

**INFLUENCE OF COMMUNITY PARTICIPATION
ON IMPLEMENTATION OF MURINGA
IRRIGATION PROJECT IN THARAKA-NITHI
COUNTY, KENYA**

BY

Opwora, Beverly Khasoa

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

2020

DECLARATION

This research project is my original work and has not been presented for an academic award in any other university.

Signature:

Date:

BeverlyOpwora

Opwora Beverly Khasoa

L50/65804/2011.

This research project has been submitted for defense with my approval as the university supervisor.

Signature:

Date:

Dr. Chandi John Rugendo

Open Distance e-Learning Campus

School of Open and Distance Learning

University of Nairobi

DEDICATION

This research is dedicated to my husband and my sons Sean and Philip, for their unwavering support and love that propelled my desires to complete this study. May this be an inspiration and challenge to you to scale higher heights towards attaining your vision.

Also, this research report is dedicated to my Father Benson and Mum Betty for the strong support and encouragement.

This study is also dedicated to the local people of Muringa in Tharaka-Nithi County whose strong bond and commitment to local development cascaded my keen interest in this research.

ACKNOWLEDGEMENT

I recognize and appreciate the noble and scholarly support accorded to me by my supervisor Dr. Chandi John Rugendo. Your novelty and motivation to excel always revitalized my vigour in enduring this endeavour.

I register my gratitude to the academic and administrative staffs of University of Nairobi at Embu Learning Centre for moulding me with appropriate knowledge and the right attitudes towards this realization.

I thank all my peers in the Masters in Project Planning and Management (University of Nairobi, class 2018) who rendered support that promoted synergy for mutual learning.

I value with gratitude the support of my research assistants Njue Nicasio and Njogu Nelson for their commitment towards collection of relevant data.

Thanks to the University of Nairobi Library staffs for making academic materials readily available online through the remote access.

I uphold with esteem for the goodwill and cooperation accorded to me by the management of Muringa Irrigation Project together with the community of Muringa in Tharaka-Nithi County during data collection. To this, I am humbled.

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LIST OF ABBREVIATIONS AND ACRONYMS

ANOVA	Analysis of Variance
GDP	Gross Domestic Product
GHI	Global Hunger Index
GOK	Government of Kenya
ICT	Information Communication Technology
ISO	International Organization for Standards
KCPE	Kenya Certificate of Primary Education
KCSE	Kenya Certificate of Secondary Education
KSh.	Kenya Shillings
MIS	Mwea Irrigation Scheme
NACOSTI	National Commission for Science Technology and Innovation
NIB	National Irrigation Board
PMI	Project Management Institute
SPSS	Statistical Packages for Social Sciences
STD	Standard Deviation
UNESCO	United Nations Educational, Scientific and Cultural Organization

ABSTRACT

There has been growing research interest in projects seeking to empower communities to sustainable livelihoods. Of special interest is the role of the local community in the development of these projects. Community integration into the project design is claimed to be a good practice in project management that promotes sustainable impacts. In Kenya, community involvement is not only a right but also a legal requirement. However, past studies have narrowly constructed community involvement from the aspect of information sharing and awareness thus negating the underlying capacities for greater participation. The purpose of this study was to examine the influence of Community Participation on the implementation of Muringa Irrigation Project in Tharaka-Nithi County, Kenya. The research was guided by four objectives namely: to establish the extent to which community resources influence implementation of Muringa Irrigation Project in Tharaka-Nithi County; to determine how community engagement influences implementation of Muringa Irrigation Project in Tharaka-Nithi County; to investigate how community leadership influences implementation of Muringa Irrigation Project in Tharaka-Nithi County and to examine how the combined Community Participation influences implementation of Muringa Irrigation Project in Tharaka-Nithi County. Participatory theory of development supported by system theory of organization guided this study. The study used a correlational survey design. The target population was 150 comprising of 141 leaders of farmer-groups in Muringa Community and 9 members of the technical management committee of the Muringa Irrigation Project. A sample of 109 was selected using the Krejcie and Morgan (1970) table of sample determination. Proportionate stratified random sampling method was used to select 102 leaders of farmer-groups and 7 members of the Muringa Irrigation Project management committee. Quantitative data was collected from the farmer-group leaders using structured questionnaires and qualitative data was collected from the project technical management committee using key informant interviews. A pilot study was conducted in Mwea Irrigation Scheme whereby related irrigation projects were being implemented. Reliability of the questionnaire (0.807) was ascertained using Cronbach's coefficient at the acceptable levels of 0.7. Quantitative data was analysed using descriptive and inferential statistics. Qualitative data was analysed using content analysis. Relationships between variables were tested using Pearson Product Moment Correlational Coefficient. Regression analysis was used to test the fitness of the model in predicting the dependent variable. Hypotheses were tested using Fisher (F) test at 95% confidence level. Results were presented in tabular form. The results indicated that Community Participation (community resources, community engagement and community leadership) separately and jointly had significant influence on the implementation of Muringa Irrigation Project. Recommendations are made to the designers and planners of development projects to ensure that local participation capacities are assessed and integrated into the project design and implementation for greater empowerment and sustainability of projects. Also, there is need for Government formulate operational guidelines and frameworks for community participation in local development projects as per aspiration of the Constitution of Kenya 2010 so as to promote equity and fairness in local capacity development. Future studies should test the findings of this study in disaggregated types of projects for greater generalization of the findings.

CHAPTER ONE INTRODUCTION

1.1 Background to the Study

Water as a natural resource is not only essential for life support but is also an economic resource utilized for socioeconomic prosperity of nations. By this recognition, the United Nations General Assembly calls for adequate measures to ensure availability and sustainability of water management so as to safeguard food security (Sachs et al, 2019). The Global Hunger Index (GHI) report (2019) indicates that hunger is one of the greatest cause of malnutrition death in South Asia and Sub-Saharan Africa with hunger indexes of 9.3 and 28.4 respectively (Helvetas, 2019). Availability of water for farming is large influenced by climatic fluctuations and environmental change thus limiting optimum productivity of rural farms (UNESCO, 2019). In response, nations and global development partners are quickly revitalizing their development policies and strategies so as to avoid setbacks related to food insecurity and loss of livelihoods to the communities whose water is an economic resource. One of the emerging approaches towards promoting sustainable water management, agricultural activities and food security in rural areas is through community-based water irrigation projects (Bredenoord, 2016).

Community refers to a collection of people living together in order to achieve shared interests and goals (Williams and Lawson, 2001). Verity (2007) describes community as group of people living in a given geographical area, displaying some sense of belonging and interdependency, sharing mutual aspirations and working collectively as a whole. Development of the communities through implementation of water and irrigation projects has emerged as the most preferred approach towards promotion social-economic development and provision of water resources to the needy and poor (Meenar, 2015). The development of community through irrigation projects entails strengthening the capacity of the local communities in identifying and prioritizing their development and socioeconomic needs and opportunities in order to encourage them to work, support and utilize the projects benefits into generating sustainable positive change in their livelihoods (Kutipan, 2017). Increasingly, community integration in local projects has captured the center-stage of development agenda of most nations and development partners. Owing to the belief that community involvement in rural programmes not only empowers but also improves the livelihood and promotes development, community participation has developed into normed practice (Shukor et al., 2011).

Jung and Choi (2013) asserts that exploitation of Community Participation in project development requires a multilevel approach in terms of community mobilization, resource mobilization, community collaboration and partnership. In this context, local development

projects should be anchored on Community Participation. Studies from Asian and Western Countries have demonstrated the usefulness of integrating community capacities into local development projects in terms of enhancement effectiveness and sustainable impacts (Nancy, 2018; Mahanani and Chotib, 2018; Meenar, 2015). In Africa, studies show that community participation contributes to sustainable impacts of community water projects due to improved resource mobilization (Majee et al., 2020; Muniu et al., 2017; Orina et al., 2016; Alasela et al., 2003). In Nigeria, Zimbabwe and Kenya, there is empirical establishment that community engagement leads to highly performing and sustainable impacts (Hermawan and Hutagalung, 2020; Omondi et al., 2020; Sabastian and Nathan, 2017; Omayo and Moronge, 2018; Jelili et al., 2020; Mashayamombe and Hofisi, 2016). Other studies have demonstrated that community leadership promotes networks, sharing of knowledge across leading to favorable synergies for project responsiveness (Manusawai et al., 2020; Ridzuan et al., 2020; Redondo-Sam, 2016; Martiskainen, 2017).

Just like other Sub-Saharan African and Asian countries which have water scarce that affects productivity of agricultural land. Through irrigation projects and sustainable agricultural practices, it can be easy to achieve most of sustainable development goals including ending hunger, achieving food security and improved nutrition and promoting peace in the community (Sachs et al, 2019). However, a large portion of rural populations in developing countries have continued to rely on unproductive traditional technologies and reliance of natural rainfalls leading to poor yields. The resultant effect is food insecurity, poor nutrition, hunger and loss of income from crop sales. In addition, it aggravates the already worse situation in relation to the living conditions of the general population in these regions hence constraining the social economic advancement of the rural economy (Sabastian and Nathan, 2017).

In Kenya, public participation in project development is not only a right but a legal requirement (Republic of Kenya, 2010). Administratively, involvement of the public and local community is described as a policy decision making process for determining the levels of service and budget priorities for the projects that meets community needs (Kakumba and Nsingo, 2008). This study sought to examine the influence of Community Participation on the implementation of Muringa Irrigation Project in Tharaka-Nithi County. The assessment of community capacities was indicated by three dimensions namely: community resources, community engagement and community leadership.

Muringa Irrigation Project in Tharaka-Nithi County was a Government of Kenya funded infrastructural agricultural development strategy (2010-2020) under National Irrigation Board (NIB) aimed at increasing productivity of agricultural through tapping and supplying irrigation water to farmland for improved food security and sustenance of livelihoods (Republic of Kenya, 2016). The project was in line with Kenya`s Vision 2030 which aimed at transforming the nation into a newly industrializing, middle-income country providing high quality of life to all its citizens in a clean and secure environment (Republic of Kenya, 2008). To achieve this, top priority was to increase area under in irrigation in order to reduce the country`s dependence on rain-fed agriculture to farmers in Maara Sub-county in Tharaka-Nithi County (Republic of Kenya, 2013). Kenya Shillings 1.5 Billion was allocated for the Muringa Irrigation Project to benefit 1,400 farm families through irrigation coverage of 5,000 Hectares of land (Republic of Kenya, 2016). Specific project components were the construction of intake and laying of pipeline for conveyancing and installation of sprinkler water distribution system. The water was to be tapped from Maara River (Republic of Kenya, 2016).

1.2 Statement of the Problem

It is in no doubt that agriculture is the cornerstone for food security and socioeconomic stability of many communities and nations. The Global Hunger Index report (2019) indicates that hunger is one of the greatest cause of malnutrition death in South Asia and Sub-Saharan Africa with hunger indexes of 29.3 and 28.4 respectively (Helvetas, 2019). Upon this realization, the Government of Kenya set aside Kenya Shillings 1.5 Billion for implementation of Muringa Irrigation Project in Tharaka-Nithi County with an aim of providing irrigation water to over 1,400 farmers through irrigation coverage of 5,000 Hectares of land (Republic of Kenya, 2016). The main objective of the Muringa Irrigation Project was to empower local farmers through provision of stable supply of irrigation water and thereby contributing to agricultural productivity and sustenance of livelihoods. However, there is ongoing debate and concerns regarding integration of the community as far as project implementation and sustainability is concerned (Kusmiarto et al., 2020; Moreri et al., 2018; Hall et al., 2016; Buerger and Holzer, 2015; Mansuri and Rao, 2013). Inadequate community involvement is cited as one of the risk factors contributing to delays and failures of community development projects (Kilic and Bacharova, 2012). In addition, there questions the low level of community participation of Tharaka-Nithi Community in local developing planning, budgeting and implementation of development project leading to low level of community contribution to the project needs, low pipe connectivity, breakages of water pipes among other issues. Also, locals of Tharaka-Nithi

County have decried poor quality of project outputs due to low citizen involvement leading to poor supervision of the project (Mwangi and Okwengu, 2019). Further, statistics suggest that there is as low as 7.5% level of awareness of development projects among the community of Tharaka-Nithi County (Mwangi and Okwengu, 2019). In response, the county assembly of Tharaka-Nithi County embarked on legislation on public participation bill so as to enforce participation of local community in development projects.

Previous studies have narrowly focused on community involvement from the dimension of creating awareness and information sharing thus negating the multifaceted potentials and capacities of communities (Hermawan and Hutagalung, 2020; Orina et al., 2016). Whereas community involvement in project development contributes to sustainable impacts (Aga et al., 2018; Nancy, 2018; Mahanani and Chotib, 2018; Meenar, 2015), narrow focus on the Community Participation and its construction has limited knowledge on the understanding of broader community dimensions that contribute to project implementation. As a result, managers and planners of community development projects are denied opportunities for learning improving management of community development projects. Also, Community Participation is one area that has been ignored by researchers of community development. In community development, Community Participation denotes multilevel aspects of community integration into local development projects through dimensions of community resource mobilization, community collaboration, community leadership and partnership (Traverso-Yepez et al., 2012). In this context, local development projects should be anchored on Community Participation. This study sought to examine the influence of Community Participation on the implementation of Muringa Irrigation Project in Tharaka-Nithi County. Community Participation is constructed by three variables namely: community resources, community engagement and community leadership.

1.3 Purpose of the Study

The purpose of this study was to examine the influence of Community Participation on implementation of Muringa Irrigation Project in Tharaka-Nithi County.

1.4 Objectives of the Study

The objectives of this study were to:

- i. Establish the extent to which community resources influence implementation of Muringa Irrigation Project in Tharaka-Nithi County.
- ii. Determine how community engagement influences implementation of Muringa Irrigation

Project in Tharaka-Nithi County.

- iii. Investigate how community leadership influences implementation of Muringa Irrigation Project in Tharaka-Nithi County.
- iv. Examine the extent to which the combined Community Participation influences implementation of Muringa Irrigation Project in Tharaka-Nithi County.

1.5 Research Questions

This study sought to answer the following research questions:

- i. To what extent does community resources influence implementation of Muringa Irrigation Project in Tharaka-Nithi County?
- ii. How does community engagement influence implementation of Muringa Irrigation Project in Tharaka-Nithi County?
- iii. How does community leadership influence implementation of Muringa Irrigation Project in Tharaka-Nithi County?
- iv. To what extent does the combined Community Participation influence implementation of Muringa Irrigation Project in Tharaka-Nithi?

1.6 Research Hypotheses

The study aimed at testing the following null hypotheses:

H₀₁: There is no significant relationship between community resources and implementation of Muringa Irrigation Project in Tharaka-Nithi County.

H₀₂: Community engagement has no significant influence on implementation of Muringa Irrigation Project in Tharaka-Nithi County

H₀₃: Community leadership has no significant influence on implementation of Muringa Irrigation Project in Tharaka-Nithi County

H₀₄: There is no significant relationship between combined Community Participation and implementation of Muringa Irrigation Project in Tharaka-Nithi

1.7 Significance of the Study

The results from this study would give better insights towards achieving systematic recognition and integration of community capacities in local development projects for sustainable change. It could also be seen as an important local development strategy as it helps the community to exploit their most potentials to participate in irrigation project activities as in boosting their livelihood. Specifically, the knowledge on the influence of the community resources, community

engagement and community leadership on the implementation of the Muringa Irrigation Project would inform project designers, planners and managers on the most effective share of integrating the variables for optimum project implementation results. The government can utilize the finding from the influence of community resources and community engagement on the implementation of irrigation projects to formulate desirable regulation and procedures for enforcing community and public involvement while strengthening participation of the communities in local development projects.

The contribution of community leadership to the implementation of the irrigation project would educate community developers on the need to overcome implementation challenges by integrating and empowering local leadership in order to take advantage of the development opportunities. The limitations and recommendations from this study would pave way for further study so as to strengthen and enhance the understanding of the research variables from multiple realities.

1.8 Basic Assumptions of the Study

This study assumed that the respondents would cooperate and provide accurate data for enhanced validity of the results. In addition, farmer-group leaders were assumed to have adequate knowledge about the Muringa Irrigation Project were actively involved in its implementation. Nevertheless, a pilot was conducted in Mwea Irrigation Scheme (MIS) so as to boost the reliability research instruments and research methodology as a whole. Also, this study was based on the assumption the target population is normally distributed to allow for the use of parametric tests. However, the statistical assumption of normality was tested and ascertained prior to data analysis.

1.9 Limitations of the Study

The choice of Muringa Irrigation Project was a limitation to this study since there are many other agricultural support projects being implemented in Kenya. In addition, the choice of Tharaka-Nithi County as the research site was a limitation since there are many other Counties implementing irrigation projects in Kenya. However, a random sample was selected so as to promote representativeness for generalization of the reassert findings.

Further, this study was limited to the correlational survey design whereby there was no cause and effects experimentation for concluding the causality. In addition, the data was collected from

one point at a time using cross-sectional survey approach unlike the longitudinal survey way whereby long-term trend data is collected over a period of time for greater internal validity. Nonetheless, the internal validity was advanced through randomization and matching for generalizable findings. Finally, this study was delimited to time and resources. Thus the study was to be conducted within a given period of time. As a result, the researcher could not perform a census survey.

1.10 Delimitations of the Study

The choice of Muringa Irrigation Project delimited this study since the project is prioritized under the presidential Four Agenda for promotion of food security and sustenance of livelihood. This study was also delimited to the target population of 141 leaders of farmer- groups and 9 members of project management committee members thus providing adequate basis for generalizing the findings across the population settings.

1.11 Definition of the Terms used in the Study

Community Participation – Community Participation describes the potential areas of community involvement in the Muringa Irrigation project and was constructed by three variables namely: community resources, community engagement and community leadership.

Community – this is the local group of people living together in the geographical area where Muringa Irrigation project was implemented and are beneficiaries (largely farmers).

Community Engagement – this is the process of involving the local people in the implementation of Muringa Irrigation Project. In this study community engagement was indicated by the levels of: opportunities available, level of abilities, willingness to engage and consultation levels.

Community Leadership – community leadership is the art of influencing local people in support of Muringa Irrigation project. Community leadership was indicated by the levels of teamwork, trust, decision making and confidence.

Community Resources – these are material or human or natural or capital wealth in terms of infrastructures, technologies, institutions, waterbodies, forests, skills, knowledge and technologies and are critical in the implementation of Muringa Irrigation Project. This variable

was indicated by levels of human resources, natural resources, physical resources and capital

Implementation of Muringa Irrigation Project – this is the process of activating resources, activities and efforts in order to achieve the set objectives. Implementation of the Muringa Irrigation Project was indicted by the level of scheduling, budgeting, outputs, accountability implementation and ownership.

1.12 Organization of the Study

This research project is divided into five chapters. In the first chapter, an introduction to the background and justification to the study is presented. Other parts of chapter one includes the purpose of study, the research objectives questions, questions and hypotheses as well as the significance of the study. In addition, the basic assumptions, delimitations, limitations and operation definition of significant terms area also explained. In chapter two the empirical literature together with the theoretical framework for the study are explored. A conceptual framework exemplifying the flow of research variables is also presented and described. Finally, a summary of the review of the literature is presented in a matrix. In chapter three, the research methodology is described in terms of research design, the target population, sample and sampling procedures, data collection instruments and procedures, data analysis techniques and ethical considerations. Chapter four is mainly composed of the analysis, presentation and discussion of the results. Chapter five presents the summary of the findings, conclusions and recommendations.

CHAPTER TWO

LITERATURE REVIEW

2.1 Introduction

This chapter begins with an empirical exploration of the research variables namely: implementation of irrigation project, community resources, community engagement, community leadership and Community Participation. Two theoretical frameworks namely: participatory theory of development and system theory of organization are discussed. Subsequently, the research conceptual framework is presented and discussed. The chapter ends with a summary of the research gaps.

2.2 Implementation of Projects.

Kipfer and Chapman (2007) trace the origin of the term “project” from a Latin word “pro” which means forward and “jacere” meaning throw which is interpreted as a proposal intended to realize something. In a more institutional dimension, Oxford Dictionary (2008) defines project as an individual or collaborative enterprise that is carefully planned to achieve a particular aim. Project Management Institute (PMI, 2013) and Kerzner (2009) summarize project as unique endeavor in terms of components and processes having; series of activities and tasks having specific objective to be completed within specified timeframe and certain specifications, funding limits and that consume resources within defined schedules, cost and performance parameters cutting across several functional lines or multifunctional. From qualitative account, project is summarized by the International Organization for Standardization (ISO 10006:2003) for Quality Management Systems on Guidelines for Quality Management in Projects as a unique processes and activities that are coordinated and controlled in order to conform to the specified requirements including constraints of time, cost and resources. However, project is considered not just an organization but a building block in the design and execution of strategies for an organization by providing an organizational focus for conceptualizing, designing, and creating new or improved products, services, and organizational processes according to a specified business-case (Cleland and Ireland, 2002).

Project implementation is the activation of project activities, resources, efforts, processes, procedures and systems so as to achieve the planned goals within time, cost and quality constraints (PMI, 2013). Usually, the implementation of project is guided by operation manuals and project management plan. During the implementation, there is need for effective and

efficient organization, coordination and control of the entire project system so as to increase chances of project success (Culligan et al., 2013). This is most important in community development projects like irrigation projects whose failure can be detrimental to socioeconomic wellbeing of the local community. However, project implementation is a complex process and is often faced by coordination challenges. Sanchez and Robert (2010) view the complexity as a key factor influencing uncertainty because it introduces non-linearity to the consequences, rendering the development of events unpredictable. Thus it is necessary to identify the key aspects of implementation that informs the success of the project.

Project implementation can be measured using different indicators that denote effectiveness, efficiency, responsiveness, relevance and even sustainability of the deliverables (PMI, 2013). However, the decision on the choice of indicators for measuring project implementation is informed by the strategies put in place to counter implementation setbacks so as to assure significant level of stability in the implementation process (Culligan et al., 2013). Thus project managers and teams should carry out the process of prioritizing and balancing opportunities and risks against demand and supply of limited resources. Interpreted, there is need for adequate measures to solve the systematic challenges through prudent approaches and coordination of tools, skills and procedures in the implementation in order to optimize implementation benefits.

There is empirical evidence to support that implementation of projects is directly influenced the foundations good planning, strong partnerships and collaboration of project management (Filippov et al., 2012). Lack of interconnectivity between elements in a local development projects and community has resulted into unresponsive deliverables (Grönevall and Danilovic, 2014). Omission of knowledge management concepts such as stakeholders mapping, scope management and risk management which are essential in project implementation is very detrimental to the implementation of projects (PMI, 2013). For example, implementation of essential-service rural- development projects like irrigation project requires integration of local community right from the conception of project idea, selection, implementation and coordination.

In an attempt to fill the knowledge gap left by Aubry et al. (2010) conducted a follow up study aimed at identifying the cause and effects of triggers of projects management office. Using web-

based questionnaires, the factor and correlation analyses revealed dynamic causes of project office changes that were unique to the context and environmental aspects of projects in relation to the organization and their implementation was quite difficult. The findings signify the important role played by the project environment and community in promoting stable implementation. However, their study did not describe the actual community integration practices and processes with impact on the implementation. Their findings were so broad in relation to specific components of the irrigation development project. In addition, the methodology used weak correlations among independent variables that partly support the results from previous qualitative studies based on case studies that provide a narrow perspective of viewing the contribution of community capacities on project implementation.

Project implementation is measured by the degree of responsiveness in meeting the requirements within time, budget and quality constraints (PMI, 2013). Though, the degree of responsiveness depends on the implementation strategies relative to the dynamic environment (Pennypacker and Retna 2009). The level of responsiveness to a project implementation can be measured by analyzing the factors like returns over time, budgets efficiency, quality performance, productivity, schedule performance, scope delivery, stakeholder participation, customer satisfaction and also performance requirements (Penny packer and Retna 2009).

Rahmat and Izudin (2018) evaluated the effects of an agricultural technical assistance empowerment project in Indonesia and used the following indicators: levels of production scheduling, cost efficiency, increased outputs, better income. Another empirical study on the influence of empowerment programmes on the competence and growth of enterprises by Putra et al. (2019) concluded that empowerment programme increases improves the welfare of the recipients. In their exploratory study on the contribution of change order management strategies on overall success of building projects in Nigeria, Kolawole et al. (2016) found that changes in order of project implementation influenced projects implementation and success. In South Africa, Kagiso and Potgieter (2019) conducted a study to examine whether the implementation of support programmes matched the needs of the entrepreneurs and the indicators used were improvement in the utility of resources and growth of the entrepreneurs.

An evaluation study on the performance of fishery-processing empowerment project in Indonesia revealed that execution and utilization of empowerment programmes can lead to

increase in the production capacity of the recipients (Swastawati et al., 2020). Another study by Hidayati et al. (2018) on the impact of women's empowerment through Corporate Social Responsibility programmes in Indonesia found that community involvement strengthened implementation process leading to better results. While projects are endeavors designed to produce set of outcomes within planned and constraining cost and budget (Nagesh and Thomas, 2015), not all programmes live to realize such ends. This study focuses on the implementation of Muringa Irrigation Project and was indicated by the levels of scheduling, budgeting, outputs, accountability and ownership.

2.3 Community Resources and Implementation of Project

Community resources are the assets, skills, capital, infrastructure, technologies etc. that can be optimized in the process of solving problems and to improve the welfare of the community without depending on external resources (Timbuleng, 2011). Community resources can be material resources such as capital, infrastructures, technologies, institutions or natural resources like waterbodies, forests and trees or human resources like skills, knowledge and technologies or intangible resources such as visibilities, reputation, culture (Hermawan and Hutagalung, 2020). All community resources are essential for the community to meet its needs depending on their level of establishment, accessibility, utilization and convertibility. In past, communities have engaged in communal resource mobilization in attempt improve their socioeconomic status. This was done in the interest of promoting effective and sustainable use and management of resources and decisions (Mansuri and Rao, 2004). In order to optimize community resources, there is need for enhanced support and interaction between project developers and community so as to enhance their participation as equal and responsible members in decision-making process. Resources have got a relationship with resilience and relates to the ability of individuals or community to control and have a substantial impact on their environments (Herbert, 2011).

Manusawai et al. (2020) performed a research to determine and analyze the degree of community participation in the community nursery program in Indonesia. Using descriptive methods, the results suggested that support and involvement of community leaders played an important role in motivating the community to actively age in the community development program. Hermawan and Hutagalung (2020) conducted a related qualitative to establish factors that determine the success of participation in government ran programmes in Indonesia and they concluded that conditions of community participation were driven by factors such as trust, opportunity, ability to participate and willingness to participate. Another study to examine the

perceptions and participation in community resources and leadership in South Africa by Majee et al. (2020) concluded that participation in community leadership roles was strongly related to perceptions of how important the provision of key resources at the local level contributes to their future community. However, these studies were limited in their qualitative methodologies. This study used comprehensive methodologies that triangulate both qualitative and quantitative strategies to inquiry for enhanced validity.

Use of community resources enhances performance of projects (Alasela et al., 2003; Ekpenyong et al., 2020). Alasela et al. (2003) did a study on the effect of community resources on performance of students of Junior Secondary Schools Performance in Nigeria and the quasi experimental research design using a random sample of 70 students concluded that students who were taught by means of community resources had significant better performance than those taught using expository resources. Thus community resources enhance effective implementation of education and learning programmes (Ekpenyong et al., 2020). The studies demonstrate the significance of integrating community resources for better implementation of community development projects. However, this study enhanced construct validity by use of participatory development theory and system theory of organization.

Adequate resources and use of appropriate technologies and participatory approaches enhances efficiency and effectiveness in the allocation and utilization of community development project resources (Orina et al., 2016). Muniu et al. (2017) did a study to establish the influence of community participation in resource mobilization on sustainability of community water projects in Nyeri Kenya. Using a random sample of 290 and the study concluded that community participation had significant influence on resource mobilization and sustainability of community water projects. This confirms the conclusions of empirical studies that when community resources are well mobilized, projects perform better (Isham, and Kahkonen, 2009; Khwaja, 2004). Nonetheless, the finding is only applicable to no-technical projects (Khwaja, 2004). This study used a random sample from participants of Muringa Irrigation project so as to enhance representativeness for generalizing the finding.

The process of community development is based on local resources thus it becomes a shared responsibility (Meirinawati et al. 2018). A community development project that is anchored on the utilization of local resources increases human resource capability in the optimal utilization of local resource potential. This calls for improved community effort so as to foster projects

outcomes. However, utilization of local resources requires adaptive, empathy, flexible and integrative and participatory management approaches (Meirinawati et al., 2018). Hence, local resources which are productive, creative and innovative need be encouraged in the local development projects.

Nonetheless, the process of utilizing local potentials must be a deliberate effort to facilitate local communities in planning, deciding and managing local resources are owned through collective action and networking so that in the end they have the ability and independence in economic, ecological and social, so that need appropriate strategies to be succeed (Meirinawati et al. 2018). This study sought to determine the influence of community resources on the implementation of Muringa Irrigation Project based on the following indicators: human resources, natural resources, physical resources and capital.

2.4 Community Engagement and Implementation of Project

Engagement involves strengthening cognitive capacity, motivation and affection of individuals in the community (Thomas, 2013). Community engagement entails informing and creating awareness to the local people, collecting input and identifying areas of involvement in decision making processes, providing opportunities for engagement, developing and strengthening areas of collaboration and partnership and monitoring the engagement (Shukor et al., 2011). Community engagement can take three models namely: material incentives, providing labour, or attending consultative workshops all based on the three factors namely: triggers or interests, negotiation or lobbying and sustenance (Banerjee and Aiyadurai, 2020). The expected results of community engagement are strengthening and creating optimal community engagement, encourage acceptance and maximizing the contribution of the community to the project success. Community engagement entails following steps: (a) recruitment and selection of community members, (b) meaningful and time-based tasks allocation of tasks, (c) training of community as project coordinators, (d) giving the community the necessary support and facilitation and (e) offering good stewardship (Hermawan and Hutagalung, 2020). Community participation is commonly manifested during idea formulation, physical participation, skills and education participation, and also through financial participation. However, some community members may have weak understanding of the nature of engagement thus lowering optimization of engagement (Hermawan and Hutagalung, 2020).

Omondi et al. (2020) conducted a study to determine the influence of community participation on performance of Kisumu water using a sample 145 implementers and correlational results indicated that community participation influences performance of water project. While using a descriptive survey design and sample of 388 project committee members, Sabastian and Nathan (2017) investigated the factors influencing performance of community water projects in Tigania Central District, Meru County and the study concluded that when more rural people were involved in addressing their own development, more confidence was restored and the project was more successful. According to Thomas (2013), participatory development alienates drawbacks of top down and bureaucratic project development approaches that isolate involvement or consultation with the communities. Thus the process of community engagement requires accommodating and integrating community needs into the project design, involving then in handling problems and forming coalitions (Hermawan and Hutagalung, 2020).

Mbui and Wanjohi (2018) stress on the importance of participatory development whereby people are given opportunities to engage in the development projects in all stages right from conceptualization, design and implementation as it entrenches a sense of responsibility and sustainability. This is further advanced by Omayo and Moronge (2018) in a study to assess the factors that affect performance of community development projects in Kenya. While using a stratified random sample of 180 and semi-structured questionnaires, the inferential statistics indicated that stakeholder engagement brings positive influence on community development projects in Kenya. However, the study was exploratory in nature thus limiting the understanding of how involvement relates to the dependent variable. Mayberry (2013) supports that community participation promotes efficient and equitable distribution of material resources thereby promoting sharing of knowledge and the transformation of community development.

Jelili et al. (2020) did a study on the influence of community engagement and sustainability of the community projects in Nigeria. Using a random sample of 120 respondents, it was concluded that community participation tended to increase sustainability of the projects. However, the study findings could not be generalized due to methodological limitations. Another study by Aule et al. (2020) to determine the most productive approach to empowering communities in slum upgrading projects in Nigeria recommended that for better partnership with local communities not just for economic concerns but with sincere motive of empowering the people for effective social production of their built environments. Monaledi (2016) summarizes benefits of community participation in terms of building capacity of among beneficiaries, increased project efficiency, incorporation of local knowledge, greater sustainability of the project and better functioning of the community. Whereas the study by Aule et al. (2020) supports that engagement boost responsiveness of empowerment project, the study could not be generalized in different setting thus calling for testing the findings in Kenya.

In another study by Mashayamombe and Hofisi (2016) to assess the impact of community participation on cooperation in malaria prevention and control programs in Zimbabwe, the study concluded that

community participation at higher levels has significant sway to cooperative behaviour and effectiveness when community members are involved in health programs. The contribution of community engagement in activities and making of decisions that impact on their livelihood cannot be ignored in modern development discourses. Community values and consciousness shapes the project objectives and implementation approaches (Khosravi et al. 2015). One of the cited reason for lack of community participation in development projects is due to low number of community members being involved in decision-making process which often leads to low levels of teamwork, sense of belonging, cooperation leading to demoralization and lack of commitment in the contribution (Khosravi, 2015; Laverack, 2006).

Community engagement bolsters inclusivity, solidarity, ownership, coherence, accountability, responsibility and sustainability of development projects (Kutipan, 2017). Also, community participation ensures that community needs, demand and interests are addressed first. In Kenya, community involvement is not only a legal requirement also a practice of good governance. In project management, community engagement is both a knowledge management area and growing area of research interest. In addition, local community has better understanding about their environment, values and norms, thus offering better source of project ideas and process (Omayo and Moronge, 2018). Community engagement promotes public control over project deliverables for greater sustainability. Engagement fosters confidence and ownership of the resources being utilized in project (Omondi et al., 2020; Sabastian and Nathan, 2017). Besides, engagement with community allows for useful making of decision that allow them take charge of development at the same time checking and balancing the participation process so as to achieve sustainability (Jelili et al., 2020; Sutawa, 2012; Bittar et al., 2017). In addition, engagement enables communities to advance their interests which intunr helps them negative negative socio-cultural impacts arising from irrigation projects (Idziak et al., 2015). Furthermore, Idziak et al. (2015) suggests that engagement in decision making in irrigation development projects promotes positive attitude among community into farming, strengthening community identity, motivating community to advance their interests and protection of their resources, strengthening local collaboration and partnerships, resolving of conflicts and promoting peace.

Sutawa (2012) asserts that decision making process includes deciding the most appropriate integration and planning approaches for the development and promotion of irrigation farming. Thus relations during engagement should be tied to the values of respect and equity, and should be oriented towards strengthening participation, leadership, resource mobilization (Traverso-Yepez et al., 2012). In addition, the relationships during engagement must be continuous and influential in the improvement of development processes (Khosravi et al., 2015). The conditions for community engagement is driven by factors such as opportunities, ability to engage, willingness to engage and consultation (Hermawan and Hutagalung, 2020). The willingness individual and community to participate in project activities may be influenced by the underlying interests. Thus the level of engagement is achieved at the partnership stage (Hermawan and Hutagalung, 2020). Consequently, community engagement in the design of development

project is crucial point to ensure successful project implementation. Thus community participation can be measured using eight indicators namely: (a) place attachments; (b) perception of negative consequences; (c) Community Involvement; (d) Infrastructure Development; (e) Place Satisfaction; (f) Economic Benefit; (g) Government Support; (h) Community Collaboration (Puspito et al., 2019). In this study, the conditions for community engagement is perceived to be driven by various levels of opportunities given to participate, ability to engage, willingness to engage and consultation level.

2.5 Community Leadership and Implementation of Project

Community leadership depicts the ability of a group to direct, encourage participation, give information and share resources for common good (Goodman et al., 1998). A community leader is a developer of shared goals and the necessary actions to achieve the group's goals (Rebori, 2006). Community leadership is characterized by the following aspects: (a) creation of change through a shared vision, (b) inspiring commitment, (c) problem solving, (d) building broad-based involvement, (e) developing trust, (f) empowering and enabling followers, (g) challenge the way things are done, (h) sustain participation and hope and (i) helping set incremental and achievable objectives to help lessen group's frustration (Rebori, 2006). This signifies community ownership efforts in pulling resources together for greater prosperity. According to Prasetyo (2017), collective leadership refers to the capacity group leaders to achieve given targets that contribute to the common good. Thus community leaders should facilitate resolve of local challenges by conceding to support development initiatives through community education and awareness and increasing social capital by uniting people (Wituk et al., 2005). Community leadership is characterized by aspects like collaboration, continuous, influential activities on the relationships between community members (Wituk et al., 2005). Community leadership uses mix of skills and tasks aimed at encouraging broad participation and promotes consensus building, collective responsibility, group dynamics in order to achieve common goods.

The classical approaches to community development cantered on top-down approaches to development whereby the community was just a passive recipient of the project outputs. However, modern management view of community leadership as focal points in assisting community to analyze and solve own challenges for greater sustainability. In addition, community members should give their views, opinions and ideas regarding in shaping the decisions that inform policies and projects. Also, leaders should serve as facilitators to empower partners and other members (Wituk et al., 2005). Manusawai et al. (2020) performed a research to determine and analyze the degree of community participation in the community nursery program in Indonesia. Using descriptive methods, the results suggested that the community involvement through their leaderships motivates the community into active involvement in the local development program. By fostering community leadership into the project design, it helps integrate the local people into solving own problems which in turn enhances confidence, trust and ownership (Mills, 2005). Also, it helps to promote local leadership skills, knowledge, and attitudes of a leaders. The information that is assembled and disseminated by the community leadership brings about

possibility of new approaches towards effective community development (Pigg, 2013).

The impacts of community leadership in policy and project endeavours has been empirically demonstrated in terms of greater sharing and collaboration, mapping the network expansion, increased sharing across groups, improved coordination and mobilization of members. Redondo-Sam (2016) conducted a review of the existing empirical studies to establish the relationship between leadership and community participation recommends for further research to investigate how leadership through community participation may result in improvements of socioeconomic wellbeing of the community.

In a meta-evaluation to establish the role of community leadership where the community leadership through shared vision, Martiskainen (2017) concluded that social networks, pre-existing knowledge and skills was found to accelerate the development of grassroots innovations for community energy projects. While determining the extent at which community leadership mediates the relationship between community resilience elements and community preparedness in Malaysia, Ridzuan et al. (2020) concluded that community leadership is a partial mediator between community engagement, education and awareness, towards enhancing community preparedness.

In recent past, community leadership has received increasing amounts of attention in the scholarly arena (Wituk et al., 2005; Kirk and Shutte, 2004; Mills, 2005). Whereas there is growing research interest in community empowerment, little is known regarding diffusion of community leadership into the implementation community development projects. Past studies have constructed community leadership while neglecting the importance of capacity building to leadership for effective and sustainable achievement of local development initiatives. This examined the effects of community leadership on the implementation of Muringa Irrigation Project based on the indicators of level of trust, confidence, team work and decision making level.

2.6 Combined Community Participation and Implementation of Project

There is limited clarity about the meaning of capacity. However, Hounslow, (2002) refers Community Participation as the capability of people to collectively work together so as to sustain desired changes. Kutipan (2017) explores Community Participation as the systematic process of involving the abilities and competences of the community in dealing and solving their needs for better livelihoods. Jung and Choi (2013) describes Community Participation as the capacity of people to mobilize resources in order to meet own needs Further, J. ng and Choi (2013) concludes that Community Participation is both a process of collaborative action for promoting stable policies and projects for addressing structural and systematic inequities in terms of needs (Jung and Choi, 2013). Kutipan (2017) concludes that community capacity as

the interaction between persons and organizational in specific community for better state and welfare of the society. Capacity is all about the ability of a community to have higher endurance against threatening and increasing the capability of the community to overcome the impactful challenges. Thus Community Participation entails any activities undertaken by the community whether by its own or with aid of others so as to develop collective commitment, resources and skills.

There are greater concerns over the host community towards successful implementation of local development projects. But there is limited knowledge on the contribution of Community Participation on irrigation projects (Meenar, 2015). An exploratory study by Nancy (2018) on the influence of Community Participation on health programme in Indonesia concluded that Community Participation was enhanced by collaboration. In their exploratory studies on the Community Participation building efforts in Thailand and USA, Nancy (2018) and (Meenar, 2015) respectively concluded that development of Community Participation was often faced by challenges relating to resource mobilization and community partnership that of course challenges the sustainability of the programmes. A related study by Mahanani and Chotib (2018) on the effects of collective action, empowerment of community, shared vision to the Community Participation in urban projects for water conservation in Malaysia. The results suggested that Community Participation influenced the way community resolved their local challenges and the sustainability of the resolutions.

Whereas the significance of Community Participation has been discussed from various research perspectives, there lacks empirical consent on the concept of Community Participation and how it is constructed. Specifically, the concept of Community Participation has received little attention in the field of development projects. This gap often leads to problems during implementation of irrigation projects especially those related to utilities like irrigation projects where ownership is a concern. In order to mitigate this, there is need to enhance community potentials in solving local challenges through integration of local potentials. Much of the literature on Community Participation has focused on Community Participation based on empowerment outcomes (Khosravi et al., 2015, Koutra, 2007).

Community Participation has been assessed using different aspects related to attitudes, skills, resources and assets, abilities, opportunities, leadership, technologies, partnerships,

participation, coordination and awareness and the results were inconclusive (Khosravi et al., 2015; Bennett et al., 2012; Koutra, 2007). Laverack (2006) explores Community Participation as the process that boosts assets accumulation for community to draw upon in order to develop their livelihoods. Timbuleng (2011) conceptualizes Community Participation in terms of the abilities, attitudes, skills, and resources owned by the community for improving their socioeconomic well-being. However, this study perceives Community Participation as a concept of wider range of community resources, community leadership and community engagement. Community Participation is perceived as a critical part towards effective implementation of a community development project.

2.7 Theoretical Framework of the Study

This study is guided by the participatory theory of development and supported by system theory of organization.

2.7.1 Participatory Theory of Development

Advanced by Hooper B. in 1970s, participatory theory of development or commonly known as popular participation states that community and societies have got the appropriate capacities to make decisions in solving problems which undermine their socio-economic transformation and prosperity (Doll, 2010). Thus participatory theory of development emphasizes on creating favorable and people centered approaches towards participatory community development (Syokau and Strathdee, 2010). The participatory development coordination of peoples` effort in taking initiatives by themselves and empowering into self-sustenance. In project development, community participatory in development is an active involvement of people in making decisions about implementation of processes which affect them (Slocum et al., 1995). In past studies, the theory of participatory development has been reliably utilized to support that engaging local communities promotes ownership, accountability, effectiveness and sustainability of development projects (Lelegwe, 2015). In this study, participatory theory of development guided in the arguments regarding the influence of community capacities (resources, engagement and leadership) on the implementation of Muringa Irrigation Project in Tharaka-Nithi County.

2.7.2 System Theory of Organization

Founded by Ludwig Barterlanffy in 1940s, system theory of organization positions that organizations consist of interrelated and interdependent components operating in a coordinated and integrated mode while flexibly adapting to the changing environment so as to achieve a common

goal (Ahrne, 1994). System theory of organization stresses on the need to involve and coordinate all the relevant parties in a project endeavour for greater results (PMI, 2013). By doing so projects run smoothly when they flexibly adapt to the dynamic environment through effective change management (Kapsali, 2011). In the same way, community development projects need to recognize the importance of community capacities in terms of resources and leadership abilities and thus engage and utilize their potentials in strengthening the project deliverables. While system theory of organizing has in past been applied in pure, applied and social studies (Partington, 1996), this study used system theory of organization to expound on the utility of community capacities in terms of resources and leadership through effective engagement for responsive implementation of Muringa Irrigation Project in Tharaka-Nithi County.

2.8 Conceptual Framework for influence of Community Participation on implementation of Muringa Irrigation Project in Tharaka-Nithi County

Figure 1 shows the flow of research variables on the influence of Community Participation on implementation of Muringa Irrigation Project in Tharaka-Nithi County

**INDEPENDENT VARIABLE
(Community Participation)**

DEPENDENT VARIABLE

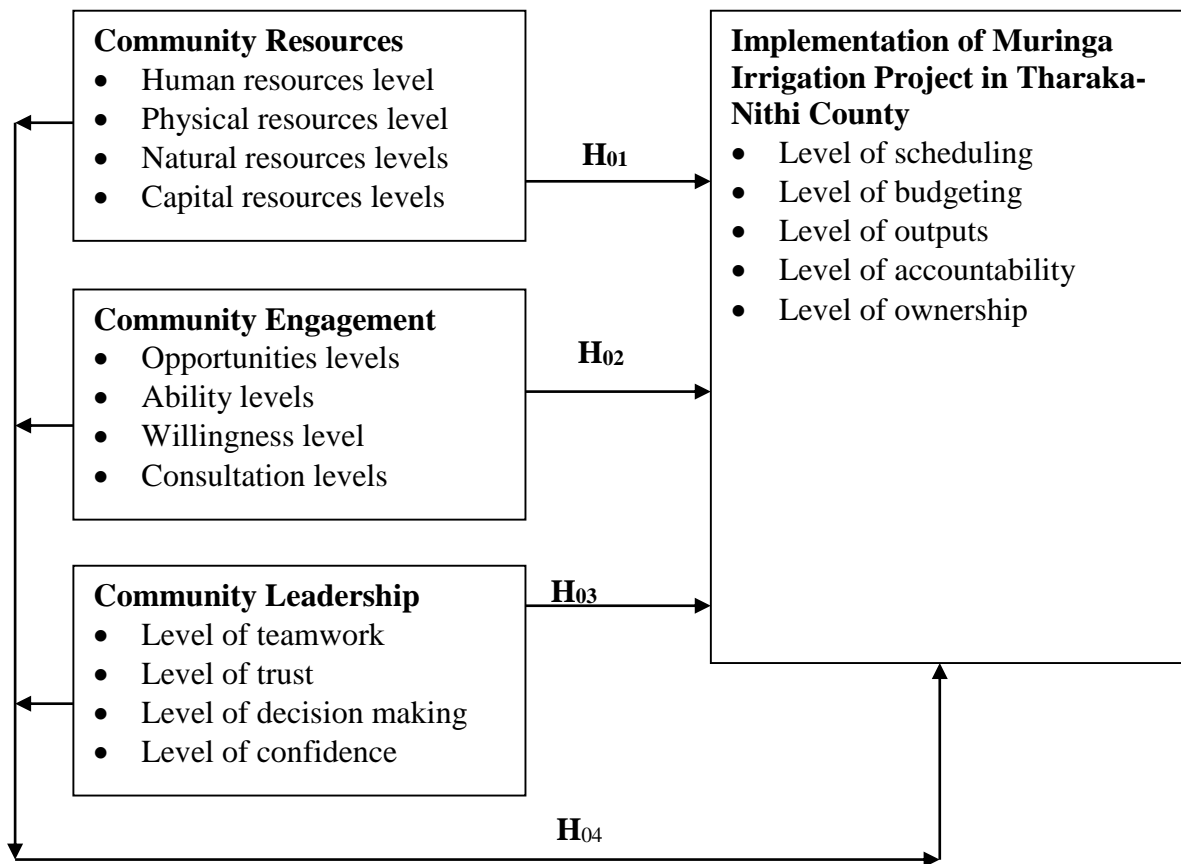


Figure 2: Relationship between Community Participation on implementation of Muringa Irrigation Project in Tharaka-Nithi County

This research aimed at answering the question on the influence of Community Participation on the implementation of Muringa Irrigation Project in Tharaka-Nithi County. Implementation of Muringa Irrigation Project in Tharaka-Nithi County is the dependent variable and is predicted by Community Participation. The measures for the implementation of Muringa Irrigation Project are various level of scheduling, budgeting, outputs, accountability, ownership. The Community Participation is constructed by three variables namely: community resources, community leadership and community engagement.

Community Participation was conceptualized as the main predictor variable which focuses on strengthening the implementation of Muringa Irrigation Project through community resource mobilization, community leadership and community engagement. All the three aspects of Community Participation are essential because local development projects entails community empowerment whose implications for the individuals involved in the project cannot just be

ignored. Thus the capacities of the intended beneficiaries of Muringa community are perceived as critical influences of the implementation of Muringa Irrigation Project.

Community resources can be material resources such as capital, infrastructures, technologies, institutions or natural resources like water bodies, forests and trees or human resources like skills, knowledge and technologies or intangible resources such as visibilities, reputation and culture. All community resources are essential for the community to meet its needs depending on levels of human resources, physical resources, natural resources and capital resources. Community engagement was constructed by the levels of opportunities given, abilities to participate, willingness to participate and consultation levels. Through manipulation of these aspects, community engagement is perceived to influence the implementation of Muringa irrigation project. Community leadership is another independent variable which is perceived to influence the implementation Muringa irrigation project and was constructed by the levels of teamwork, trust, decision making and confidence.

2.9 Summary of the Empirical Literature Review

Chapter two has explored on the literature on the research variables for the study to examine the influence of community`s participation capacity on the implementation Muringa Irrigation Project in Tharaka-Nithi County. In addition, the theoretical frameworks guiding this study together with conceptual framework are discussed. The empirical literature is also discussed the summary of the research gaps is presented in a matrix.

Table 2.1: Knowledge Gaps

Theme One: Community Resources and Implementation of Muringa Irrigation Project						
Authors	Study Focus	Methodology	Study Findings	Knowledge Gap	Focus of Current Study	
Majee et al. (2020).	Examination of perceptions of community resources and participation in leadership in South Africa	The survey research collected data from 58 youth and 52 young adults affiliated with key community organizations using quantitative questionnaires and qualitative interviews, correlational analysis and content analysis	The study found that young people's participation in community leadership roles was strongly related to perceptions of how important the provision of key resources at the local level (particularly human, social, financial, and built capital) will contribute to their future community	The study was limited to perceptions of the respondents thus negating the practical contribution of community resources to the implementation of community endeavors	To assess how community resources, contribute to the implementation of Muringa Irrigation Project in Tharaka-Nithi County.	
Muniu et al. (2017)	Influence of community participation resource mobilization on sustainability of community water projects in Nyeri Kenya	Mixed research design, 290 proportionately stratified random sample, self-administered questionnaire and focus group discussion and semi structured	Community participation had significant influence on resource mobilization and sustainability of community water projects	The study was not anchored on any theoretical framework thus lowering construct validity	To use system theory of organization in order to support the influence of community engagement on implementation of Muringa Irrigation Project in Tharaka-Nithi County.	

Orina et al., (2016)	The purpose of this study was to assess the factors influencing the performance of CBOs poverty alleviation projects in Kenya.	Descriptive survey design, sample size of 97 selected using a stratification sampling method, questionnaires as the instrument to collect data and data analyzed using weighted averages and percentages.	Adequate resource, use of appropriate technologies and participatory approaches enhances efficiency and effectiveness in the allocation and utilization of project resources	The study failed to explain the sources of project resources and how the sources impacted differently on the project implementation	To assess how community resources, contribute to the implementation of Muringa Irrigation Project in Tharaka-Nithi County.
Alasela et al. (2003)	Effects of community resources on Junior Secondary Schools Students' Performance in Basic Technology, in Ilorin Kwara State Nigeria	Quasi experimental research design, 70 students who were randomly sampled, expert's data collection instruments descriptive and inferential statistics	Students taught using community resources performed significantly better than their counterparts taught using expository	The study was limited to the influence of community resources on performance of students at school	To examine influence of community resources on implementation of Murirnga irrigation project in Tharaka-Nithi County.

Theme Two: Community Engagement and Implementation of Muringa Irrigation Project

Authors	Study Focus	Methodology	Study Findings	Knowledge Gap	Focus of Current Study
Hermawan and Hutagalung (2020)	To establish factors that determine the success of participation in government programmes in Indonesia	Qualitative design, sample of 20 Implementers of government programmes data collected using in-depth interviews, secondary data studies and observation, qualitative data analytical technique	The condition of community participation is driven by three factors, namely: trust or opportunity. Ability to participate, willingness to participate	The qualitative research was limited to non-probability sampling that limits representativeness and generalization of the findings.	To use random sampling methods when collecting representative sample for generalizing the results on the influence of community engagement on the implementation of Muringa Irrigation Project

Omondi et al. (2020)	Determine the influence of community participation on performance of Kisumu water and sanitation company projects in Kisumu county, Kenya.	Cross sectional research design, 145 managers selected using sample frame, stratified random sampling, questionnaires, Cronbach's Alpha Coefficient registering a score of 0.966, descriptive and inferential statistics	Community participation influences water project performance and sustainability a KIWASCO though to a smaller extent	The indicators of community participation were not clearly defined to reflect community characteristics thus limiting the connection between the study and community	To assess the influence of community engagement on implementation of Muringa Irrigation Project using community enshrined indicators of opportunities, willingness level and consultation levels.
Sabastian and Nathan, (2017)	To investigate factors influencing performance of community water projects in Tigania Central District, Meru County, Kenya	A descriptive survey design, sample of 388 project management committee members purposively, selected, questionnaires and interview schedules, descriptive and inferential statistics	The study concluded that more rural people were involved in addressing their own development, confidence and the more the successful level associated with water projects for success.	The indicators for community participation were not explicitly linked to the capacity of the local community thus limiting the validity of the results	To assess the influence of community engagement on implementation of Muringa Irrigation Project using community enshrined indicators of opportunities, willingness level and consultation levels.
Omayo and Moronge (2028)	To determine factors affecting performance of community development projects in Kenya.	Survey research design, 180 stratified random sample, semi-structured questionnaire, descriptive statistics, multiple regression and analysis of variance	It was revealed that stakeholder involvement has a positive influence on community development projects in Kenya	The study did not explain the dimensions of involvement that contributed to the community development projects	To assess the influence of community engagement on implementation of Muringa Irrigation Project using community enshrined indicators of opportunities, willingness level and consultation levels.

Jelili et al., (2020).	Influence of community participation and sustainability of the community and social development projects in Kwara State, Nigeria	Multistage sampling procedure was used to select 120 respondents, structured interview schedule, Pearson	Community participation increases with higher monthly income, fewer number of projects individual participated in, and higher perceived sustainability of the projects	The indicators for community participation were not explicitly linked to the capacity of the local community thus limiting the validity of the results	To assess the influence of community engagement on implementation of Muringa Irrigation Project using community enshrined indicators of opportunities, willingness level and consultation levels.
Mashayambo and Hofisi (2016).	To assess the impact of Community Participation on cooperation in malaria prevention and control programs in Binga, Gokwe and Kariba districts in Zimbabwe	Documentary review, meta-evaluation	Community participation contributes to cooperative behavior by community members in malaria prevention and control programs thus improves the effectiveness of malaria control programs	The findings were relied on secondary data thus limiting originality and validity of the findings	To collect qualitative and qualitative primary data using both structured questionnaire and unstructured interview guide so as to conclude the influence of community engagement on the implementation Muringa Irrigation Project in Tharaka-Nithi County

Theme Three: Community Leadership and Implementation of Muringa Irrigation Project

Authors	Study Focus	Methodology	Study Findings	Knowledge Gap	Focus of Current Study
Manusawai et al. (2020).	To determine and analyze the degree of community participation in the nursery program in Indonesia	The method used in this research was descriptive method with observation and interview technique. The data obtained were analyzed by tabulation and descriptive method	The support and involvement of community leaders played an important role in motivating the community to actively engage in the KBR program	The study was limited in the measures of community leadership to the implementation of community programmes thereby limiting the knowledge on how community leadership is constructed.	To assess the influence of community leadership on implementation of Muringa Irrigation Project using community enshrined indicators of levels of teamwork, trust, decision making and confidence

Ridzuan et al. (2020)	To determine extent at which community leadership mediates the relationship between community resilience elements and community preparedness in Malaysia	Data was gathered from a random sample of 318 respondents using questionnaires, correlational analysis	Community leadership is a partial mediator between community engagement, education and awareness, towards enhancing community preparedness to resolving own problems	The study focused on moderation of community leadership to project development discourse thus ignoring probability of linear relationship between community leadership and dependent variable	To assess the influence of community leadership on implementation of Muringa Irrigation Project using community enshrined indicators of levels of teamwork, trust, decision making and confidence
Redondo-Sam (2016).	Relationship between leadership and community participation to identify the research topics underpinning the studies and theoretical works in this domain	17 articles were reviewed in detail, meta-evaluation and synthesis	It was found that there are fewer works that include integrative approaches in terms of dialogical leadership among all community members.	The study was purely a desktop review which limits the validity of the conclusion due to empirical limitation	To assess the influence of community leadership on implementation of Muringa Irrigation Project using community enshrined indicators of levels of teamwork, trust, decision making and confidence
Martiskainen (2017).	To establish the role of community leadership in the development of grassroots innovations for community energy projects	Qualitative case study, semi-structured interviews, two community energy project cases, content analysis	Community leadership through shared vision, social networks, pre-existing knowledge and skills promotes development of grassroots innovations in community projects	Use of documentary analysis as the source of information limits the validity of the results	To assess the influence of community leadership on implementation of Muringa Irrigation Project using community enshrined indicators of levels of teamwork, trust, decision making and confidence

Theme Four: Community Leadership and Implementation of Muringa Irrigation Project

Authors	Study Focus	Methodology	Study Findings	Knowledge Gap	Focus of Current Study
Nancy (2018)	To explore the influence of Community participation on Karen refugee women's mental health programme in Thailand	Ethnographic research design, purposeful sampling of 38 women, focused group interview and participant observations, content analysis	Community capacity was promoted through collaboration across settlement agencies, primary care and public health but challenged	The study used qualitative design and data thus limiting the generalization of the findings	To use descriptive correlational survey design, random sampling technique and both qualitative and quantitative data so as to generalize the results on the influence of Community Participation on the implementation of Muringa Irrigation Project
Meenar (2015)	Exploratory study on Nonprofit-driven Community capacity-building efforts in community food systems in Philadelphia, USA	The study focused on 25 food-related events, online survey and interviews, descriptive statistics and content analysis	The findings revealed challenges like collaboration and community engagement. That hinder building capacity to sustainable communities	The study could not explain how Community Participation in terms of engagement, leadership and resources contributes to development of community projects	To examine how Community Participation (resources, leadership, engagement) influences implementation of
Mahanani and Chotib (2018).	The influence of collective action, community empowerment, and shared vision to the Community capacity in urban water resource conservation in Malaysia	The causal research design, cluster sampling of 300, questionnaires, Data was analyzed using both analytical techniques of principal component analysis (PCA) and double linear regression analysis.	Community empowerment variable is the most significant variable on Community Participation in water resources conservation. Communities were able to build a shared vision and sense of interest on water resources which cascaded their effort in solving water challenges facing them	The study failed to explain how various aspects of community capacity implicated on resolving community water challenges.	This study examined how community capacity (resources, leadership, engagement) influences implementation of Muringa Irrigation project

CHAPTER THREE RESEARCH METHODOLOGY

3.1 Introduction

Chapter three gives an overview of the methods used in this study. Specific areas covered includes research design, the target population, the sample size and sampling procedure, data collection instruments, research instruments, procedures for data collection, data analysis methods, ethical and legal requirements. The chapter ends with a presentation on operationalization of variables.

3.2 Research Design

Research design is an outline of how research problems were solved (Best and Kahn, 2009). This study used correlational survey design that allows for simultaneous data collecting from the same population while integrating and interpreting the findings and predicting future relationships between the variables (Kothari, 2004). The cross-sectional approach to the survey inquiry provided better insights about the changes of the phenomenon under consideration understanding in relation to implementation of Muringa Irrigation Project at one point so as to evaluate the significant changes that have taken place during the implementation. The correlational survey design was used to explain the relationship between the variables.

3.3 Target Population

The study targeted a population of 150 comprising of 141 leaders of farmer-groups and 9 members of the technical management committee of Muringa Irrigation Project (Republic of Kenya, 2016). The leaders represent the interests of 141 farmer-groups who were the beneficiaries of Muringa Irrigation Project. The leaders are distributed in Muringa community in Maara Sub-county in Tharaka-Nithi County. The views, opinions and experiences of the farmer- group leaders were critical in understanding how Community Participation shaped the implementation of Muringa Irrigation Project. The technical management committee members were chosen since they have a better understanding and experience in implementing the Muringa Irrigation Project.

In this study, the population was assumed to be homogenous since the project targeted farmers with similar socioeconomic characteristics. The farmer-group leaders are assumed to have similar characteristics in terms of socioeconomic interests. Also, the management committee members were assumed to be homogenous from the position of exposure and experience to same Muringa Irrigation Project environment. However, test for normality was conducted before data analysis.

3.4 Sample Size and Sampling Procedures

This section presents the sample size and the sampling procedures taken during sampling.

3.4.1 Sample Size

Kothari (2004) defines sample as a portion of the population where the finding is generalized. In this study, a sample of 109 was selected using the Krejcie and Morgan (1970) table of sample determination. According to Field (2003), the 109 is adequate sample size for regression analysis because the minimum required sample size is 104 cases plus the number of predictors. Computed, this study must have at least 104 plus 3 predictor variables bringing to 107. Thus the 109 cases surpass the minimum required.

3.4.2 Sampling Procedure

After selecting a sample of 109 from the Krejcie and Morgan (1970) table of sample determination, proportionate stratified random sampling ensured that the 109 sample (102 farmer-group leaders and 7 technical project management committee members) was selected fairly from the strata of 141 farmer-group leaders and 9 project management committee members respectively. The formulae of proportionate stratified random sampling is proposed by Babbie (2001) as follows:

$$n_h = (N_h / N) * n, \text{ whereby,}$$

n_h is the sample size for stratum h ,

N_h is the population size for stratum h ,

N was total population size

and n was total sample size

The sample size for each stratum is computed and presented in Table 3.1.

Table 3.1: Sampling Size

Table 3.1 shows the summary of the list of respondents to this study.

Target Population	Population Size	Sample Size [$nh = (Nh / N) * n$]	Sampling method
Farmer-group leaders (chairmen)	141	$(141/150)108=102$	Proportionate stratified random sampling
Technical project management committee members	9	$(9/150)108=7$	Proportionate stratified random sampling
Total	150	109	

A sampling list was first obtained from the management of the Muringa Irrigation Project. The sampling list provided names, contacts and location of the respondent. The names were arranged alphabetically using Microsoft excel followed by assignment of random numbers to each case. Afterward, the random numbers were sorted in an increasing order whereby the first 102 sample for the farmer-group leaders and first 7 sample of project management committee members were selected.

3.5 Research Instruments

This research utilized structured questionnaires and unstructured interview guide to collect data from the 102 farmer-group leaders and 7 project committee members respectively. Kothari (2004) avers that structured questionnaires and unstructured interview guide are best suited for correlational analysis and descriptive studies respectively. Best and Khan (2009) adds that structured questionnaires collects numerical data for quantitative analysis and interviews are best fit when probing highly specialized and confidential data to supplement the quantitative data. The mixture of both structured questionnaire and unstructured interview guide strengthened the validity of research data for conclusive discussions and generalization of the findings.

3.5.1 Questionnaire

In this study, the questionnaire was designed using 5 point Likert-scale questions ranging from strongly agree, agree, neutral, disagree and strongly disagree. Five-point Likert scale have reliably been used in related studies by Majee et al. (2020) and Muniu et al.

(2017) and produced consistent results. Five-point Likert questionnaires are recommended by many researchers as they are suitable to respondents thus increasing quality of responses and response rate as well. The questionnaire was organized into five sections to collect data on the following thematic areas: demographic profile, implementation of irrigation project, community resources, community engagement and community leadership. Section four comprised of questions relating to the community engagement and section five comprises of questions relating to the community leadership. The questionnaire sought collect data on the knowledge, attitude and perceptions of the respondents so as to answer the research questions and have conclusive results.

3.5.2 Interview guide

Interview guide was used as a follow-up towards enforcement of the quantitative responses from the farmer-group leaders. According to Best and Khan (2009), interview data is used to supplement quantitative data obtained from questionnaires. In addition, interviews are used to probe specialized and privileged information that cannot be obtained using structured data collection tools. The unstructured interview guide consisted of three sections namely: introduction to the research goal, questions related to each research variable and closure of the interview session.

3.5.3 Piloting of the Research Instruments

A pilot study was conducted in Mwea Irrigation Scheme in Kirinyaga County to enhance the quality and reliability of research methodology. In the pilot study a sample of 11 or 10% of the actual sample in the research was used. Similar government-supported irrigation projects are implemented in Mwea Irrigation Scheme thus providing valid ground for piloting the research instruments. During the pilot study, special attention was given to the feasibility of the research design. The outcome of the pilot study was used to improve on the research instruments.

3.6 Validity and Reliability of Research Instruments

The validity and reliability of the research instruments is discussed in the next subsection.

3.6.1 Validity of Research Instruments

Validity is the degree to which a test measures what it's supposed to measure (Kothari, 2004). There are three types of validity namely: content, criterion and construct validity.

Content validity refers to degree to which the research items reflect the content domain of interest and was enhanced through matching of research questions with the data collection instruments. Criterion validity refers to the degree to which the obtained relate to other measures and was enhanced by selecting research instruments which have been used in related past studies. Finally, construct validity which indicates how the scores relate to the existing theories was enhanced using the relevant theoretical frameworks to argue the findings.

3.6.2 Reliability of Research Instruments

Reliability of research instruments revolves around repeatability, consistency, trustworthiness and precision of the research instruments (Best and Khan, 2009). In this study, reliability was enhanced through a pilot study in Mwea Irrigation scheme. The internal consistency of the questionnaire was examined using split-half method. The reliability was tested by splitting the instrument into two equivalent halves after administering it. Each half is then treated separately and scored accordingly. The resultant scores were computed and the two halves correlated using Pearson's Correlation Coefficient in order to estimate the reliability of the instruments. The results are presented in Table 3.2

Table 3.2 Reliability Test for Questionnaire

Cronbach's coefficient	Standardized coefficient	Cronbach's	Number of items
0.821	0.807		30

The tests were accepted using Cronbach's Coefficient Alpha method at the widely-accepted social science cut-off of at least $\alpha = 0.70$ (Kothari, 2004). Considering the multiple-item variable in this study, the research questionnaires was deemed reliable when computed at α values of equal or greater than 0.70.

3.7 Data Collection Procedures

The first step in data collection was acquisition of research permits from the relevant authorities including University of Nairobi, National Council of Sciences Technology and Innovation (NACOSTI). The second step was to inform the relevant National Government and County government of Tharaka-Nithi about the study. A preparatory meeting with the Muringa project management team was conducted so as to agree on the convenient schedule

for interview. A sampling list was obtained and modalities of administering interviews was agreed. Sampling was done. The sampled farmer-group leaders were identified, contacted and arrangement made for most convenience time of disbursing the research questionnaires. The questionnaires were distributed and follow-up be made to ensure completeness.

3.8 Data Analysis Techniques

Prior to data analysis, the 5-point Likert-scale ordinal data was first transposed into interval data by assigning equidistance of 0.8 (Lantz, 2013). The transformation of the ordinal data allowed for parametric analysis. The five-point Likert scale was scored in equidistance of 0.8 as follows: Strongly Agree (SA) $4.2 < SA < 5.0$; Agree (A) $3.4 < A < 4.2$; Neutral (N) $2.6 < N < 3.4$; Disagree (D) $1.8 < D < 2.6$ and Strongly Disagree (SD) $1.0 < SD < 1.8$.

The Statistical Packages for Social Sciences (version 22) was the used to generate descriptive and inferential statistics from the quantitative data. Quantitative data was analyzed using descriptive statistics namely: percentages, arithmetic mean and standard deviation. Also, inferential statistics such as Pearson`s Product Moment Correlation Coefficient (r), Multiple Correlation Coefficient (R), Regression analysis and Analysis of Variance (ANOVA) was used in the analysis. The qualitative data was analyzed through transcribing and generation of themes.

Correlation values of between 0.0 and +0.3 was interpreted as weak but positive relationship of the variables. Correlation values of between +0.3 and +0.7 was interpreted as moderate but positive relationship of the variables and correlation values of between +0.7 and +1.0 was construed as strong but positive relationship. However, correlation values of between 0.0 and -0.3 was interpreted as weak but negative relationship of the variables. Correlation values of between -0.3 and -0.7 was interpreted as moderate but negative relationship of the variables and the correlation values of between -0.7 and -1.0 was construed as strong but negative relationship. Finally, correlation values of 0.0, -1.0 and +1.0 was interpreted as having no relationship, perfect negative relationship and perfect positive relationship correspondingly. All tests were accepted at 95% confidence interval whereby a sample proportion (p) which was equal to or less than 0.05, the relationship was considered as significant.

In order to predict of the strength of the model in predicting the dependent variable given the independent variable, regression analysis was used. The Analysis of Variance (ANOVA) was used to determine if the regression model fit well in predicting the dependent variable using F statistic. F-test is very efficient in correlational studies having more than one independent variable (Best and Khan, 2009). Finally, qualitative data was analyzed using content analysis which involves transcribing, organizing and coding the content in thematic orders so as to draw patterns for objective reporting. The coded content was analyzed and presented through summarizing.

3.8.1 Test of Hypothesis

The statistical tests for null hypothesis was done at significance level of $\alpha= 0.05$. Coefficient of determination (R^2) was used to get the variability in predicting the regression model. Table 3.3 summarizes all research model to be tested in the study.

Table 3.3: Test of Hypotheses

	Research objective	Hypothesis	Data analysis techniques	Model	Interpretation of results
1	To establish the extent to which community resources influence implementation of Muringa Irrigation Project	H₀₁ : There is no significant relationship between community resources and implementation of Muringa Irrigation project	Simple linear relationship	X ₁ = Community resources	Reject null hypothesis (H ₀₁) for p < 0.05, and for p > 0.05, fail to reject null hypothesis (H ₀₁)
2	To determine how community engagement influences implementation of Muringa Irrigation Project in Tharaka-Nithi County	H₀₂ : Community engagement has no significant influence on implementation of Muringa Irrigation Project in Tharaka-Nithi County	Simple linear relationship	X ₂ = Community engagement	Reject null hypothesis (H ₀₂) for p < 0.05, and for p > 0.05, fail to reject null hypothesis (H ₀₂)
3	Investigate how community leadership influences implementation of Muringa irrigation project	H₀₃ : There is no significant relationship between combined Community Participation and implementation of Muringa irrigation project	Simple linear relationship	X ₃ = community leadership	Reject null hypothesis (H ₀₃) for p < 0.05, and for p > 0.05, fail to reject null hypothesis (H ₀₃)

4	Examine the extent to which the combined Community Participation influences implementation of Muringa	H ₀₄ : There is no significant relationship between combined Community Participation and implementation of Muringa Irrigation Project in Tharaka-Nithi.	Multiple relationship	$Y = \beta_0 + \beta_1 X_1 + \beta_2 X_2 + \beta_3 X_3 + \varepsilon$ <p>Where,</p> $Y = \text{Implementation of Muringa irrigation project}$ $X_1 = \text{community resources}$ $X_2 = \text{community engagement}$ $X_3 = \text{community leadership}$ $B_0 = \text{constant}$ $B_1, B_2, B_3 = \text{beta coefficient for } X_1, X_2, X_3$ $\varepsilon = \text{error term}$	Reject null hypothesis (H ₀₄) for $p < 0.05$, and for $p > 0.05$, fail to reject null hypothesis (H ₀₄)
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Table 3.3 presents the research model. Whereas Y represents the dependent variable (implementation of Muringa Irrigation Project), B₀ is a constant, β₁, β₂, β₃ are beta coefficients that was utilized during testing of hypothesis and X₁, X₂, X₃ are independent variables.

3.9 Ethical Considerations

Research ethics are the norms and standards of behaviour that a researcher must comply with so as to safeguard the rights of the research subjects and foster credible findings (Saunders et al., 2009). The researcher fulfilled all legal, professional and ethical requirements during the implementation of the study so as to satisfy and safeguard the rights of the research subjects. Specific obligations were: adhering to the academic requirements and university guidelines, seeking for research approvals and permits, voluntary participation of the respondents free from coerced or manipulation, upholding confidentiality of the research participants and data

3.10 Operational Definition of the Variables

Operationalization helps to define variables and concepts by assigning them measurable indicators. Table 3.4 presents the summary of the measures together and analytical techniques per research variable.

Table 3.4: Operational Definition of Research Variables

Objective	Variables	Indicators	Measurements	Measuring Scale	Research Approach	Tool of Analysis
To establish the extent to which Community resources influence implementation of Muringa irrigation project in Tharaka-Nithi County	Dependent Variable Implementation of Muringa Irrigation Project	<ul style="list-style-type: none"> • Level of scheduling • Level of budgeting • Level of outputs • Level of accountability • Level of ownership 	<ul style="list-style-type: none"> • Level of scheduling • Level of budgeting • Level of outputs • Level of accountability • Level of ownership 	Interval	Quantitative	Percentage, arithmetic mean, Pearson`s correlation coefficient, standard deviation, ANOVA, regression analysis
	Independent Variable Community resource	<ul style="list-style-type: none"> • Human resource level • Physical resource level • Natural resource level • Capital resource level 	<ul style="list-style-type: none"> • Human resource level • Physical resource level • Natural resource level • Capital resource level 	Interval	Quantitative	Percentage, arithmetic mean, Pearson`s correlation coefficient, standard deviation, ANOVA, regression analysis
To determine how community engagement influences implementation of Muringa irrigation project in Tharaka-Nithi County	Dependent Variable Implementation of Muringa Irrigation Project	<ul style="list-style-type: none"> • Level of scheduling • Level of budgeting • Level of outputs • Level of accountability • Level of ownership 	<ul style="list-style-type: none"> • Level of scheduling • Level of budgeting • Level of outputs • Level of accountability • Level of ownership 	Interval	Quantitative	Percentage, arithmetic mean, Pearson`s correlation coefficient, standard deviation, ANOVA, regression analysis

Objective	Variables	Indicators	Measurements	Measuring Scale	Research Approach	Tool of Analysis
	Independent Variable Community engagement	<ul style="list-style-type: none"> • Opportunities levels • Ability levels • Willingness level • Consultation levels 	<ul style="list-style-type: none"> • Opportunities levels • Ability levels • Willingness level • Consultation levels 	Interval	Quantitative	Percentage, arithmetic mean, Pearson`s correlation coefficient, standard deviation, ANOVA, regression analysis
To investigate how community leadership influences implementation of Muringa irrigation project in Tharaka-Nithi County	Dependent Variable Implementation of Muringa Irrigation Project	<ul style="list-style-type: none"> • Level of scheduling • Level of budgeting • Level of outputs • Level of accountability • Level of ownership 	<ul style="list-style-type: none"> • Level of scheduling • Level of budgeting • Level of outputs • Level of accountability • Level of ownership 	Interval	Quantitative	Percentage, arithmetic mean, Pearson`s correlation coefficient, standard deviation, ANOVA, regression analysis
	Independent Variable Community leadership	<ul style="list-style-type: none"> • Level of teamwork • Level of trust • Level of decision making • Level of confidence 	<ul style="list-style-type: none"> • Level of teamwork • Level of trust • Level of decision making • Level of confidence 	Interval	Quantitative	Percentage, arithmetic mean, Pearson`s correlation coefficient, standard deviation, ANOVA, regression analysis
To examine the extent to which the combined Community Participation influences implementation of	Dependent Variable Implementation of Muringa Irrigation Project	<ul style="list-style-type: none"> • Level of scheduling • Level of budgeting • Level of outputs • Level of accountability • Level of ownership 	<ul style="list-style-type: none"> • Level of scheduling • Level of budgeting • Level of outputs • Level of accountability • Level of ownership 	Interval	Quantitative	Percentage, arithmetic mean, Pearson`s correlation coefficient, standard deviation, ANOVA, regression analysis

Objective	Variables	Indicators	Measurements	Measuring Scale	Research Approach	Tool of Analysis
Muringa Irrigation Project in Tharaka-Nithi County	Independent Variable Implementation of Muringa Irrigation Project	<ul style="list-style-type: none"> •Community resources •Community engagement •Community leadership 	<ul style="list-style-type: none"> •Community resources •Community engagement •Community leadership 	Interval	Quantitative	Percentage, arithmetic mean, Pearson`s correlation coefficient, standard deviation, ANOVA, regression analysis

CHAPTER FOUR

DATA ANALYSIS, PRESENTATION, INTERPRETATION AND DISCUSSION

4.1 Introduction

This chapter presents the analysed data and interpretation of the findings. Chapter four comprises of the following contents: return rate of the questionnaire and interview, demographic profiles of respondents, test for normality, statistical assumptions tests, and treatment of Likert-type scales data, analysis and presentation of data, interpretation and discussion. In the analysis, the following descriptive statistics are used: standard deviation, percentages and arithmetic mean. In addition, inferential analysis such as Person's correlation coefficient (r), Multiple correlations (R), Regression analysis and ANOVA were used. Finally, qualitative data was analyzed through transcribing, organizing and coding the content in thematic order so as to draw patterns for objective reporting. The coded content was analyzed and presented through summarizing.

4.2 Return Rate

The questionnaires were administered to Out of the 109 questionnaires that were disbursed to respondents, 88 representing 80.73% were fully filled and returned. According to Fincham (2008), a good return rate for questionnaire should be above 80% minimum for conclusive analysis of the survey. Whereas the 30% is the minimum recommended return rate for statistical inferences, 80.73% return rate for this study is satisfactory for both survey design and for statistical inferences. The high response rate was attributed to simple design of questions and persistent follow-up. The response rate for the interview was 77.78% whereby 7 out the targeted 9 project management committee members were interviewed. According to Curtin et al., (2000) the conventionally accepted return rate for interview is 50%. This implies that the return rate for both question and interviews are acceptable for concluding the findings.

4.3 Demographic Profiles of the Respondents

In this section, the data on the gender, age and education level of the respondents is presented.

4.3.1 Gender of Respondents

Respondents indicated their gender as either male or female and the responses are shown in Table 4.1

Table 4.1: Gender

Gender	Frequency	Percentage
1. Male	56	63.6
2. Female	32	36.4
Total	88	100

Table 4.1 shows that out of the 88 respondents for the questionnaire, male were 56 and female were 32 representing 63.6% and 36.3% respectively. It implies that men represented twice the number of women in the local leadership of farmer-groups that participated in the implementation of Muringa Irrigation Project in Tharaka-Nithi Count. In the interview, the numbers of male were 5 and female were 2 representing 71.4% and 28.6% respectively. It suggests that men represented thrice the number of women in the project management committee. This calls for empowerment of more women so as to take more leadership roles in the community development projects so as to promote gender equity and fairness in development discourses per the constitution of Kenya 2010.

4.3.2 Age of the Respondents

To answer this question, respondents were asked to indicate their age in categories: 18-25, 26-35, 36-45, 46-55, 56-65 or at least 66 years. Table 4.2 presents the responses.

Table 4.2: Age Group

Age group	Frequency	Percentage
1. 18-25	2	2.3
2. 26-35	24	27.3
3. 36-45	28	31.8
4. 46-55	16	18.1
5. 56-65	14	16.0
6. ≥ 66	4	4.5
Total	88	100

From the 88 respondents for the questionnaire, 2.3% aged between 18 and 25 years, 27.3% aged between 26 and 35 years, 31.8% aged between 36 and 45 years, 18.1% aged between 46 and 55 years, 16.0% aged between 56 and 65 years and 4.5% aged above 66 years. This implies that majority of the farmer-group leadership are adults of above 70 years (70.4%). Out of the 7 interviewed programme committee members, 1 (14.3%) aged between 18 and 35 years and the rest 6(85.7%) aged between 36 and 60 years. It implies that majority of the programme management committee members were adults with essential qualities of leadership for successful programme implementation. Good local leadership promotes linkages between programme management and community thus providing synergy for propelling programme towards attainment of the expected goals (Prasetyo, 2017).

4.3.3 Education level of Respondents

In project development, education is important in communication and in making decisions. To answer this question therefore, respondents indicated their level of education and the results are as shown in Table 4.3.

Table 4.3: Education level of Respondents

Education level	Frequency	Percentage
1. Degree	7	7.9
2. Diploma	19	21.6
3. Certificate	37	42.0
4. KCSE	21	23.9
5. KCPE	3	3.4
6. Below KCPE	1	1.1
Total	88	100

Table 4.3 indicates that 7.9% of the respondents had a university degree, 21.6% of the respondents had only a diploma, 42.0% of the respondents had a college certificate, 23.9% of the respondents had only completed secondary education (KCSE), 3.4% of the respondents had only completed primary education (KCPE) and 1.1% of the respondents had not completed the primary level of education. It implies that most of the respondents with 98.9% (7.9% + 21.6% + 42.0% + 23.9% + 3.4%) had acquired the basic education essential for supporting the research assumption that respondents will be literate enough to answer to the research instruments. All the project committee members interviewed were literate and had acquired at least a diploma certificate. Effective programme management requires managers with pool of diverse knowledge and experience essential for steering the programme to successive conclusion.

4.4. Test for Normality

The test for the assumption of normality was essential so that statistical tests are not invalidated or rendered inaccurate (Kothari, 2004). In this study, Shapiro-Wilk Test (“W”) was used to test whether the distribution of data was normal because it offers a higher power in comparison to other tests compared to other tests (Peat and Barton, 2005). In the case of “W” tests, the result which was near but less than one, the conclusion was that data was not significantly different from the normal distribution thus the conclusion that the sample variable data was perfectly normal. For “W” value less than 1 or close to 0, the sample variable data was concluded not to be normal (Peat and Barton, 2005). The tests for Shapiro-Wilk Test are presented in Table 4.4.

Table 4.4: Shapiro-Wilk Test for Normality

Variable	Shapiro-Wilk Test (W)		
	Statistic	df	Sig
Implementation	Muringa 0.799	88	0.031
Irrigation project			
Community resources	0.893	88	0.015
Community engagement	0.792	88	0.036
Community leadership	0.840	88	0.029
Community capacity	0.807	88	0.022

The data in Table 4.4 indicates that the lowest “W” value was 0.792 for community engagement and the highest “W” value was 0.893 for community resources. Nonetheless, all these `Values were approaching 1 for p values equal to or less than 0.05. Hence the distribution of data was confirmed as being statistically significant to conclude that the population was normal.

4.5 Treatment of Likert-Type Data Analysis

The ordinal data collected using five-point Likert questionnaire was first converted to interval scale data by assigning equidistance of 0.8 whereby: Strongly Agree (SA) $4.2 < SA < 5.0$; Agree (A) $3.4 < A < 4.2$; Neutral (N) $2.6 < N < 3.4$; Disagree (D) $1.8 < D < 2.6$ and Strongly Disagree (SD) $1.0 < SD < 1.8$. According Lantz (2013), Likert scales data can be treated as quasi interval scale data by assigning equal interval measures to allow for parametric and other higher statistical tests.

4.6 Implementation of Muringa Irrigation Project

In this study, implementation of Muringa Irrigation project was the dependent variable and was measured by the following indicators: the project activities were related to my needs, the programme timelines were practical, the project budget was appropriate, the project delivered the expected outputs, the project recognized my needs and I am fully satisfied by the project implementation.

4.6.1 Descriptive Data for Implementation of Muringa Irrigation Project

The respondents rated the six items on a five-point Likert scale with ranges from Strongly Disagree (SD), Disagree (D), Neutral (N), Agree (A) or Strongly Agree (SA). The Likert scale was assigned equidistance of 0.8 and the results are presented in Table 4.5.

Table 4.5: Statements on Implementation of Muringa Irrigation Project

Statements on performance of Implementation	SD f (%)	D f (%)	N f (%)	A f (%)	SA f (%)	Mean	STD
The project activities were related to my needs	0 (0.0)	0 (0.0)	2 (2.3)	23 (26.1)	63 (71.6)	4.3035	0.3810
The programme timelines were practical	0 (0.0)	1 (1.1)	1 (1.1)	45 (51.2)	41 (46.6)	4.1453	0.3903
The project budget was appropriate	2 (2.3)	1 (1.1)	7 (7.9)	33 (37.5)	45 (51.2)	4.0795	0.4129
The project delivered the expected outputs	0 (0.0)	0 (0.0)	0 (0.0)	25 (28.4)	63 (71.6)	4.3727	0.3419
The project recognized my needs	0 (0.0)	0 (0.0)	2 (2.3)	19 (21.6)	67 (76.1)	4.3489	0.3682
I am fully satisfied by the project implementation	0 (0.0)	0 (0.0)	1 (1.1)	12 (13.7)	75 (85.2)	4.4511	0.3581
Composite Results						4.2835	0.3754

The data shows in Table 4.5 indicates that the composite arithmetic mean and composite standard deviation for the implementation of Muringa Irrigation project were 4.2835 and 0.3754 respectively. With the composite mean of above 4.2, it implies that most of the respondents strongly agreed that implementation of Muringa irrigation project was executed responsively and effectively per their expectations. The statements with mean superseding the composite mean of 4.2835 were: the project activities were related to my needs, the project delivered the expected output, the project recognized my needs and I am fully satisfied by the project implementation. The statements whose means scored below the composite mean were: the programme timelines were practical and the project budget was appropriate. It means that the respondents` perception about implementation of the Muringa Irrigation project was informed by the effectiveness of the project in meeting their needs rather than efficiency or accounting of the project resources. This is supported by the empirical establishments that have demonstrated the usefulness of integrating community needs and expectations into the design of local development projects so as to enhance effectiveness and sustainable impacts (Nancy, 2018; Mahanani and Chotib, 2018; Meenar, 2015). This promotes sustainable impacts (Hermawan and Hutagalung, 2020).

The results are shared by the responses from the interview with members of the project management committee who when asked to explain about the implementation of Muringa Irrigation Project said that,

“Muringa Irrigation project was conceived from the local community needs for improved land productivity for food security and sustainable livelihood. The land was fertile. The farmers and local community at large are active and industrious people. The major challenge was inadequate and unreliable water supply to support crop farming. Rainfalls were unreliable. Thus the project was designed to meet the need for reliable and sustainable supply of irrigation water to the needy farmers. The project goals and implementation strategy was integrated to the farmers who are the beneficiaries of the project. That is why everyone become committed to the project activities to this end. They are a happy lot. Everybody is connected to irrigation water. They are now very productive in farming. They now have good harvest to meet their domestic needs and even excess for sale or value addition. They are richer than now than before the project. The suppliers of agricultural inputs have expanded their sales to the farmers of this locality. Traders are flooding in the community to buy crop harvest, “said project management committee members.

4.7 Community Resources and Implementation of Muringa Irrigation Project

Community resources was the first independent variable for this study and it was measured by the following indicators: I dedicated my time in working for the project, some local technologies supported the project implementation, I allowed for the use of my land for the passage of irrigation water ways, I made some cash contribution to the project, I contributed material resources to the project, my contributions to the project were essential to project success and there was efficiency in the utilization of my contributions to the project.

4.7.1 Descriptive Data for Community Resources and Implementation of Muringa Irrigation Project

The respondents rated the seven items on a five-point Likert scale ranging from Strongly Disagree (SD), Disagree (D), Neutral (N), Agree (A) or Strongly Agree (SA). The Likert scale was assigned equidistance of 0.8 and the results are presented in Table 4.6.

Table 4.6: Statements on Community Resources

Statements on Community Resources	SD f (%)	D f (%)	N f (%)	A f (%)	SA f (%)	Mean	STD
I dedicated my time in working for the project	0 (0.0)	0 (0.0)	9 (10.2)	20 (22.7)	59 (67.1)	4.2545	0.3592
Some local technologies supported the project implementation	4 (4.5)	6 (6.8)	9 (10.2)	30 (34.1)	39 (44.3)	3.8247	0.4621
I allowed for the use of my land for the passage of irrigation water ways	0 (0.0)	0 (0.0)	0 (0.0)	2 (2.3)	86 (97.7)	4.5818	0.2856
I made some cash contribution to the project	0 (0.0)	0 (0.0)	0 (0.0)	1 (1.1)	87 (98.9)	4.5905	0.1927
I contributed material resources to the project	0 (0.0)	0 (0.0)	2 (2.3)	19 (21.6)	67 (76.1)	4.3487	0.3682
My contributions to the project were essential to project success.	0 (0.0)	0 (0.0)	0 (0.0)	12 (13.7)	76 (86.3)	4.4909	0.3406
There was efficiency in the utilization of my contributions to the project	0 (0.0)	0 (0.0)	20 (9.1)	34 (38.6)	34 (38.6)	3.9273	0.3990
Composite Results						4.2883	0.3439

The data presented in Table 4.6 indicates that the composite arithmetic mean and composite standard deviation for the community resources in Muringa Irrigation project were 4.2883 and 0.3439 correspondingly. The composite mean was above 4.2 implying that most of the respondents strongly agreed that community resources were critical in the implementation of Muringa irrigation project. The statements whose mean superseded the composite mean of 4.2883 were: I allowed for the use of my land for the passage of irrigation water ways, I made some cash contribution to the project, I contributed material resources to the project and my contributions to the project were essential to project success. The statements whose means scored below the composite mean of 4.2883 were: I dedicated my time in working for the project, some local technologies supported the project implementation and there was efficiency in the utilization of my contributions to the project. It implies that the community resources that essentially contributed to the implementation of Muringa Irrigation Project were both land, liquid money and other material resources. Utilization of community resources in project development promotes community ownership for sustainable project outcomes (Hermawan and Hutagalung, 2020). Further, community resources enhance performance of projects (Alasela et al., 2003; Ekpenyong et al,

2020). Alasela et al. (2003) and Ekpenyong et al., (2020) add that community resources enhances effectiveness in the implementation of programmes.

The qualitative data from the interview with management committee members of Muringa Irrigation Project supported the use of community resources in successful implementation of the project. For example, when asked to explain how were the community resources factored in the project design and implementation the response was the following;

“The Muringa community was very supportive to the project. They supported the project with all their resources and effort. Of interest was the land they offered freely without charge for the passage of water pipes. In addition, each member contributed about Ksh. 1,300 towards purchase of the pipes. Farmers provided security of the pipes that were left lying on their land. There were times when the farmers dedicated their time to assist demarcation of the water ways and digging pipes. Indeed, farmers committed their resources towards this success. without them, the project would not have been a success. to this end, sustainability of the project is achieved due to the overwhelming support from the farmers and the community at large,” said project management committee members.

4.7.2 Relationship between Community Resources and Implementation of Muringa Irrigation Project

Pearson’s Correlation Coefficient technique was used to establish the relationship between community resources and implementation of Muringa Irrigation Project and the results are presented in Table 4.7

Table 4.7: Relationship between Community Resources and Implementation of Muringa Irrigation Project

		Implementation of Muringa Irrigation Project	Community Resources
Community Resources	Pearson Correlation	0.729**	1
	Sig. (2-tailed)	0.000	
	n	88	88

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

Table 4.7 suggests that at 99% confidence interval, the correlation coefficient between community resources and implementation of Muringa Irrigation Project was 0.729 for $p=0.000<0.01$. This shows a strong positive relationship between community resources and implementation of Muringa Irrigation Project.

The following null hypothesis was tested:

Hypothesis H₀₁: There is no significant relationship between community resources and implementation of Muringa Irrigation project

From the data in Table 4.7, the null hypothesis was not supported hence the null hypothesis was rejected and conclude that there is significant relationship between community resources and implementation of Muringa Irrigation project. The results are supported by Hermawan and Hutagalung (2020), Omondiet al. (2020), Sabastian and Nathan (2017), Omayo and Moronge (2028), Jelili et al., (2020) and Mashayamombe and Hofisi (2016). Majee et al. (2020), Muniu et al. (2017), Orina et al., (2016) and Alasela et al. (2003) aver that mobilization and utilization of local resources in project development promotes ownership and sustainability of community water projects. Both participatory theory of development and system theory of organization support that by creating favorable and flexibility approaches towards participatory community development leads to stable and sustainable communities (Syokau and Strathdee, 2010).

4.8 Community Engagement and Implementation of Muringa Irrigation Project

Community engagement was the second independent variable in this study and was measured by the following indicators: I was given opportunities for engaging in the project, information was shared in time, the frequency of engagement was high, I was always ready to engage, I was able to engage, I had the will to engage, consultations were done frequently and the engagement was beneficial.

4.8.1 Descriptive Data for Community Engagement and Implementation of Muringa Irrigation Project

The respondents rated the 8 items on a five-point Likert scale ranging from Strongly Disagree (SD), Disagree (D), Neutral (N), Agree (A) or Strongly Agree (SA). The Likert scale was assigned equidistance of 0.8 and the results are presented in Table 4.8.

Table 4.8: Statements on Community Engagement and implementation of Muringa Irrigation Project

Statements on Community Engagement	SD f (%)	D f (%)	N f (%)	A f (%)	SA f (%)	Mean	STD
I was given opportunities for engaging in the project	0 (0.0)	0 (0.0)	0 (0.0)	1 (1.1)	87 (98.9)	4.5905	0.1927
Information was shared in time	0 (0.0)	0 (0.0)	1 (1.1)	17 (19.3)	70 (79.6)	3.8247	0.3751
The frequency of engagement was high	0 (0.0)	2 (2.3)	0 (0.0)	31 (35.2)	54 (61.4)	4.2114	0.4005
I was always ready to engage	0 (0.0)	0 (0.0)	0 (0.0)	12 (13.7)	76 (86.3)	4.4909	0.3409
I was able to engage	0 (0.0)	0 (0.0)	0 (0.0)	7 (8.0)	81 (92.0)	4.5360	0.2912
I had the will to engage	0 (0.0)	0 (0.0)	0 (0.0)	4 (4.5)	84 (95.5)	4.5636	0.2444
Consultations were done frequently	1 (1.1)	5 (5.7)	2 (2.3)	16 (18.2)	64 (72.7)	4.2454	0.4820
The engagement was beneficial	0 (0.0)	0 (0.0)	3 (3.4)	9 (10.2)	76 (86.4)	4.4636	0.3989
Composite Results						4.3658	0.3407

As shown in Table 4.8, the composite mean and composite standard deviation for community engagement in Muringa Irrigation project were 4.3658 and 0.3407 correspondingly. The composite mean was above 4.2 implying that most of the respondents strongly agreed that community engagement was critical in the implementation of Muringa Irrigation project. The statements whose mean exceeded the composite mean of 4.3658 were: I was given opportunities for engaging in the project, I was always ready to engage, I was able to engage, I had the will to engage and the engagement was beneficial. The statements whose mean fell below the composite mean of 4.3658 were: Information was shared in time, the frequency of engagement was high and consultations were done frequently. It can be observed that the statements that required the respondent action in the actual project implementation scored more than the statements related to the actions of project management. It implies that the community or respondents knew their roles in the engagement that resulted into better decisions during project implementation. Past empirical studies support that community engagement leads to highly performing and sustainable impacts (Hermawan and

Hutagalung, 2020; Omondi et al., 2020; Sabastian and Nathan, 2017; Omayo and Moronge, 2018; Jelili et al., 2020; Mashayamombe and Hofisi, 2016).

In support, the qualitative data from the interview with management committee members of Muringa Irrigation project demonstrated that engagement of the local community members through awareness and information sharing, consultations, collaborations and partnerships with the local community members led to better and innovative decision making processes leading to sustainable results. For example, when the managers were asked to expound on how community was engaged in the implementation of Muringa Irrigation project, they responded that,

“Throughout the Muringa Irrigation project cycle, all stakeholders and particularly the farmers who in this case are the primary beneficiaries of the project were involved either directly or through representation by the chairmen or leaders of farmer-groups. The conceptualization of the project was derived from their (farmers) needs. we kept communicating every bit of progress and their feedbacks were used to strengthen the decision making processes. In some incidences, we had to build collaboration and partnerships especially in places where installation of water pipes had to cause serious damages to the existing infrastructure. Consultations were done regularly and the deliberations recorded for future reference. Luckily, the local community was friendly, available and always ready to support. The engagements were sometimes formal and sometimes conducted informally to allows for participation of all willing stakeholders. This contributed greatly to the formulation of amicable and sustainable decisions that propelled the project to successful conclusion,” said project management committee members.

4.8.2 Relationship between Community Engagement and Implementation of Muringa Irrigation Project

Pearson’s Correlation Coefficient technique was used to establish the relationship between community engagement and implementation of Muringa Irrigation Project and the results are presented in Table 4.9

Table 4.9: Relationship between community engagement and implementation of Muringa Irrigation Project

		Implementation of Muringa Irrigation Project	Community Engagement
Community Engagement	Pearson Correlation	0.813**	1
	Sig. (2-tailed)	0.000	
	n	88	88

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

The data in Table 4.9 suggest that at 99% confidence interval, the correlation coefficient between community engagement and implementation of Muringa Irrigation Project was 0.813 for

$p=0.000<0.01$. This shows a strong positive relationship between community engagement and implementation of Muringa Irrigation Project.

The following null hypothesis was tested:

Hypothesis H₀₂: There is no significant relationship between community engagement and implementation of Muringa Irrigation project

Based on the data in Table 4.9, the null hypothesis was not supported hence the null hypothesis was rejected and conclude that there is significant relationship between community resources and implementation of Muringa Irrigation project. The results are supported by Hermawan and Hutagalung (2020), Omondiet al. (2020), Sabastian and Nathan (2017), Omayo and Moronge (2028), Jelili et al., (2020) and Mashayamombe and Hofisi (2016) that community engagement contributes to cooperative behavior, confidence and trust leading to more successful and responsive projects. Further, the results are reinforced by system theory organization which emphasizes on integration of project components and stakeholders into the project implementation so as to promote constructive interdependencies and interrelationships essential for achieving sustainable community development. Equally, participatory theory of development stresses on cooperative approach towards local development for successful implementation of Muringa Irrigation project.

4.9 Community Leadership and Implementation of Muringa Irrigation Project

Community leadership was the third independent variable in this study was measured by the following indicators: there was strong teamwork towards project, the local leadership dedicated strong support to the project, the local leadership was built on strong trust, the local leaders were visionary and dedicated, the community leaders were courageous and focused on community issues and local leaders are forward thinking

4.9.1 Descriptive Data for Community Leadership and Implementation of Muringa Irrigation Project

The respondents rated the six items on a five-point Likert scale ranging from Strongly Disagree (SD), Disagree (D), Neutral (N), Agree (A) or Strongly Agree (SA). The Likert scale was assigned equidistance of 0.8 and the results are presented in Table 4.10.

Table 4.10: Statements on Community Leadership

Statements on Community Leadership	SD f (%)	D f (%)	N f (%)	A f (%)	SA f (%)	Mean	STD
There was strong teamwork towards project	0 (0.0)	0 (0.0)	2 (2.3)	19 (21.6)	67 (76.1)	4.3487	0.3682
The local leadership dedicated strong support to the project	0 (0.0)	0 (0.0)	3 (3.4)	9 (10.2)	76 (86.4)	4.4636	0.3989
The local leadership was built on strong trust	2 (2.3)	1 (1.1)	7 (7.9)	33 (37.5)	45 (51.2)	4.0795	0.4129
The local leaders were visionary and dedicated	0 (0.0)	0 (0.0)	11 (12.5)	20 (22.7)	57 (64.8)	4.2182	0.2927
The community leaders were courageous and focused on community issues	0 (0.0)	0 (0.0)	0 (0.0)	12 (13.7)	76 (86.3)	4.4909	0.3406
Local leaders are forward thinking	1 (1.1)	3 (3.4)	1 (1.1)	35 (39.8)	48 (54.6)	4.1454	0.4793
Composite Results						4.2911	0.3821

From Table 4.10, the composite arithmetic mean and composite standard deviation for the community leadership in Muringa Irrigation project were 4.2911 and 0.3821 correspondingly. The composite mean was above 4.2 implying that most of the respondents strongly agreed that community leadership was critical in the implementation of Muringa irrigation project. The statements whose mean superseded the composite mean of 4.2911 were: there was strong teamwork towards project, the local leadership dedicated strong support to the project, the local leaders were visionary and dedicated and the community leaders were courageous and focused on. The statements whose means scored below the composite mean of 4.2911 were: the local leadership was built on strong trust and the local leaders are forward thinking. The results suggest that most of the respondents strongly agreed that community leadership contributed to the implementation of Muringa Irrigation Project. Community leadership promotes sharing of knowledge and networking on important project matters leader who in turn build synergies with the followers for effective and sustainable project results (Manusawai et al., 2020; Ridzuan et al., 2020; Redondo-Sam, 2016; Martiskainen, 2017).

The qualitative data from the interview with management committee members of Muringa Irrigation Project support that community leadership played important role of steering and communicating the

project agenda to the farmers which in turn helped to build connection and cooperation in the execution of the project. When probed on how community leadership was organized to enhance cooperation with the project implementation discourse, majority of project management committee members said that,

“The project management received enormous support from the leadership of the farmer group leaders. There was diligent leadership that was built on, teamwork trust and confidence. Communication and feedback between farmers and project management was facilitated by their leaders. Every issue was solved diplomatically and effectively thus reducing chances of conflicts which could have negative implications to the implementation of the project. One of the components of the project was to promote community education and community awareness about the project. Through this and thanks to their leaders, the project was able to build good rapport and ownership of the project deliverables,” said project management committee members.

4.9.2 Relationship between Community Leadership and Implementation of Muringa Irrigation Project

Pearson’s Correlation Coefficient technique was used to establish the relationship between community leadership and implementation of Muringa Irrigation Project and the results are presented in Table 4.11

Table 4.11: Relationship between Community Leadership and Implementation of Muringa Irrigation Project

		Implementation of Muringa Irrigation Project	Community Leadership
Community Leadership	Pearson Correlation	0.828**	1
	Sig. (2-tailed)	0.000	
	n	88	88

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

Table 4.11 indicates that at 99% confidence interval, the correlation coefficient between community leadership and implementation of Muringa Irrigation Project was 0.828 for $p=0.000 < 0.01$. This implies that there exists strong positive relationship between community engagement and implementation of Muringa Irrigation Project.

The following null hypothesis was tested:

Hypothesis H₀₃: Community leadership has no significant influence on implementation of Muringa Irrigation Project in Tharaka-Nithi County

As shown in Table 4.11, the null hypothesis was not supported hence the null hypothesis was rejected and conclude that there is significant relationship between community engagement and implementation of Muringa Irrigation project. The results are supported by Nancy (2018), Meenar (2015) and Mahanani and Chotib (2018). Further the results are reinforced by theory of participatory development which emphasis on developing cordial linkages with the local communities so as to promote sustainable benefits. This was strengthened by strong leadership abilities from the farmer-group. As a result, the project system is able to navigate towards sustainable results per the principal of system theory of organization.

4.10 Combined Community Participation and Implementation of Muringa Irrigation Project

The fourth objective sought to examine the extent to which the combined Community Participation influences implementation of Muringa Irrigation Project in Tharaka-Nithi County. The indicators of focus were: community resources, community engagement and community leadership.

4.10.1 Descriptive Analysis of Combined Community Participation and Implementation of Muringa Irrigation Project

Respondents responded to three statements regarding Community Participation on a five-point Likert scale namely: Strongly Disagree (SD), Disagree (D), Neutral (N), Agree (A) or Strongly Agree (SA). During the scoring, an equidistance of 0.8 was assigned whereby: Strongly Agree (SA) $4.2 < SA < 5.0$, Agree (A) $3.4 < A < 4.2$, Neutral (N) $2.6 < N < 3.4$, Disagree (D) $1.8 < D < 2.6$ and Strongly Disagree (SD) $1 < SD < 1.8$. Table 4.12 shows the results attained.

Table 4.12: Statements of Combined Community Participation

Statements of Combined Community Participation	N	Mean	STD
Community resources	88	4.2883	0.3439
Community engagement	88	4.3658	0.3407
Community leadership	88	4.2911	0.3821
Composite Results	88	4.3151	0.3556

Table 4.12 indicates that the composite mean and standard deviation for combined Community Participation were 4.3151 and 0.3556 respectively. It means that most of the respondents strongly agreed that combined Community Participation (community resources, community engagement and community leadership) contributes to the implementation of Muringa Irrigation Project. Mahanani and Chotib (2018) claims that community capacity is enhanced through empowerment of the local potentials like assets, abilities, resources. Communities capacities boosts shared vision and sense

essential successful project implementation. Poor collaboration and community engagement effort hinders building sustainable community development (Meenar, 2015).

In support, the project management committee members who were interviewed conceded the success of the Muringa Irrigation project was credited to unwavering community efforts, support, resources, cooperation and stewardship. When asked to expound more on that, the response was,

“This community project was anchored on community spirit. The problem or need for the project was informed by the expressed, felt and to some extent comparative needs for doing better in boosting their livelihood. In this sense, the original thought of empowering locals through participatory development was upheld throughout the project cycle. As a result, the community shared a sense of belonging and ownership throughout. The evidence from the community support is the huge milestones that the project has scored in connecting irrigation water to the targeted homesteads. The other indicator of the community support is the increased farm productivity and better livelihoods of the beneficiaries. In general, the project was built on a strong foundation of community capacity and empowerment and this principal bear fruits beyond everybody’s expectation”, said project management committee members.

4.10.2 Relationship between Combined Community Participation and Implementation of Muringa Irrigation Project

The Pearson’s Correlation Coefficient method was then used establish the relationship between combined Community Participation and implementation of Muringa Irrigation Project. The results are as shown in Table 4.13.

Table 4.13: Relationship between Combined Community Participation and Implementation of Muringa Irrigation Project

		Implementati on of Project	Community Resources	Community Engagement	Community Leadership
Community Resources	Pearson Correlation	0.728**	1		
	Sig. (2-tailed)	0.000			
	n	88	88		
Community Engagement	Pearson Correlation	0.813**	0.091	1	
	Sig. (2-tailed)	0.000	0.000		
	n	88	88	88	
Community Leadership	Pearson Correlation	0.828**	0.077	0.013	1
	Sig. (2-tailed)	0.00	0.000	0.000	
	n	88	88	88	88

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

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

Table 4.13 shows that at 99% confidence level, the correlation coefficient for community resource and implementation of Muringa Irrigation Project was 0.728 for $p=0.000<0.01$. The correlation coefficient for community engagement and implementation of Muringa Irrigation Project at 99% confidence interval was 0.813. The correlation coefficient for community leadership and implementation of Muringa Irrigation Project at 99% confidence interval was 0.828. It implies that community resources, community engagement and community leadership have strong positive correlation with the implementation of Muringa Irrigation Project.

The following null hypothesis was tested:

Hypothesis H₀₄: There is no significant relationship between combined Community Participation and implementation of Muringa Irrigation Project in Tharaka-Nithi

Based on the results in Table 4.13, the null hypothesis was rejected as there was enough evidence to conclude that the combined Community Participation (community resources, community engagement and community leadership) has significant relationship with the implementation of Muringa Irrigation Project.

4.10.3 Regression Analysis

Multiple linear regression model was performed to determine the influence of community resources, community engagement and community leadership on the implementation of Muringa Irrigation Project in Tharaka-Nithi. The results of the model summary, ANOVA and coefficient of determination are summarized in Table 4.14.

Table 4.14: Influence of combined Community Participation on implementation of Muringa Irrigation Project

Model Summary						
Model	R	R Square	Adjusted R Square	Std. Error of the Estimate		
1	0.863	0.745	0.736	0.50		

ANOVA						
Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	62.081	3	20.69	82.76	0.000
	Residual	20.972	85	0.25		
	Total	83.056	88	20.94		

Coefficients						
Model		Unstandardized Coefficients B	Std. Error	Standardized Coefficients Beta	t	Sig.
1	(Constant)	1.401	0.434		4.943	0.000
	Community resources	0.719	0.349	0.701	2.060	0.000
	Community engagement	0.809	0.341	0.789	2.372	0.000
	Community leadership	0.818	0.382	0.795	2.141	0.000

a. Dependent Variable: Implementation of Muringa Irrigation Project

b. Predictor Variables: Community resources, community engagement, community leadership, (constant)

$F(3,85) = 82.76, r = 0.863, R^2 = 0.745$ at $p=0.000 < 0.05$

From the model summary shown in Table 4.14, the predictor variables (community resources, community engagement and community leadership) accounted for 74.5% variations in the implementation of Muringa irrigation project ($R^2=0.745$). The remaining 25.5% variation in the implementation of Muringa irrigation project was contributed by other factors outside the model. The external factors can be explored in future studies.

The ANOVA results indicate that at $p=0.000 < 0.05, F=82.76$. This implies that the overall test model was significant in predicting the implementation of Muringa Irrigation project.

The following regression model was tested;

Implementation of Muringa Irrigation Project = f (community resources, community engagement and community leadership)

$$Y = 1.401 + 0.701X_1 + 0.789X_2 + 0.795X_3$$

Whereby,

Y= Implementation of Muringa Irrigation Projects, X_1 = community resources, X_2 = community engagement, X_3 = community leadership.

The coefficients data shown in Table 4.14 suggest that if all factors were held constant, the implementation of Muringa Irrigation Project would remain at 1.401. In addition, if all factors were held constant, a unit increase in community resources would result into 0.701 increase in implementation of Muringa Irrigation Project. The results are supported by Muniu et al. (2017) that community participation had significant influence on resource mobilization and sustainability of community water projects.

Further, the data in Table 4.14 suggest that if all factors were held constant, a unit increase in community engagement would result into 0.789 increase in implementation of Muringa Irrigation Project. Omondi et al. (2020) supports that community engagement contributes to performance and sustainability of water projects.

In addition, a unit increase in community leadership would result into 0.795 increase in implementation of Muringa Irrigation Project. According to Ridzuan et al. (2020), effective community leadership boosts community engagement, education and awareness which enhances community preparedness to resolving own problems thus promoting effective and sustainable implementation of project.

Generally, the study revealed that the variables (community resources, community engagement and community leadership) were significant in predicting the model. The variable with the greatest influence on the implementation of Muringa irrigation project was community leadership followed by community engagement and community resources.

CHAPTER FIVE

SUMMARY OF FINDINGS, CONCLUSIONS AND RECOMMENDATIONS

5.1. Introduction

Chapter five covers the summary of the research findings, the conclusion and recommendations. This study sought to the influence of Community Participation and implementation of Muringa Irrigation Project in Tharaka-Nithi County, Kenya.

5.2 Summary of Findings

This section presents summary of the findings per research objective.

5.2.1 Influence of Community Resources on Implementation of Muringa Irrigation Project

From the descriptive statistics, composite mean for the statements on the influence community resources on implementation of Muringa Irrigation Project was 4.2883. This indicated that most of the respondents strongly agreed that community resources contribute to the implementation of Muringa Irrigation Project. The coefficient of correlation indicated that community resources had statistically significance influence on the implementation of Muringa Irrigation Project ($r=0.729$ for $p=0.00<0.05$). Thus at 99% confidence interval, the null hypothesis was rejected and concluded that there is significant relationship between community resources and implementation of Muringa Irrigation Project in Tharaka-Nithi County, Kenya. Therefore, community resources are critical consideration to the implementation of Muringa Irrigation project.

5.2.2 Influence of Community Engagement on Implementation of Muringa Irrigation Project

The descriptive statistics indicated that the composite mean for the statements on the influence community engagement on implementation of Muringa Irrigation Project was 4.3658. This implied that most of the respondents strongly agreed that community engagement contributes to the implementation of Muringa Irrigation Project. The coefficient of correlation indicated that community engagement had statistically significance influence on the implementation of Muringa Irrigation Project ($r=0.813$ for $p=0.00<0.05$). Hence at 99% confidence interval, the null hypothesis was rejected and concluded that there is significant relationship between community engagement and implementation of Muringa Irrigation Project in Tharaka-Nithi County, Kenya. Thus it was critical to factor community engagement when implementing Muringa irrigation project.

5.2.3 Influence of Community Leadership on Implementation of Muringa Irrigation Project

From the descriptive statistics, composite mean for the statements on the influence community leadership on implementation of Muringa Irrigation Project was 4.2911. It implied that most of the

respondents strongly agreed that community engagement contributes to the implementation of Muringa Irrigation Project. The coefficient of correlation indicated that community leadership had statistically significant influence on the implementation of Muringa Irrigation Project ($r=0.828$ for $p=0.00<0.05$). Thus at 99% confidence interval, the null hypothesis was rejected and concluded that there is significant relationship between community leadership and implementation of Muringa Irrigation Project in Tharaka-Nithi County, Kenya. Therefore, community leadership is an essential consideration when implanting Muringa irrigation project.

5.2.4 Influence of Combined Community Participation on Implementation of Muringa Irrigation Project

The composite mean for the statements on combined Community Participation was 4.3151 thus implying that majority of the respondents just strongly agreed that combined Community Participation contributes to the implementation of Muringa Irrigation Project. The regression results indicated that combined Community Participation (community resources, community engagement and community leadership) had statistically significant influence on the implementation of Muringa Irrigation Project in Tharaka-Nithi County, Kenya ($r=0.863$ for $p=0.00<0.05$). Thus the null hypothesis was not rejected as there was strong evidence to conclude that there is significant relationship between combined Community Participation (community resources, community engagement and community leadership) and implementation of Muringa Irrigation Project in Tharaka-Nithi County, Kenya. The ANOVA results indicated that at $p=0.000<0.05$ and $F=82.76$, thus the overall test model was significant in predicting the implementation of Muringa Irrigation project. Therefore, community participation capacities (community resources, community engagement, community leadership) are critical considerations when implementing Muringa Irrigation project.

5.3 Conclusions

The first objective sought to establish the extent to which community resources influence implementation of Muringa Irrigation Project in Tharaka-Nithi County. Based on the descriptive and correlation results, it is concluded that community resources are important influencer of the implementation of Muringa Irrigation Project in Tharaka-Nithi County.

The second objective aimed at determining how community engagement influences implementation of Muringa Irrigation Project in Tharaka-Nithi County. The descriptive and correlational results lead to the conclusion that community engagement is a critical influencer of the implementation of Muringa Irrigation Project in Tharaka-Nithi County.

Objective three sought to investigate how community leadership influences implementation of Muringa Irrigation Project in Tharaka-Nithi County. The descriptive and correlational results lead to the conclusion that community leadership is a critical influencer of the implementation of Muringa Irrigation Project in Tharaka-Nithi County.

Objective four sought to examine the extent to which the combined Community Participation (community resources, community engagement and community leadership) influences implementation of Muringa Irrigation Project in Tharaka-Nithi County. The descriptive and regression results lead to the conclusion that combined Community Participation (community resources, community engagement, community leadership) are good predictors of implementation of Muringa Irrigation Project in Tharaka-Nithi County.

5.4 Recommendations

From the findings of this study, the following recommendations are put forward:

5.4.1 Recommendation for Practice

Project planners and designers of community development projects should integrate community capacities into the project design and implementation so as to utilize their benefits and empower them. Specifically, community resources should supplement and reinforce project budget so as to reduce financial and material risks. Also, by engaging local community in project implementation helps to build some sense of ownership for sustainable results. In addition, it is essential to identify and utilize the gate keepers or community leaders when implementing local development projects. By using the relevant and appropriate leaders, it boosts project connectedness to the local community for sustainable outcomes.

5.4.2 Recommendation for Policy

All aspects of community capacity (community resources, community engagement and community leadership) were attributed to the perceptions related to community participation. It is important for the government to institute guidelines for public and community involvement in development projects. The guidelines should outline the frameworks for engagement so as to promote not only equity and fairness but also ownership and sustainability of local development projects.

5.4.3 Recommendation for Methodology

Based on the mixed research design for this study, researchers should triangulate different strategies to research inquiry so as to increase validity for the generalization of the findings. This study used

correlational survey design to implement the research which allows for simultaneous data collection from the same population while integrating and interpreting the findings and predicting future relationships.

5.5 Suggestions for Further Study

The finding of this study revealed that community resources, community engagement and community leadership are good predictors of the implementation Muringa Irrigation Project. Nonetheless, the findings can be advanced in diverse types of projects so as to increase chances of generalization across population settings.

This study used cross-sectional approach to survey inquiry. Future studies should consider longitudinal survey design so as to collect trend data for critical analysis of the changes that have occurred in the implementation of projects for better understanding.

There is need to research on broader aspects of community capacity that may contribute to the successful implementation of community development projects so as to broaden the knowledge in that area.

REFERENCES

- Aga, D. A., Noorderhaven, N., & Vallejo, B. (2018). Project beneficiary participation and behavioural intentions promoting project sustainability: *The mediating role of psychological ownership*. *Development Policy Review* 36 (5):527-546
- Ahrne, G. (1994). *Social Organizations: Interaction inside, outside and between organizations*. Sage Publication.
- Aubry, M., Hobbs, B., Muller, R., & Blomquist, T., (2010). "Identifying Forces Driving PMO Changes" *Project Management Journal*, (Special PMI Research Conference 2010 Edition), à paraître
- Aule, T. T, Jusan, M. B. M. & Ayoosu, M. J. (2020). Outcomes of Community Participation in Housing Development an Update Review. *International Journal of Science Research Science Engineering Technology* 6 (6), 208-218. <https://doi.org/10.32628/IJSRSET196642>
- Banerjee, S. & Aiyadurai, A., (2020). *Factors influencing Local Community Participation in Wildlife Conservation Projects in Northeast India*, <https://doi:10.31235/osf.io/sy98>
- Bennett, N., Lemelin, R., Koster, R., & Budke, I. (2012). A capital assets framework for appraising and building capacity for tourism development in aboriginal protected area gateway communities. *Tourism Management*, 33(4), 752-766
- Bittar Rodrigues, C. & Prideaux, B. (2017). A management model to assist local communities developing community-based tourism ventures: a case study from the Brazilian Amazon. *Journal of Ecotourism: 17 (1)* 1-19. <https://doi.org/10.1080/14724049.2017.1309045>
- Bredenoord, J. (2016). Sustainable housing and building materials for low-income households. *Journal of Architectural Engineering Technology*, 5(01), 1–9. <https://doi.org/10.4172/2168-9717.1000158>
- Buerger, C., & Holzer, E. (2015). How does community participation work? Human rights and the hidden labour of interstitial elites in Ghana. *Journal of Human Rights Practice*, 7(1), 72–87. <https://doi.org/10.1093/jhuman/huu024>
- Cleland, D. I., & Ireland, L. R. (2002). *Project Management, Strategic Design and Implementation*. Newyork, Mc GRAW-HILL Publishers

- Culligan, M., Marks, S., Nelson, T., Radstone, L. & Verzuh, E. (2013). *A Guide to the Project Management for Development Professionals (PMD Pro) Version 1.7* PM4NGOs Publishers
- Doll, J. (2010). *Program development and grant writing in occupational therapy: making the connection*. Ontario: Jones & Bartlett Publishers
- Ekpenyong, E. E., Wali, R. C., Akpan, I. M. & Ajang E. I. (2020). Community Resources for the Development of Social Studies Curriculum in Nigeria. *The Journal of Social Sciences Research*, 6(4), 452-458. <https://doi.org/10.32861/jssr.64.452.458>
- Field, A. (2013). *Discovering statistics using SPSS* (4th Ed.). Sage.
- Filippov, S., Mooi, H. G. & Weg, R. (2012). Strategic Alignment of the Project Portfolio: An Empirical Investigation. *Risus - Journal on Innovation and Sustainability*. RISUS, São Paulo, 3(1), 9 – 23
- Goodman, R.M.; Speers, M.A.; McLeroy, K.; Fawcett, S.; Kegler, M.; Parker, E.; Smith, S.R.; Sterling, T.D. & Wallerstein, N. (1998). Identifying and defining the dimensions of Community Participation to provide a basis for measurement. *Health Educ. Behav.* 25, 258– 278
- Grönevall, R., & Danilovic, M. (2014). Designing and Integrated Project, Program and Portfolio System - A Case Study of Healthcare. *The Journal of Modern Project Management*, 2(2). doi:10.3963/jmpm. v2i2.76
- Hall, N., Acosta Jaramillo, C.M., Jagals, P., Currie, D., Ossa-Moreno, J., Dean, A., Ross, H., Bowling, T., Hill, P., Head, B., Richards, R., Willis, J., Abal, E. & Cruz Lopez, D. (2016) ‘*Strengthening community participation in meeting UN Sustainable Development Goal 6 for water, sanitation and hygiene*’, Global Change Institute, The University of Queensland, Brisbane. Online[URL]: <http://gci.uq.edu.au/un-sustainabledevelopment-goals-water-sanitation-and-hygiene>
- Helvetas, R. M. (2019). *Global Hunger Index: The challenges of hunger and climate change*.
- Herbert, M. (2011). *An Exploration of the Relationships Between Psychological Capital, Occupational Stress, Burnout and Employee Engagement*. Thesis, Stellenbosch University. <https://scholar.sun.ac.za:443/handle/10019.1/17829>
- Hermawan, D., & Hutagalung, S. S. (2020). Development of community participation based on behavior in managing participative programs. *Masyarakat, Kebudayaan dan Politik* 32 (3), 312-322.

- Hidayati, L. N., Huda, A. M. & Suryapusita, M. (2018). Towards a sustainable local business community by women's empowerment programs through corporate social responsibility (CSR). *E3S Web of Conferences* 74, 04005 (2018). <https://doi.org/10.1051/e3sconf/20187404005>
- Hounslow, B. (2002). *Community Participation building explained*. Stronger Families Learning Exchange Bulletin, 1, 20–22
- Idziak, W., Majewski, J. & Zmyslony, P. (2015). Community participation in sustainable rural tourism experience creation: a long-term appraisal and lessons from a thematic villages project in Poland. *Journal of Sustainable Tourism*, 23 (8-9), 1341-1362
- International Organization for Standards (ISO 10006:2003). *Quality management systems – guidelines for quality management in projects*
- Isham, and Kahkonen (2009). *Institutional Determinants of the impacts of community Institute of Economic Affairs: A Rapid Assessment of Kenya's Water, Sanitation and Sewerage Framework*; Retrieved 16 March 2010
- Jelili, Y. O., Oyeniyi, A. A., & Folorunsho, A. I. (2020). Community Participation and Sustainability of the Community and Social Development Projects in Kwara State, Nigeria. *Journal of Agricultural Extension*, 24 (1), 138-147. <https://dx.doi.org/10.4314/jae.v24i1.14>
- Jung, M., & Choi, M. (2013). Impact of Community Participation on the health status of residents understanding with the contextual multilevel model, *The Health Care Manager*, 32(1), 77-86.
- Kagiso, N. & Potgieter, M. (2019). *Developmental support for SMMEs in Mahikeng: SMME needs versus support programme*. 13th International business conference proceedings 22- 25 September 2019 at African Pride Hotel, Cape Town South Africa. 641-647.
- Kakumba, U., & Nsingo, S. (2008). *Citizen Participation in Local Government and the Process of Rural Development: Rhetoric and Reality in Uganda*. South Africa: University of Pretoria; School of Public Management and Administration
- Kapsali, M. (2011). Systems thinking in innovation project management: A match that works. *International journal of project management*; 29, 396–407. <https://www.sciencedirect.com/science/article/abs/pii/S0263786311000044?via%3Dihub>

- Kerzner, H. R (2009). *Project Management: A systems approach to planning, scheduling, and controlling*, 10th Edition, Wiley publishers.
- Khosravi, S., Mohamed, B. & Nair, V. (2015). Community Participation for conserving natural resources in ecotourism destinations: a review of the concept. *Asia-Pacific Journal of Innovation in Hospitality and Tourism APJIHT*, 4 (2), 235-256.
- Khwaja, A. (2004), Is Increasing Community Participation Always a Good Thing? *Journal of the European Economic Association* 2 (2-3), 427-436
- Kilic D, & Bacharova, L (2012). *The 9th International Scientific Summer School in Makov, Slovakia*. *Anatol J Cardiol* 2012; 12:539–41.
- Kipfer, B. A. & Chapman, R. L., (2007). *The Dictionary of American Slang*, Fourth Edition, HarperCollins Publishers
- Kirk, P., & Kraft, M. K. (2004). Community leadership development. *Community Development Journal*, 39, 234-251
- Kolawole, A. R., Kamau, K. P., & Munala, G. (2016). Change order management factors in building projects in Northern Nigeria. *Asian Social Science*. 12, (1), 223 <http://dx.doi.org/10.5539/ass.v12n1p223>
- Kothari, C.R. (2004). *Research methodology*, New age international (P) Ltd publishers, Dharmesh Art Process Delhi, India.
- Koutra, C. (2007). *Building capacities for tourism development and poverty reduction*. Paper presented at the 4th IIP (International Institute for Peace through Tourism) African Conference on Peace through Tourism, Kampala, Uganda
- Krejcie, R.V. & Morgan, D.W., (1970). *Determining Sample Size for Research Activities Educational and Psychological Measurement*, Vol. 30(608), Sage Publishers.
- Kusmiarto, Sutanta, H., & Aditya, T. (2020). The Level of Community Participation in Land Registration Activities in Indonesia, Bhumi, *Jurnal Agraria dan Pertanahan*, 6(1) 42-55. <https://DOI:10.31292/jb.v6i1.423>
- Kutipan, A. (2017). Community Participation : A Concept Analysis. *Journal Keperawatan Muhammadiyah*, 2 (1), 186-194. <https://doi:1030651/jkm.v2i1.1068>
- Lantz, B. (2013). Equidistance of likert-type scales and validation of inferential methods using experiments and simulations. *The Electronic Journal of Business Research Methods*, 11(1), 16-28. <http://www.ejbrm.com>

- Laverack, G. (2006). Evaluating Community Participation : Visual representation and interpretation. *Community Development Journal* (2006), <https://doi:10.1093/cdj/bsi047>
- Lelegwe, S. (2015). Influence of Community Participation on Community Ownership of Donor Funded Projects: A Case of Saidia, Samburu County, Kenya. *Humanities and Social Sciences*. 3 (5),193-200. <https://doi:10.11648/j.hss.20150305.15>
- Mahanani, W. & Chotib (2018). The influence of collective action, community empowerment, and shared vision to the Community Participation in urban water resource conservation. *IOP Conf. Series: Earth and Environmental Science* 200 (2018) 012040 <https://doi:10.1088/1755-1315/200/1/012040>
- Majee, W., Adaobi A., & Karien, J. (2020). Youth and Young Adults These Days: Perceptions of Community Resources and Factors Associated with Rural Community Engagement. *Journal of Rural Social Sciences*, 35(1): <https://egrove.olemiss.edu/jrss/vol35/iss1/1>
- Mansuri, G. & Rao, V. (2013). *Chapter 5 – Does Participation Improve Development Outcomes? In: Localizing Development: Does Participation Work? Policy Research Report*; Washington, DC: World Bank. © World Bank. <https://openknowledge.worldbank.org/handle/10986/11859>License: CC BY 3.0 IGO
- Manusawai, J., Herlina, E., Tjolli, I., Jowei, R. N. & Sinery, A. S. (2020). Community Participation in the Community Nursery Program in Manokwari Regency, West Papua Province, *Energy and Environment Research*, 10 (1), 1-7. <https://doi:10.5539/eer.v10n1p1>
- Martiskainen, M. (2017). The role of community leadership in the development of grassroots innovations, *Environmental Innovation and Societal Transitions*, 22 (2017), 78-89.
- Mashayamombe, N. & Hofisi, C. (2016). Community participation and malaria prevention programs, *Environmental Economics*, 7 (4), 139-148. [https://doi:10.21511/ee.07\(4-1\).2016.0](https://doi:10.21511/ee.07(4-1).2016.0)
- Mayberry, J. F. (2013). The development of medical education in Eastern Europe during the 20th century and the emergence of ‘English parallel’ courses. *Scott Med J* 2013; 58:46– 52
- Mbui, J. N. & Wanjohi, J. M. (2018). Influence of community participation on project performance of Ruiru water projects, Meru County, Kenya. *International Academic Journal of Information Sciences and Project Management*, 3(2), 331-344

- Meenar, M. R. (2015). Nonprofit-driven community capacity-building efforts in community food systems. *Journal of Agriculture, Food Systems, and Community Development*. Advance online publication. <http://dx.doi.org/10.5304/jafscd.2015.061.006>
- Meirinawati, Prabawati, I. & Pradana¹, G. W. (2018). Strategy community development based on local resources. *Journal of Physics: Conference Series* 953 (2018). [HTTPS://doi:10.1088/1742-6596/953/1/012158](https://doi.org/10.1088/1742-6596/953/1/012158)
- Mills, R. C. (2005). *Sustainable community change: A new paradigm for leadership in community revitalization efforts*. National Civic Review, 94, 9-16.
- Moreri, K., Fairbairn, D. & James, P. (2018). *Issues in developing a fit for purpose system for incorporating VGI in land administration in Botswana*, Land Use Policy. Elsevier, 77 (November 2017), 402–411. <https://DOI:10.1016/j.landusepol.2018.05.063>
- Mwangi, A. & Okwengu, N. (2019). *Citizen participation in County Integrated Development Planning and budgeting in Kenya: A case of five Counties*. Government of Ireland
- Nagesh, D. S., & Thomas, S., (2015). Success factors of public funded R&D projects. *Current Science*, 108(3), 357-363. <https://www.currentscience.ac.in/Volumes/108/03/0357.pdf>
- Nancy, C., (2018). Exploring Community Participation : Karen refugee women’s mental health, *International Journal of Human Rights in Healthcare*, 11(4), 244-256, <https://doi.org/10.1108/IJHRH-02-2018-0025>
- Nugroho, D. S., Hermawan, H., Putri, E. D. H. & Mayasar, C. U. (2020). Community participation tourist attraction development in Jabal Kelor - a case study. *African Journal of Hospitality, Tourism and Leisure*, 9(1), 1-9. [http://: www.ajhtl.com](http://www.ajhtl.com)
- Omayo, L. B., & Moronge, M. (2018). Factors affecting performance of community development projects in Kenya, a case of Meru county. *The Strategic Journal of Business & Change Management*, 5 (4), 109 – 125. www.strategicjournals.com
- Omondi, J. A., Odek, R. & Siringi, E. (2020). Influence of community participation on performance of Kisumu water and sanitation company projects in Kisumu county, Kenya. *International Journal of Economics, Commerce and Management*, VII (11), 353- 398.
- Orina, V. M., Nyakundi, W. A. & Abuga, M. V. (2016). Factors influencing the performance of community based organizations’ poverty alleviation projects in Kisii county, Kenya. *International Journal of Social Sciences and Information Technology*, 2 (3), 1-16.
- Partington, D. (1996). The project management of organizational change. *International journal of project management*, 14(1), 13–22. [https://doi.org/10.1016/0263-7863\(95\)00037-2](https://doi.org/10.1016/0263-7863(95)00037-2)

- Pennypacker, J. & Retna, S. (2009). *Project portfolio management—A View from the Management Trenches*, PMI [M]. Wiley Periodicals Inc
- Pigg, K. (2013). Community leadership development: the effects on community development, *Community Development*, 44 (4), 408-410, <http://dx.doi.org/10.1080/15575330.2013.814699>
- Prasetyo, Y. E. (2017). Mapping and Exploring Informal Network in Organizational and Community Leadership. *Journal of Asian Rural Studies* 2(1): 37-48. <https://DOI:10.20956/jars.v2i1.1363>
- Project Management Institute. (PMI, 2013). *A Guide to the Project Management Body of Knowledge (PMBOK Guide)*, Fourth Edition. PA
- Puspito, H. Setiyorini, D., Andari, R. & Masunah, J. (2019). Analyzing factors for community participation in tourism development. *THE Journal: Tourism and Hospitality Essentials Journal*, 9(1),39-44.
- Putra, G. C., Kepamareni, P. & Suryandari, N. A. (2019). Empowerment Program, Entrepreneurial Competence and Business Growth SMEs in Denpasar. *Asian Pacific Journal of Management and Education*, 2 (2), 14-32. <https://DOI:10.32535/apjme.v2i2.557>
- Rahmat, A. & Izudin, I. A. (2018). Impact evaluation of community empowerment programs with the farmer managed extension model. *European Research Studies Journal* 21(2), 225-235.
- Rebori, M. K. (2006). *Community Leadership Essentials for Nevada Communities: Series One: What is Community Leadership?* Fact Sheet-06-59, University of Nevada, Cooperative Extension.
- Redondo-Sama, G. (2016). Leadership & Community Participation: A Literature Review. *International and Multidisciplinary Journal of Social Sciences*, 5(1), 71-92. <http://doi.org/10.17583/rimcis.2016.1998>
- Republic of Kenya (2008). *Kenya Vision 2030* available at: http://www.vision2030.go.ke/cms/vds/Popular_Version.pdf
- Republic of Kenya (2010). *The constitution of Kenya*, Government printer
- Republic of Kenya (2013). *The Project on the Development of the National Water Master Plan 2013 Final Report*. <http://www.wrma.or.ke/index.php/projects/nwmp-2030.htm>

- Republic of Kenya (2016). *Strategic environmental assessment (sea) for expanded irrigation programme and national economic programme in the Tana and Athi Basins*. Envilead Limited
- Ridzuan, A. A., Kadir, M. J., Yaacob, S., Zainol, N. A. M., HAbdullah1, Roslan, N. H., Wong, M. M. R. & Ahmad, N. D. F. (2020). *The Mediating Effect of Community Leadership on Community Resilience Elements and Community Preparedness*, The 7th AUN/SEED-Net Regional Conference on Natural Disaster (RCND 2019), OP Conf. Series: Earth and Environmental Science 479 (2020) 012009 IOP Publishing. [HTTPS://doi:10.1088/1755-1315/479/1/012009](https://doi.org/10.1088/1755-1315/479/1/012009)
- Robins, G. (2015). *Doing Social Network Research: Network-Based Research Design for Social Scientists*. Sage Publications
- Sabastian, K. J. & Nathan, G. (2017). Factors influencing performance of community water projects in Tigania Central Sub-County, Meru county, Kenya. *European Journal of Social Sciences Studies* 2(7), 127-145. [https://doi10.5281/zenodo.883867](https://doi.org/10.5281/zenodo.883867)
- Sachs, J., Schmidt-Traub, G., Kroll, C., Lafortune, G., & Fuller, G. (2019): *Sustainable Development Report 2019*. New York: Bertelsmann Stiftung and Sustainable Development Solutions Network (SDSN)
- Sanchez, H. & Robert B. (2010). A matrix for monitoring the strategic performance of project portfolios *International Journal of Project Organization and Management*, 2(2), 135-153
- Saunders, M., Lewis, P., & Thornhill, A. (2009). *Research methods for business students*, 4th edition, Prentice Hall
- Shukor, F. S., Mohamed, A. H., Sani, S. A., & Awang, M. (2011). *A review on the success factors for community participation in solid waste management. International conference on management. Skudai, Malaysia*. University of Technology: Malaysia
- Slocum, R., Wicchart, L., Rocheleau, D. & Thomas-Slayter, B (1995). *Power, processes and participation: Tools for change*. London. Intermediate Technology Publications
- Sutawa, G. K. (2012). Issues on Bali tourism development and community empowerment to support sustainable tourism development. *Procedia economics and finance*, 4, 413-422
- Swastawati, F., Roessali, W., Wajayanti, I. & Anggo, A. D. (2020). *Evaluation of empowerment programme to increase production capacity of fishery processing business in Semarang City Indonesia*. International Symposium on Food and Agro-biodiversity (ISFA), IOP

Conf. Series: Erath and environmental Science 102 (2017) 012082.
<https://doi.org/10.1088/1755-1315/102/1/012082>

Syokau, J., & Strathdee, R. (2010). *Participatory development in Kenya*. London: Ashgate Publishing, Ltd

The Oxford English Dictionary. “project” (2008) 11th ed. UK. Oxford University Press 28(4)

Timbuleng, J. A. (2011). Community, Community Participation Building and Decentralization in Indonesia. *Journal Innovative*, 7 (1), 1-10.

Traverso-Yepe, M., Maddalena, V., Bavington, W. & Donovan, C. (2012). Community Participation building for health: a critical look at the practical implications of this approach. *Sage Open*, 2(2), 1-12

United Nations Educational Scientific and Cultural Organization (UNESCO, 2019). *The United Nations world water development report 2019: leaving no one behind*.

Verity, F. (2007). *Community Participation Building-A review of the literature*. South Australia : South Australian Department of Health

Williams, J. & Lawson, R. (2001). Community issues and resident opinions of tourism. *Annals of Tourism Research*, 28(2), 269–290. [https://doi.org/10.1016/S0160-7383\(00\)00030-X](https://doi.org/10.1016/S0160-7383(00)00030-X)

Wituk, S., Ealey, S., Clark, M., Heiny, P. & Meissen, G. (2005). Community Development through Community Leadership Programs: Insights from a Statewide Community Leadership Initiative, *Journal of the Community Development Society*, 36, (2), 2005

APPENDICES

Appendix I: Transmittal Letter

Opwora Beverly Khasoa

L50/65804/2011

Open Distance e-Learning Campus

School of Open and Distance Learning

University of Nairobi

P.O Box 30197

Nairobi

Date 20/8/2020

Dear Respondent,

RE: REQUEST FOR RESEARCH PARTICIPANT

I am a student pursuing Masters in Project Planning and Management at the University of Nairobi, Kenya. In order to fulfill the requirement of the Degree, I am conducting a research study entitled *“Influence of Community Participation on Implementation of Muringa Irrigation Project in Tharaka-Nithi County”*. The findings from this study will recommend on the possible areas of improvement when managing community projects.

Therefore, you have been identified as a potential respondent to this study. You are therefore requested to answer the questions in the enclosed research instrument with sincerity. Your responses and identity was handled with full confidence.

Thank you very much.

Yours respectfully,

Beverly Opwora K.

Masters Student PPM

University of Nairobi, Kenya

Appendix II: Questionnaire

This questionnaire is designed to collect data from the leaders or chairmen of farmer-groups in the study to examine *“Influence of Community Participation on Implementation of Muringa Irrigation Project in Tharaka-Nithi County”*. The questionnaire is organized into five thematic areas namely: demographic profile, implementation of irrigation project, community resources, community engagement and community leadership. You are therefore requested to tick **the most** appropriate answer that suits you. Your responses and identity was held in confidence.

Section One: Profile of the Respondent

1. Please indicate your Gender

(a.) Male []

(b.) Female []

2. Tick on your age group

(a). 18 to 25 []

(b). 26 to 35 []

(d) 36 to 45 []

(c) 46 to 55 []

c) 56 to 65 []

c) above 66 []

3Please indicate the highest level of your education

(a) Degree [] (d) KCSE []

(b) Diploma [] (e) KCPE []

(c) Certificate [] (f) Below KCPE []

Section Two: Implementation of Muringa Irrigation Project

In this section you are requested to indicate your level of your agreement with the statements relating to the effectiveness in the implementation of Muringa Irrigation Project whereby; 1=Strongly Disagree (SD), 2=Disagree (D), 3= Neither Agree nor Disagree (N), 4= Agree (A), 5= Strongly Agree (SA). Please mark only one objective response as per the statement and answer all questions

Implementation of Muringa Irrigation Project						
	Statements of the implementation	SD	D	N	A	SA
		1	2	3	4	5
a)	The project activities were related to my needs					
b)	The programme timelines were practical					
c)	The project budget was appropriate					
d)	The project delivered the expected outputs					
e)	The project recognized my needs					
f)	I am fully satisfied by the project implementation					

Section Three: Community Resources and Implementation of Muringa Irrigation Project In this section you are requested to indicate your level of your agreement with the statements relating to the community resources whereby; 1=Strongly Disagree (SD), 2=Disagree (D), 3= Neither Agree nor Disagree (N), 4= Agree (A), 5= Strongly Agree (SA). Please mark only one objective response as per the statement and answer all questions

	Statements of Community Resources	SD	D	N	A	SA
		1	2	3	4	5
a)	I dedicated my time in working for the project					
b)	Some local technologies supported the project implementation					
c)	I allowed for the use of my land for the passage of irrigation water ways					
d)	I made some cash contribution to the project					
e)	I contributed material resources to the project					
f)	My contributions to the project were essential to project success.					
g)	There was efficiency in the utilization of my contributions to the project					

Section Four: Community Engagement and Implementation of Muringa Irrigation Project

In this section you are requested to indicate your level of your agreement with the statements relating to the Community Engagement whereby; 1=Strongly Disagree (SD), 2=Disagree (D), 3= neither Neither Agree nor Disagree (N), 4= Agree (A), 5= Strongly Agree (SA). Please mark only one objective response per the statement and don't leave any question unanswered.

	Community Engagement	SD	D	N	A	SA
		1	2	3	4	5
a)	I was given opportunities for engaging in the project					
b)	Information was shared in time					
c)	The frequency of engagement was high					
d)	I was always ready to engage					
e)	I was able to engage					
f)	I had the will to engage					
g)	Consultations were done frequently					
h)	The engagement was beneficial					

Section Five: Community Leadership and Implementation of Muringa Irrigation Project

In this section you are requested to indicate your level of your agreement with the statements relating to the community leadership whereby; 1=Strongly Disagree (SD), 2=Disagree (D), 3= neither Neither Agree nor Disagree (N), 4= Agree (A), 5= Strongly Agree (SA). Please mark only one objective response per the statement and don't leave any question unanswered.

	Community Leadership	SD	D	N	A	SA
		1	2	3	4	5
a)	There was strong teamwork towards project					
b)	The local leadership dedicated strong support to the project					
c)	The local leadership was built on strong trust					
d)	The local leaders were visionary and dedicated					
e)	The community leaders were courageous and focused on community issues					
f)	Local leaders are forward thinking					

Thank you for cooperating

Appendix III: Interview Guide

The interview guide sought collect qualitative data from the Muringa Irrigation Project committee members on the study entitled *“Influence of Community Participation on the Implementation of Muringa Irrigation Project in Tharaka-Nithi Count”*. The interview guide is designed to begin with an introductory note to the study followed by the probe on the research thematic areas and conclusion.

Part A: Introduction to the Interview and Demographic data

Introduction to the interview and exchange of demographic data (observe gender, probe professional qualification and experience).

Part B: Main Questions

- a) Explain the implementation of Muringa Irrigation Project (probe on the project needs, goals, strategy)
- b) How were the community resources factored in the project? (probe on type of resources, availability, convertibility, feasibility)
- c) Explain how community was engaged (probe on opportunities available, abilities of the community, willingness to engage and areas of engagement)
- d) How can you describe community leadership in the implementation of the project? (probe on levels of trust, confidence, teamwork)
- e) How do you describe the overall Community Participation as far as implementation of the project is concerned? (probe on resources, engagement and leadership.)

Part C: Closure of the Interview

What other Community Participation issues do you think played a critical role in the implementation of the Muringa Irrigation Project?

Thank you!

Appendix IV: Sample Determination Table

<i>N</i>	<i>S</i>	<i>N</i>	<i>S</i>	<i>N</i>	<i>S</i>
10	10	220	140	1200	291
15	14	230	144	1300	297
20	19	240	148	1400	302
25	24	250	152	1500	306
30	28	260	155	1600	310
35	32	270	159	1700	313
40	36	280	162	1800	317
45	40	290	165	1900	320
50	44	300	169	2000	322
55	48	320	175	2200	327
60	52	340	181	2400	331
65	56	360	186	2600	335
70	59	380	191	2800	338
75	63	400	196	3000	341
80	66	420	201	3500	346
85	70	440	205	4000	351
90	73	460	210	4500	354
95	76	480	214	5000	357
100	80	500	217	6000	361
110	86	550	226	7000	364
120	92	600	234	8000	367
130	97	650	242	9000	368
140	103	700	248	10000	370
150	108	750	254	15000	375
160	113	800	260	20000	377
170	118	850	265	30000	379
180	123	900	269	40000	380
190	127	950	274	50000	381
200	132	1000	278	75000	382
210	136	1100	285	100000	384

Note.—*N* is population size. *S* is sample size.

Source: Krejcie & Morgan, 1970

Appendix V: Clearance Letter



UNIVERSITY OF NAIROBI
OPEN DISTANCE AND E-LEARNING CAMPUS
SCHOOL OF OPEN LEARNING PROGRAMMES
DEPARTMENT OF OPEN DISTANCE AND E-LEARNING PROGRAMMES

TO WHOM IT MAY CONCERN

29th September, 2020

Dear Sir/Madam,

SUBJECT: OPWORA BEVERLY KHASOA - REG NO. L50/65804/2011

This is to confirm that the above named person is a student at the University of Nairobi, Open Distance and E-learning Campus, **Embu Learning Centre**, pursuing a Master of Arts degree in Project Planning and Management. As a requirement for his course completion she is required to conduct an independent research project. Her Research topic is: **INFLUENCE OF COMMUNITY PARTICIPATION CAPACITY ON IMPLEMENTATION OF MURINGA IRRIGATION PROJECT IN THARAKA-NITHI COUNTY, KENYA.**

I kindly request you to allow her carry out her research in your organization.






Please accord her all the necessary assistance.

THANKS.

YOURS FAITHFULLY,

A circular blue ink stamp of the University of Nairobi, Embu Learning Centre, with a signature in the center.
DR. CHANDI J. RUGENDO
CO-ORDINATOR EMBU LEARNING CENTRE.

Appendix VI: Research Permit

 REPUBLIC OF KENYA	
Ref No: 862135	Date of Issue: 05/October/2020
RESEARCH LICENSE	
	
This is to Certify that Ms. Beverly Khasoa Opwora of University of Nairobi, has been licensed to conduct research in Tharaka-Nithi on the topic: INFLUENCE OF COMMUNITY PARTICIPATION CAPACITY ON IMPLEMENTATION OF MURINGA IRRIGATION PROJECT IN THARAKANITHI COUNTY, KENYA. for the period ending : 05/October/2021.	
License No: NACOSTI/P/20/7007	
862135	
Applicant Identification Number	Director General NATIONAL COMMISSION FOR SCIENCE, TECHNOLOGY & INNOVATION
	Verification QR Code
	
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