicated that participation in procure of goods & services and good management of resources influenced performance of Irrigation Projects in Meru Central District to a great extent as indicated by a mean score of 3.8391 and 3.7283 respectively. Further the respondents indicated that

implementation plan and stakeholders meetings influenced performance of Irrigation Projects in Meru Central District to a moderate extent as indicated by a mean score of 3.1087 and 3.0326 respectively. From these findings we can therefore infer that in members' opinion, results reports & review procedures greatly influence the performance of irrigation projects while implementation plan and stakeholders meetings were not considered as important

4.6 Project monitoring and evaluation

The study sought to establish how members participation in project monitoring and evaluation influence the performance of irrigation projects in Meru Central District.

4.6.1 Members participation in project monitoring and evaluation influence performance

The study also required the respondents to indicate in their view the extent to which the following factors influenced performance of Irrigation Projects in Meru Central District as indicated on Table 4.13.

Table 4. 13: Components of project monitoring and evaluation

Component	Mean score	Std. Deviation
Physical verification	4.5326	.17858
Regular project visit	4.5043	.46265
Regular group discussions	4.8891	.50262
Development of a workable monitoring & evaluation system	4.6478	.50131
Review of achievements against set objectives.	4.7822	.51483
Dispute resolution mechanism	4.7587	.50452
n=184		

Results shown on Table 4.13 indicated that regular group discussions influenced performance of Irrigation Projects in Meru Central District to a very great extent as shown by a mean score of

4.8891.The respondents also indicated that review of achievements against set objectives influenced performance of Irrigation Projects in Meru Central District to a very great extent as shown by a mean score of 4.7822.The respondents further indicated that dispute resolution mechanism and development of a workable monitoring & evaluation system influenced performance of Irrigation Projects in Meru Central District to a very great extent as shown by a mean score of 4.7587 and 4.6478 respectively. They also indicated that regular project visits and Physical verification influenced performance of Irrigation Projects in Meru Central District to a very great extent as shown by a mean score of 4.5043 and 4.5326 respectively. We can therefore infer that in members' opinion, regular group discussions and review of achievements significantly contributed in ensuring that the irrigation projects were sustained.

4.7 Selection of the management committees

The study further sought to assess the influence of members participation in selection of the management on the performance of irrigation projects in Meru Central District.

4.7.1 Members participation in selection of the management influence performance of irrigation projects

The study further sought to determine the extent to which members' Participation in selection of the management committees influence the performance of irrigation projects in Meru Central District as indicated on Table 4.14.

Table 4. 14: Members' opinion on extent to which their participation in selection of the management influence the performance of irrigation projects.

Member's opinion	Frequency	Percentage
To a very great extent	168	91.3
To a great extent	16	8.7
Total	**184**	**100.0**

From the findings shown on Table 4.14, 91.3% of the respondents indicated that members' participation in selection of the management influenced the performance of irrigation projects in Meru Central District to a very great extent while 8.7 % of the respondents indicated that members' participation in selection of the management influenced the performance of irrigation projects in Meru Central District to a great extent. We can therefore infer that in members' opinion, their participation in selection of the management greatly influenced the performance of irrigation projects in Meru Central District.

4.7.2 Factors of selection of the management

The study sought to establish how the various factors of committee selection affected performance of respective irrigation projects as indicated on Table 4.15.

Table 4.15: Components of selection of the management committees

	Mean score	Std. Deviation
Committee members elections	4.8109	.10426
Minutes of committee meetings	4.9522	1.05804
n=184		

As shown on Table 4.15, the study found that factors of committee members elections and availing minutes of committee meetings affected the performance of Irrigation Projects in Meru Central District to a very great extent as indicated by a mean of 4.9522 and 4.8109 respectively. We can therefore infer that in members' opinion, their participation in both committee members elections and availing minutes of respective committee meetings had a great influence on the performance of the irrigation projects in Meru Central District.

4.8 Performance of irrigation projects

The study sought to establish the members' view on trend of irrigation project performance for the last five years. This was guided by an assessment of specific functions such as; water distribution, acreage irrigated, member's access to water and operation & maintenance schedule.

4.8.1 Members view on trend of irrigation project performance for the last five years

The study further required that the respondents give their opinion on performance of the respective irrigation projects for the last five years as indicated on Table 4.16.

Table 4.16: Members opinion on trend of the irrigation project performance for the last five years

Component	Mean score	Std. Deviation
Water distribution	3.1739	.52642
Acreage covered relative to target,	3.6543	.66900
Farmers access to water	4.7804	.83656
Operation and maintenance schedule	4.7391	.91230
n=184		

From the findings in Table 4.16, the respondents indicated that members access to water had greatly improved as indicated by a mean of 4.7804. They also indicated that adherence to operation and maintenance schedule had greatly improved as indicated by a mean of 4.7391.The respondents further indicated that acreage covered relative to target had improved as indicated by a mean of 3.6543 while water distribution had remained constant as indicated by a mean of 3.1739.

4.9 Regression analysis

The relevant portions of the output provided by SPSS were as shown on Table 4.17:

Table 4.17: Regression results showing the relationship between performance of irrigation projects and five predictive factors

Dependent variable	**Performance of irrigation projects**
R	0. 784
R Square	0.615
Adjusted R Square	0.601
Std. Error of the Estimate	3.58232

	Sum of squares	**df**	**Mean Square**	**F**	**Sig.**
Regression	901.780	4	450.89	71.91	.000[a]
Residual	564.653	180	6.27		
Total	1466.433	184			

	Unstandardized coefficients(B)	**p-Value**
Constant	12.23	2.65e-11***
Project identification	0.762	0.0296**
Implementation	0.674	0.0134**
Monitoring and Evaluation	0.846	0.0243**
Selection of management	0.984	0.0345**
Designing	0.943	0.0210**

*Significant at 1% **Significant at 5% ***Significant at 10%

Source: Research, 2013

a. Predictors: (Constant), Project identification, Implementation, Monitoring and Evaluation, Selection of management and Designing

b. Dependent Variable: Performance of Irrigation Projects

The "Adjusted R Square" (adjusted for the number of variables in the equation) for the model summary shows that all five independent variables taken together explain about 60.1 percent of the variation in performance of irrigation projects.
The ANOVA results show that the residual sum of squares (the sum of squared deviations from the least squares line) is 564.653, while the total sum of squares (the sum of squared deviations from the mean) is 1466.433. Note that (1466.433 – 564.653) / 1466.653 = .615. This is identical to the unadjusted R Square in the model summary. The significance of .001 is the significance level (based on an “F ratio”). In other words, for the model as a whole, $p < .001$ hence reliable.

The “coefficients” table provides the regression equations. Under “unstandardized coefficients,” the “Constant” (12.23) is the “a” coefficient. The remaining values in this column are the “b” coefficients. Rewriting this in standard algebraic form, the unstandardized regression equation is: PIP=12.23 +0.762I+ 0.674E+0.846ME+0.984SM+0.943PD project identification, implementation, monitoring and evaluation, selection of management and designing.

Where; PIP is Performance of Irrigation Projects, I is Project identification, E is Implementation, ME is Monitoring and Evaluation, SM is Selection of management and PD is Designing.

A unit change in the project identification will lead to a 0.762 change in the performance of irrigation projects. A unit change in implementation will lead to a 0.674 change in the performance of irrigation projects. A unit change in monitoring and evaluation will lead to a 0.846 change in the performance of irrigation projects. A unit change in the selection of management will lead to a 0.984 change in the performance of irrigation projects while a unit change in the designing will lead to a 0.943 change in the performance of irrigation projects.

Table 4.17 shows that project identification, implementation, monitoring and evaluation, selection of management and designing at both 1% and 5% level of significance, they are significant in explaining the variations in performance of irrigation projects.

CHAPTER FIVE

SUMMARY OF THE FINDINGS, DISCUSSION, CONCLUSIONS AND RECOMMENDATIONS

5.1 Introduction

This chapter presents the summary of findings, discussion, conclusions drawn from the findings and recommendations made therefore. This study sought to assess the influence of members' participation on the performance of an irrigation project in Meru Central District, Kenya.

5.2 Summary of the findings

- The study established that the members were involved in project identification of the irrigation project. 95.7% of respondents felt that members participation in project identification affected performance of Irrigation Projects in Meru Central District to a very great extent. The study also revealed that working group, minutes of members meetings, objective analysis and generation of initial idea affected performance of Irrigation Projects in Meru Central District.
- The study found out that 92.4% of the members felt their participation in project design process influenced the performance of irrigation projects in Meru Central District to a very great extent. The study also established that availability of financial plan, members meetings to review proposed costs, preparation of project documents/drawings, analysis of expected results and definition of pre- requisites, inputs, outputs, participants, and costs affected performance of Irrigation Projects in Meru Central District.
- The study also revealed that 94.6% of the members felt their participation in implementation influenced the performance of Irrigation projects in Meru Central District to a very great extent and that results reports & review procedures, work schedule, progress reports & budget and a system of measurement influenced performance of Irrigation Projects in Meru Central District to a very great extent.
- The study further found that regular group discussions, review of achievements against set objectives, dispute resolution mechanism, development of a workable monitoring &

evaluation system, regular project visits and physical verification influenced performance of Irrigation Projects in Meru Central District.

- The study established also that 91.3% of the members felt their participation in selection of the management influenced the performance of irrigation projects in Meru Central District to a very great extent. The study deduced that committee member's elections and availing minutes of committee meetings affected the performance of Irrigation Projects in Meru Central District to a very great extent.
- Finally, the study deduced that members access to water, adherence to operation and maintenance schedule as well as acreage irrigated relative to target had improved for the last five years while water distribution had remained constant.

5.3 Discussions of key findings

A detailed discussion of the findings is given below. The main aim of this research was to assess the influence of members' participation on the performance of an irrigation project in Meru Central District, Kenya. On this basis, a descriptive research design was done targeting the members of the three main irrigation projects in Meru Central District: Millennium, Nduruma Gakumbo and Nkabune Muguna Igoki.

5.3.1 Members participation in irrigation project identification

The study established that the members were involved in project identification of the irrigation project. According to Yadama (1995), participation of the masses in development activities implies enhanced capacity to perceive their own needs. Through participation, local people identify their needs as well as the relevant goals of a program. By participating in decision making and implementation activities, local people help irrigation officials identify their needs, strategies to meet those needs and the necessary resources required to implement the various strategies. The study revealed that members' participation in project identification affected performance of Irrigation Projects in Meru Central District. This is in line with Becker, (1997) who argues that participation actually brings the public into the decision- making process. Community irrigation projects should encourage a maximum number of people in the participation of development projects. Such involvement should give the participants full

inclusion in designing, organizing and implementing activities and workshops in order to create consensus, ownership, and action in support of environmental change in specific areas. It should include people and groups rather than exclude any individuals. Public involvement is a process for involving the public in the decision making of an organization. The study also revealed that working group, minutes of members meetings, objective analysis and generation of initial project idea affected performance of Irrigation Projects in Meru Central District. This collates with the liuterature review where Shenhar (2001) points out that initiating action, within parameters defined by agencies, represents a high level of participation that surpasses involvement in the decision-making process. Self-initiated actions are a clear sign of empowerment. Once clients are empowered, they are more likely to be proactive, to take initiative, and to display confidence for undertaking other actions to solve problems beyond those defined by the irrigation project. This level of participation is qualitatively different from that achieved when clients merely carry out assigned tasks.

5.3.2 Members participation in irrigation project implementation

The study revealed that members' participation in implementation influenced the performance of Irrigation projects in Meru Central District to a very great extent .Zhang et al., (2003) argues that irrigation project implementation is inherently risky and the lack of appropriate approach to addressing these risks has led to a lot of undesirable results in project implementation in the construction industry of most developing countries. Most of the problems militating against the achievement of the desired effect on the construction industry of any country have to do with the irrigation project implementation challenges, namely, the difficulty in achieving the main objectives of the project. The study also established that results reports & review procedures, work schedule, progress reports & budget and a system of measurement influenced performance of Irrigation Projects in Meru Central District to a very great extent.

Chimwaso (2000) researched into the factors of cost overrun and came out with four related factors: variations, re-measurement of provisional works, fluctuation in the cost of labour and materials and contractual claims, that is, claims for extension of time with cost. In the case of time overruns, Zhang et al. (2003) identify 8 factors that cause delay in project implementations

in China: factors related to the contractor, the design team, the project, labour, client, material, equipment and other factors. In the midst of the booming infrastructure development and urbanisation in Vietnam. LeHoai et al (2008) established that cost and time overruns top the list of problems of project implementation.

5.3.3 Members participation in irrigation project designing

The study found out that members participation in the design process influenced the performance of irrigation projects in Meru Central District to a very great extent. Vandevelde et al., (2002) argues that well-managed irrigation projects are committed to planning. For example if the output of a project is to contain quality, then this quality must be properly planned for in the early stages of a project. When detailed planning/design is being done, it must be tracked or follow-up and re-planning must be done if the initial plan does not work before it is too late to do so. It is shown that personnel factor especially the project manager competence and leadership style is one of the crucial factors in irrigation project success implementation. The study also established that availability of financial plan, minutes of community appraisal meetings, preparation of project documents/drawings, analysis of expected results and definition of pre-requisites, inputs, outputs, participants, costs affected performance of Irrigation Projects in Meru Central District. (Smith (1998) argues that it is widely recognized that participation in community agricultural schemes often means no more than using the service offered or providing inputs to support the irrigation project. This is contrasted with stronger forms of participation, involving control over decisions, priorities, plans and implementation or the spontaneous, induced, or assisted formation of groups to achieve collective goals.

5.3.4 Members participation in irrigation project monitoring and evaluation

The study further found that regular group discussions, review of achievements against set objectives, dispute resolution mechanism, development of a workable monitoring & evaluation system, regular project visits and physical verification influenced performance of Irrigation Projects in Meru Central District. PMI (2004) postulates that monitoring and evaluation is the process necessary for collecting, measuring, and disseminating performance information, and assessing measurements and trends to effect process improvement. When this is done

continuously, the body of knowledge suggests, it will provide the project team insight into the health of the project and highlights any areas that require additional attention. The main activities in monitoring and evaluation, according to the guide, include: monitoring the ongoing project activities against the project management plan and the irrigation project performance baseline, influencing the factors that could circumvent integrated change control so that only approved changes are implemented.

5.3.5 Members participation in selection of irrigation project management committees

The study established also that members' participation in selection of the respective management committees influenced the performance of irrigation projects in Meru Central District to a very great extent. According to UNDP (2000) quality of leadership was found to impact on the community participation in the development of irrigation and income generating projects. Project members felt that to enable effective participation, irrigation project planners and especially officials should be equipped with adequate participatory knowledge and skills. It was also observed that ability of a leader to influence group action depended largely on the leadership skills. The study deduced that committee member's elections and committee meetings affected the performance of Irrigation Projects in Meru Central District to a very great extent. According to World Bank, (2003) the ideal way to start the project is to involve the beneficiaries and stakeholders at the initial stage and throughout the project cycle. The involvement is seen as crucial for all development projects as it facilitates collective ownership and sustainability. Besides, the success of any development of irrigation projects depends on selection of management committees. Unfortunately politicians, local leaders or a few opinion leaders in the community imposed many projects in rural areas without consulting the beneficiaries.

5.4 Conclusions

- It is concluded from the study that members participation in project identification is significant in explaining the variations in performance of irrigation projects. The study revealed that participation of the masses in development activities implies enhanced capacity to perceive their own needs. Through participation, local people identify their needs as well as the relevant goals of a program.

- It is also concluded from the study that members participation in project implementation is significant in explaining the variations in performance of irrigation projects. This is to mean that every project is different, a situation which emanates from the project's own characteristics. Hence irrigation project implementation is inherently risky and the lack of appropriate approach to addressing risks can lead to a lot of undesirable results in project implementation.

- The study reveals that members participation in monitoring and evaluation is significant in explaining the variations in performance of irrigation projects in that monitoring and evaluation provide the insight into the health of the project and highlights any areas that require additional attention. It also reveals that the integrative nature of the project management requires the monitoring and evaluation process group interaction with every other process group. Hence, monitoring and evaluation is central to irrigation project management processes.

- The study also reveals that members participation in selection of management committees is significant in explaining the variations in performance of irrigation projects .This can be taken to mean that to enable performance of the irrigation projects, officials should be acceptable to all the members and equipped with adequate participatory knowledge and skills.

- The study further reveals that members participation in designing is significant in explaining the variations in performance of irrigation projects. This is to mean that well-managed irrigation projects are committed to planning.

5.5 Recommendations

Based on the findings and conclusions, the following recommendations are made from the study.

1. Full participation of members in irrigation project development should be encouraged to enhance capacity to perceive their own needs. Through participation, local people identify their needs as well as the relevant goals of a program.

2. The study recommends that project members need to participate in decision making and implementation activities, to help irrigation officials identify their needs, strategies to meet those needs and the necessary resources required to implement the various strategies.
3. The study also recommends that members' managed irrigation projects should encourage a maximum number of people to participate at various stages of project development. Such involvement should give the participants full inclusion in designing, organizing, implementation activities and workshops in order to create consensus thus enhancing ownership.

5.6 Recommendations for further research

This study sought to assess the influence of members' involvement on the performance of an irrigation project in Meru Central District, Kenya. It is also recommended that a similar study should be conducted on the effect of member's involvement on the performance of an irrigation project in other parts of the country. Further studies can compare the performance of the irrigation project measured in terms of physical indicators such as efficiency in water use and economic indicators such as return to farmers' inputs and general infrastructure to participation by the members. Policy and practice can also benefit from comparison of relative performance of irrigation projects and member participation.

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APPENDICES

Appendix 1: Letter of introduction

May 8th, 2013.

Dear respondent,

RE: DATA COLLECTION

I am a student at the University of Nairobi pursuing a Masters of Arts program (Project Planning and Management option).

Pursuant to the pre-requisite course work, I would like to conduct a research project to assess the influence of members participation on performance of members managed irrigation projects in Meru Central District, Kenya.

Kindly therefore, complete the attached questionnaire with accurate information that will be used entirely for this research while observing utmost confidentiality.

Your assistance is highly valued. Thank you in advance.

Yours faithfully,

Muriithi Joseph Lawrence

REG.No L50/77614/2012

Appendix 2: Questionnaire for irrigation project members

Please read the questions carefully, tick inside the appropriate box and fill in the blank spaces provided.

PART A: DEMOGRAPHIC INFORMATION

1) Please indicate your gender ☐ Man ☐ Woman

2) Level of education

   a) Primary ☐

   b) Secondary ☐

   c) College (Diploma/Higher Diploma) ☐

   d) University (undergraduate Degree / Postgraduate Degree) ☐

3) Please indicate your Age bracket?

   e) Under 25 ☐

   f) 26 – 35 ☐

   g) 36 – 45 ☐

   h) 46 – 55 ☐

   i) 56 and Above ☐

4) How long have you been a member of the irrigation project?

   j) 0 – 5 years ☐

   k) 6 – 10 years ☐

   l) 11 – 15 years ☐

m) 16 – 20 years ☐

PART B: MEMBERS PARTICIPATION ON PERFORMANCE OF IRRIGATION PROJECTS

MEMBERS PARTICIPATION IN PROJECT IDENTIFICATION

5) Were you involved in project identification of this irrigation project?

Yes [ ]

No [ ]

6) To what extent does the members Participation in project identification affect performance of Irrigation Projects in Meru Central District?

To a very great extent	[ ]	To a great extent	[ ]
To a moderate extent	[ ]	To a little extent	[ ]
To no extent	[ ]		

7) What is the extent to which the following factors affect performance of Irrigation Projects in Meru Central District?

	Very great extent	Great extent	Moderate extent	Little extent	Not at all
Generation of initial idea					
Members meetings minutes					
Working group					
Objective analysis					

8) How does members Participation in project identification affect performance of Irrigation Projects in Meru Central District?

……

…....……

……

…

MEMBERS PARTICIPATION IN PROJECT DESIGN PROCESS

9) To what extent does members Participation in design influence the performance of irrigation projects in Meru Central District?

To a very great extent	[ ]	To a great extent	[ ]
To a moderate extent	[ ]	To a little extent	[ ]
To no extent	[ ]		

10) What is the extent to which the following factors affect performance of Irrigation Projects in Meru Central District?

	Very great extent	Great extent	Moderate extent	Little extent	Not at all
Selection of irrigation technology					
Definition of pre- requisites, inputs, outputs, participants, costs					
Availability of financial plan					
Project documents preparation, drawings					
Community appraisal meetings minutes					
Analysis of expected results					

MEMBERS PARTICIPATION IN IMPLEMENTATION

11) To what extent does members' Participation in implementation influence the performance of Irrigation projects in Meru Central District?

To a very great extent	[ ]	To a great extent	[ ]

To a moderate extent [ ] To a little extent [ ]

To no extent [ ]

12) What is the extent to which the following factors influence performance of Irrigation Projects in Meru Central District?

	Very great extent	Great extent	Moderate extent	Little extent	Not at all
Stakeholders meetings					
Implementation plan					
A system of measurement					
Work schedule, progress & budget					
Results reports & review procedures					
Good management of resources					
Involvement in procure of goods & services					

MEMBERS PARTICIPATION IN MONITORING AND EVALUATION

13) How does members Participation in monitoring and evaluation influence the performance of irrigation projects in Meru Central District?

……

……

……

…….

…….

14) What is the extent to which the following factors influence performance of Irrigation Projects in Meru Central District?

	Very great	Great	Moderate	Little	Not

	extent	extent	extent	extent	at all
Physical verification					
Regular project visit					
Regular group discussions					
Development of a workable monitoring & evaluation system					
Review of achievements against set objectives.					
Dispute resolution mechanism					

MEMBERS PARTICIPATION IN SELECTION OF THE MANAGEMENT

15) To what extent does members' Participation in selection of the management influence the performance of irrigation projects in Meru Central District?

To a very great extent [ ] To a great extent [ ]

To a moderate extent [ ] To a little extent [ ]

To no extent [ ]

15) What is the extent to which the following factors affect performance of Irrigation Projects in Meru Central District?

	Very great extent	Great extent	Moderate extent	Little extent	Not at all
Committee members elections					
Committee meetings					

PERFORMANCE OF IRRIGATION PROJECTS

16) What is the trend of the following in your irrigation project for the last five years?

	Greatly Improved	Improved	Constant	Decreasing	Greatly decreased

Water distribution					
Acreage covered relative to target,					
Farmers access to water					
Operation and maintenance schedule					

Appendix 3: Interview Guide for Departmental Heads/Government Officers

1) What projects are you involved in?

2) Are the community members directly involved in making decisions when starting the irrigation projects? If yes, state their role and area of involvement.

3) In your view, how does this level of Participation in project initiation affect the project performance?

4) What are the planning activities for irrigation projects?

5) In what ways are community members involved in design of the project?

6) How does this affect the success of the project?

7) What are the various steps involved in irrigation project implementation?

8) Are community members involved in project implementation? What is their role?

9) How does your participation in project implementation affect the performance of irrigation projects?

10) How frequently are irrigation projects evaluated? What is the Evaluation criteria used?

11) What is the role of community members in the monitoring and evaluation of irrigation projects? In what ways does their participation affect performance?

12) How are the community members involved in selection of the management committees of the project?

13) In what ways does this affect performance?

14) How can you describe the performance of the irrigation projects in the district for the last five years?