THE INFLUENCE OF RESOURCE MOBILIZATION ON THE SUSTAINABILITY OF COMMUNITY WATER PROJECTS: A CASE STUDY OF MAKILENGA

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A DISSERTATION IS SUBMITTED IN PARTIAL FULFILLMENT OF THE REQUIREMENTS FOR THE DEGREE OF MASTER OF PROJECT MANAGEMENT OF THE OPEN UNIVERSITY OF TANZANIA

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CERTIFICATION

The undersigned certifies that he has read and hereby recommends for acceptance by the Open University of Tanzania a dissertation titled: ***"The Influence of Resource Mobilization on the Sustainability of Community Water Projects: A Case Study of MAKILENGA"*** in partial fulfillment of the requirements for degree of Master in Project Management (MPM) of the Open University of Tanzania.

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Date

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DECLARATION

I**, Christina Sifaeli Ndetaulwa,** hereby declare that, this dissertation is my own original work and that it has not been presented and will not be presented to any other University for a similar or any other degree award.

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Signature

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Date

DEDICATION

To my dear parents **late father Sifaeli Ndetaulwa Pallangyo** and **Late mother Eliashea Manng'alo Nanyaro**. They were my very first teachers. Their endless love, continuous encouragement, support and desire to see me excel to greater heights in academic excellence has taken me this far. Without them, I would not be who I am today. To my dear husband **Mr. Ndelekwa A. Urio** for your important facilitations, endless love and tireless assistance during my studies. Thank you for being there for me. To my daughters; **Upendo, Irene, Carolyne** and **Dorcas** for your warm and tender company during this study.

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ABSTRACT

This study assessed the influence of resource mobilization on the sustainability of community water projects. The study specifically determined the adequacy of financial resources, the capacity of human resource and appropriateness of the technology on sustainability of water project. The study was conducted in Arumeru District, Arusha Region - Tanzania where MAKILENGA water scheme project is undertaken. Three wards namely Kingôori, Leguruki, and Ngarenanyuki were studies whereby 89 respondents in the category of village water committee members participated. Data were collected quantitatively by questionnaire and have been analyzed by SPSS version 20 descriptive and correlation statistics techniques. The findings revealed that, adequate financial resources for sustainability of MAKILENGA water project can be achieved when there are adequate internal sources of revenues such as water charges and retained earnings. Also the study shows that, sustainability of MAKILENGA water project can be improved through good human resources practices in terms of good job analysis before recruitment, implementation of recruitment policies and guidelines as well as observation of the qualification of human resources in terms of minimum level of education. Furthermore, the study found out that fair appropriate technology can enhance the sustainability of MAKILENGA water project. Generally, it can be concluded that; resource mobilization may contribute to the sustainability of community water projects. Recommendations were drawn from the findings and had been directed to community water projects to embrace resource mobilization in terms of adequacy financial resources from internal sources, adoption of best human resources practices and qualification, as well as adoption and application of appropriate engineering technology for the sustainability of community water projects.

TABLE OF CONTENTS

LIST OF TABLES

LIST OF FIGURES

LIST OF ABBREVIATIONS AND ACRONYMS

DC	District Council
ICWE	International Conference on Water and Environment
IEG	Independent Evaluation Group
LGA	Local Government Authority
M&E	Monitoring and Evaluation
MAKILENGA	Makiba, Kingôori, Leguruki and Ngarenanyuki
PPP	Public Private Partnership
SDG	Sustainable Development Goals
SPE	Special Purpose Entity
SPSS	Statistical Package for Social Science
UN	United Nations
UNICEF	United Nations International Children Education Fund
USA	United States of America
VEO	Village Executive Officer
WEO	Ward Executive Officer
WHO	World Health Organization

CHAPTER ONE

INTRODUCTION

1.1 Chapter Overview

This chapter provides background information to the study, statement of the research problem, research objectives both general and specific, research questions and the significance of the study.

1.2 Background to the Study

Project is an endeavor undertaken to achieve a specific goal with the aim of achieving a desired change, which could be social, cultural or economic. For most of projects such change can only be achieved if the project lasts longer. According to Parsons, et al (2013) the project is a set of coordinated activities with starting and finishing time. In this respect, supports offered by donors through implementation of projects are of transitory basis, but benefits to be derived are anticipated to be of longer term. Apparently, the success of a project is determined by the extent of its sustainability after its implementation.

According to Ababa (2013) most of donor funded projects in Sub Saharan Africa do not last longer after donorsô exit. The setback is contributed by various issues including technical, financial, institutional, economic and social factors that were not considered well in the project management cycle. Socially, involvement of the community through resource mobility is vital in developing framework for project. The Independent Evaluation Group (IEG) report of 2017 shows that lack of financial viability and accountability in global water and sanitation services were the main

contributors for gaps and disparities in investment in water and sanitation sector, including the private sector finance (IEG, 2017). Secondary source studies reveal that improvement in the sustainability of water projects needs communitys efforts in mobilizing resources, coupled with direct participation of all beneficiaries in making decisions on resources allocation (Muniu *et al*., 2018; Kimengsi *et al*., 2016; Mwangangi and Wanyoike, 2016). According to International Conference of Water and Environment (ICWE) report of 1992, for a project to succeed, planning and use of comprehensive public representation, open and equitable access to information and direct participation of all beneficiaries in making decisions about allocating resources is vital.

1.3 Statement of the Problem

Sustainability of community water projects is a major concern in Sub Saharan Africa countries as most of those projects fail shortly after donors exit. This problem has contributed into inadequate access to clean and safe drinking water and sanitation services in these countries.

As the world is moving towards achieving 2030 Agenda of which Sustainable Development Goal (SDG) number six focuses to ensure availability and sustainable management of water and sanitation for all by 2030, issues concerning sustainability of water projects need to be adequately addressed. Resource mobilization has been identified and promoted globally as among factors that can enhance the sustainability of water projects. Studies concerning the influence of resource mobilization on the sustainability of water projects conducted recently in Kenya by Muniu, et al., (2018)

reveal that community participation in resource mobilization is important for enhancement sustainability of water projects.

Similar to fellow Sub Saharan countries, Tanzania is faced by failure of most of water projects post donor support. Studies conducted by Kariba (2002) show that only 31% out of 357 of the water projects implemented in Dodoma Region were operating. Such failure has resulted into overall access to water to decline from 55% to 53% and for rural citizens from 46% to 44% (TWAWEZA, 2014). Such turn down is also revealed in the Water Aid report which shows that 50% of people in Tanzania lack access to clean water (Water Aid, 2014). Despite these challenges in access to drinking water which is mainly caused by failure of water projects, few studies regarding challenges in sustainability of those projects have been conducted and yet, none of them has addressed the effectiveness of resource mobilization on the sustainability of community water projects in Tanzanian context.

1.4 Research Objectives

1.4.1 General Research

The purpose of this study was to assess the influence of resource mobilization on the sustainability of community water projects.

1.4.2 Specific Research Objectives

The study was guided by the following specific objectives:

(i) To determine the adequacy of financial resources on sustainability of MAKILENGA water project

(ii) To determine the capacity of human resource on sustainability of MAKILENGA water project.

(iii) To assess the appropriateness of the technology applied on sustainability of MAKILENGA water project.

1.5 Research Questions

In relation to the specific objectives above, the following were research questions:-

(i) Which factors determine the adequacy of financial resources on sustainability of MAKILENGA water project?

(ii) What is the capacity of human resource on sustainability of MAKILENGA water project?

(iii) Is the technology applied appropriate to sustainability of MAKILENGA water project?

1.6 Significance and Justification of the Study

The results of this study can be relevant to policy making in the level of government, donors, funding agencies and the community in relation to management of water projects. The findings can provide insight to government in identifying and reviewing the existing policies on communitiesô resource mobilization towards enhancing sustainability of water projects after donor support ceases. Funding donors and agencies that support the communities for development can benefit from the findings of the study by adaption of the best practices that can be recommended by this study. The community can be enhanced in terms of information and knowledge on the roles they should play as key stakeholders and beneficiaries in implementation of mobilizing their resources towards community water projects post donor support.

Members of water management committee can use the findings of this study as an instrument to influence change in attitude, knowledge, and practice in managing their community water projects set up. Also, the findings of this study may be used as reference to guide funding donors, agencies, and community in implementation and M&E for strategic plans for community water projects by adaption of best practices that lead toward project sustainability. Since the study is for academic purpose, the findings from the study can be useful to provide empirical literature to other related studies especially for assessing the effectiveness of resource mobilization on the sustainability of community water projects. In this regard, findings of the study can add up to the body of literature the relationship between the effectiveness of communityôs resource mobilization and the sustainability of community water projects. The study can form an empirical base on the effectiveness of communityôs resource mobilization to the sustainability of community water projects. Finally, this study is significant to the study as it is for partial fulfillment of the requirement for the award of masterôs degree.

1.7 Scope and Limitation of the Study

The study focuses on assessing the influence of resource mobilization on improving the sustainability of donor funded community water projects post donor support. The study was conducted in MAKILENGA water project in Meru District Council. The scope of this study is smaller compared to the level of the problem. Hence it could better be expanded because non-performing water projects post donor support have been common phenomenon all over developing countries. However, the study was conducted in this scope due to time and financial constraints of the author.

1.8 Organization of the Study

This proposal is organized into five chapters whereby chapter one provides introduce the study by providing background information, statement of problem, research objectives, research questions, relevance of the study as well as the scope and limitation of the study. Chapter two provides conceptual definitions of key terms, theoretical and empirical literature review, and identify the research gap. It also provides conceptual framework which guided the study. Chapter three covers the methodology of the study including research strategy, population; area of the research; sampling design and procedures; variables and measurement procedures; methods of data collection; data processing and analysis. Chapter four covers data analysis, presentation and discussion while chapter five presents conclusion and recommendations.

CHAPTER TWO

LITERATURE REVIEW

2.1 Introduction

This chapter provides literature, theoretical empirical reviews from various authors. The chapter also provides conceptual definitions of key terms that will be used in this study. Lastly, it presents research gap, and conceptual framework.

2.2 Conceptual Definitions

The study used several terms with its global meaning and understanding. However, some terms have conceptual definition in particular to this study as follows:-

2.2.1 Community Water Project

Community Water Project refers to water supply project designed to provide water service to local communities. However, it has been regarded as community project because the community is involved in designing the project and it forms part in the management of the project (Clarke, 1990).

2.2.2 Sustainability

Sustainability refers to continuity of the project for the intended period of time in terms of achievement of its objective quantitatively and qualitatively. However, according to Jocelyn (2013), sustainability means meeting human needs without compromising future generationsô ability to meet their needs. Jocelyn (2013) also referred sustainability as a process of perpetually sustaining life condition through use of available limited resources. The term sustainability means differently in different context such as environmentally friendly, financially viable which can be continued

indefinitely and takes a long-term view. This study adopts the definition of sustainability by Markulev and Long (2013) which refer it as a capacity to continue with a process, activity or production for a long time in future.

2.2.3 Water Scheme Project

Water scheme project refers to water supply scheme project designed to provide water service to the local community. However, it has regarded as community project because; the community was involved to design the project as well as part of the project management. According to World Bank (2018), water scheme project includes water reservoir on the upper reaches of the source river, raw water pumping, transmission and treatment; operation and maintenance of equipment system; technical assistance; and project management and administration.

2.2.4 Resource Mobilization

Resource mobilization refers to all activities undertaken by an organization to ensure supply of resources such as financial, human, and technological resources which are sufficient to maintain operations which aim to attain the organizationôs mission. Seltzer (2014) refers resource mobilization as process to acquire resources that are inherent to maintain sustainability of the organization from various sources of provider through different mechanisms.

2.2.5 Financial Resources

Financial resources refer to all monetary term resources required to finance operations and activities of an organization. The Online Business Dictionary (2019) defines

financial resources as the ñmoney available to a business for spending in the form of cash, liquid securities and credit lines.ò

2.2.6 Human Resources

Human resources refer to people who are engaged to perform activities of the project. McGaughey (2018) defines human resources as all people employed by an organization to perform duties and activities as assigned within time given.

2.2.7 Technological Resources

Technological Resources refer to devices, tools, information and systems employed by an organization for processing material into goods and products. McGaughey (2018) defines technological resources as tools and systems that are required to effectively create or produce product or service. The tools and systems may include machines, energy, information, time and capital, which support or enhance production processes.

2.2.8 Appropriate Technology

Appropriate technology refers to affordable, convenient, and efficient technology employed by an organization. Merriam Webster Online Dictionary (2019) defines appropriate technology as ñtechnology that is suitable to the social and economic conditions of the geographic area in which it is to be applied, is environmentally sound, and promotes self-sufficiency on the part of those using it.ò

2.3 Theoretical Review

The concept of sustainability was originally developed from environmental management after the Second World War. It was initially related to the biophysical

damage and ecological degradation, which were caused by the impact of the war (Kemp and Parto, 2017).

There have been several theories and principles expressing sustainability such as land, infrastructure, economic and public policy. This study will focus sustainability from economic theoretical framework.

2.3.1 Adequacy of Financial Resources

The economic sustainability theory basically refers to ñmaintaining an economic system that provides non-declining standard of living for this and future generationò (Allen and Ervin, 2007). Economically, sustainability refers to welfare or utility in terms of achieving non-declining standard over the time. According to Stiglitz (1974) and others in Markulev and Long (2013) model of sustainability provides that, utility in the maximum level can be achieved over period of time when the limited level of financial resources are available. Stiglitz illustrates that utility can be declining over period of time if the level of financial resources with regard to level of utility is discounted in the future.

Solow (1974) in Markulev and Long (2013) expresses that, given constant conditions; sustainability can be achieved over period of time if the sufficient financial resources are maintained. This means that reduction of the financial resources can be counterbalanced by investment of other forms of resources including natural resources. According to the theory of Solow, by sustaining the same level input of financial resources, sustainability in terms of level of constant utilization per individual can be achieved over period of time. Markulev and Long (2013)

hypothesizes that, if all factors remain constant, investing sufficient financial resources in reproducible project then constant utilization over period time will occur. However, this theory requires perfect substitution of different forms of other resources.

2.3.1.1 Sources of Financial Resources

Adequate funds for project can be obtained from various sources. Chan (2010) mentions external sources of project financing to include venture capital, bank loans, syndicated loans, and armôs length capital markets. Internal sources are stakeholdersô contributions, retained earnings from sales of project products and services as well as shareholdersô equity. Chan (2010) points that, projects aimed to serve public may receive subsidies and loans from government. Ernest and Young (2009) describes a Private Public Partnership (PPP) as finance sources model used to adequately finance long term projects which serves public social services such as road projects, railway projects, water supply projects and electricity projects. Under conventional procurement model, Ernst and Young (2009) further suggests PPP as the best approach for financing a public sector related projects as it optimizes risk allocation where it is financed by non-resource forfeiting of installments model.

Other models for sourcing adequate funds were discussed by several authors. For example, armôs length capital markets, including structured loans and bonds markets, as well as asset securitization were discussed by Braathen and Odd-Helge (2014), Bukurura, (2014) and Nevitt and Fabozzi, (2010). Cash flows financing whereby cash flows of a project are placed under Special Purpose Entity (SPE) (Zhi, 2015). Leland (2007) suggests financing a risky project through spinoff or through project finance

model. Esty (2009) demonstrates typical project finance structure which includes sources like donors, government subsidies, international organization and bank syndicate which uses non-recourse debt, sponsors who use equity shareholder agreement, labour, input supply contract, output purchase contract, equipment contract, construction contract, and operation as well as management contract.

2.3.1.2 Budgeting Process

In order to ensure adequate funding, Schmidt (2019) suggests proper budgeting process which involves planning, approving, and budget executed in its designated period. Budget plan preparation involves among other things assessing variances between revenue and actual spending, prioritization of project needs according to its set of objectives, forecasting and evaluation of incoming revenues, trends of spending and risks that can impact funds (Schmidt, 2019). Budgeting process considers cost factor. Cost of items is always a major consideration during budgeting process. Affordability of items affects prioritization of spending because it determines the decision for spending (Goodwin, 2003). However, cost is influenced by other factors such as time for expenditure and location of spending.

2.3.1.3 Prioritization of Spending

Although spending in organizations is compulsory, not all of them are urgent. Hatton (2007) considers four aspects to be taken into consideration during prioritization of spending. These aspects are importance, time, cost and risk. According to Bukurura (2004), spending plan takes into account the importance of spending in terms of value and urgency of implementation among other things. However, the term importance may denote different meaning to different people.

In order to minimize confusion during prioritization, common definition must be agreed among all stakeholders (Bukurura, 2004). Time of spending is another aspect of prioritization. Long term goals and short term goals have different timing of spending whereas; short terms goals may be given priority than long term goals in terms of spending provided the implementation of the short term goal does not affect the achievement of the long term goals (Gallegos, 2004). However, time factor in prioritizing during budgeting process is influenced by other factors such as staff training time or degree of parallelism in development (Goergen, 2012). Prioritization of spending also considers consequence that may occur for delaying of such spending.

For example (Frigo, 2002) points that, prioritization for expenditure needs to consider penalty that an organization may incur for failing to allocate funds timely. Frigo (2002) distinguishes statutory spending from non-statutory spending whereby statutory spending such as salaries, wages, social security contribution and taxes should be given priority over non-statutory spending such as purchase of CEOôs house, vehicle and recreational expenditures. Prioritization of spending also considers level of risk associated with implementation of certain activities of a project. Despite of the magnitude of cost involved in certain spending, failure to spend on some activities may have significant adverse impact on the outcome of the project (Crossman, 2019). Usually, prioritizing for spending cannot be based on a single factor rather multiple factors are interdependent.

For example, Shah (2015) describes that, it could be easier to prioritize budgeting based on a single factor such as importance, time, cost or risk separately. However, it is unrealistic to plan for budgeting based on a single factor. Tajeram (2018) notes that,

all factors are dependent to each other, and interrelate with each other. Tajeram (2018) adds that, when one factor changes all other factors do change.

Water being a basic human need, its availability for consumption requires an enormous financial investment. Despite this requirement, community water projects have been globally mismanaged whereby their sustainability becomes jeopardized. Meanwhile, being that, resources are scarce according to economic theory, constant sources of financial resources can be panacea of the water projects sustainability.

2.3.2 Capacity of Human Resource

According to Resource Based View (RBV) theory, human resource management is paramount for organizational operations including those of projects. According to Mweru and Mwaina (2015), the RBV theory expresses that, ñin order to be competitive, the organizationôs human resource management needs to enhance talent management and the value of the human resource in achieving competitive advantage by strategic fitting through application of best human resource practicesò.

2.3.2.1 Qualification

Capacity of human resource is determined by ability of labor force in terms of level of education knowledge and skills possessed. Qualification is considered as a package of skills, knowledge, and experiences of an individual who holds a job position. Crivelli and Gupta, (2013) concludes that formal organizations, have recruitment policies and guidelines which specify set of qualifications for each job position. Gimeno (2013) identifies an intrinsic features of qualifications that can be included in the minimum requirement for recruitment a job seeker in job positions offered by a

formal organization. However, in order to specify standard qualification needed to each position, job analysis must have been done and put in place candidate specification such as minimum level of education, skills and work experience in terms of duration.

2.3.2.2 Best Human Resource Practices

Best human resource practices comprise several processes which can be used together to achieve the theoretical goals of the organization. According to Amstrong (2006), best human resource practices include workforce planning; recruitment; induction and orientation; skills management; training and development; personnel administration; compensation in wage or salaries; time management; travel management; employeesô benefits administration and personnel cost planning. Best human resource practices create effective and efficient method to achieve objectives of an organization. When best human resource practices are aligned with the companyôs mission statement and goals, they can address many personnel issues that come up for a business. It is far better for a company to move forward towards meeting its goals as one unit, collectively working towards a common goal and having a plan to get there.

As observed by Cole (2016), best human practices entail paying attention to performance levels by individual employees in department and evaluating growth so that additional development or recruitment practices can take place. Best human role in achieving organizational goals is achieved through human resource planning. Although human resource department does not take part in daily operations, it supports the activities of other departments to achieve the corporate success through systematic human resources planning and development. Best human resource

practices centers on the human resource management functions such as planning, staffing, employee development, employee maintenance and its related common sub functions including performance appraisal, human resource planning, and staff training.

On the other hand, poor human resource practices curtail the organization from performing its objective effectively and efficiently. Mbutta (1999) in Kihongo (2011) observes the human resource practices being performed in many organizations are not properly designed and managed and concludes that, poor human resource practices are likely to lead the organization to perform poorly even with adequate funds. This implies that, poor human resource practices make planning and achievement of organizationôs goal unachievable. Also the study of Mjenga (2002) in Kihongo (2011) reveals that many organizations do not pay sufficient attention to best human resource practices. This inattention leads organizations to perform poorly in achieving its stated goals and objectives. Thus, for the water project to be sustainable, capable human resources is prerequisite.

2.3.3 Appropriate Technology

Resource Based View theory premises the relationship between technological capability and competitive advantage of an organization. Competitive advantage is however related to sustainability of an organization in terms of market and business turnover at large. Tello-Gamarra and Zawislak (2013) are quoted to have said that, ñfirms that have developed technological capabilities increase their chances of success in relation to those with weak technological capability.ò In this regard, sustainability

of water projects requires adoption of appropriate technology. Smith and Jagger (2010) refers appropriate technology as the one which requires modern equipment, techniques and tools which are compatible to project environment, capable staff and are affordable to be used during the implementation of the projects activities.

In designing criteria for sustainable development, Robert and Wicklein (2008) clarify the criteria for appropriate technology to include systems-independence; whereby the technological devices used have an ability to stand on their own and perform their functions with few or no other supporting devices, image of modernity; whereby people should perceive that technological devices are sophisticated and add value to their social life, cost of technology; whereby the cost of devices should be significantly affordable to the users and available on time when needed, and risk factor; whereby all threats should be assessed during development of the technological devices and also such risks are well managed during operations.

2.4 Empirical Review

Several studies have been conducted all over the world on water resource sustainability and related disciplines. This section provides discussion on the empirical literature related water resource sustainability. It covers studies conducted in various regions in the world.

2.4.1 General Studies

Ostrom (2009) conducted multiple disciplines research worldwide through general framework to identify 10 subsystem variables, which influence the likelihood of self-organization for the purpose enhancing sustainability. The study adopted both

qualitative and quantitative design whereby questionnaire, interview, and review of secondary documentation were used as a triangulation methods of data collection. A total of 185 respondents were sampled to participate in the study. Ostrom (2009) concluded that, challenges of water sustainability as a worldwide problem, which is influenced by insufficient supply of inputs such as funds, proper budgeting, technology and capable manpower to manage other inputs.

Grant *et al.,* (2012) reviewed emerging approaches for reusing wastewater and minimizing its generation in USA. They hypothesize that, ñthe wasting of water poses sustainability challenges, depletes energy reserves, and undermines human water security and ecosystem health.ò The review was conducted using 273 consumers in the US state of Texas with regard to impact of management on the sustainability of water projects. They found out that, human activities have created huge quantities of wastewater through inefficiency and poor management of water resources. They concluded that, regardless of sufficient availability of resources such as financial and technology, lack of capable human resources lead to management challenge which in turn jeopardize the sustainability of water projects.

2.4.2 Studies in African Countries

Jiménez, *et al.* (2017) described the role of financial resources for sustainability of water projects in Central and West Africa developed by UNICEF. The authors employed iterative, collaborative learning and adaptive approach whereby water projects in five countries including Mali, Ghana, Siera Leone, Niger and Central Africa Republic were assessed. The study finding concluded that, sufficient financial

resources and prioritization of spending are the most fundamental resources, which influence other resources to enhance the sustainability of projects.

Omole and Ndambuki (2014) reviewed challenges affecting African countries namely Nigeria, Ghana, Togo, and Ivory Coast in relation to the mobilizing resources for water projects with specific to sustainability of supply of clean water and energy. The study employed soft path approach and the trialog model. While soft path approach places high priority on the proper use and management of existing infrastructure or resources more than acquisition or exploitation of more infrastructure or resources, the trialog model addresses the principle of resource governance by applying understanding of the complex relationship between stakeholders. The study findings concluded that exploitation of environmental resources in order to maintain constant human development affects resources sustainably hence unsustainable supply of resources to enhance water project success. Omole and Ndambuki (2014) recommended for management of existing infrastructure as a priority of its sustainability rather than management of the resource exploitation.

Mugisha and Borisova (2010) examined the Affordable Basic Water Project implemented by Ugandaôs National Water and Sewerage Corporation. Three investment scenarios with different inferences to improve water access to more than 400,000 local community people in Kampala were employed. The examination concluded that guarantee of better service to the users depends on the projectôs financial resource sustainability rather than its design set up.

2.4.3 Empirical Studies in Tanzania

Alistidia (2013) conducted an assessment to determine sustainability of rural water project in Rufiji district, Tanzania. Data were collected from 180 householdsô respondents in six villages. Quantitative methods through Pearson Chi square and Logistic regression model were used to analyze data. The study findings revealed and concluded that, sustainability of water projects in rural areas depends on various factors including maintenance of infrastructure, availability of spare parts for water pumping system, level of community participation and coverage area of the project, price of water bills and project funds management.

Tonya (2015) conducted an assessment on the sustainability of water projects in Bahi and Chamwino districts, Dodoma, central Tanzania. He adopted a cross - sectional research design whereby 24 water projects were assessed. A total of 136 respondents were interviewed. Data were descriptively analyzed. The study concluded that, little or poor involvement of the project beneficiaries on design of the project and decision of the type of appropriate technology which is affordable by the community post donor support which in turn affect future sustainability of the project.

Mujwahuzi (2012) conducted study with regard to community participation in rural water supply schemes in Tanzania. The study observed possible arrangements of involvement of community in the development and operation of water supply schemes. The study concluded that, in order to enhance sustainability of rural water supply schemes there is need to increase participation of local communities in all aspects of water scheme development. For example, creation of an autonomous

village water committees, mobilized local people participation in planning, and financing are crucial factors in enhancing sustainability in rural water supply schemes.

Reweta and Sampath (2010) investigated potential of urban water project sustainability in terms of self-sustaining water supply for the long-term development to the well-being of the people the developing countries. The scope of the study involved few rural and urban water supply projects in Tanzania. With regard to equity in public tap distribution, data were analyzed through Theil information theoretic measure while Theil forecast error method was used to measure the performance of monthly water bills collection. The study revealed that, the assurance of the sustainability of water project requires equity, billing collection, cost recovery and beneficiaries participation.

2.5 Research Gap

In conclusion, the worldwide sustainability of water resources projects have influential factors. In view of the above literature review, it may be influenced by financial, human, and technological resources. Although some empirical studies revealed that sufficient resources can enhance it, these studies did not specifically focus on the adequacy of finance, capacity of human resources, and appropriate technology. In this regard, this study assessed the influence of resource mobilization on the sustainability of community water project; the case of MAKILENGA water scheme project.

2.6 Conceptual Framework

Sustainability of rural community water scheme projects is a complex combination of various factors including resource factors, project design factors, project management factors, policy and legal factors to mention few. There is no linearity interaction of these factors rather in a complex manner. However, in order to measure the influence of some variables, other factors should be held constant. In this regard, the conceptual framework for this study was developed in the assumption that, other factors remain constant; mobilization of resources can influence sustainability of rural community water scheme projects. The following model shows linear relationship of the variables.

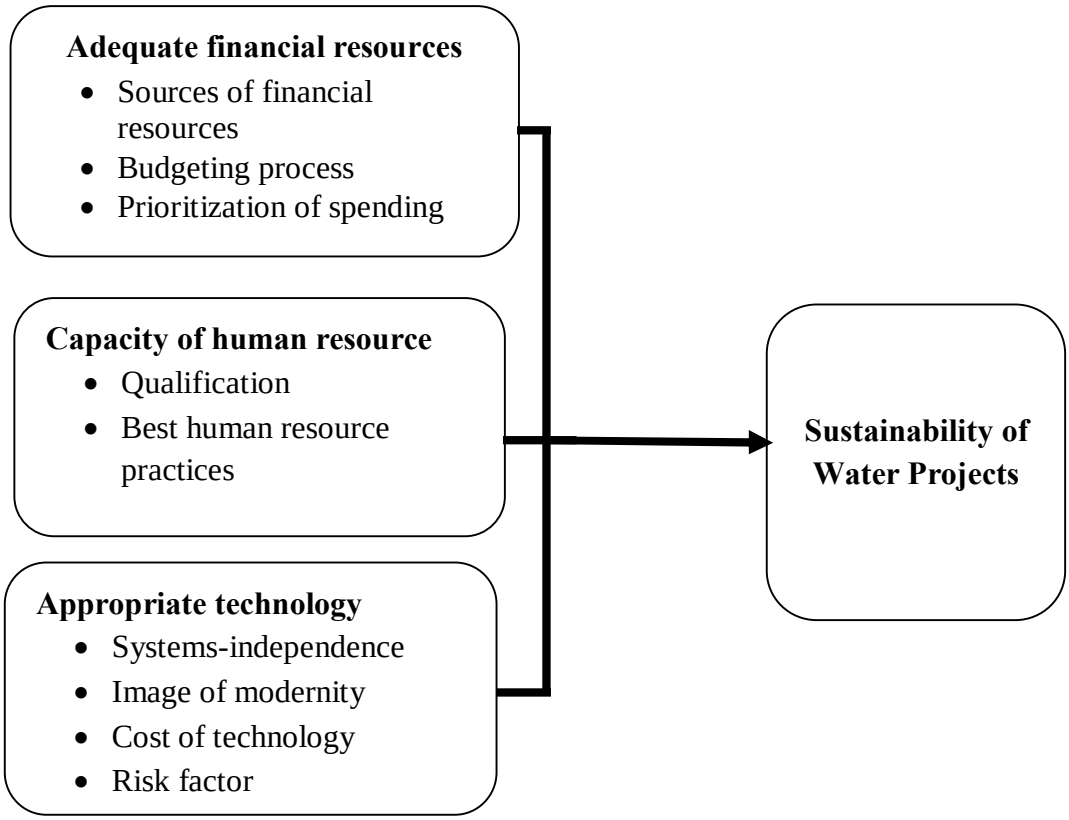

Figure 2.1: Conceptual Model

2.6.1 Dependent Variable

According to the problem statement and the objectives of the study, the dependent variable is the ñsustainability of water projectsò resulting from resource mobilization in terms of financial resources, capacity of human resource and appropriateness of technology. For the purpose of this study, sustainability of project refers to continuity of the project for the intended period of time in terms of achievement of its objective.

2.6.2 Independent

Independent variables are identified variables that are responsible for influencing sustainability of projects. The independent variables are premised from economic sustainability theory and resource based view theory, which provide relationship between availability of resources such as financial, human resources, and technological resources and sustainability of project. In this regard, independent variables can be viewed in three dimensions:

2.6.2.1 Adequacy of financial resources

Refers to sufficient funds to finance the operations of the project. Adequacy of financial resources can be determined by sources of finance, budgeting process, and prioritization of spending.

Sources of finance: Reliable sources of finance are one of the determinant of adequacy of finance. Several sources were identified in the literature review above whereby internal sources such as retained earnings, cash flow financing as well as shareholders and stakeholders contribution were identified. External sources were also identified such as bank loans, government subsidies, and donors. Reliability of these

sources depends on several factors (Braathen and Odd-Helge, 2014; Bukurura, 2014; and Nevitt and Fabozzi, 2010). However, this study has assessed these factors in order to determine their effect on MAKILENGA water scheme project sustainability.

Budgeting process: Proper budgeting process ensures adequacy of financial resources to project operation and activities. Good budget process should go through four main stages namely budget draft formulation, budget approval, budget execution, and budget oversite. Each stage involves best practice, which ensures good budget and in turn enhances adequacy of financial resources to the project (Schmidt, 2019). This study will evaluate the budgeting process of MAKILENGA water scheme project to determine whether it follows best practice or not.

Prioritization of spending: Adequate finance for a project can also be determined by spending (Schmidt, 2019). Given the fact that, financial resources are always scarce, prioritization of spending is inevitable. This study will assess the budget execution while focus on prioritization of spending by MAKILENGA water scheme project.

2.6.2.2 Capacity of human resource

Refers to ability of human resource (employee) to perform given duties according to organizationôs guidelines, and meeting customersô requirements. In this respect, determination of competent human resource should consider qualification as well as best human resource practices issues.

Qualification: Minimum qualifications for performing job include education attainment, work experience and personal attributes needed by an organization. In

order to determine qualification for a job, an organization should conduct job requirement analysis before making vacancy announcement (Mweru and Mwaina, 2015). This study will assess the qualification of position holders with comparison to post requirements on the scheme of service of MAKILENGA water scheme project.

Best human resource practices: As discussed in the literature review above, best human practices include workforce planning; recruitment; induction and orientation; skills management; training and development; personnel administration; compensation in wage or salaries; time management; travel management; employeesô benefits administration and personnel cost planning (Armstrong, 2006). This study will review human resourcesô function of MAKILENGA water scheme project in order to determine whether it applies best human resource practices.

2.6.2.3 Appropriate Technology

Refers to technology adopted by an organization, which is cost effective in terms of application, affordability and environmental compatibility. The appropriate technology has four basic characteristics namely systems-independence, image of modernity, cost of technology, and risk factor (Robert and Wicklein, 2008). This study will assess the technology adopted by MAKILENGA water scheme project in order to determine whether it possess these characteristics.

2.7 Summary

The central objective of this study is to assess the influence of resource mobilization on the sustainability of community water projects. The literature review above

provided theories and other authors view on the sustainability of projects generally and specific to community water projects. Theoretical review is centered on economic sustainability theory and resource based view theory on mobilization of financial, human, and technological resources. Empirical reviews demonstrate various studies that have been conducted in various regions of the world. Despite, both theoretical and empirical review it was revealed that sustainability of water resource project has influential factors. However, the gap is remained specific to Tanzania context whereby, studies on the influence of resource mobilization for sustainability of community water projects did not specifically focus on the adequacy of finance, capacity of human resources, and appropriate technology. Significantly, this research can contribute to fill the gap and add up to the body of public literature domain.

CHAPTER THREE

RESEARCH METHODOLOGY

3.1 Overview

Research methodology is an approach, which guides how the research was conducted. The research methodology for this study included research philosophy, research area, population, sampling design and procedures, variables and measurement procedures, validity and reliability, methods of data collection, data processing and analysis as well as expected results.

3.2 Research Philosophy

Research philosophy underpins many research questions for which the researcher needs to develop answers particularly when it comes to data collection and analysis (Creswell, 2014). In social science research, researcher needs to make a decision regarding the philosophical orientation. Without this it might be difficult to proceed to the next question that is what research design was employed during the research study. At this juncture the researcher needed to consider the relationships that exist between theoretical orientation, philosophical orientation and research design.

3.2.1 Research Design

This study employed case study research design whereby the data were collected in quantitative form aiming at providing pattern of a certain phenomenal problem (Creswell, 2014). For purpose of the underlying study, the researcher developed research questions, which enabled her make conclusion based on the pattern of the results from the analytical point of view in relation to the existing situation or

problem. In this regard this study collected primary data from the respondents of the study.

3.3 Area of the Research

This study was conducted in Arumeru District, Arusha Region - Tanzania where MAKILENGA water scheme project operates. The district is constituted by 2 LGAs namely Arusha and Meru. MAKILENGA water project operates under Meru LGA. The district is located in 3.2923° S, 36.8250° E coordinates in the Arusha region of Tanzania. The District is bordered by Monduli district in the North and West, by Hai district in the East and South. It is administratively divided into 37 Wards in 2966 square Kilometers. This area has been chosen for this study because it is accessible by researcher from her living location. Moreover, the MAKILENGA water scheme project has been selected as a case study because it is a community water project with both features of being financed by donor and successively handed over to the community after donor project period. During the donor period, the project M&E report showed successful operation and output.

However, after donor period and project been handed over to the community, several challenges including billing and sabotage problems were reported. Furthermore, the researcher is familiar with both situations whereby she has been involved in donor project management as well as post donor project management. In this setting, the researcher was able to easily access the required information within little resources. Thus, a case study approach enabled the researcher to make deep exploration on the research problem to come up with a comprehensive answers and recommendations.

3.4 Research Population

The research population is the entire group of people, objects or organizations the researcher is interested or wishes to draw conclusions (Creswell, 2014). This study targeted all 4 wards with 144 village members of water committee, which form MAKILENGA water scheme projects in Meru District Council (MAKILENGA, 2017).

3.5 Sampling Design and Procedures

This study employed multistage sampling method to select wards and sub-villages from which the specific respondents will be selected. According to McConville and Hong (2007) multistage sampling is a method, which allows the process of obtaining sample size in stages through descending scale from larger stage to smaller stage. The first stage involved selection of wards from Meru District Council where MAKILENGA water scheme is operated. However, the wards were selected purposively based on the particularity of the village water committee whereby the wards and villages with total coverage of water supply network were selected first. A probability sampling method was also employed whereby respondents in the population frame were given equal chance of being selected.

3.5.1 Sample Size

According to Creswell, (2014) sample size is a small number unit from a targeted population used to draw representative information which can be generalized to conclusion and represent the behavior of the entire population. The sample size for this study was drawn from a cluster of 3 Wards namely Kingôori, Leguruki and Ngarenanyuki. The reason to leave out one ward namely Makiba is that, until the time

of handing over the project to the community management by donor, this ward was not yet covered by the project. However, the selection of respondents were done from all 144 village water committee members by using Krejcie and Morgan formula as indicated below:

$$\mathbf{n = P \div [1+ P (r^2]}$$

Where:

n = Sample size

P = Population

r = Degree of accuracy (5%)

According to MAKILENGA water project management set up, each village is populated by 2 people who are members of village water management committee. The three wards has a total of 72 villages. In this respect the population frame of this study was 144 people. Based on the Krejcie and Morgan formula above, the sample size was 106 respondents.

3.6 Measurement of Variables

The Table 3.1 summarizes the how data were collected, measured, and analytical techniques.

Table 3.1: Measurement of Variables

Variable	Data Collection Method	Variable Measurement Technique	Data Analytical Technique
Adequacy of financial resources (i) Sources of financial resources (ii) Budgeting process (iii) Prioritization of spending	**Questionnaire** (Chan 2010; Ernest and Young 2009; Schmidt 2009; Bukurura 2004).	Ordinal	Quantitative
Capacity of human resource (i) Qualification (ii) Best human resource practices	**Questionnaire** (Gupta 2013; and Gimeno 2013; Armstrong 2006)	Ordinal	Quantitative
Appropriate technology (i) Systems-independence (ii) Image of modernity (iii) Cost of technology (iv) Risk factor	**Questionnaire** (Robert and Wicklein 2008)	Ordinal	Quantitative

3.7 Reliability

Reliability is an important aspect to researchers that link abstract concepts to empirical determinants. Several measures were employed to ensure that the results are free from material errors from the design of the questionnaire to interpretation of the results. Such measures include: pre-testing of the designed questionnaire and prior review of the questionnaire by the supervisor. Apart from the supervisor, ten people were used for pilot testing the questionnaires. Such measures enabled to find out the time needed to complete a questionnaire, clarity of instructions, clarity of the questions, topic omissions, the layout of the questionnaire and other comments.

3.8 Validity

Validity deals with persons, settings and times to which findings can be generalized. This was addressed in this research during the planning stage. The use of expert advice to check this was sought. Moreover, the following three strategies were adopted which are interviews, sorting and pre testing of the questionnaires for the purpose of measuring theoretical meaningfulness of the concepts and consistency of language used to represent concepts. Subject expert (supervisor) reviewed the questions in the questionnaire form.

3.9 Data Processing and Analysis

Since data for this study were collected quantitatively, they were processed and summarized in appropriate tables. The researcher checked the accuracy of the data collected as well as the correctness and relevance to the study. Data were quantitatively analyzed by the Statistical Package for Social Sciences (SPSS) version

20.0 whereby, after validity checks and reliability, two methods namely descriptive and correlations statistics.

This study conceptualizes that the sustainability of community water project is influenced by resource mobilization factors such as adequacy of financial resources, capacity of human resource, and appropriate technology. The purpose of this study was therefore to test influence and relationship of the variables as shown in the model below:

The model:

$$WPS = b_0 + b_1X_1 + b_2X_2 + b_3X_3 + e$$

Where:

WPS = Water project sustainability- dependent variable

X_1 = Adequacy of financial resources,

X_2 = Capacity of human resource,

X_3 = Appropriate technology

b_0, b_1, b_2 and b_3 = Coefficients of the model

e = Error term.

CHAPTER FOUR

DATA ANALYSIS, INTERPRETATION AND DISCUSSION

4.1 Introduction

This chapter presents data analysis, interpretation and discussion of the findings. It is organized into sections and sub-sections, which reflect research questions towards achieving the specific objectives of the study. However, this section provides the analysis of the respondentsô demographic characteristics. The analysis of the respondentsô demographic characteristics was important because, it provides necessary information of respondents that were required to validate their representativeness of the study population. Analysis of the respondentsô demographic was categorized into four personal characteristics such as age, gender, education level, and domicile of the respondent. The analysis was done descriptively and presented by SPSS frequency tools.

4.1.1 Respondents' Wards Distribution

According to the set-up of the study sample size, respondents were obtained from three wards to represent a total sample size of 106 respondents. However, there were 89 respondents in the field, which is equivalent to 84%. The wards were selected purposively based on the coverage of MAKILENGA water project to the four wards of the project whereby the most covered three wards were selected. However, selection of respondents from these wards were done randomly based on the Morgan formula of sample size selection.

Table 4.1: Respondents' Wards Distribution

Ward	Frequency	Percent	Valid Percent	Cumulative Percent
King'ori	53	59.6	59.6	59.6
Leguruki	18	20.2	20.2	79.8
Ngarenanyuki	18	20.2	20.2	100.0
Total	**89**	**100.0**	**100.0**	

Source: Survey Data, 2019

Table 4.1 shows the percentage distribution of the respondents from the selected wards. Kingôori ward had 59.6%, Leguruki had 20.2%, and Ngarenanyuki had 20.2%. The distribution represent same pattern of the number of villages distribution in the respective wards. This implies that, Kingôori ward has a larger number of villages compared to Leguruki and Ngarenanyuki wards which have few and same number of villages.

4.1.2 Respondents' Age Profile

The respondentsô age profile was analyzed in order to determine its distribution in the MAKILENGA villagesô water committees. The age units were categorized into group of ten years brackets. Figure 4.1 shows that, majority of the respondents had over 30 years. Cumulatively 82% of the respondents had age bracket of between 31 and 60 years. However, the group was dominated by respondents with age bracket of between 31 and 40 by 30.3%, followed by respondents with age bracket of between 41 and 50 by 28.1%, and respondents with age bracket of between 51 and 60.

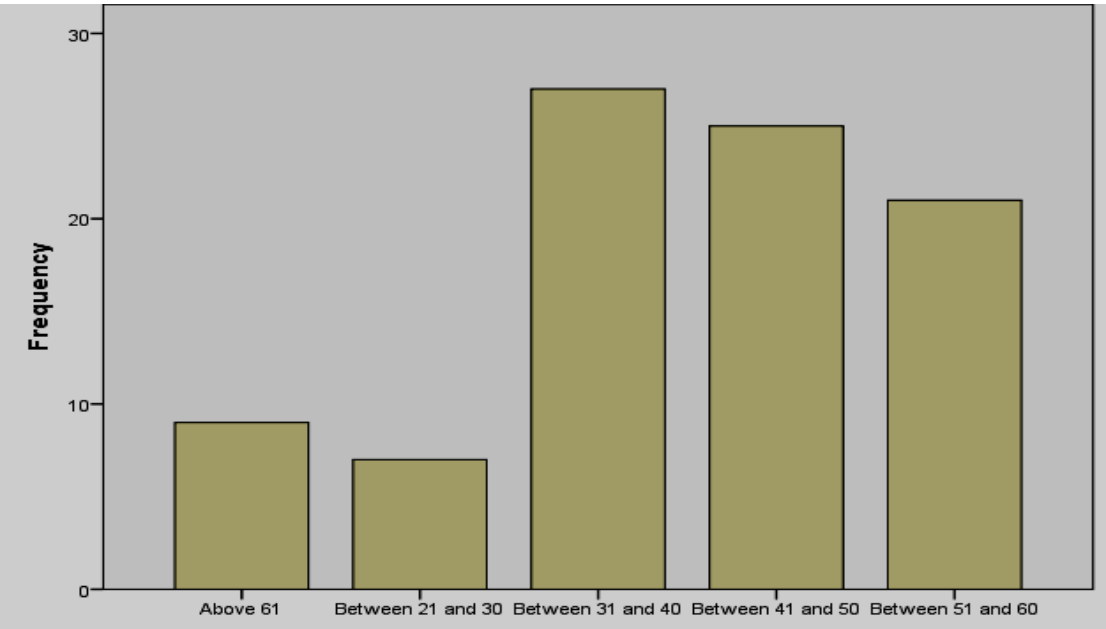

Figure 4.1: Respondents' Age Profile

Source: Survey Data, 2019

4.1.3 Respondents' Gender Profile

The gender profile of the respondents was also analyzed to determine distribution in the MAKILENGA villagesô water committee. Figure 4.1 shows that, great majority of the respondents were male with more than 70%. However, the sex and wards cross tabulation shows similar pattern of male dominance in the distribution.

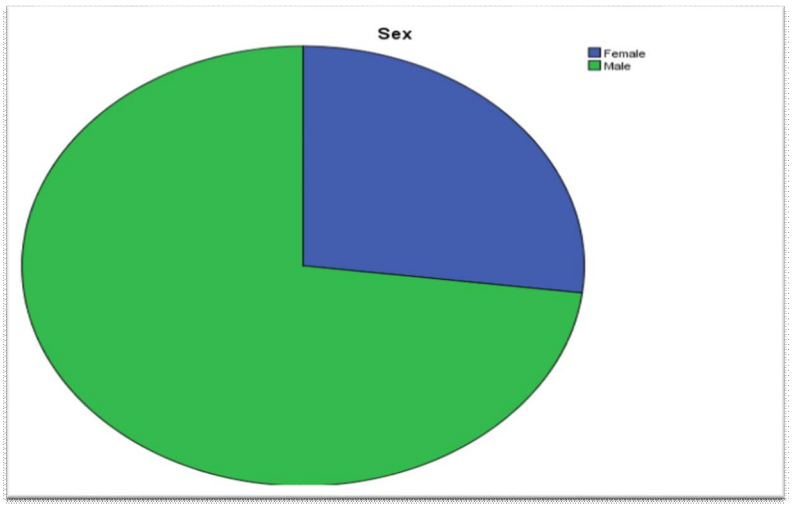

Figure 4.2: Respondents' Gender Profile

Source: Survey Data, 2019

The results signify the patriarchy system in Meru community whereby men hold primary power and dominate in all political leadership role, have more moral authority, more privileged in social affairs and more control of property ownership than women. According to Butovskaya, et al., (2016) Meru community commonly known as Wameru, is typically a patriarchal society since 1880s when the society was ruled by a leadership of *Randi II* named as *Ndemi.*

4.1.4 Respondents' Education Profile

The respondentsô education profile was also analyzed to determine its distribution in the MAKILENGA villagesô water committees. Figure 4.3 shows that, the group was dominated by primary level of education. The great majority (78.7%) of the respondents had primary level of education. 15.7% of the respondents had secondary level of education 5.6% of the respondents had above secondary level of education.

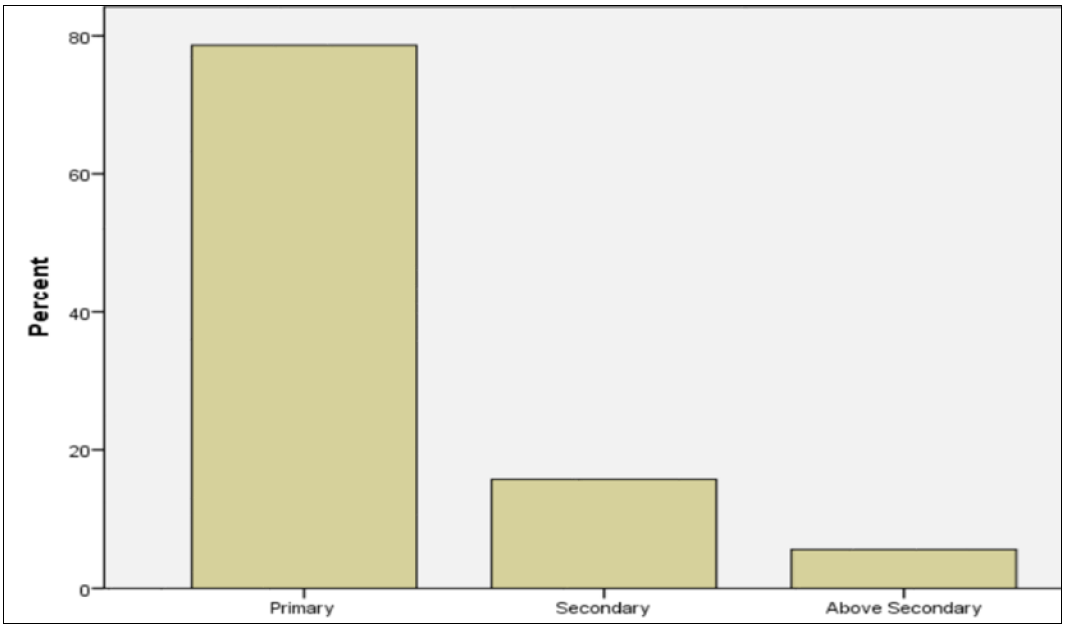

Figure 4.3: Respondents' Education Profile

Source: Survey Data, 2019

The results show that, majority of the respondents had attained primary level of education. Despite, primary level of education is regarded as the lowest level of education, MAKILENGA village water committee, consider involvement of community in the implementation of the project as a key aspect for success. Since majority of the members of the community have the lowest level of education, involving the similar category in the village water committee is considered as community participation in the project management. According to Muniu, et al., (2018) community participation in resource mobilization is important for enhancing sustainability of water projects.

4.2 Adequacy of Financial Resources on Sustainability of MAKILENGA Water Project

The first objective of the study aimed at assessing adequacy of financial resources on sustainability of MAKILENGA water project. In order to achieve the objective, several items were measured. Questionnaire was used to collect data from the respondents whereby SPSS descriptive statistic techniques were used to analyze the data. The data ware analyzed by computing descriptive weighted average and standard deviation. According to interpretation criteria, a mean score from 0.01 to 1.00 is (strongly disagree); from 1.01 to 2.00 is (disagree); from 2.01 until 3.00 is (neutral); 3.01 until 4:00 is (agree); and mean score from 4.01 until 5.00 is (strongly agree).

4.2.1 Sources of Financial Resources

Sources of financial resources are major determinant of adequacy of financial resources which is a major determinant of sustainability of a project. This means that, sustainable sources of finance enhances the sustainability of the project. Question

1(a) of Section B of Appendix 1 asked respondents to indicate level of disagreement/agreement by selecting from Likert scale of five the most appropriate answer on the relationship between sources of financial resources and adequacy of financial resource for the sustainability of MAKILENGA water project. Table 4.2 below presents the results.

Table 4.2: Relationship between Sources of Financial Resources and Adequacy of Financial Resource

Descriptive Statistics					
	N	**Minimum**	**Maximum**	**Mean**	**Std. Deviation**
Water charges could be best financial sources for MAKILENGA water project	89	1	5	4.10	1.118
Government contribution could be best financial sources for MAKILENGA water project	88	1	5	3.65	1.232
Donorsô contribution could be best financial sources for MAKILENGA water project	89	1	5	3.51	1.244
Retained earning could be best financial sources for MAKILENGA water project	89	1	5	3.36	1.359
Bank loans could be best financial sources for MAKILENGA water project	89	1	5	2.94	1.417
Valid N (listwise)	88				

Source: Survey Data, 2019

The results revealed members of MAKILENGA village water committeeôs views on the relationship between sources of financial resources and adequacy of financial resource. Bank loans (Mean: 2.94) found with neutral relationship. This implies that, members of MAKILENGA village water committee are uncertain on sustainability of MAKILENGA water project in terms of adequacy of financial sources to be

influenced by bank loan. According to Chan (2010) bank loans are among the external sources of project financing. Respondents might have considered the advantages of bank loans such as flexibility and tax benefits.

On the other hand they might have considered disadvantages of bank loans such as repayment burden and strict requirements. Thus, balancing both advantages and disadvantages made them to be uncertain. However, the standard deviation was greater than 1 which indicated that, responses were very dispersed away from the mean. This implies that, there was no common agreement among the respondents with regard to bank loans as sources of adequacy financial resources to the MAKILENGA water project.

The results also revealed other external sources of finance that can moderately make sustainable adequacy of finance to MAKILENGA water project. The sources were measured by the following items: Donorsô contribution could be best financial sources for MAKILENGA water project (Mean: 3.51); and Government contribution could be best financial sources for MAKILENGA water project (Mean: 3.65). The results also revealed that one internal source, retained earnings that have a moderate influence on adequacy finance: Retained earning could be best financial sources for MAKILENGA water project (Mean: 3.36). The results comply with Chan (2010) and Esty (2009) who refer donorsô support, and government subsidies as sources of project financing. However, for a case of MAKILENGA water project these sources are moderately considered as sources for adequacy financial resources. According to Chan (2010) sources of finance for adequacy financial resources of a project, should come from

internal commercial sources that can exist parallel to the life span of the project. However, the standard deviations for these items were greater than 1 which indicated that, responses also dispersed away from the mean. This implies that, there was also no common agreement among the respondents with regard to external sources as sources of adequacy financial resources to the MAKILENGA water project sustainability.

The results further revealed one item, water charges, which could be best financial sources for MAKILENGA water project, with extremely high score of mean of 4.10. This implies that, members of MAKILENGA village water committee consider water charges as the best sources of finances for adequacy financial resources. The findings comply with Chan (2010) that, internal sources of finance could be the best for adequacy and sustainable adequacy of financial resources. Therefore, for MAKILENGA water project to be sustainable in terms of generating adequate financial resources, it should consider water charges policy, billing system, and revenue collection guidelines for maximum revenues. Although the standard deviation for this item was greater than 1, it is however smaller than others in the group. This implies that, the common consensus was at least closer than other items.

4.2.2 Budgeting Process

From the conceptual framework point of view, the researcher envisaged that, proper budgeting process would ensure adequacy of financial resources for the sustainability of MAKILENGA water scheme project. A good budget process should pass through four main stages namely budget planning, budget approval, budget execution, and budget oversite. Question 1(b) of Section B of Appendix 1 asked respondents to

indicate level of disagreement/agreement by selecting from Likert scale of five the most appropriate answer on the way they consider budgeting process to enhance adequacy of financial resource for sustainability of MAKILENGA water project. Table 4.3 presents the results.

Table 4.3: Relationship between Budget Process and Adequacy of Financial Resource

Descriptive Statistics					
	N	**Minimum**	**Maximum**	**Mean**	**Std. Deviation**
Adequate finance for MAKILENGA water project budgeting is influenced by proper planning process	89	4	5	4.82	.386
Adequate finance for MAKILENGA water project budgeting is influenced by proper approval for expenditure	89	1	1	1.00	.000
Adequate finance for MAKILENGA water project budgeting is influenced by proper execution of the budget	89	1	2	1.03	.181
Adequate finance for MAKILENGA water project budgeting is influenced by actual spending of budgeted finances	89	1	2	1.03	.181
Valid N (listwise)	89				

Source: Survey Data, 2019

The results revealed the perception and observation of members of MAKILENGA village water committee on the budgeting process. Their perception and observation revealed the practice in MAKILENGA water project with regard to budgeting process and its impact to the sustainability of the project. The respondents strongly agreed on one item in the process which is: Adequate finance for MAKILENGA water project budgeting is influenced by proper planning process (Mean: 4.82). This implies that,

the budgeting process of MAKILENGA is well planned and any success with regard to adequacy of finance is contributed by proper budgeting planning. The results also imply that, members of MAKILENGA village water committee believe of proper budget planning as the prerequisite for the adequacy of financial resources for the sustainability of the project. The results comply with the Schmidt (2019) on the benefits of proper budgeting planning such as to enhance business owners to concentrate on prioritization of actual spending, reduction of costs, control of revenues losses, prioritization of project needs according to its objectives, forecasting and evaluation of incoming revenues, trends of spending and work on risks that can impact funds in advance.

The respondents however, did not agree with other budgeting process items such as adequate finance for MAKILENGA water project budgeting being influenced by proper approval for expenditure (Mean: 1.00); Adequate finance for MAKILENGA water project budgeting is influenced by proper execution of the budget (Mean: 1.03); and adequate finance for MAKILENGA water project budgeting is influenced by spending of actual budgeted finances (Mean: 1.03).

According to the evaluation criteria, these items fall under strongly disagree. The results imply that, MAKILENGA water project is very poor in the proper approval for expenditure and proper execution of the budget and actual spending of budgeted finances. This also implies that, the adequacy of financial resources is affected by these practices. According to Schmidt (2019), proper budgeting should involves planning, proper approval, proper budget execution in actual spending in the

designated period. The four budgeting processes were assumed to be interlinked and dependent. Table 4.4 summarizes correlation between budgeting processes variables.

Table 4.4: Correlations Matrix of Budgeting Process Variables

Correlations					
		Proper planning process	**Proper approval for expenditure**	**Proper execution of the budget**	**Actual spending of budgeted finances**
Proper planning process	Pearson Correlation	1			
	Sig. (2-tailed)				
	N	89			
Proper approval for expenditure	Pearson Correlation	.[a]	.[a]		
	Sig. (2-tailed)	.			
	N	89	89		
Proper execution of the budget	Pearson Correlation	-.075	.[a]	1	
	Sig. (2-tailed)	.487	.		
	N	89	89	89	
Actual spending of budgeted finances	Pearson Correlation	-.237*	.[a]	-.035	1
	Sig. (2-tailed)	.025	.	.746	
	N	89	89	89	89
*. Correlation is significant at the 0.05 level (2-tailed).					
a. Cannot be computed because at least one of the variables is constant.					

Source: Survey Data, 2019

The results show small correlation between proper planning process and actual spending of budgeted finances ($r = -0.237$, $p < 0.05$). However, other items have negative correlation. This implies that, as proper budgeting planing is done, as actual spending may be. Therefore, for MAKILENGA water project to enhance sustainability it should consider proper budgeting planning in order to enhance efficent actual spending.

4.2.2.1 Multiple Regression Analysis of Influence of Budgeting Process on Sustainability of MAKILENGA Water Project

Table 4.5 shows that budgeting process variables have only 3.7% effect on sustainability of MAKILENGA water project. Results show that proper planning process and proper execution of the budget have negative and insignificant relationship on sustainability of MAKILENGA water project (ɓ = -.241, p= .024) and (ɓ = -.053, p=.616) respectively. Other variables were computed and found constants or have missing correlations.

Table 4.5: Multiple Regression Analysis on Budgeting Process Variables

Coefficients[a]						
Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	1.634	.269		6.070	.000
	Adequate finance for MAKILENGA water project budgeting is influenced by proper planning process	-.113	.049	-.241	-2.295	.024
	Adequate finance for MAKILENGA water project budgeting is influenced by proper execution of the budget	-.053	.105	-.053	-.504	.616
a. Dependent Variable: Adequate finance for MAKILENGA water project						

Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.243[a]	.059	.037	.178

Source: Survey Data, 2019

The results imply that, budgeting process has little effect on the sustainability of MAKILENGA water project as was revealed by the ajusted R-squre of 3.7%. This means that, respondents did not consider budgeting process to have much influence on the sustainability of their water project. The findings did not support the emperical study of Ostrom (2009) that challenges of water sustainability are contributed by insufficient supply of inputs such as funds, proper budgeting, technology and capable manpower to manage other inputs.

4.2.3 Prioritization of Spending

The researcher also envisaged that, prioritization of spending would ensure adequate financial resources for the sustainability of MAKILENGA water project. Since financial resources are always scarce, prioritization of spending is one of the strategies to ensure adequacy of financial resources. Question 1(c) of Section B of Appendix 1 asked respondents to indicate level of disagreement/agreement by selecting from Likert scale of five the most appropriate answer on the way they consider prioritization of spending is conducted in MAKILENGA water project with regard to enhancing adequacy of financial resource for sustainability of MAKILENGA water project. Table 4.6 presents the results.

Table 4.6: Relationship between Prioritization of Spending and Adequacy of Financial Resource

Descriptive Statistics					
	N	**Minimum**	**Maximum**	**Mean**	**Std. Deviation**
Prioritization of spending by MAKILENGA is influenced by importance of item/activity the expenditure is meant for	89	1	5	3.57	1.195
Prioritization of spending by MAKILENGA is influenced by time due for expenditure	89	1	5	3.44	1.196
Prioritization of spending by MAKILENGA is influenced by cost of item/activity the expenditure is meant for	89	1	5	3.45	1.332
Prioritization of spending by MAKILENGA is influenced by risk associated with item/activity the expenditure is meant for.	89	1	5	2.75	1.317
Valid N (listwise)	89				

Source: Survey Data, 2019

The results revealed members of MAKILENGA village water committeeôs perceptions and observation on the relationship between prioritization of spending and adequacy of financial resource. Risk associated with item/activity (Mean: 2.75) found with neutral relationship. This implies that, members of MAKILENGA village water committee are uncertain on sustainability of MAKILENGA water project in terms of risk associated with item/activity the expenditure meant for. According to Hatton (2007), risk is among of the four aspects to be taken into consideration during prioritization of spending. However, this is not the case in MAKILENGA water project. The cross tabulation shows even distribution of respondents from categories of respondents in terms of wards, education, and sex. Thus, the researcher could not able to identify reason for this consideration of the respondents with regard to risk.

However, the standard deviation for this item was greater than 1 which means, there was no common agreement among the respondents with regard to risk associated with item or activity the expenditure meant for.

The results also revealed other prioritization for spending items under study have moderately influence on enhancing adequacy of finance to MAKILENGA water project. The items measured were: Prioritization of spending by MAKILENGA is influenced by time due for expenditure (Mean: 3.44); Prioritization of spending by MAKILENGA is influenced by cost of item/activity the expenditure is meant for (Mean: 3.45); and Prioritization of spending by MAKILENGA is influenced by importance of item/activity the expenditure is meant for (Mean: 3.65). Although the three items fall under single category of evaluation, the importance of item/activity the expenditure is meant for scored largest mean of all items in the group. This implies that, respondents consider the importance of item to carry more weight than others. In this regard, the finding comply with Bukurura (2004) that, creating spending plan takes into account the importance of the spending in terms of value and urgency of implementation among other things. Meanwhile, the standard deviation of this item was smaller than others in the group. The four items for spending prioritization were assumed be interlinked and dependent. Table 4.7 summarizes correlation between budgeting processes variables.

Table 4.7: Correlations Matrix of Prioritization of Spending Variables

Correlations					
		Importance of item/activity the expenditure is meant for	Time due for expenditure	Cost of item/activity the expenditure is meant for	Risk associated with item/ activity the expenditure is meant for
Importance of item/activity the expenditure is meant for	Pearson Correlation	1			
	Sig. (2-tailed)				
	N	89			
Time due for expenditure	Pearson Correlation	.681**	1		
	Sig. (2-tailed)	.000			
	N	89	89		
Cost of item/activity the expenditure is meant for	Pearson Correlation	.622**	.667**	1	
	Sig. (2-tailed)	.000	.000		
	N	89	89	89	
Risk associated with item/activity the expenditure is meant for	Pearson Correlation	.077	.207	.233*	1
	Sig. (2-tailed)	.476	.052	.028	
	N	89	89	89	89
**. Correlation is significant at the 0.01 level (2-tailed).					
*. Correlation is significant at the 0.05 level (2-tailed).					

Source: Survey Data, 2019

Results show that, item/activity the expenditure is meant for has strong and positive significant relationship with time due for expenditure for and cost of item/activity the expenditure is meant for. The results are summarized in Table 4.7 ($r = 0.681$, $p < 0.01$) and ($r = 0.622$, $p < 0.01$)respectively; while the findings show that there is strong, positive relationship between time due for expenditure and cost of item/activity the expenditure is meant for ($r = 0.667$, $p < 0.01$). The results also revealed moderately positive correlation between cost of item/activity the expenditure is meant for and risk associated with item/activity the expenditure is meant for (r =

0.233, $p < 0.05$). The results imply that, when prioritizing spending, it is important for MAKILENGA water project to strongly consider time due for expenditure and cost of item/activity the expenditure is meant for. Moreover, when prioritization for spending, it is important for MAKILENGA water project not undermine the risk associated with item/activity the expenditure is meant for.

4.2.3.1 Multiple Regression Analysis of Influence of Prioritization of Spending on Sustainability of MAKILENGA Water Project

Table 4.8 shows that prioritization of spending variables have 50.6% effect on sustainability of MAKILENGA water project. Results show that time due for expenditure and cost of item/activity the expenditure is meant for have positive and significant relationship on prioritization of spending (ɓ = .488, p= .00) and (ɓ = .319, p=. 002) respectively while risk associated with item/activity the expenditure is meant for has a negative relationship on prioritization of spending.

Table 4.8: Multiple Regression Analysis on Prioritization of Spending Variables

Coefficients[a]						
Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	1.154	.311		3.704	.000
	Prioritization of spending by MAKILENGA is influenced by time due for expenditure	.488	.101	.488	4.845	.000
	Prioritization of spending by MAKILENGA is influenced by cost of item/activity the expenditure is meant for	.286	.091	.319	3.145	.002
	Prioritization of spending by MAKILENGA is influenced by risk associated with item/activity the expenditure is meant for	-.089	.070	-.099	-1.276	.206
a. Dependent Variable: Prioritization of spending by MAKILENGA water project						

Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.723[a]	.523	.506	.840

Source: Survey Data, 2019

The results imply that, prioritization of spending has significant effect on the sustainability of MAKILENGA water project as was revealed by the ajusted R-squre of 50.6%. This means that, respondents consider prioritization of spending to have much influence on the sustainability of their water project. The findings support the emperical study of Jiménez, et al., (2017) that, sufficient financial resources and prioritization of spending are fundamental resources which influence other resources to enhance project sustainability and are used to enhance reaction to address other project challenges.

4.3 Capacity of Human Resource on Sustainability of MAKILENGA Water Project

The second objective of the study aimed at assessing the capacity of human resource on sustainability of MAKILENGA water project. In order to achieve the objective, several items were measured. Questionnaire was used to collect data from the respondents whereby SPSS descriptive statistic techniques were used to analyze data. The data ware analyzed by computing descriptive weighted average and standard deviation.

4.3.1 Qualifications

Qualifications are major determinants of capacity of human resource who are major determinant for sustainability of a project. This means that, best qualifications of human resource can enhance sustainability of the project. Question 1(a) of Section C of Appendix 1 asked respondents to indicate level of disagreement/agreement by selecting from Likert scale of five the most appropriate answer on the relationship

between qualifications of capacity of human resource and sustainability of MAKILENGA water project. Table 4.9 presents the results.

Table 4.9: Relationship between Qualifications of Human Resource on the Sustainability of MAKILENGA Water Project

Descriptive Statistics					
	N	**Minimum**	**Maximum**	**Mean**	**Std. Deviation**
Qualified staff of MAKILENGA water project are obtained through good job analysis before recruitment	89	1	5	3.19	1.347
Qualified staff of MAKILENGA water project are obtained through practice of recruitment which require minimum level of education	89	1	5	3.17	1.367
Qualified staff of MAKILENGA water project are obtained through implementation of recruitment policies and guideline	89	1	5	3.11	1.256
Qualified staff of MAKILENGA water project are obtained through practice of recruitment which require minimum level of integrity and values of candidate	89	1	5	2.97	1.410
Valid N (listwise)	89				

Source: Survey Data, 2019

The results revealed members of MAKILENGA village water committeeôs perceptions and observation on the relationship between qualifications and capacity of human resource on sustainability of MAKILENGA water project. However, practice of recruitment which requires minimum level of integrity and values of candidate (Mean: 2.97) was found with neutral relationship. This implies that, members of MAKILENGA village water committee were uncertain on sustainability of MAKILENGA water project in terms of capacity of human resources with regard to practice of recruitment which require minimum level of integrity and values of candidate. According to Gimeno (2013), the practices of recruitment which require

minimum level of integrity and values of candidate is among of intrinsic features of qualifications for recruitment a job seeker in job positions offered by a formal organization. However, this is not the case in MAKILENGA water project. The cross tabulation shows even distribution of respondents from categories of respondents in terms of wards, education, and sex. Thus, the researcher could not able to identify reason for this consideration of the respondents with regard to practice of recruitment, which requires minimum level of integrity and values of candidate. However, the standard deviation for this item was greater than 1 which means, there was no common agreement among the respondents with regard to practice of recruitment which requires minimum level of integrity and values of candidate. The four qualifications of human resource items were assumed be interlinked and dependent. Table 4.10 summarizes correlation between budgeting processes variables.

Table 4.10: Correlations Matrix of Qualification Variables

Correlations					
		Implementation of recruitment policies and guideline	Good job analysis before recruitment	Practice of recruitment which require minimum level of education	Practice of recruitment which require minimum level of integrity and values of candidate
Implementation of recruitment policies and guideline	Pearson Correlation	1			
	Sig. (2-tailed)				
	N	89			
Good job analysis before recruitment	Pearson Correlation	.571**	1		
	Sig. (2-tailed)	.000			
	N	89	89		
Practice of recruitment which require minimum level of education	Pearson Correlation	.386**	.470**	1	
	Sig. (2-tailed)	.000	.000		
	N	89	89	89	
Practice of recruitment which require minimum level of integrity and values of candidate	Pearson Correlation	.207	.398**	.463**	1
	Sig. (2-tailed)	.051	.000	.000	
	N	89	89	89	89
**. Correlation is significant at the 0.01 level (2-tailed)					

Source: Survey Data, 2019

Results show that implementation of recruitment policies and guideline has strong and positive relationship with good job analysis before recruitment ($r = 0.571$, $p < 0.01$), and practice of recruitment which require minimum level of education ($r = 0.386$, $p < 0.01$).

Furthermore, good job analysis before recruitment has strong and positive relationship with practice of recruitment which require minimum level of education ($r = 0.470$, $p < 0.01$), and practice of recruitment which require minimum level of integrity and values of candidate ($r = 0.398$, $p < 0.01$). Lastly, practice of recruitment which require minimum level of education has strong and positive relationship with practice of recruitment which require minimum level of integrity and values of candidate ($r = 0.463$, $p < 0.01$).

4.3.1.1 Multiple Regression Analysis of Influence of Qualifications on Sustainability of MAKILENGA Water Project

Table 4.11 shows that qualifications variables have 32.6% effect on sustainability of MAKILENGA water project. Results show that, qualified staff of MAKILENGA water project are obtained through good job analysis before recruitment and practice of recruitment which requires minimum level of education have positive and significant relationship on projectôs human resource capability (ɓ = .520, p= .00) and (ɓ = .180, p=.091) respectively; while the practice of recruitment which requires minimum level of integrity and values of candidate has a negative relationship.

Table 4.11: Multiple Regression Analysis of Qualification Variables

Coefficients[a]						
Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	1.261	.333		3.784	.000
	Qualified staff of MAKILENGA water project are obtained through good job analysis before recruitment	.485	.095	.520	5.101	.000
	Qualified staff of MAKILENGA water project are obtained through practice of recruitment which require minimum level of education	.166	.097	.180	1.709	.091
	Qualified staff of MAKILENGA water project are obtained through practice of recruitment which require minimum level of integrity and values of candidate	-.074	.090	-.083	-.817	.416
a. Dependent Variable: Qualified staff of MAKILENGA water project						

Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.591[a]	.349	.326	1.031

Source: Survey Data, 2019

The results imply that, qualifications of employees have significat effect on the sustainability of MAKILENGA water project as was revealed by the ajusted R-squre of 32.6%. This means that, respondents consider qualifications of employees to have as such (32.6%) influence on the sustainability of their water project. The findings support the emperical study of Ostrom (2009) that, water project sustainability can be influenced by among other factors, insufficient capable manpower to manage other inputs.

4.3.2 Best Human Resource Practices

Best human resource practices are also major determinants of capacity of human resource who are major determinant of sustainability of projects. This means best human resource practices can enhance sustainability of the project. Question 1(b) of Section C of Appendix 1 asked respondents to indicate level of disagreement/agreement by selecting from Likert scale of five the most appropriate answer on the relationship between best human resource practices and capacity of human resource for the sustainability of MAKILENGA water project. Table 4.12 below presents the results.

Table 4.12: Relationship between on Best Human Resource Practices on the Sustainability of MAKILENGA Water Project

Descriptive Statistics					
	N	**Minimum**	**Maximum**	**Mean**	**Std. Deviation**
Capable human resource of MAKILENGA water project is influenced best personnel administration practice	89	1	5	3.45	1.234
Capable human resource of MAKILENGA water project is influenced by best compensation in wage or salaries administration practice	89	0	5	3.43	1.339
Capable human resource of MAKILENGA water project is influenced by best induction and orientation practice	89	1	5	3.42	1.269
Capable human resource of MAKILENGA water project is influenced by best training and development practice	89	1	5	3.38	1.378
Capable human resource of MAKILENGA water project is influenced by proper HR planning	89	1	5	3.37	1.228
Valid N (listwise)	89				

Source: Survey Data, 2019

The results revealed that, best human resource practices have moderate influence on enhancing capacity of human resource of MAKILENGA water project. The item measured were: Capable human resource of MAKILENGA water project is influenced by proper HR planning (Mean: 3.37); Capable human resource of MAKILENGA water project is influenced by best training and development practice (Mean: 3.38); Capable human resource of MAKILENGA water project is influenced by best induction and orientation practice (Mean: 3.42); Capable human resource of MAKILENGA water project is influenced by best compensation in wage or salaries administration practice (Mean: 3.43); and capable human resource of MAKILENGA water project is influenced best personnel administration practice (Mean: 3.45).

Although the five items fall under single category of evaluation, with very close mean; ócapable human resource of MAKILENGA water project is influenced by best personnel administration practiceô scored largest mean with the smallest standard deviation of all items in the group. This implies that, respondents consider best personnel administration practice to have more influence of enhancing capacity of human resources.

According Armstrong (2006), among of best human resource practices is personnel administration function which deals with personnelôs administrative matters such as leave, attendance, absenteeism, employee turnover, discipline etc. Thus, it is important for MAKILENGA water project to consider best personnel administration practice for its sustainability. Since the scored mean for these items were very close, it is also envisaged to display strong correlation as shown in Table 4.13.

Table 4.13: Correlations Matrix of best Human Resource Practices Variables on Sustainability of MAKILENGA Water Project

Correlations						
		Proper HR planning	Best induction and orientation practice	Best training and development practice	Best personnel administration practice	Best compensation in wage or salaries administration practice
Proper HR planning	Pearson Correlation	1				
	Sig. (2-tailed)					
	N	89				
Best induction and orientation practice	Pearson Correlation	.812**	1			
	Sig. (2-tailed)	.000				
	N	89	89			
Best training and development practice	Pearson Correlation	.587**	.675**	1		
	Sig. (2-tailed)	.000	.000			
	N	89	89	89		
Best personnel administration practice	Pearson Correlation	.698**	.663**	.700**	1	
	Sig. (2-tailed)	.000	.000	.000		
	N	89	89	89	89	
Best compensation in wage or salaries administration practice	Pearson Correlation	.642**	.630**	.539**	.612**	1
	Sig. (2-tailed)	.000	.000	.000	.000	
	N	89	89	89	89	89
**. Correlation is significant at the 0.01 level (2-tailed).						

Source: Survey Data, 2019

Results show that, proper HR planning has significant strong and positive relationship with best induction and orientation practice ($r = 0.812$, $p < 0.01$), best training and development practice ($r = 0.587$, $p < 0.01$), best personnel administration practice ($r = 0.698$, $p < 0.01$) and best compensation in wage or salaries administration practice ($r = 0.642$, $p < 0.01$). Furthermore, the results show that, best induction and orientation

practice has significant strong and positive relationship with best training and development practice ($r = 0.675$, $p < 0.01$), best personnel administration practice ($r = 0.663$, $p < 0.01$), and best compensation in wage or salaries administration practice ($r = 0.630$, $p < 0.01$).

Best training and development practice has significant strong and positive relationship with best personnel administration practice ($r = 0.700$, $p < 0.01$) and best compensation in wage or salaries administration practice ($r = 0.539$, $p < 0.01$). Lastly, best personnel administration practice has significant strong and positive relationship with best compensation in wage or salaries administration practice ($r = 0.612$, $p < 0.01$). The results imply that, strengthening the best human resource practices could enhance the sustainability MAKILENGA water project.

4.3.1.2 Multiple Regression Analysis of Influence of best Human Resource Practices On Sustainability of MAKILENGA Water Project

Table 4.14 shows that, best human resource practices variables have 70.5% effect on sustainability of MAKILENGA water project. Results show that capable human resource of MAKILENGA water project is influenced by best induction and orientation practices, by best personnel administration practices and by best compensation in wage or salaries administration practices have positive and significant relationship of (ɓ = .596, p= .00), (ɓ = .275, p= .00) and (ɓ = .144, p=.072) respectively; while best training and development practice has a negative relationship.

Table 4.14: Multiple Regression Analysis of Best Human Resource Practices Variables

Coefficients[a]						
Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	.260	.232		1.123	.264
	Capable human resource of MAKILENGA water project is influenced by best induction and orientation practice	.577	.087	.596	6.670	.000
	Capable human resource of MAKILENGA water project is influenced by best training and development practice	-.077	.079	-.086	-.974	.333
	Capable human resource of MAKILENGA water project is influenced best personnel administration practice	.274	.090	.275	3.035	.003
	Capable human resource of MAKILENGA water project is influenced by best compensation in wage or salaries administration practice	.132	.073	.144	1.823	.072
a. Dependent Variable: Capable human resource of MAKILENGA water project						

Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.847[a]	.718	.705	.667

Source: Survey Data, 2019

4.4 Appropriateness of the Technology Applied on Sustainability of MAKILENGA Water Project

The third objective of the study aimed at assessing appropriateness of the technology applied on sustainability of MAKILENGA water project. The appropriateness of technology involves suitability of technology in terms of its system-independence, image of modernity, cost effective, and risk free. Questionnaire was used to collect data from the respondents whereby SPSS correlation statistic technique was used to analyze the data.

A technology to be appropriate it should contain system which operates effectively without external system support. It also needs to be perceived modernity by users whereby it should simplify work and save userôs time. Moreover, appropriateness of technology is assumed when it saves the costs of user when compared to other alternatives. It also needs to consider risk factors such as risk environmental and ecological destruction. For example water pump system that depends on grid power supply might not be appropriate in rural areas where power cut occurs frequently. In this regard, according to Robert and Wicklein, (2008) appropriate technology has four basic characteristics namely systems-independence, image of modernity, cost of technology, and risk factor. These factors interrelate and correlate to make the technology appropriate. Question 1(a)-(d) of Section D of Appendix 1 asked respondents to indicate level of disagreement/agreement by selecting from Likert scale of five the most appropriate answer on the relationship between appropriateness of technology and sustainability of MAKILENGA water project. Table 4.15 shows correlations of these factors.

Table 4.15: Correlations Matrix of Technology Applied Variables on Sustainability of MAKILENGA Water Project

Correlations					
		Systems-independence	Image of modernity	Cost effectiveness	Consider risk factor
Systems-independence	Pearson Correlation	1			
	Sig. (2-tailed)				
	N	89			
Image of modernity	Pearson Correlation	.231*	1		
	Sig. (2-tailed)	.029			
	N	89	89		
Cost effectiveness	Pearson Correlation	.280**	.432**	1	
	Sig. (2-tailed)	.008	.000		
	N	89	89	89	
Consider risk factor	Pearson Correlation	.220*	.212*	.236*	1
	Sig. (2-tailed)	.038	.046	.026	
	N	89	89	89	89
*. Correlation is significant at the 0.05 level (2-tailed).					
**. Correlation is significant at the 0.01 level (2-tailed).					

Source: Survey Data, 2019

Results show that, systems-independence has significant strong and positive relationship with cost effectiveness ($r = 0.280$, $p < 0.01$) which means that, respondents consider systems-independence of MAKILENGA water project to have cost effective function. The results also show that, image of modernity is strongly correlated with positive relationship with cost effectiveness ($r = 0.432$, $p < 0.01$).

Moreover, the results reveal that, systems-independence has moderate significant and positive relationship with both image of modernity and consider risk factor ($r = 0.231$, $p < 0.05$ and ($r = 0.220$, $p < 0.05$) respectively. Image of modernity has moderate

significant and positive relationship with consider risk factor (r =0. 212, p < 0.05) and cost effectiveness has moderate significant and positive relationship with consider risk factor (r =0.236, p < 0.05). The findings signify the theoretical perspective of Robert and Wicklein (2008) on appropriate technology with an ability to stand alone to perform its function with few or no other supporting devices and image of modernity devices that provide sophistication and adds value to peopleôs social life.

The results also signify the perspective of Smith and Jagger, (2010) that, appropriate technology requires installation of modern equipment and tools which are compatible to project environment. The results indicate that, MAKILENGA water project is appreciated by users because of its technological appropriateness. Thus, sustainability is assured when end users of project outcome satisfies their needs.

4.4.1 Multiple Regression Analysis of Influence of Technology Applied on Sustainability of MAKILENGA Water Project

Table 4.16 shows that technology applied variables have 18.1% effect on sustainability of MAKILENGA water project. Results show that image of modernity has positive and significant relationship on cost of technology and risk factor (ɓ = .103, p= .315), (ɓ = .380, p= .00). and (ɓ = .100, p=.325) respectively.

Table 4.16: Multiple Regression Analysis of Technology Applied Variables

Coefficients[a]						
Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	.776	.426		1.820	.072
	Image of modernity	.097	.096	.103	1.012	.315
	Cost of technology	.397	.107	.380	3.712	.000
	Risk factor	.101	.102	.100	.989	.325
a. Dependent Variable: The engineering technology of MAKILENGA water project						

Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.457[a]	.209	.181	1.149

Source: Survey Data, 2019

CHAPTER FIVE

CONCLUSION AND RECOMMENDATIONS

5.1 Overview

The study covered a considerable number of items with regard to research study entitled ñthe influence of resource mobilization on the sustainability of community water projects: the case study of MAKILENGA.ò This chapter presents summary, conclusions and recommendations of the study.

5.2 Summary

The study specifically determined the adequacy of financial resources, the capacity of human resource, and appropriateness of the technology on sustainability of water project. The study was conducted in Arumeru District, Arusha Region - Tanzania where MAKILENGA water scheme project is undertaken. The study was conducted in Kingôori, Leguruki and Narenganyuki wards whereby 89 respondents in the category of village water committee members participated. The study was prompted by challenges of sustainability of water projects, especially after donor period. However, resource mobilization in terms of financial resources, capacity of human resources and technological resources have been envisaged to be panacea of sustainability of water projects challenges if well mobilized and managed. Data were collected quantitatively by questionnaire and have been analyzed by SPSS version 20 descriptive, correlation and regression statistics techniques.

In summary, findings revealed that, internal sources of revenues such as water charges; proper budget planning process, actual spending of budgeted finances,

prioritization of spending on item/activity the expenditure is meant for, cost of item/activity the expenditure is meant for, and time due for expenditure are influential factors which were identified with regard to adequacy of financial resources to enhance the sustainability of MAKILENGA water project.

In terms of capacity of human resource on sustainability of MAKILENGA water project, the findings revealed that, best qualified staff could be obtained through good job analysis before recruitment, implementation of recruitment policies and guidelines, and recruitment practice by observing minimum level of education. Meanwhile, capable human resource for MAKILENGA water project could be managed through best personnel administration practice.

With regard to appropriateness of the technology applied on sustainability of MAKILENGA water project, the findings revealed strong and positive relationship between systems-independence, image of modernity, consideration of risk factor, and cost effectiveness of MAKILENGA water project applied technology. Although some items have moderate positive relationship, the findings generally revealed fair appropriate technology of MAKILENGA water project on its sustainability.

5.3 Conclusion

Generally, based on the findings, it can be concluded that; resource mobilization may contribute to the sustainability of community water project. Internal sources of finance, which is attached to the project activities, can be the best source of finance resources for the adequacy of financial resources on sustainability of water project. In this regard, commercial or revenue collection activity of water charges can raise

financial resources, which are necessary for community water projects sustainability. However, for revenues to be spent properly, it can be concluded that, proper budget planning process; actual spending of budgeted finances; and prioritization of spending whereby cost of item/activity; time due for on statutory expenditures are influential factors for adequacy of financial resources on sustainability of water project.

In terms of capacity of human resource contribution for sustainability of water project, it can be concluded that, having good human resource practices which take care on good job analysis and implementation of recruitment policies and guidelines, can lead to the recruitment practices that observe minimum level of education. Having right and qualified human resource, personnel administration practice is inevitable for maintaining the human resource, hence sustainable water project.

With regard to appropriateness of the technology applied on sustainability of water project, it can be concluded that, systems-independence; image of modernity; consideration of risk factor; and cost effectiveness are influential factors. In this regard, for water project to ensure sustainability, it should consider adopting and applying appropriate technology.

5.4 Recommendations

Recommendations were drawn from the findings and been directed to community water projects as following:

(i) The findings revealed that, water charges could be the best financial source for MAKILENGA water project. Management of community water projects is

hereby recommended to come up with water charge policy, guidelines and procedures for water charges collection in order to maximize revenues for its sustainability.

(ii) The findings revealed that, retained earnings are the good best financial source for MAKILENGA water project. The management of community water projects is hereby recommended to also come up with water retained earnings policy that guides for the percentage of spending on other expenditures such as salaries and percentage of retained earnings to finance capital of the projects for its sustainability.

(iii) The findings revealed that, adequate finance for MAKILENGA water project can be influenced by proper budgeting planning process. The management of community water projects is hereby recommended to hire a qualified budgeting consultant and auditor to prepare annual budget for the project and audit its implementation respectively.

(iv) The findings revealed that, proper approval for expenditure in MAKILENGA water project has constant variables meant unsatisfactory practice in this regard. Therefore, management of community water project is hereby recommended to take note and ensure proper approval for expenditure and budget execution for its sustainability.

(v) The findings revealed that, capacity of human resource can enhance sustainability of MAKILENGA water project. It is hereby recommended to the community water projects to implement good human resources such as proper HR planning, best induction and orientation, best training and

development, best personnel administration, and best compensation in wage or salaries administration for its sustainability.

(vi) The findings revealed that, qualification of human resource can enhance sustainability of MAKILENGA water project. It is hereby recommended to the community water projects to implement proper recruitment policies and guidelines, practice good job analysis before recruitment, implement recruitment practice which requires minimum level of education, and implement recruitment practice which require minimum level of integrity and values of candidate.

(vii) The findings revealed that, appropriate technology can enhance sustainability of MAKILENGA water project. It is hereby recommended to the community water projects to consider an advanced engineering technology of water projects that can produce water with minimum support from other devices, an engineering technology which is sophisticated to add value to peoplesô social life, an engineering technology which is affordable to the users and parts are available on time when needed, and an engineering technology which consider risk factors such as environmental risks and climate risks.

5.5 Recommendation for Further Study

The study focused on the assessment of the generic influence of resource mobilization on the sustainability of water projects; a case study of MAKILENGA water project. Although, the findings revealed positive influence on resource mobilization to sustainability of the project, specific factors such as water charges policies and

guidelines need further study to explore its potentials to the sustainability of the project. Therefore, further study is recommended on assessment of the influence of internal sources of fund mobilization to the sustainability of water projects.

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APPENDICES

APPENDIX 1: QUESTIONNAIRE

Dear respondents,

My name is Christine Ndetaulwa. I am currently a student of the Open University of Tanzania pursuing Master programme in Project Management. The purpose of this questionnaire is to collect data on **"the influence of resource mobilization on the sustainability of community water projects: the case study of MAKILENGA."** The study is for partial fulfillment of the requirement for the award of masterôs degree. Any information you provided will be for academic purposes and will be treated as confidential.

SECTION A: PERSONAL INFORMATION

1. Please provide your personal information (Please tick the appropriate)

(i) Age: Below 20 ( ) Between 21 and 30 ( ) Between 31 and 40 ( )

(ii) Between 41 and 50 ( ) Between 51 and 60 ( ) Above 61 ( ).

(iii) Sex: Male ( ) Female ( )

(iv) Education: Primary ( ) Secondary ( ) Above secondary ( )

(v) Please indicate the name of your Ward é é é é é é é é é é é é .

(vi) Other (Please Specify).....

SECTION B: ADEQUACY OF FINANCIAL RESOURCES

1. Please indicate your level of disagreement/agreement by ticking [ã] the MOST appropriate box on what do you subscribe for the relationship between adequacy of financial resource and sustainability of MAKILENGA water project.

1) Strong Disagree (SD) 2) Disagree (D) 3) Nretral (N) 4) Agree (A) 5) Strongly Agree (SA)

	Factor	SD	D	N	A	SA
	a) Sources of financial resources					
B1	Bank loans could be best financial sources for MAKILENGA water project					
B2	Water charges could be best financial sources for MAKILENGA water project					
B3	Donorsô contribution could be best financial sources for MAKILENGA water project					
B4	Government contribution could be best financial sources for MAKILENGA water project					
B5	Retained earning could be best					

	financial sources for MAKILENGA water project					
	b) Budgeting process					
B6	Adequate finance for MAKILENGA water project budgeting is influenced by proper planning process					
B7	Adequate finance for MAKILENGA water project budgeting is influenced by proper approval for expenditure					
B8	Adequate finance for MAKILENGA water project budgeting is influenced by proper execution of the budget					
B9	Adequate finance for MAKILENGA water project budgeting is influenced by actual spending of budgeted finances					
	c) Prioritization of spending					
B10	Prioritization of spending by MAKILENGA is influenced by importance of item/activity the expenditure is meant for					
B11	Prioritization of spending by MAKILENGA is influenced by time					

	due for expenditure					
B12	Prioritization of spending by MAKILENGA is influenced by cost of item/activity the expenditure is meant for					
B13	Prioritization of spending by MAKILENGA is influenced by risk associated with item/activity the expenditure is meant for (if spending is not effects).					

2. Otheré é

SECTION C: CAPACITY OF HUMAN RESOURCE

1. Please indicate your level of disagreement / agreement by ticking [ã] the MOST appropriate box on what do you subscribe for the relationship between the capacity of human resource and sustainability of MAKILENGA water project.

	a) Qualification	1 SD	2 D	3 N	4 A	5 SA
C1	Qualified staff of MAKILENGA water project are obtained through implementation of recruitment policies and guideline					
C2	Qualified staff of MAKILENGA water project are obtained through good job analysis before recruitment					
C3	Qualified staff of MAKILENGA water project are obtained through practice of recruitment which require minimum level of education					
C4	Qualified staff of MAKILENGA water project are obtained through practice of recruitment which require minimum level of integrity and values of candidate					
	b) Best human resource practices					
C5	Capable human resource of MAKILENGA water project is influenced by proper HR planning					
C6	Capable human resource of MAKILENGA water project is influenced by best induction and orientation practice					

C7	Capable human resource of MAKILENGA water project is influenced by best training and development practice					
C8	Capable human resource of MAKILENGA water project is influenced best personnel administration practice					
C9	Capable human resource of MAKILENGA water project is influenced by best compensation in wage or salaries administration practice					

2. Othersé é

SECTION D: APPROPRIATE TECHNOLOGY

1. Please indicate your level of disagreement / agreement by ticking [ã] the MOST appropriate box on what you can subscribe on the relationship between appropriate technology and sustainability of MAKILENGA water project.

	Factor	**SD**	**D**	**N**	**A**	**SA**
	Systems-independence					
D1	The engineering technology of MAKILENGA water project is advanced enough to produce water without support from other devices					

	such as power generator, hand held water pump etc					
	Image of modernity					
D2	The engineering technology of MAKILENGA water project is sophisticated to adds value to peoplesô social life					
	Cost of technology					
D3	The engineering technology of MAKILENGA water project is affordable to the users and parts are available on time when needed					
	Risk factor					
D4	The engineering technology of MAKILENGA water project risk factors such as environmental risks and climate risks are considered during planning and operation					

2. Othersé é

THANKS