

**FACTORS INFLUENCING SUSTAINABILITY OF WATER PROJECTS IN  
SCHOOLS: A CASE OF MUTHITHI WARD SCHOOLS, KIGUMO,  
MURANG'A, KENYA**

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**A RESEARCH PROJECT REPORT SUBMITTED IN PARTIAL FULFILLMENT  
OF THE REQUIREMENTS FOR THE AWARD OF THE DEGREE OF MASTER  
OF ART IN PROJECT PLANNING AND MANAGEMENT OF THE  
UNIVERSITY OF NAIROBI**

**2016**

**DECLARATION**

This research project report is my original work and to the best of my knowledge has not been presented in any university for award of any degree

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## **DEDICATION**

This work is dedicated to my mum Jane Wairimu Njoroge who has been an inspiration to me.

## **ACKNOWLEDGEMENT**

My acknowledgement goes to my supervisor Prof. Christopher Gakuu for her guidance, encouragement and moral support while writing this project and to The University of Nairobi Extra Mural Department for offering me a chance to do my Master Degree. My appreciation goes to all my lectures for their encouragement and support through the two years of my study and the support staff whom with dedication, ensured the class were set for the lectures. Special thanks to my classmates and especially those we shared groups for their dedication to class assignments, moral support and encouragement. Further appreciation goes to my family for the support and encouragement during the study period.

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## **ABBREVIATIONS AND ACRONYMS**

IFAD	-	International fund for Agricultural Development
UN	-	United Nations
TANGO	-	Technical assistance to NGOs
NGO	-	Non Governmental Organization
UNRISD	-	United Nations Research Institute on Social Development
BARD	-	Bangladesh Academy for Rural Development
CD	-	Community Development
IRC	-	International rescue committee
O&M	-	Operated and maintained
M & E	-	Monitoring and evaluation

## **ABSTRACT**

Water is a natural resource that is necessary for sustenance of life, ecological systems and a key resource to social and economic development. Governments, Non-governmental organizations, local and international organizations from all over the world have implemented water projects to promote safe rural water supply and sanitation over the years. However, in most project areas there is lack of sustainability of these water infrastructures and water supply systems. The purpose of this study was to investigate the factors that influence sustainability of water projects in schools. Muthithi ward schools are selected as the case for the study. The study employed descriptive research design. The target population of this study was 320 teachers and 16 school administrators. Simple random sampling was used in this study and a census. Through random sampling 76 teachers were selected for the study. Primary data for the study was collected using structured questionnaires that were administered to the respondents by the researcher. Data collected was edited, coded and analyzed using SPSS. Findings were presented using tables. The findings of the study indicated that community participation, level of education, management skills and follow up support do influence sustainability of school water projects. The study recommends that beneficiary involvement is key to sustainability, project designers should ensure there is a check list to check and ensure beneficiaries are involved adequately at all project stages and community participation in the whole project cycle be enhanced, there should be an analysis of capacity needed for the community to run a project without external help and as such sustain project benefits, Water projects should rely on more sustainable methods and strategies, donors should have adequate budgets for any water projects designed for implementation and organizations should strongly support monitoring and evaluation of their water projects besides ensuring that community responsible for management and operation of water projects are well trained in operation and maintenance.

## **CHAPTER ONE**

### **INTRODUCTION**

#### **1.1 Background of the Study**

Project sustainability concept is of large concern (United Nations, 2010). As by the (2007-2010) IFAD Strategic Framework, project sustainability is the ability for a project make confident that beneficiaries and benefits continue even after project closure and discontinuation of funds from external donors. The Brundtland report is the most cited meaning of sustainability. It denotes a significant change in the concept of sustainability as being principally an environmental affair to one that stresses on socio-economic improvement means (IISD, 2003). In recent years, project configuration and implementation exercises have received increased attention and have been better understood as component of attempts to execute projects in an extra productive and operate more efficiently (IFAD, 2007).

The trends with sustainability are disappointing despite the trend with implementation showing major improvement (TANGO International, 2008). This implies that money used during project implementation is not proportional to the expected return on investment. Studies conducted in Philippines and Vietnam reflects the lack of risk analysis before project design and concrete management strategies risks. Lack of deliberation of background matters, for instance, poor infrastructure or funding, has also led to the enlargement of a market-oriented project design that may not be sustainable.

In Africa and third world economies, a considerable fraction of projects are not working or neglected altogether. Likewise, according to Foxand (2004) in a study conducted in South Africa, at the Limpopo province rural areas; on the sustainability of projects Foxand (2004) projects fail to achieve desired goals, without a projects participatory approach from the grassroots level, in project implementation. On the other hand, McKay & Sarakinsky (1995) distinguished skill deficiency to direct projects to be a major factor fail to maintain the flow Of projected profit in probable duration of fifteen to twenty years (Sara and Katz, 1997). Other aspects influencing project sustainability are lack of reporting, technical skills for precautionary upholding, or lack of monitoring and evaluation training (Rigby, Howlett & Woodhouse, 2000).

Water project sustainability signifies that the supply of water services and interventions maintain to function adequately and produce settlement as anticipated after project closure (Kimberly, 1998).

The World Health Organization (WHO) World Water and Sanitation Report (WHO, 2000) draws a distinction between practical sustainability and ecological sustainability. Kimberly (1998) added that sustainability rests on the capability to harness and sustain original project functional values. Nonetheless, in order to accomplish this, it must be planned from the start of the project in order to guarantee the basics for lasting sustainability and plan to ensure the implementation of sustainable projects.

In describing the idea of water and sanitation sustainability, Abrams (1998) sees the water sustainability as a continuous stream of water at the similar pace and feature similar to the original design. For him, if water stream, then all essentials of sustainability consign. On the other hand, Richard (1999) necessitates engaging all project shareholders in use and costing revival approaches to make certain the supply of quality facilities and ensure projects development are sustainable. Brikke & David (1995) in reference to rural water provision entails ensuring that water services are preserved in a state that provides a dependable and satisfactory water delivery and achievements of water benefits prolong for long term. Some reasons for water un-sustainability in third world nations may comprise: lack of approval and non-price of society input; lack of grass root participation community and inadequate support from the major stakeholders (Harvey & Reed, 2007).

## **1.2 Statement of the Problem**

In a survey of eleven states in sub-Saharan Africa, Sutton (2004) found out that the then United Nations Millennium Development Goals (MDGs) that aimed to reduce by 2020 the fraction with no access to water and sanitation were significant in galvanizing world awareness and provision for water and sanitation. Despite, efforts like the MDGs which emphasize the extension of further co-operation jeopardize practical sustainability by promoting the quick installation of infrastructure preferably than the lasting investment required for to maintenance. According to Montgomery & Elimelech (2009), it became

imperative to derive the tide of disorder and stimulate advancement in attaining the MDGs could provide a consistent approach to water sustainability.

In the last 30 years, close to 40 school water projects have been implemented in Muthithi Ward schools. However, in spite of these efforts, water shortage remains a major challenge in schools. On the other hand, demand for additional water projects continues, yet there is limited evidence on the current level of functionality and service coverage. The large failed school water projects raises critical questions on sustainability hence the need for this study. The study sets to examine the factors influencing sustainability of school water projects with a case of Muthithi ward schools, Kigumo, Murang'a, Kenya.

Experience in the development sector reveals that project sustainability is a major issue (panda, 2007). Despite the numerous efforts to develop self- sustaining projects in rural areas of sub-Sahara Africa, the progress is rather slow leading to spending of massive resources on projects that have restricted benefits to the target population.

Sustainability of water project is becoming an area of great importance to both government and non-governmental. Project sustainability enables a project to yield the intended results through proper project management. National governments and international donor agencies have invested a lot of funds in projects implementation. But notwithstanding the rising efforts to minimize project shortfalls, many of them still lose to control the course of anticipated outcomes over their expected lifespan of fifteen to twenty years (Sara & Katz, 1997). These have been mainly attributed to inability of the projects to sustain them self.

According to USAID (2010), rates water project sustainability level at 42.85 percent in sub-Sahara Africa. USAID (2010) describes high sustainability levels as enhancing sustainability and low sustainability levels as impended sustainability with Kenyan water projects being at evolving sustainability level. There are generally low sustainability levels of school water projects in sub-Sahara Africa (Globalgiving, 2013). The project under study is a case of school water projects in MuthithiWard, Kenya and sub-Sahara



Africa at large hence no exception to poor levels of water project sustainability. With the continued water problems in schools in Muthithi Ward, it is important to carry out this study and provide recommendations towards solving this problem.

### **1.3 Purpose of the Study**

The purpose of the study was to study factors influencing sustainability of school water projects: a case of Muthithi ward schools, Kigumo, Murang'a, Kenya.

### **1.4 Objectives of the Study**

The following objectives guided the research,

- (i) To establish how community participation influence sustainability of school water projects in Muthithi ward, Kigumo, Murang'a, Kenya
- (ii) To assess in what ways the level of education influence sustainability of school water projects in Muthithi ward, Kigumo, Murang'a, Kenya
- (iii) To establish how managerial skills influence sustainability of school water projects in Muthithi ward, Kigumo, Murang'a, Kenya
- (iv) To determine how follow up support influences sustainability of school water projects in Muthithi ward, Kigumo, Murang'a, Kenya

### **1.5 Research Questions of the Study**

The study was guided by the following research questions

- (i) How does community participation influence sustainability of school water projects in Muthithi ward, Kigumo, Murang'a, Kenya?
- (ii) In what ways does the level of education influence sustainability of school water projects in Muthithi ward, Kigumo, Murang'a, Kenya?
- (iii) How do managerial skills influence sustainability of school water projects in Muthithi ward, Kigumo, Murang'a, Kenya?
- (iv) How does follow up support influence sustainability of school water projects in Muthithi ward, Kigumo, Murang'a, Kenya?

## **1.6 Significance of the Study**

As proposed in the ministry of water and irrigation water services strategy report for the period from 2015 to 2020, Kenya intends to increase access to clean drinking water and sanitation with the objective of achieving seventy-four percent access to clean and secure water in metropolitan regions and seventy percent for rural and lessen undeclared water to less than 30 percent (republic of Kenya, 2015). However, given the low proportion of clean water facilities in schools and rural areas in Kenya, possibilities of improving and sustaining access to safe drinking water to sustainability levels cannot be significantly improved

The findings of this study are expected to assist school administrators, project managers, government and water project donors in the formulation of evidence based strategies aimed at development of sustainable financing mechanism to support operation and maintenance of water projects. The study would also contribute knowledge on community participation, level of education, managerial skills and follow up support that will promote long term functionality of school water projects that will be of value to researchers and scholars.

## **1.7 Delimitation of the Study**

Although there are many challenges facing sustainability of school water projects in Muthithi ward, the study was limited to community participation, education and skills in project management, managerial factors and follow up support on projects. The population was sampled to get a representative sample. The study was limited to school water projects. The study was undertaken in Muthithi ward schools. The study covered 76 teachers and 16 school administrators.

## **1.8 Limitations of the Study**

Time and resources were the limiting factors. However, in order to speed up the process, the questionnaires were hand delivered to the school teachers and interview schedules conducted simultaneously. The researcher hired 3 Research Assistant to help him dispatch and collect the questionnaires.

## **1.9 Basic Assumptions of the Study**

This study was undertaken founded on some key assumptions. The researcher assumed that all the respondents in the selected sample were to provide complete and honest feedback within the specified study time frame. That there were funds to conduct the study

## **1.10 Definition of Significant Terms Used in the Study**

### **Community participation**

Community participation in this study was used to refer to a dynamic process by which beneficiaries shape the management and execution of school water projects or rather community participation referring to a means that people, groups, or populations assume accountability of their own welfare and in this case develop an ability to contribute to own growth and that of the community's water development.

### **Level of education**

Level of education in this study was used to refer to the formal education acquired in school. That is primary education through university education. More specifically project management knowledge that has been accumulated in the course of formal education.

### **Managerial skills**

Managerial skill in this study was used to refer to the ability to manage the capacity of a social process involving the accountability for economic grounding and the operating regulations of a project in the accomplishment of a function

### **Follow up support**

Follow up support for this study referred to the participatory M&E, carried out in collaboration with the primary stakeholders, but bestow the secondary stakeholders, in this case, the implementers and project designers to the responsibility to monitor the process.

**Project sustainability**

Project sustainability in the context of this project was used to indicate the ability of Muthithi Ward Schools projects to realize benefits and continue to function after project closure and after the stop of external funding

**Community**

For the purpose of this study, the term community was used to refer to school community. That is all the stakeholders of a school.

**1.11 Organization of the Study**

The research was organized into five chapters. Chapter One included the background of the study, statement of the problem, purpose of the study, study objective, research questions, significance of the study, delimitation of the study, limitation of the study, assumption of the study, definition of significant terms and the summary of the chapter. Chapter Two included the literature review and the conceptual framework. Chapter Three included the research methodology including research design, target population, the sample and sampling procedure, research instruments, data collection procedure and data analysis techniques applied. Chapter Four included data analysis, Data presentation and interpretation while chapter Five included summary of the findings, discussion, conclusion and recommendations.

## **CHAPTER TWO**

### **LITERATURE REVIEW**

#### **2.1 Introduction**

This chapter encompasses the evaluation of all sources of information or data that relate to the topic. The chapter examines literature from some accredited researchers and academics on the sustainability of water school projects. The chapter reviews the four study themes. Themes under literature review include community participation, level of education, managerial skills and follow up support on projects visa vie sustainability of school water projects. The chapter also presents the theoretical framework where collective action theory and institutional theory are expounded. The chapter finally presents the conceptual framework which summarizes the relationship between the independent variables, dependent variables, moderating variables and community attitude as the intervening variables.

#### **2.2 Concept of Water Project Sustainability**

A project is sustainable if it effectively meets the wants of at hand inhabitants without put at risk the capability of the prospect generations to gather for their wants (Keeys, 2012). Before the work by Brundtland (1987), sustainability of project was seen as the capability of a project to sustain healthy economic records once the initial financial input has been stopped (Deland, 2009). Bagheri and Hjorth (2007) viewed a sustainable project as one whose short term output are highly valued by the stakeholders such that they are willing to sacrifice and commit resources to the maintenance of the project to ensure it produces outputs in the long term. With the integration of all this concepts, a holistic look at sustainability can be taken into account multiple indicators that can be monitored to ensure project sustainability. In this study, sustainability will be henceforth described as the ability of a project to go on with fulfilling the desired needs in the community on the long term even after support has been withdrawn.

The sustainability of community development projects has been an important concerning for developing countries (Panda, 2007). Sustainability of projects ensures that the benefits from project are felt for extended periods of time that can justify the economic

and social input invested in to the project (Hayward & Neuberger, 2010). Unfortunately, sustainability development concepts and principles are not taken much seriously in development projects (Gareis, Huemann & Weninger, 2010). In the corporate sector, sustainability is a very important concept that is taken seriously because of the need to meet company and customers' needs (Heap, 1998). There is however little guidelines on sustainable project running and also the role of a team in ensuring project sustainability (Silvius & Schipper, 2010).

A project acquires sustainability if it is managed by a system that has long term capacity to mobilize resources sufficiently (Ebner & Baumgartner, 2010). These resources come in the form of technology, finances, manpower, information and raw materials (Ebner & Baumgartner, 2010). There are three indicators that can be used to monitor project sustainability; these factors include project benefits, systemic indicators and social development indicators (Silvius & Schipper, 2010). From these indicators, it is possible to derive aspects that influence the sustainability of school water projects. These factors can be classified into factors associated with project design and implementation, organizational factors and environmental factors (Silvius & Schipper, 2010). It is paramount for the project team to take into consideration these indicators during the planning and design phase of water projects if sustainability is to be achieved.

Systemic indicators that can be used to monitor project sustainability include technology, the project process, structure and culture and all this are vital in ensuring sustainability (Ebner and Baumgartner, 2010). A model based on inputs should be used in project design and implementation. Project design should ensure institutional change to develop self-sustaining institution that remains functional when the project life cycle ends. This will ensure any projects and program coming after that are only part of a progressively evolving and changing community system. The most successful elements of such a project become part of the overall process of positive community change.

Benefit indicators basically relate to the way choice of activities to be implemented in a project will be determine sustainability of such project. Failure or ability to define the

benefit of a project to the beneficiaries and focus on achieving these benefits will play an important function in the determination of project malfunction (Panda, 2007). Project benefit can be seen as positive and advantageous outcome that are desirable to the project stakeholder. Any project team that just focuses on the quality, time, and cost indicators without laying much focus on the benefit to the community will have to live with the memory of a fallen community project. It is only when the local stakeholders are in a position to appreciate the benefits that they will mobilize resources to guard the project and ensure continuity (Panda, 2007)

### **2.3 Community Participation and Water Project Sustainability**

Positive change is more likely if the stakeholders who will directly benefit from the project or the target group are an integral element of the change process (Bagheri & Hjorth, 2007). These stakeholders should participate in project selection, planning and execution (Capobain, 2004). Community participation involves the community coming together to identify their needs, plan and execute solution to these needs. Involvement of community opinion leaders and giving them appropriate training is very important in ensuring sustainability of community projects (Laura, 2004). Stakeholder participation must be based on the principles of voluntary involvement to allow full commitment to the course and full participation (Wilcox, 2001)

Decades of implementation of community development projects have proved that top down approaches to development don't work (Hodgkin, 1994). The top down participation of the beneficiaries usually adopted by central government has been challenged in the past as the government planning mechanism view beneficiary participation as a procedure of drawing people in to project execution after all project decisions have been made (Mulwa, 2008). In this way, people become resources impending authorities' wants to mobilize and this usually includes involuntary material and financial contribution towards these public projects. Genuine community participation does not focus on participation in implementation or even in project design but rather has to start with the community identifying their needs. This ideology has been utilized a lot in the recent past where community based groups initiate development

projects assisted by external entities. This has enabled the people identify their own goals and define how to attain them. This is an approach that places control and ownership squarely on the hands of the beneficiaries (Tango International, 2009). The the study findings, sought to determine the extent to communities participate in projects funded by non-governmental.

Community participation involves residents taking part in systems to tackle communal problems (Kaufman & Poulin, 1996). It can be defined rather vaguely as peoples involvement in community projects to resolve their own problems. People should participate voluntarily. This is a fundamental human right and a elemental rule of democratic system. Participation is a way of educating populace and growing their ability (Brager, Specht & Torczyner, 2001). It is influences decision making to ensure the success of a project. Still, it is a means to responsiveness, understanding and responsibility for communal services. Armitage (2003) reported that communal involvement is a procedure by which community members own projects by taking action in relation to problems affecting them. Pran Manga and Wendy Muckle (Chappel, 2005) put forward that stakeholder support can also be a rejoinder to the conventional feeling of helplessness faced by the community in influencing state judgment. The community ensures the achievement of a project success is in a cooperative effort to enhance and control projects. In addition, the Participatory Development Group (2001) indicated that this community ownership allows stakeholders to control projects by making key decisions influencing its growth and sustainability

Stakeholder support involves people, accountability for their well-being and developing an ability to provide to their development (Oakley and Marsden, 2007). In their support, the community participants conserve resources of the projects which can then be directed to generate increased outcomes. As noted by Chappel, (2005), through their participation, the community shares the costs of the project at all cycle of a project life. This save the project money and can therefore contribute to ensuring financial sustainability.



As pointed out by Oakley and Marsden (2007), community participation is a major form of stakeholder support. In fact, Admassuet.al, (2002) notes that involving communities is critical to the sustainability of rural water supply operations. The sustainability pace of rural water supply operations is increasing because of communal ownership and control at the village-level. The community secure water points, improve operatives and sustenance costs of projects and engendering the whole process.

Community support increasing project efficiency (Chappel, 2005): he recommended that there should be consultation with the community throughout a project cycle to ensure project sustainability. Further, Arbitrage (2003) stressed that community backing improves the efficiency of a project by helping to assure that project accomplishes its intentions to the target groups. Community support, coupled with community participation, contributes to developing the capacities of beneficiaries: either by confirming that members are actively committed to the project or by training and projects awareness.

Establishing a connection with communities drives to improved people's problem-solving abilities, which changes anticipations for sustainability. For instance, improved community participation in projects like digging wells is better than in the developing rivers springs due to the different method applied by the mobilizers “However, it is impossible to rule out whether, the weakness came from the stakeholders’ participatory approach related to wells or not, which is as important as the other water points(Admassuet al., 2002).”

Stakeholders free will to contribute money for project success is a an important sustainability (Bhandari and Grant, 2007; Mbata, 2006). Mbata (2006), postulates that if communities voluntarily pay for a project then awareness increases too promoting its sustainability. It is the researcher’s strong conviction that projects affected by disasters, would survive, due to the communal ownership of the entity that will make them continue supporting the project at the verge of collapse.

## **2.4 Level of Education and Water Project Sustainability**

Illiteracy creates a deficiency syndrome in people (Swanepoal, 1993). Despair makes them refrain from participating. This constraint acts against self-assurance and independence of individuals, hence little participation in development projects (Mulwa, 2002). To extend the choice of the community in project participation, it is vital to develop human potentials through capacity building initiatives, to be informed, on the access to resources and be able to participate in the development projects in the community (UNDP, 2001). Occurrence recommends that projects which that survive the crisis in time are those who have invested in people's growth in skills capability to oversee and direct project actions (Eade and Williams, 1995).

Whereas, project monitoring necessitates data collection and dissemination, collecting this data does not warranty its value. The inadequacy of core competencies affects the quality of data that community could gather. Besides, community members may lack skills for effective data dissemination (Mulwa, 2002). The UNDP report on human development claims that, out of the four point six billion people in third world economies, more than eight hundred and fifty million are uneducated. Of these sixty-four percent are women. Approximately three hundred and twenty-five million girls and boys of primary and secondary school age are not enrolled, and fifty-six are girls. (UNDP, 2001). This severely affects implementation in development projects, the report adds. The test of growth is to be enhanced through education. These demands for better education and greater individual freedom which makes it ensure participation in project development especially in rural arrears (World Bank, 1991).

Most unskilled workers employed in the Malaysian construction industry are foreign workers (Sambasivan and Yau, 2007). These workers do not have proper skills (Santoso et al., 2003). Thus, making project coordination difficult. To Martin & Tate (2001), development management is a collection of mechanisms, methods, and information that, when utilized, improve project performance. Running a project without project team is like playing soccer with no a play order (Martin & Tate, 2001). The Project Manager

programs and ministers outline to team segments and ensure organization leaders accomplish their responsibilities on schedule (Martin & Tate, 2001).

Project management originates from the necessity to design and regulate vast and complicated multifunctional applications (Richman, 2012). Management is systematically understood as fulfilling work by the cost of resources. Richman (2012) illustrates that scheduling, management, group, conscription, organize and harmonization as the traditional purpose of project running. The project manager must be an individual who can create and lead a team of professionals (Pieterse, 2001) therefore, they should have the essential fundamental organization skills and understand project life cycle (Pieterse, 2001).

Project management participation entails facilitating management process. Advantages of participating in project management (Martin & Tate, 2001) are that participatory approach presents improved project outcome. However, poor scheduling is one of the leading bases of project malfunction (Pieterse, 2001). Pieterse (2001) showed that designing a project consist of resolving activities to be finished in order to reach project intention and enable the project team to outline a map. Without peoples supervision projects are prompted to collapse (Piterse, 2001). Magano (2008) revealed that having a clear plan is the vanguard of every activity and encompassing a project map with distinct objectives, as a mode of proposition to keep the members informed about project status.

Ravhura (2010) designate that mismanagement of the public extension projects has stretched to unacceptable dimensions. The central purpose of project management is to check and direct on new product elaboration or attaining preferred result. Anschutz (1996) point out, that a lesser enthusiasm to direct an impediment in the running of communal water supply project and added that the success of the community; Water-based water provision projects have exposed a management model that revolutionize towards individuals concerned with outcome of projects.

The project manager must hold the subsequent project management competency to complete the management project (Kerzener, 1992) successfully. Produce the final outcome contained by the limits of accessible income and performance necessities. This necessitate an overall vision of project objectives and precise planning of ways of achieving success, the leadership feature of leading the project team's effort, judgment construction, negotiating necessary resources and declaration of the adversarial application on those resources.

## **2.5 Follow up Support and Project Sustainability**

Traditional handing over of donor projects have often left both communities and water agencies with schemes which neither party has properly prepared to operate and maintain (Davies & Brikke, 1995) funds, resources and time must be allocated for full and appropriate consultation with the stakeholders' during project formulation (Davies & Brikke, 1995).

Post construction support such as training of caretakers, particularly recent training and visits, even once a year by water agencies is positively associated with system performance (Komives et al, 2008). The same study reported that receiving free spares, grants or help in financial and management assistance were not significantly associated with system performance. Monitoring routines of community water supplies have shown an immense positive impact on the motivation of local communities to properly manage operate and maintain their water supply system, a key requirement for achieving the objectives of sustainability (Koestler and Koestler, 2008).

Efforts to correlate combinations of support before and after establishment demonstrates that there are apparently many combinations of models, For instance, in Bolivia and Ecuador, plans include decentralization models. Other institutional models and changes to the deployment and implementation of lasting sustainance purpose are hardly ever easy and often affected by many peripheral factors (Rosensweiged 2001. The study investigated whether post implementation support to community managed rural water supplies influences sustainability of rural water supplies in Western Kenya.

The World Bank is increasingly funding projects on the basis of requirements, resulting to the research attention on the link between implementation of project requirements and sustainability (Sara Katz, 1997). However, limited concentration focus on post construction phase .The long-term project sustainability can reduce a number of factors, such as: poor support network to assist communities in conflict management or increase the project systems, the short of technical know-how to perform preventive maintenance, and lack of reminder training.

Water services are sustainable when they are performing and in use. Second, it becomes sustainable when it is possible to provide a suitable arena of payback in terms of excellence, magnitude, expediency, progress, and wellbeing for all, counting those in absolute poverty. Third, when services continue to operate over a long period that is past the lifetime of a project. Fourth, when its running is institutionalized, operating, continuation, managerial and substitution costs are sheltered at the confined stage. This can be exploited and maintained at the local level with restricted but achievable outside support. It should not negatively change the surroundings (IRC, 2004). In so doing, it will guarantee the sustainability of a water project that will be facilitated by a domestic monitoring process. This will harmonize the participatory M&E element in teamwork with the final beneficiaries. It will provide project initiators accountability to post monitor activities (IRC (2004).

Systematic and regular collection of data from projects will assist the project team to learn from experience and improve practices, allow for both external and internal accountability of their sources invested and the results realized as well as ensure planned activities are adhered to (O'Sullivan, 2004). Monitoring checks activities and progress against plans allowing documentation of project progress and this improves greatly the chances of project success and sustainability. Evaluation focuses on systematically and objectively assessing a phase of a project or the whole project after it is completed (Rossi, Lipsey, & Freeman, 20004). Evaluation of project phases allows detect deviation from plan in time and allow for timely rectification (Valadez & Bamberger, 1994). Project evaluation phase also allows assess relevance of the project to community needs,

efficiency of the project team and use of resources, effectiveness of the intervention and also impacts being realized from the project or impacts anticipated, this allows the project manager analyze the expected sustainability level of the project (Junbeum, et al. 2007).

Kadzikano (2002) found out that skill is the most influential factor of participatory monitoring and evaluation of planning, M&E team. The study found that increased involvement of community associates and other key stakeholders in M&E skills can help to explain the evolution method better. Elevated monitoring and evaluation capacity adds to independence in the overall implementation of the project, and assures improved sustainability of project actions and improves project outcomes. Incorporating decisions and studying from all stakeholders is essential to the means of promoting project layout and execution that is more tailored to the realities of the field (Kadzikane, 2002).

Participation in monitoring and evaluation reflects a bottom up approach that ensures that livelihood project in all the life cycle of a project and initiated by the people unlike traditional M&E approaches, that are top-down (Pringle, 2011). Although there are many variants, traditional M&E have been characterized as being directed solely to the needs of donors and decision-makers (Pringle, 2011).

## **2.6 Managerial Skills and Water Project Sustainability**

Management of projects entails strengthening the order of community projects with host community needs and organizing support forces at all project levels to advance control and efficient transfer of services. It is therefore fundamentally offering leadership to achieve laid objectives. McDade (2004), good control warrants the availability of adequate local support and ability to sustain the project in the defection of an external support

Community projects are winding (Weinberg, 2008) and need multidimensional control skills. A project manager must demonstrate not only project management techniques (Kirsch, 2000) but also the technology and expertise required for the project (Thite, 2001). Project management actions include but are not restricted to, determining the

extent of the project and collecting provisions, controlling resources, and relevant training issues within a project, Technical architecture, identification of project management practices and escalation procedures. Manage risks within a project and prepares risk moderation

The correspondence or adjustment between a project and project manager broaden not only to the technical skills but distinctive broad project management profile characteristic, such as previous experience in methodology familiarity (Swanson & Beath, 2000). A project manager is a survey for the technical and project assessment. The PM should have an understanding of the project objectives (Bloom, 2006). Previous literature has exposed that familiarity of tasks aids to improve performance and increase the sustainability of a project (Goodman & Leyden, 2001). Earlier experience to project characteristics, like expertise or methodology, familiarize the work of a project manager hence improve sustainability (Banker & Slaughter 2000). According to Espinosa, et al. (2007), familiarity with tasks is crucial in community projects, and this is connected to improved outcome, which in turn is related to sustainability. As suggested by Irsch (2000) and Thite (2001), a project manager must manage the project and lead idea development.

Leadership is a practice whereby person manipulates others towards the achievement of set goals (Fiedler, Chemers & Mahar, 2004). Three points are emphasized while defining leadership. First, leadership is a process of social persuade. Leadership must have a leader and group. Secondly, leadership induces voluntary deed by the followers. The voluntary character of a leadership distinguishes leadership from other forms of formal authority. Finally, the results of leadership in the behavior of the disciples are objective and objective-directed in a kind of organized framework. Many, albeit not all, leadership studies focus on the nature of leadership in the workplace, however, leadership has advantages in a broader scope.

Individuals with good management skill are considered to be good leaders and therefore, through their leadership organizations are steered to prosperity (McDade, 2004). The

specific character of leadership and its affiliation with input variables such as subordinate approval, obligation and results are still vague; leadership remains almost a "black box" or inexplicable perception. However, not all managers are good managers. Therefore, in the quest to ascertain consequence of management skills on sustainability of community projects, leadership should be distinguished from management. Chemers & Mahar, (2004) indicated that management entails setting up, managing, recruitment, direction and control, and a manager is someone who performs these roles. Leadership, on the other hand, deals mainly with influence. The ability of a leader to persuade others may be founded on array of issues other than PM authorized position (Andriessen and Drenth, 2007).

Project managers have to influence all that they interact with so that project sustainability can be achieved; therefore they need not only to possess good management skill but leadership skills as well. PMs need to cooperate with multiple stakeholders, not only direct with in-house project players, but with beneficiaries using basically non-technical and non-imitative skills. These include, but are not restricted to, managerial knowledge, implicit people's knowledge management within the managerial arrangement (Kirsch 2000) these skills contribute to the efficient management of projects. Wagner & Sternberg (1985) focus on skills that are tacit and learned through experience rather than being taught in the classroom. They rank these competencies according to self-management, managing others and occupation. They found that skill differences between a beginner and a specialist are consecutive to professional performance in management activities.

Successful project management needs both hard and soft skills (Kirsch, 2000). Hard skills include technological skills, field expertise, and project management practice and knowledge like planning and controlling. Soft skills are immaterial and relate people management. These skills include, but are not confined to, organizational experience, implicit understanding project team or individuals within the organization chart or the project beneficiaries (Becker, 1975, Lee et al. 1995; Kirsch, 2000). Thite (1999) insisted that IT managers need skills in technical and transformational leadership. As previous



research has demonstrated (for example, Byrd & Turner, 2001), IT professionals need both hard and soft skills to achieve better performance. However, to our knowledge, there has been no study that measures the direct impact of PM competencies, particularly non-technical skills, on the success of the project.

General human capital includes technological skills, expertise in the field, experience and experience in project management and project management. A person can use common human resources to enhance productivity in many projects. Precise human resources use skills that are intangible and that can be particular to an entity (Becker, 1975, Lee et al., 1995, Kirsch, 2000). Although the technical skills of the PM function in shaping the performance of the project, the team elements are critical too. When team members work together in harmony coordination becomes easy because information flow about the task and stakeholders are enhanced (Espinosa et al., 2007). For instance, when team players interact during a project, they widen an expertise roadmap, on how to locate the project, expertise required in the next phase (Boh et al., 2007). Since co-ordination within a familiar team is easier, it is anticipated that the PM's technical skills would be more useful for less proverbial teams in order to facilitate project performance and ensure sustainability of the projects.

According to Pagellet (2000), the impact of the adjustment between skills and the environmental performance of projects is more important than the direct bearing of competencies on performance. Project managers must adapt resources to the needs of the project. The allocation of resources requires a harmonizing of the characteristics of a project with the PM skills sets. Such correspondence can also be considered as a strategic preference in reaction to the project's surroundings. Venkatraman & Prescott (1990) proposed that any divergence from a most favorable resource allocation model should be remarkably and unenthusiastically connected to performance and thus to sustainability (Martin et al., 2004).

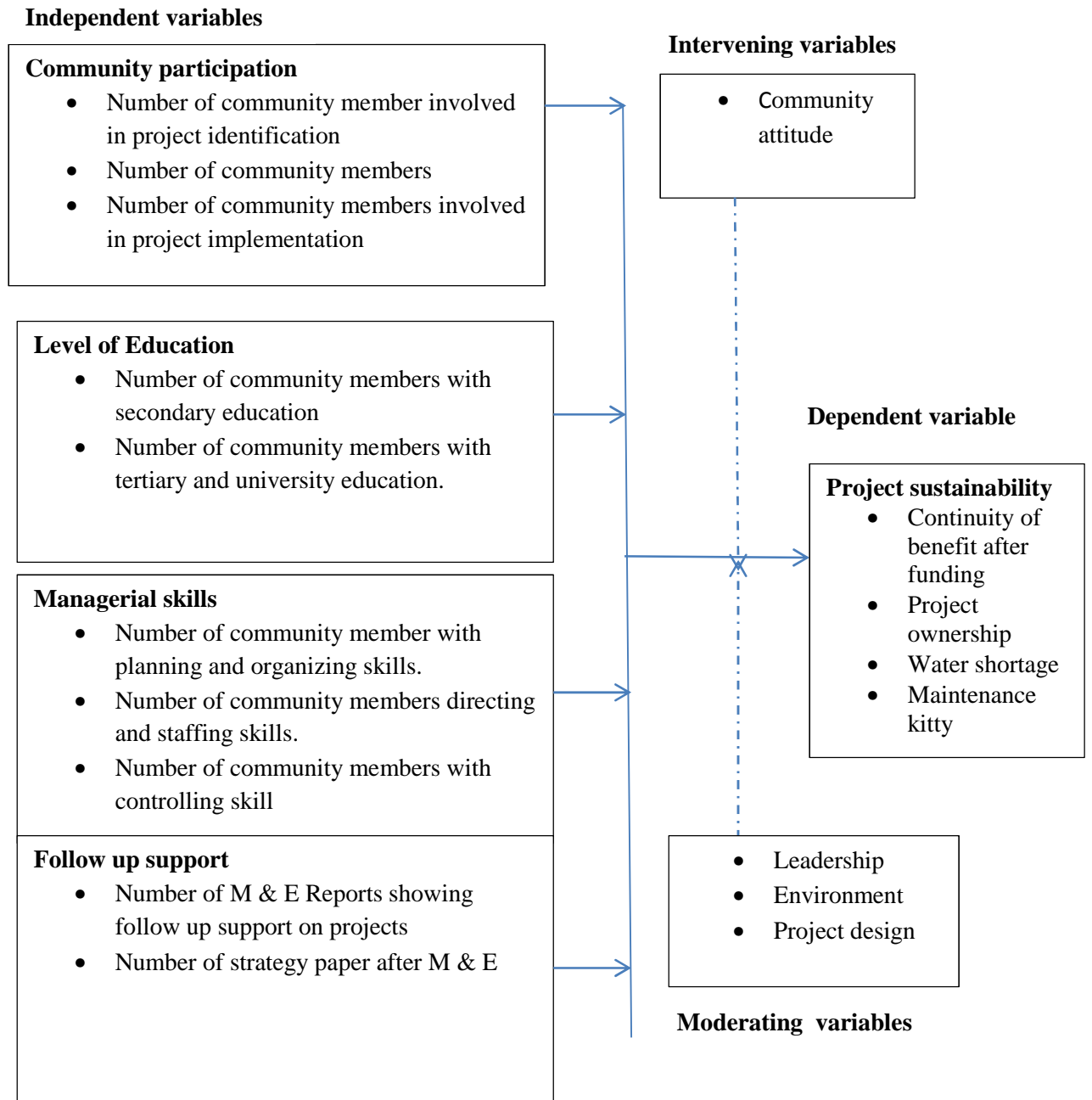
## **2.7 Theoretical Framework**

The researcher looked into collective action theory and institution theories in an effort to demystify the concept of sustainable development. First published by Mancur Olson, collective action theory seeks to explain what causes continuity of projects and ventures (Anesi, 2009). The theory suggests that a project that meets a common need will instinctively bring people together leading to project sustainability (Mazibuko, 2007). This theory however falls short since sustainability is much more complex than a project just meeting a common need.

Institutional theory was developed by Nelson Philips, who asserts that institutionalization- process of institution formation- is the backbone to sustainable development (Schneiberg and Soule, 2005). Institutions are building units of any society and they shape human interaction as well as provide structures to everyday life. Institutions can be seen as a collection of specific behaviors and support structures that simplify or make possible the accomplishment of a task. Institutions make it possible for desirable set of actions to be realized more frequently and with repetition, these actions take root as norms (Green, Li & Nohria, 2009). People at this point cease doing things because there are rules that call them to but because it's the norm (Scott, 1991). In their work, Edward and Hulme (1992) summarized the theory by saying "one clear conclusion is that institution building is the critical task facing all Non-Governmental Organizations in their search for sustainable development" (Edwards & Hulme, 1992). The stability of institutions depends a lot on their fit with the culture and values of the subjects as well as the benefits that it presents to the people (Schneiberg and Soule, 2005).

This theory was adopted for this study since the process of institutionalization is multi-faceted and goes beyond looking at sustainability being a factor of a project simply meeting a common need.

## 2.8 Conceptual Framework



**Figure 1: Conceptual framework**

The following conceptual framework was useful in understanding the relationship between the dependent and independent variables in this study. From figure 1, the researcher assumes that community participation, level of education, managerial skills

and follow up support will influence sustainability of school water projects. As an external factor community attitude will also influence school water projects positively or negatively. Moderating variables will include leadership, project design and environment.

## **2.9 Knowledge Gaps in Literature Review**

The study sought to examine factors influencing sustainability of school water projects. According to Kanini (2015) she found out that sustainability of community water projects is influenced by social economic factors. This study sought to find out factors influencing school water projects sustainability. According to Onango (2014) on factors influencing sustainability of donor funded projects, he found out that project ownership by the community was the main influencing factor. This study will look into community participation in project identification through implementation. Oloo (2013) on factors influencing sustainability of water projects found out that secondary education is key in project sustainability. This study will include primary, secondary, tertiary and university education in regard to sustainability. Though the concept of sustainability is not new, it has hardly been given attention especially with regard to sustainability of school water projects. The concept of project sustainability was of immense concern (United Nations, 1987). Recent studies (TANGO International, 2008) have distinguished that although the inclination towards implementation has shown a considerable progress, the drift sustainability is somewhat unsatisfactory, with less maintained projects.

The study therefore sought to examine how community participation, level of education skills, managerial skills and follow up support influence sustainability of school water projects an area that have not been look into in the previous research and more so in Muthithi ward schools.

## **2.10 Summary of the Chapter**

From the literature review, it is apparent that project sustainability is a key challenge for most if not all projects. However, literature has indicated that some of the causes of this unsustainability of project are as a result of lack of community participation. That is, the community is not drawn in, to identify, plan and implement projects. Another factor that

has come out clear is level of education. In reference to the literature review, most people assigned the responsibility to manage project lack project management education and skills and hence inability to manage sustainable projects. Lack of managerial skills also influences projects sustainability negatively. Lastly, lack of follow up support by project implementers is another big contributor to unsustainability of projects. The chapter has also looked into the theoretical framework as well as the conceptual framework to the study.

## **CHAPTER THREE**

### **RESEARCH METHODOLOGY**

#### **3.1 Introduction**

This chapter gives a brief description of the research design, target population, sampling design, data collection procedures, data collection tools, validity and reliability of the research instruments and data analysis methods. The study will adopted descriptive research because of the need to describe factors affecting water project sustainability in depth. The chapter concludes with operational definition of variables table that summarizes the objectives, independent variables, the indicators, how to measure the indicators, the scale of measurement of the variables, data collection methods adopted and type of data analysis adopted.

#### **3.2 Research Design**

The study employed a descriptive research design to collect adequate and relevant data for analyzing the topic under study. The choice of the design was informed by the fact that both qualitative and quantitative data can be collected through questionnaires through a descriptive research design. The researcher mainly used interviews and structured questionnaires to collect data. The research design permitted the researcher to produce both numerical and descriptive data that were utilized in measuring the relationship between variables as well as determining their influence on sustainability of the projects. The research design also enabled the researcher to generalize his findings.

#### **3.3 Target Population**

Target population is a grouping of people, items or objects from which a sample is to be taken for desirable measurement to be conducted as a way of inferring on the larger population from the small selected sample (Kombo & Tromp, 2006). This research was carried out in Muthithi ward schools, Murang'a County and the target population compromised of school administrators and teachers. It covered 16school administrators and 320teachers working directly in schools projects. There are a total of 336 school teachers and administrators (TSC, 2014).

### 3.4 Sample Size

According to Kombo and Tromp (2006), sampling is the process of selecting a number of individuals from a population of concern in a way that allows the selected group to effectively represent the characteristics of the entire group. A census inquiry was targeted for the 16 school administrators since their population is small (Kumar, 2009). For the teachers, Yamane formula was used to calculate a representative sample.

The formula below provided by Yamane was used to determine the sample size (University of Florida, 2013)

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

Where; n is the sample size,

N: The estimate of the population size,

e: error limit

At 95% level of confidence and with an error limit of 10%

$$n = \frac{320}{1 + 320(0.1)^2}$$

$$n = \frac{320}{\{1 + 320(0.1)^2\}}$$

$$n = 76 \text{ respondents}$$

**Table 3.1: Summary of the sample**

Subject	Population	Sample size	Percentage
Teachers	320	76	24
School administrators	16	16	100
Total number of respondents	336	92	27

*Source: teachers service commission data base 2014*

#### 3.4.1 Sample Procedure

Out of the 320 teachers, a sample size of 76 was targeted through stratified random sampling after creating strata based on the five sub locations. There are five schools in each sub location each with a population of 20 teachers and one administrator. 10 teachers were picked from each school randomly from a cluster and formed a cluster of that sub location. Five teachers were then picked randomly from the five clusters to from

the sample. This allowed an all-inclusive representation of different groups in the sample (Mugenda & Mugenda, 2003). The study targeted to collect data from different clusters of teachers. The population was divided into sub groups that were more homogenous individually. From each stratum, a proportional sample was drawn randomly.

### **3.5 Method of Data Collection**

Interview schedule was used for school administrators while questionnaires were used for the teachers. The data collection tools contained both closed and open ended questions allowing the respondents to give an explanation of their answer in their own words.

According to Kathori (2004), Primary data are those that are collected a fresh and for the first time and therefore occur to be of origin in the character. While secondary data, are already been collected data and analyzed data that have passed the statistical procedure. The researcher used primary data to make the results more reliable and accurate.

### **3.6 Pilot Testing of the Study**

Prior embarking on data collection, a pilot study was carried out to pre-test the instruments. This was done in order to assess the clarity of items, validity and reliability of the instruments (Mugenda & Mugenda). The pre-testing was carried out on 16 school administrators from Eastleigh ward in Kamukunji constituency Nairobi County and any question that was found to be interpreted differently during the pre-testing was rephrased so that it can have the desired meaning to all respondents.

### **3.7 Validity**

Validity is used to refer to the meaningfulness and accuracy of the inferences made by a researcher based on data collected and research findings (Mugenda & Mugenda, 2003). Validity is seen as the capability of a research instrument to measure what it is intended to measure (Kumar, 2009). To achieve desired degree of validity, the research instruments were formulated in a way to answer the objectives set for the study as stated earlier. To ensure content validity, the tools were presented to professionals including my supervisor who was requested to critique positively.



### **3.8 Reliability**

Reliability is a measure of amount to which a research instrument will give constant data on repeated trials (Muganda & Mugenda, 2003). The split half method was used to establish reliability of the instruments. The split-half technique was used to test reliability of the instrument.

The split half reliability artificially divides test into two halves and correlates the individual scores on the two halves. The researcher administered the test to a group of school administrator and later divides the items into two halves using odd and even numbers. Scores for each individual on the two halves was obtained and coefficient correlation calculated using SPSS version 20. To transform the split half correlation into an appropriate score, reliability estimate for the entire test, the Spearman's- Brown Prophecy Formula was employed. The reliability test was 0.88, this was acceptable since it was more than 0.80 in relation to Spearmans-Brown Prophecy Formula.

### **3.9 Method of Data Analysis**

After data collection, the questionnaires were sorted and edited to detect any inconsistencies during data collection. Data coding was done by allocating different responses falling in the ordinal scale dummy numeric values that could be computed by statistical package for social scientists software. Data cleaning was done whereby the data was finally checked for accuracy and completeness. The keyed in data was subjected to SPSS analysis and the data was presented in terms of percentages and frequencies. This was then presented in table format. Spearman coefficient of correlation was computed in an effort to determine the strength of the correlation between community participation, education and skills, managerial skills and follow up support vice vie school project sustainability.

### **3.10 Ethical Issues**

The researcher ensured that all respondents were accorded treatment with respect and that the data collection processes not needlessly disrupt their socio economic activities. The identity of the respondents was also treated with utmost confidentiality.

**Table 3.2: Operationalization Definition of Variables**

Objectives	Independent variables	Indicator(s)	Measurement	Scale	Data collection method	Data analysis
To establish how community participation influence school project sustainability	Community participation	<ul style="list-style-type: none"> <li>• Involvement in project identification</li> </ul>	<ul style="list-style-type: none"> <li>• Number of project identified by teachers and administrators</li> </ul>	Ordinal	Questionnaires/ interview schedules	Descriptive statistics
		<ul style="list-style-type: none"> <li>• Involvement in project planning</li> </ul>	<ul style="list-style-type: none"> <li>• Number of project planned by teachers and administrators</li> </ul>	Ordinal		
		<ul style="list-style-type: none"> <li>• Involvement in project implementation</li> </ul>	<ul style="list-style-type: none"> <li>• Teachers and admin. Involvement in implementation.</li> </ul>	Ordinal		
To assess in what ways the level of education influence school project sustainability	Level of education	<ul style="list-style-type: none"> <li>• Number of teachers and admin. With tertiary and university.</li> </ul>	<ul style="list-style-type: none"> <li>• Number of respondents with education certificates in project management.</li> </ul>	Ordinal	Questionnaires/ interview schedules	Descriptive statistics
		<ul style="list-style-type: none"> <li>• Skills in project management</li> </ul>	<ul style="list-style-type: none"> <li>• Number of respondents with skills in project management.</li> </ul>	Ordinal		

To establish how managerial skills influence school project sustainability	Managerial skills	<ul style="list-style-type: none"> <li>• Involvement in planning and organizing</li> </ul>	<ul style="list-style-type: none"> <li>• Number teachers and administrators with planning skills</li> </ul>	Ordinal		
		<ul style="list-style-type: none"> <li>• Involvement in project directing and staffing</li> </ul>	<ul style="list-style-type: none"> <li>• Number teachers and administrators with directing and staff skills</li> </ul>	Ordinal	Questionnaires / interview schedules	Descriptive statistics
		<ul style="list-style-type: none"> <li>• Involvement in controlling of projects</li> </ul>	<ul style="list-style-type: none"> <li>• Teachers and admin. With controlling skills</li> </ul>	Ordinal		
To determine how follow up support influences school project sustainability	Follow up support	<ul style="list-style-type: none"> <li>• Involvement in monitoring and evaluation</li> </ul>	<ul style="list-style-type: none"> <li>• Number of respondents involved in monitoring and evaluation.</li> </ul>	Ordinal	Questionnaires/ interview schedules	Descriptive statistics
		<ul style="list-style-type: none"> <li>• Involvement in project strategy formulation on sustainability</li> </ul>	<ul style="list-style-type: none"> <li>• Number of respondents involved in project strategy formulation</li> </ul>	Ordinal		

## CHAPTER FOUR

### DATA ANALYSIS, PRESENTATION AND INTERPRETATION

#### 4.1 Introduction

This chapter gives the analysis of data, interpretation and the presentation of the research findings. Chandran (2004) defined data analysis as the process of reducing large amount of collected data to data that addresses the initial proposition of the study. The research findings related to the research questions that guided the study. The purpose of the study was to investigate factors influencing sustainability of school water projects: A case of Muthithi ward schools water projects. The study targeted 76 teachers and 16 school administrators. Out of the total 92 respondents targeted, 85 filled and returned their questionnaires (70 teachers and 15 school administrators).

**Table 4.1: Questionnaire Response Rate**

	<b>Frequency</b>	<b>Percent</b>
Completed	85	92.4
Not completed	7	7.6
<b>Total</b>	<b>92</b>	<b>100.0</b>

The researcher targeted a sample of 76 teachers and a census for 16 school administrators. After data collection exercise, 85 fully filled questionnaires were received equating to 92.4 percent of the target. This is reliable response rate for data analysis as any response above 50 percent is regarded adequate (Punch, 2003)

#### 4.2 Demographic Information

This section presents the findings on the demographic characteristics of the respondents. The characteristics were the respondents' gender, school category, school population, school level and number of years in the school.

##### 4.2.1 Gender of the Respondents

The study sought to establish the gender of the respondents. The findings are shown in table 4.2.

**Table 4.2: Distribution of Respondents by Gender**

	<b>Frequency</b>	<b>Percent</b>
Male	52	61.2
Female	33	38.8
<b>Total</b>	<b>85</b>	<b>100.0</b>

From the findings presented in Table 4.2, 61.2% of the respondents covered in the study were male while female respondents made up 38.8% of the respondents implying that majority of the teachers and school administrators covered under the study were male.

#### **4.2.1.1 Gender of the Teachers**

The study sought to establish the gender of the teachers. The findings are shown in Table 4.3

**Table 4.3: Gender of Teacher**

<b>Gender</b>	<b>Frequency</b>	<b>Percent</b>
Male	40	57.1
Female	30	42.9
<b>Total</b>	<b>70</b>	<b>100.0</b>

From the findings, the study established that 57.1% of the teachers were males while 42.9% of teachers' respondents were female. This implies that majority of the teachers were male

#### **4.2.1.2 Gender of School Administrators**

The study sought to establish the gender of the school administrators. The findings are shown in Table 4.4.

**Table 4.4: Gender of School Administrators**

<b>Gender</b>	<b>Frequency</b>	<b>Percent</b>
male	10	66.7
Female	5	33.3
<b>Total</b>	<b>15</b>	<b>100.0</b>

As indicated in table 4.4, 66.7% of the school administrators were male while 33.3% were female. This implies that majority of the school administrators were male.

#### 4.2.2 Distribution of Respondent by School Category

The study sought to establish school category, the findings are shown in Table 4.5.

**Table 4.5: Respondents by School Category**

School category	Frequency	Percent
Government school	74	87.0
Private school	11	23.0
<b>Total</b>	<b>85</b>	<b>100.0</b>

The respondents who school category were government school were 87.0% while 23.0% were from private schools. This implies that majority of the respondents were from government schools.

#### 4.2.3 Distribution of Respondent by Years Taught in the School

The study sought to determine the number of years that a respondent have taught in the school. The findings are shown in Table 4.6

**Table 4.6: Respondents by years taught in the school**

Years taught	Frequency	Percent
3 years and below	13	15.3
4- 6 years	30	35.3
7-9 years	19	22.4
Above 15 years	23	27.0
<b>Total</b>	<b>85</b>	<b>100.0</b>

From the findings, 15.3% of the respondents had taught in their school for 3 years and below, 35.3% for 4-6 years, 22.4% for 7-9 years and 27.0% for above 15 years. This implies that the respondents have taught for different periods in their respective schools.

#### 4.2.4 Distribution of Respondents by School Population Size

The study sought to determine the population size of the schools. The findings are shown in Table 4.7.

**Table 4.7: Respondents by school population size**

<b>Population size</b>	<b>Frequency</b>	<b>Percent</b>
Less than 200 students	9	10.6
200 – 500 students	42	49.4
600- 800 students	24	28.2
Over 800 students	10	11.8
<b>Total</b>	<b>83</b>	<b>100.0</b>

From the findings, 10.6% of the respondents were from a school with a population size of less than 200 students, 49.4% from a school with a population size of 200-500 students, 28.2% from a school with a population size of 600-800 students and 11.8% from a school with a population size of over 800 students.

#### 4.2.5 Distribution of Respondents School Level

The study sought to determine the schools level. The findings are shown in Table 4.8

**Table 4.8: Respondents by School Level**

<b>School level</b>	<b>Frequency</b>	<b>Percent</b>
Primary	62	72.9
Secondary	23	27.1
Tertiary	0	0.0
University	0	0.0
<b>Total</b>	<b>85</b>	<b>100.0</b>

The respondents whose school level was primary school formed 72.9% while 27.1% formed those from secondary school. There was none from tertiary institutions and universities. This

implies that there is more primary school than secondary school while there are no tertiary institutions and universities.

### 4.3 Influence of Community Participation on School Water Project Sustainability

The study sought to determine the influence of community participation on school water projects sustainability in Muthithi ward schools. The information on the influence was sought from two categories of respondents- School teachers and administrators who form part of the school community. The findings are reported in the following section.

#### 4.3.1 Response of Teachers

The teachers were asked to report on the extent to which community participation influence school project sustainability. The response ranged from very great extent to No extent. The findings are presented in Table 4.9.

**Table 4.9: Community participation and school water project sustainability**

	<b>Frequency</b>	<b>Percent</b>
Very great extent	48	68.6
Great extent	12	17.1
Moderately extent	5	7.1
Less extent	3	4.3
No extent	2	2.9
<b>Total</b>	<b>70</b>	<b>100.0</b>

Table 4.9 shows the findings on the extent to which the respondents agreed with the statements on the influence of community participation on sustainability of school water projects in Muthithi ward schools. The study found out that 68.6% respondents felt that community participation played a key role to a very great extent on the sustainability of school water projects. 17.1% respondents stated that community participation played a key role to great extent on sustainability of school water projects. 7.1% respondents indicated that community participation influenced moderately sustainability of school water projects. 4.3% respondents stated that community participation influenced to less extent sustainability of school water



projects. Finally, the study found out that 2.9% respondents indicated that community participation influenced sustainability of school water projects to no extent

### 4.3.2 Response by School Administrators

The school administrators were asked to report to which extent community participation influences sustainability of school water projects in Muthithi ward. The responses ranged from very great extent to no extent. The findings are presented in Table 4.10.

**Table 4.10: Community participation and school water project sustainability**

	<b>Frequency</b>	<b>Percent</b>
Very great extent	9	60.0
Great extent	4	26.7
Moderately extent	2	13.3
Less extent	0	0.0
No extent	0	0.0
<b>Total</b>	<b>15</b>	<b>100.0</b>

### 4.3.3 Influence of Teachers Participation in Management of School Water Project

The respondents were asked to report to which extent teachers managing school water project influence their sustainability in Muthithi ward. The response ranged from very great extent to no extent. The findings are presented in Table 4.11

**Table 4.11: Teachers' participation in management of school water project**

	<b>Frequency</b>	<b>Percent</b>
Very great extent	30	42.9
Great extent	26	37.1
Moderately extent	10	14.3
Less extent	3	4.3
No extent	1	1.4
<b>Total</b>	<b>70</b>	<b>100.0</b>

#### 4.3.4 Influence of Community Participation on Identification of School Water Project

The respondents were asked to report on the extent to which community participation in school water project identification influence school project sustainability. The response ranged from strongly agree to disagree. The findings are presented in Table 4.12.

**Table 4.12: Project identification and school water projects sustainability**

	<b>Frequency</b>	<b>Percent</b>
Strongly agree	60	70.6
Agree	15	17.6
Neutral	8	9.4
Disagree	2	2.4
<b>Total</b>	<b>85</b>	<b>100.0</b>

#### 4.3.5 Influence of Community Participation in Planning of School Water Project

The respondents were asked to report on the extent to which community participation in school water project planning influence school project sustainability. The responses ranged from strongly agree to strongly disagree. The findings are presented in Table 4.13

**Table 4.13: Project planning and school water project sustainability**

	<b>Frequency</b>	<b>Percent</b>
Strongly agree	70	82.4
Agree	10	11.8
Neutral	5	5.8
Disagree	0	0.0
Strongly disagree	0	0.0
<b>Total</b>	<b>85</b>	<b>100.0</b>

From table 13, 82.4 percent of the respondent agreed that project planning influences project sustainability to a high extent hence the need to plan for the project.

#### 4.3.6 Influence of Community Participation in Implementation of School Water Project

The respondents were asked to report on the extent to which community participation in school water project implementation influence school project sustainability. The responses ranged from strongly agree to strongly disagree. The findings are presented in Table 4.1.

**Table 4.14: Project implementation and school water project sustainability**

	<b>Frequency</b>	<b>Percent</b>
Strongly agree	82	96.5
Agree	2	2.4
Neutral	1	1.1
Disagree	0	0.0
Strongly disagree	0	0.0
<b>Total</b>	<b>85</b>	<b>100.0</b>

#### 4.3.7 Influence of Community Participation in Monitoring and Evaluation of School Water Project

The respondents were asked to report on the extent to which community participation in school water project monitoring and evaluation influence school project sustainability. The responses ranged from strongly agree to strongly disagree. The findings are presented in Table 4.15

**Table 4.15: Monitoring and evaluation and school water project sustainability**

	<b>Frequency</b>	<b>Percent</b>
Strongly agree	76	89.4
Agree	9	10.6
Neutral	0	0.0
Disagree	0	0.0
Strongly disagree	0	0.0
<b>Total</b>	<b>85</b>	<b>100.0</b>

#### 4.4 Influence of Level of Education on Sustainability of School Water Projects

The study sought to determine the influence of level of education on school water projects sustainability in Muthithi ward schools. The information on the influence was sought from two categories of respondents- School teachers and administrators who form part of the school community. The findings are reported in the following section.

##### 4.4.1 Response of Teachers

The teachers were asked to report on the extent to which level of education influence school project sustainability. The response ranged from very great extent to No extent. The findings are presented in Table 4.16.

**Table 4.16: Level of education and school water project sustainability**

	<b>Frequency</b>	<b>Percent</b>
Very great extent	50	74.4
Great extent	10	14.3
Moderately extent	7	10.0
Less extent	3	4.3
No extent	0	0.0
<b>Total</b>	<b>70</b>	<b>100.0</b>

Table 4.16 shows the findings on the extent to which the respondents agreed with the statements on the influence of level of education on sustainability of school water projects in Muthithi ward schools. The study found out that 74.4% respondents felt that level of education played a key role to a very great extent on the sustainability of school water projects. 14.3% respondents stated that level of education played a key role to great extent on sustainability of school water projects. 10.0% respondents indicated that level of education influenced moderately sustainability of school water projects. 4.3% respondents stated that level of education influenced to less extent sustainability of school water projects. Finally, the study found out that no respondents indicated that level of education influenced sustainability of school water projects to no extent.

#### 4.4.2 Response by School Administrators

The school administrators were asked to report to which extent level of education influences sustainability of school water projects in Muthithi ward. The responses ranged from very great extent to no extent. The findings are presented in Table 4.17.

**Table 4.17: Level of education and school water project sustainability**

	<b>Frequency</b>	<b>Percent</b>
Very great extent	9	60.0
Great extent	3	20.0
Moderately extent	2	13.3
Less extent	1	6.7
No extent	0	0.0
<b>Total</b>	<b>15</b>	<b>100.0</b>

Table 4.17 shows the findings on the extent to which the respondents agreed with the statements on the influence of level of education on sustainability of school water projects in Muthithi ward schools. The study found out that 60.0% respondents felt that level of education played a key role to a very great extent on the sustainability of school water projects. 20.0% respondents stated that level of education played a key role to great extent on sustainability of school water projects. 13.3% respondents indicated that level of education influenced moderately sustainability of school water projects. 6.7% respondents stated that level of education influenced to less extent sustainability of school water projects. At last, the study established that no respondents indicated that level of education influenced sustainability of school water projects to no extent

#### 4.4.3 Influence of Primary Education on School Water Project Sustainability

The respondents were asked to report on the extent to which primary education influence school water project sustainability. The response ranged from strongly agree strongly disagree. The findings are presented in Table 4.18.

**Table 4.18: Primary education and sustainability of school water project**

	<b>Frequency</b>	<b>Percent</b>
Strongly agree	5	5.9
Agree	0	0.0
Neutral	0	0.0
Disagree	2	2.4
Strongly disagree	78	91.7
<b>Total</b>	<b>85</b>	<b>100.0</b>

#### **4.4.4 Influence of Secondary Education on School Water Project Sustainability**

The respondents were asked to report on the extent to which secondary education influences school water project sustainability. The responses ranged from strongly disagree to strongly agree. The findings are presented in Table 4.19.

**Table 4.19: Secondary education and sustainability of school water projects**

	<b>Frequency</b>	<b>Percent</b>
Strongly agree	58	68.2
Agree	24	28.3
Neutral	3	3.5
Disagree	0	0.0
Strongly disagree	0	0.0
<b>Total</b>	<b>85</b>	<b>100.0</b>

#### **4.4.5 Influence of Tertiary Education on School Water Project Sustainability**

The respondents were asked to report on the extent to which tertiary education influence school water project sustainability. The responses ranged from strongly agree to strongly disagree. The findings are presented in Table 4.20.

**Table 4.20: Tertiary education and sustainability of school water projects**

	<b>Frequency</b>	<b>Percent</b>
Strongly agree	64	75.3
Agree	20	23.5
Neutral	1	1.2
Disagree	0	0.0
Strongly disagree	0	0.0
<b>Total</b>	<b>85</b>	<b>100.0</b>

#### **4.4.6 Influence of University Education in School Water Project Monitoring and Evaluation**

The respondents were asked to report on the extent to which university education influence school water project sustainability. The responses ranged from strongly agree to strongly disagree. The findings are presented in Table 4.21.

**Table 4.21: University Education and Sustainability of School Water Projects**

	<b>Frequency</b>	<b>Percent</b>
Strongly agree	81	95.3
Agree	3	3.5
Neutral	0	0.0
Disagree	1	1.2
Strongly disagree	0	0.0
<b>Total</b>	<b>85</b>	<b>100.0</b>

#### **4.5 Influence of Managerial Skills on School Water Project Sustainability**

The study sought to determine the influence of management skills on school water projects sustainability in Muthithi ward schools. The information on the influence was sought from two categories of respondents- School teachers and administrators who form part of the school community. The findings are reported in the following section.

#### 4.5.1 Response of Teachers

The teachers were asked to report on the extent to which management skill influence school water project sustainability. The response ranged from very great extent to No extent. The findings are presented in Table 4.22.

**Table 4.22: Management skills and school water project sustainability**

	<b>Frequency</b>	<b>Percent</b>
Very great extent	57	81.4
Great extent	8	11.4
Moderately extent	3	4.3
Less extent	2	2.9
No extent	0	0.0
<b>Total</b>	<b>70</b>	<b>100.0</b>

Table 4.22 shows the findings on the extent to which the respondents agreed with the statements on the influence of management skills on sustainability of school water projects in Muthithi ward schools. The study found out that 81.4% respondents felt that management skills played a key role to a very great extent on the sustainability of school water projects. 11.4% respondents stated that management skill played a key role to great extent on sustainability of school water projects. 4.3% respondents indicated that management skills influenced moderately sustainability of school water projects. 2.9% respondents stated that management skills influenced to less extent sustainability of school water projects. Finally, the study established that no respondents indicated that management skills influenced sustainability of school water projects to no extent

#### 4.5.2 Response by School Administrators

The school administrators were asked to report to which extent management skills influences sustainability of school water projects in Muthithi ward. The responses ranged from very great extent to no extent. The findings are presented in Table 4.23.



**Table 4.23: Management skills and school water project sustainability**

	<b>Frequency</b>	<b>Percent</b>
Very great extent	9	60.0
Great extent	4	26.7
Moderately extent	2	13.3
Less extent	0	0.0
No extent	0	0.0
<b>Total</b>	<b>15</b>	<b>100.0</b>

Table 4.23 shows the findings on the extent to which the respondents agreed with the statements on the influence of management skills on sustainability of school water projects in Muthithi ward schools. The study found out that 60.0% respondents felt that management skills played a key role to a very great extent on the sustainability of school water projects. 26.0% respondents stated that management skills played a key role to great extent on sustainability of school water projects. 13.3% respondents indicated that management skills influenced moderately sustainability of school water projects. Finally, the study established that no respondents indicated that management skills influenced sustainability of school water projects to less extent and no extent.

#### **4.5.3 Influence of Planning as a Management Function on School Water Project Sustainability**

The respondents were asked to report on the extent to which community planning as management function influence school water project sustainability. The responses ranged from strongly agree to strongly disagree. The findings are presented in Table 4.24.

**Table 4.24: Planning as a management function and sustainability of school water projects**

	<b>Frequency</b>	<b>Percent</b>
Strongly agree	72	84.7
Agree	8	9.3
Neutral	2	2.4
Disagree	1	1.2
Strongly disagree	2	2.4
<b>Total</b>	<b>85</b>	<b>100.0</b>

#### **4.5.4 Influence of Organizing as a Management Function on School Water Project Sustainability**

The respondents were asked to report on the extent to which organizing as a management function influences school water project sustainability. The responses ranged from strongly agree to strongly disagree. The findings are presented in Table 4.25

**Table 4.25: Organizing as a management function and sustainability of school water projects**

	<b>Frequency</b>	<b>Percent</b>
Strongly agree	64	72.3
Agree	7	8.2
Neutral	9	10.6
Disagree	2	2.4
Strongly disagree	3	3.5
<b>Total</b>	<b>85</b>	<b>100.0</b>

#### **4.5.5 Influence of Directing as a Management Function on School Water Project Sustainability**

The respondents were asked to report on the extent to which directing as a management function influence school water project sustainability. The responses ranged from strongly agree to strongly disagree. The findings are presented in Table 4.26.

**Table 4.26: Directing as a management function and sustainability of school water projects**

	<b>Frequency</b>	<b>Percent</b>
Strongly agree	57	67.1
Agree	6	7.1
Neutral	7	8.2
Disagree	8	9.4
Strongly disagree	7	8.2
<b>Total</b>	<b>85</b>	<b>100</b>

#### **4.5.6 Influence of Controlling as a Management Function on School Water Project Sustainability**

The respondents were asked to report on the extent to which controlling as a management function influence school water project sustainability. The responses ranged from strongly agree to strongly disagree. The findings are presented in Table 4.27

**Table 4.27: Controlling as management function and sustainability of school water projects**

	<b>Frequency</b>	<b>Percent</b>
Strongly agree	72	84.7
Agree	6	7.1
Neutral	2	2.4
Disagree	3	3.5
Strongly disagree	2	2.3
<b>Total</b>	<b>85</b>	<b>100.0</b>

#### **4.6 Influence of Follow up Support on Sustainability of School Water Projects**

The study sought to determine the influence of follow up support on school water projects sustainability in Muthithi ward schools. The information on the influence was sought from two categories of respondents- School teachers and administrators who form part of the school community. The findings are reported in the following section.

#### 4.6.1 Response of Teachers

The teachers were asked to report on the extent to which follow up support influence school project sustainability. The response ranged from very great extent to No extent. The findings are presented in Table 4.28.

**Table 4.28: Follow up support and school water project sustainability**

	<b>Frequency</b>	<b>Percent</b>
Very great extent	61	87.1
Great extent	7	10.0
Moderately extent	2	2.9
Less extent	0	0
No extent	0	0
<b>Total</b>	<b>70</b>	<b>100.0</b>

Table 4.28 shows the findings on the extent to which the respondents agreed with the statements on the influence of follow up support on sustainability of school water projects in Muthithi ward schools. The study found out that 87.1% respondents felt that follow up support played a key role to a very great extent on the sustainability of school water projects. 10.0% respondents stated that follow up support played a key role to great extent on sustainability of school water projects. 2.9% respondents indicated that follow up support influenced moderately sustainability of school water projects. Finally, the study established that no respondents indicated that follow up support influenced sustainability of school water projects to less extent and no extent.

#### 4.6.2 Response by School Administrators

The school administrators were asked to report to which extent follow up support influences sustainability of school water projects in Muthithi ward. The responses ranged from very great extent to no extent. The findings are presented in Table 4.29.

**Table 4.29: Follow up support and school water project sustainability**

	<b>Frequency</b>	<b>Percent</b>
Very great extent	7	46.7
Great extent	6	40.0
Moderately extent	2	13.3
Less extent	0	0.0
No extent	0	0.0
<b>Total</b>	<b>15</b>	<b>100.0</b>

Table 4.29 shows the findings on the extent to which the respondents agreed with the statements on the influence of follow up support on sustainability of school water projects in Muthithi ward schools. The study found out that 46.7% respondents felt that follow up support played a key role to a very great extent on the sustainability of school water projects. 40.0% respondents stated that follow up support played a key role to great extent on sustainability of school water projects. 13.3% respondents indicated that follow up support influenced moderately sustainability of school water projects. Finally, the study established that no respondents indicated that follow up support influenced sustainability of school water projects to no less extent and extent

#### **4.6.3 Influence of Monitoring on School Water Project Sustainability**

The respondents were asked to report on the extent to which monitoring influence school water project sustainability. The response ranged from very effective to very ineffective. The findings are presented in Table 4.30.

**Table 4.30: Project monitoring and sustainability of school water projects**

	<b>Frequency</b>	<b>Percent</b>
Very effective	82	96.5
Effective	2	2.4
Early effective	1	1.1
Ineffective	0	0
Very effective	0	0
<b>Total</b>	<b>85</b>	<b>100.0</b>

#### 4.6.4 Influence of Evaluation on School Water Project Sustainability

The respondents were asked to report on the extent to which evaluation influences school water project sustainability. The response ranged from very effective to very ineffective. The findings are presented in Table 4.31.

**Table 4.31: Project evaluation and sustainability of school water project**

	<b>Frequency</b>	<b>Percent</b>
Very effective	76	89.4
Effective	4	4.7
Fairly effective	5	5.9
Ineffective	0	0
Very ineffective	0	0
<b>Total</b>	<b>85</b>	<b>100.0</b>

#### 4.7 Sustainability of School Water Projects

The study sought to determine sustainability of school water projects in Muthithi ward schools. The information on project sustainability was sought from two categories of respondents- School teachers and administrators who form part of the school community. The findings are reported in the following section.

**Table 4.32: Water Shortage**

	<b>Frequency</b>	<b>Percent</b>
Strongly agree	40	47.1
Agree	20	23.5
Neutral	5	5.8
Disagree	6	7.1
Strongly disagree	14	16.5
<b>Total</b>	<b>85</b>	<b>100</b>

Table 4.32 shows the findings on the extent of water shortages in school water projects in Muthithi ward schools. The study found out that 47.1% respondents felt strongly agreed that

there are water shortages. 23.5% respondents agreed that there are water shortages.5.8% respondents were neutral on water shortages, 7.1% of the respondents disagreed that there are water shortages and 16.5% of the respondents strongly disagreed that there are water shortages. This indicate that we have water shortages in school since most of the respondents strongly agreed with the statement.

**Table 4.33: Water project kitty**

	<b>Frequency</b>	<b>Percent</b>
Strongly agree	3	3.5
Agree	5	5.9
Neutral	9	10.6
Disagree	8	9.4
Strongly disagree	60	70.6
<b>Total</b>	<b>85</b>	<b>100</b>

Table 4.33 shows the findings on availability of school water project kitty in Muthithi ward schools. The study found out that 3.5% respondents felt strongly agreed that there are project kitty. 5.9% respondents agreed that there are project kitty.10.6% respondents were neutral on project, 9.4% of the respondents disagreed that there are project kitty and 70.6% of the respondents strongly disagreed that there are project kitty. This indicate that we do not have project kitty in school water projects since most of the respondents strongly disagreed with the statement.

**Table 4.34:Continuity of benefit after funding**

	<b>Frequency</b>	<b>Percent</b>
Strongly agree	3	38.8
Agree	12	14.2
Neutral	20	23.5
Disagree	15	17.6
Strongly disagree	5	5.9
<b>Total</b>	<b>85</b>	<b>100</b>

Table 4.34 shows the findings on continuity of benefit after funding in school water projects in Muthithi ward schools. The study found out that 38.8% respondents felt strongly agreed that there are continuity of benefit after funding. 14.2% respondents agreed that there are continuity of benefit after funding. 23.5% respondents were neutral on continuity of benefit after funding, 17.5% of the respondents disagreed on continuity of benefit after funding and 5.9% of the respondents strongly disagreed that there are continuity of benefit after funding. This indicates that we have continuity of benefit after funding in school since most of the respondents strongly agreed with the statement.

**Table 4.35: Water project ownership**

	<b>Frequency</b>	<b>Percent</b>
Strongly agree	9	10.6
Agree	9	10.6
Neutral	13	15.3
Disagree	24	28.2
Strongly disagree	30	35.3
<b>Total</b>	<b>85</b>	<b>100</b>

Table 4.35 shows the findings on project ownership in school water projects in Muthithi ward schools. The study found out that 10.6% respondents felt strongly agreed that there is project ownership. 10.6% respondents agreed that there is project ownership. 15.3% respondents were neutral on project ownership, 28.2% of the respondents disagreed on project ownership and 35.3% of the respondents strongly disagreed that there is project ownership. This indicates that there is no ownership of projects in school since most of the respondents strongly disagreed with the statement.

#### **4.8 Spearman Coefficient of Correlation**

To compute the correlation between the study variables and their findings, the researcher used Spearman coefficient of correlation at 95 percent confidence interval. From the findings, it was clear that there was a positive correlation between community participation and sustainability of school water projects as shown by a correlation figure of 0.648. Level of education, managerial



skills and follow up support all showed positive correlation with sustainability of school water project with correlation figures of 0.672, 0.707 and 0.669 respectively. Positive relationship indicates that there is a correlation between the factors and sustainability of school water projects. The significant values for the relationship between community participation, level of education, managerial skills and follow up support were 0.134, 0.134, 0.023 and 0.356 respectively. Thus at 5% confidence level and at p-value ( $P < 0.05$ ), only community participation was significant. Therefore, it is interpreted that with community participation, sustainability of school water projects will be achieved otherwise no sustainability can be attained.

**Table 4.36: Coefficient Correlation**

		Sustainability	Community participation	Level of education	Managerial skills	Follow up support
Sustainability	Spearman correlation	1.000				
	Sig. (2-tailed)					
Community participation	Spearman correlation	0.648	1.000			
	Sig. (2-tailed)	0.034				
Level of education	Spearman Correlation	0.672	0.333	1.000		
	Sig. (2-tailed)	0.034	0.420			
Managerial skills	Spearman correlation	0.707	0.207	0.690	1.000	
	Sig. (2-tailed)	0.023	0.623	0.058		
Follow up support	Spearman correlation	0.669	0.218	0.218	0.632	1.000
	Sig. (3-tailed)	0.356	0.604	0.604	0.092	

**CHAPTER FIVE**  
**SUMMARY OF FINDINGS, DISCUSSION, CONCLUSION AND**  
**RECOMMENDATIONS**

**5.1 Introduction**

This chapter presents the summary of findings, discussion of findings, conclusions derived from the findings and recommendations for action and further research.

**5.2 Summary of Findings**

The study focused on factors influencing sustainability of school water project in Muthithi ward. The objectives that guided the study were: To establish how community participation influence sustainability of school water projects, to assess in what ways the level of education influence sustainability of school water projects, to establish how managerial skills influence sustainability of school water projects, to determine how follow up support influences sustainability of school water projects.

**5.2.1 Community Participation**

The study found out that 68.6% respondents felt that community participation played a key role to a very great extent on the sustainability of school water projects. 17.1% respondents stated that community participation played a key role to great extent on sustainability of school water projects. 7.1% respondents indicated that community participation influenced moderately sustainability of school water projects. 4.3% respondents stated that community participation influenced to less extent sustainability of school water projects. Finally, the study found out that 2.9% respondents indicated that community participation influenced sustainability of school water projects to no extent. From this finding, it is prudent to put through that for sustainability of school water projects, the school community must be involved in the project life cycle. That is in the identification, implementation and monitoring and evaluation.

**5.2.2 Level of Education**

The study found out that 74.4% respondents felt that level of education played a key role to a very great extent on the sustainability of school water projects. 14.3% respondents stated that level of education played a key role to great extent on sustainability of school water

projects.10.0% respondents indicated that level of education influenced moderately sustainability of school water projects. 4.3% respondents stated that level of education influenced to less extent. From this finding, it is with confidence that the researcher can state the importance of education on sustainability of school water projects.

### **5.2.3 Managerial Skill**

The study found out that 81.4% respondents felt that management skills played a key role to a very great extent on the sustainability of school water projects. 11.4% respondents stated that management skill played a key role to great extent on sustainability of school water projects.4.3% respondents indicated that management skills influenced moderately sustainability of school water projects. 2.9% respondents stated that management skills influenced to less extent sustainability of school water projects. Finally, the study established that no respondents indicated that management skills influenced sustainability of school water projects to no extent. This shows that management skills are very key in project sustainability. That is the ability to plan for a project, organize for the project, direct the project, staffing and controlling the project.

### **5.2.4 Follow up Support**

The study found out that 87.1% respondents felt that follow up support played a key role to a very great extent on the sustainability of school water projects. 10.0% respondents stated that follow up support played a key role to great extent on sustainability of school water projects.2.9% respondents indicated that follow up support influenced moderately sustainability of school water projects. Finally, the study established that no respondents indicated that follow up support influenced sustainability of school water projects to less extent and no extent. This shows that majority of the respondents agree with the fact that follow up support is key for project sustainability. It is therefore important to plan for follow up support in the designing stage of projects to ensure sustainability

## **5.3 Discussion of Finding**

This section gives a detailed discussion of the findings from the study.

### **5.3.1 Community Participation**

Griffith et al. (2008) noted that the concerns and needs of the key stakeholders have to influence project conception. This can be achieved through consultation and involvement of the stakeholders in project identification. With 68.6 percent of the school community to a very great extent agreeing that community participation is key to school water project sustainability, community participation in project identification is key.

According to Lewis (2004) all facets at play in a project including the beneficiaries, implementation organization, project objectives and means of distributing projects benefits play key role in ensuring project sustainability. Khwaja (2003) emphasizes that how all these facets are intermixed to acquire desired results depends heavily on project planning and stakeholder involvement in the process 82.4 percent of the beneficiaries said they were actively involved in the planning stage. The study agrees with Khaji(2003) that the planning stage is key in ensuring project sustainability by creating a platform through which various facets of the project are synchronized to achieve a common goal. The study also agrees with Griffith et al. (2008) who noted that projects should be in response to gaps that exist in the community and the best way to identify and respond to this gap is through involvement of the beneficiaries in project conception.

Bagheri and Hjorth(2007) noted that implementation phase is key to sustainability since plans are harder to implement though they look easier on paper. The active involvement of the beneficiary develops ownership and also helps build the capacity of the beneficiary (Temali, 2012). With 96.5 percent of the responding beneficiary saying that they were actively involved in project implementation, beneficiary involvement in project implementation has been effectively achieved. Cleaver (1999) noted that community opinion leader have the ability to rally the community behind an idea or against an idea. Seeking the support of these community opinion leaders is important in achieving support for the project ideas. These leaders have values, practices and culture to protect and if they feel they are being challenged they will rally against project ideas (Mulwa, 2008). The study established that it is paramount to actively engage community in project implementation. This keeps the project in line with community values and beliefs thus avoiding conflicts that will hinder the community adopting project concepts and

eventual sustainability. This agrees with Cleaver (1999) and Mulwa(2008) who noted that community participation influences acceptability of a project and that the community have some interest to protect respectively.

### **5.3.2 Level of Education**

According to Swanepoal (1993), illiteracy causes a complexity of inferiority among people. Fear makes them refrain from taking initiatives that they cannot make a useful contribution. People believe that innovation must come from educated people or the rich. Illiterates also realize that they cannot develop their own organization by themselves because they will need a literate person to keep records for them. This limitation acts against the self-confidence and independence of the action, hence low participation in development projects (Mulwa, 2002). With 74.4% respondents feeling that level of education played a key role to a very great extent on the sustainability of school water level of education are key in project sustainability.

In order to enlarge the choice of the community in project participation, it would be crucial to develop human capability through capacity building programs. The most basic capabilities for human development is to be well-informed, to obtain resources and participate in the development projects of the community (UNDP, 2001). Experience proposes that projects that adapt best in crisis time are those that have invested in the development of people with the relevant skills and above all self-confidence to manage and control their own actions (Eade & Williams, 1995).

Although the monitoring of any project requires the collection, documentation and allocation of a broad variety of information, the means of collecting such information may not guarantee its quality. One of the main reasons that influence the quality of information that the community can collect is the skills needed for such a task. More often than not, community members lack the skills to effectively share information (Mulwa, 2002). The Human Development Report of the United Nations Development Program (UNDP, 2001) supports the claim that out of the four point six billion people in developing countries, more than eight hundred and fifty million are illiterate. Of these sixty four percent are women. Nearly three hundred and twenty million girls and boys of primary and secondary school age are not enrolled and fifty six percent are girls. This severely affects implementation in development projects the report adds. The challenge of

development is to better the value of life in poor countries of the world, a improved value of life normally calls for better education and greater individual freedom which makes it ensure participation in project development especially in rural arrears (World Bank, 1991).

### **5.3.3 Managerial Skills**

In one of the studies conducted by Assaf et al. (1995), it was found that the difficulty of coordination between the parties to a project is one of the factors that contribute to delaying its implementation. In addition, Majid & McCaffer (1998) also agreed that coordination problems will contribute to project delays. Ali et al. (2008) and Kadir et al. (2005) stated that lack of coordination between contractors and subcontractors would lead to delays, for example in the event that a newly revised project for a project could be issued later by the contactors to the subcontractor . This leads to construction errors and work that needs to be remade. Reconstruction work takes longer, which has an impact on the completion time of the project. According to Sambasivan & Yau (2007), most of the unskilled workers employed in the Malaysian construction industry are foreign workers. These foreign plows have little formal education (Santoso et al., 2003).

### **5.3.4 Follow up Support**

Project follow up support ensures timely implementation of all activities planned (O'Sullivan, 2004). According to James (2000) project evaluation helps project stakeholders to look at the relevance of a project, sustainability in the environment and the impacts of a project and as such help the project gain more prospects for sustainability. It is important for the implementing organization to keep seeking the opinion of the beneficiaries to ensure a project remains focused on community needs and to ensure capacity building efforts are bearing fruits. The study found out that 87.1% respondents felt that follow up support played a key role to a very great extent on the sustainability of school water projects. 10.0% respondents stated that follow up support played a key role to great extent on sustainability of school water projects.2.9% respondents indicated that follow up support influenced moderately sustainability of school water projects.

The study agrees with James (2000) who noted that follow up support and monitoring and evaluation is important in ensuring project sustainability of school water projects. Follow up support provides mechanism through which the implementing organization and beneficiaries can

analyze the project progress and impacts and determine the current relevance of a project to the community needs. This will also provide a platform on which the beneficiary can give their opinion and share their experience thus helping record best practices, lessons learned and also drive recommendation for alteration of the project plans.

#### **5.4 Conclusions**

Community participation, level of education, managerial skills and follow up support contribute to sustainability of school water projects as attributed by this study. In relation to the demographic characteristic of the respondents, the study concluded that the respondents were in a position to comprehend issues water project sustainability since they were part of the school community.

In relation to objective one which sought to establish the influence of community participation in school water projects sustainability, the study conclude that community participation is key for project sustainability. Both the teachers and school administrators agreed to this fact to a great extent. The study recommended that a check list be included in project design stake so as to check on community participation.

As regards objective two which sought to asses in what ways the level of education influences sustainability of school water projects, it was revealed that the level of education played a key role in planning and designing water projects and hence influencing sustainability. The study recommended that the capacity of the community managing the project in relation to education be evaluated and there after trainings be conducted.

On objective three which sought to establish the how managerial skills influences sustainability of school water projects, it was found out that management skills played a key role in ensuring sustainability of school water projects. The study recommended that those managing the projects to have management skills including; planning, organizing, directing, staffing and controlling.

Lastly on objective four which sought to determine how follow up support influences sustainability of school water projects, the researcher found out that it does to a great extent

influence water project sustainability. The researcher recommended that there should be planning of the follow up support in the design stage of the project including funding.

In conclusion, to meet the needs of present population without jeopardizing the ability of the future generations to meet their needs, the objective under study must be given a higher priority in school water projects planning and implementation. This will assist school administrators, project managers, government and water project donors in the formulation of evidence based strategies aimed at development of sustainable financing mechanism to support operation and maintenance of water projects. The study also contributed to knowledge on community participation, level of education, managerial skills and follow up support that will promote long term functionality of school water projects that will be of value to researchers and scholars.

## **5.5 Recommendations**

The findings of this study revealed that community participation, level of education, managerial skills and follow up support influences sustainability of school water projects to a great extent. On the basis of these findings, the researcher recommends the following:

1. The study recommends that since beneficiary involvement is key to sustainability, project designers should ensure there is a check list to check and ensure beneficiaries are involved adequately at all project stages. This checklist should ensure that a significant number of the beneficiaries especially opinion leaders are satisfied with the project choices made. This will avoid sabotage and slow diversion on beneficiaries' interest in project.
2. The study further recommend that there should be an analysis of capacity needed for the community to run a project without external help and as such sustain project benefits. This should be the guiding factor that will ensure that the right training is offered. The beneficiary should appoint a project local committee that will be in charge of the project and ensure such project continues to be beneficial to the community.
3. Training on value addition is vital to ensure that the community reaps maximum benefits from project activities and personal lives. There should be direct efforts to ensure that projects bring economic value to the community as this will ease the burden of maintaining the project once funder help is withdrawn.



4. Project implementation organizations should adopt community based monitoring and evaluation. This will enable them focus on tracking their own development thus ensuring they develop in an all-inclusive manner. This will not aim at making a statement about the impact of a certain community development project rather it will be tool for building communities capacity to direct their own overall development.
5. Water projects should rely on more sustainable methods and strategies. Water pans and earth dams need constant maintenance and de-silting which is unaffordable to many rural communities. Sinking bore holes and use of pipes to tap river water which can then be supplied by gravity is a more sustainable solution to water shortage. At the same time, water generators have significant recurrent costs attached to them and they cannot be a foundation for sustainable water supply.
6. Finally, the study recommends that the project document should be clear on the project benefits that the implementing organization will seek to sustain and the strategies to be used to ensure this is achieved.

## **5.6 Suggested Areas for Further Research**

The following are suggested areas for further research:

1. The study report recommends that much research be done to establish factors leading to school community dependency on funders. It would be important to look at the role that the funder play in creating this dependency and how this interacts with other factors to create funder dependency in communities
2. Further research should be done to establish how social economic factors influence school water project sustainability
3. The researcher proposes that more studies be done to determine the impact that partnership between the government and funders has on sustainability of school water projects
4. The study also suggests more studies be done to establish how locking out of the students in school water projects affects their sustainability.

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## APPENDICES

### Appendix I: Letter of Introduction

UNIVERSITY OF NAIROBI  
P.O BOX 30197  
NAIROBI

Dear Respondent,

REF: LETTER OF INTRODUCTION

I am a student at the University of Nairobi, in the department of extra mural studies. I am currently undertaking a Master of Arts degree in project planning and management. As a requirement by the University, I have been assigned to carry out a research as part of the studies. My area of researcher is to examine factors influencing sustainability of school water projects with a case of Muthithi ward schools. In order to undertake the study successfully, I will need to collect data necessary for the project by use of questionnaires and interview schedule. I would like to assure you that any information provided by you will be used only for purpose of this research and not any other reason whatsoever.

By virtue of being a school administrator or a teacher in Muthithi, you have been selected to participate in the study. Kindly provide the information in the questionnaire to the best of your ability. I will appreciate if you could sacrifice a bit of your time to answer these questions.

Thank you for your co-operation.

Yours faithfully,

Ndung'u Kamande Samuel

L50/78094/2015

## Appendix II: Questionnaires

### INTRODUCTION

This questionnaire is designed to gather information on factors influencing school water project sustainability in Muthithi Ward. All the information given in this questionnaire will be treated with utmost confidentiality.

### PART I: Back ground information

Please indicate your response by ticking ( ) the appropriate box. Do not indicate your name or that of your school anywhere in this questionnaire.

1. Gender
  - i. Male ( )
  - ii. Female ( )
2. In which category does your school fall in?
  - i. Government school ( )
  - ii. Private school ( )
- 3.(a) How many years have you taught in your school?
  - i. 3 years and below ( )
  - ii. 4-6 years ( )
  - iii. 7-9 years ( )
  - iv. Above 15 years ( )

(b) In other schools (please indicate)

.....
4. What is the population size of your school?
  - i. less than 200 students ( )
  - ii. 200-500 students ( )
  - iii. 600-800 students ( )
  - iv. Over 800 students ( )
5. What level is your school?
  - i. primary school ( )
  - ii. Secondary school ( )
  - iii. Tertiary institution ( )
  - iv. University ( )

**PART II: Community participation and school water project sustainability**

6. To what extent does community participation influence school water project sustainability?
- i. Very great extent ( )
  - ii. Great extent ( )
  - iii. Moderately extent ( )
  - iv. Less extent ( )
  - v. No extent ( )
7. To what extent do teachers participate in school water project management?
- i. Very great extent ( )
  - ii Great extent ( )
  - iii. Moderately extent ( )
  - iv. Less extent ( )
  - v. No extent ( )
8. To what extent do you agree with the following statement concerning sustainability of school water project? Indicate your response by ticking in one of the boxes provided to the right of each task. Give one response for every question. Use the key below  
 5=SA=Strongly Agree, 4=A=Agree, 3=N=Neutral, 2=D=Disagree, 1=SD=Strongly Disagree.

Sustainability of school water project	SA	A	N	D	SD
The extent to which sustainability is influenced by communities involvement in project identification					
The extent to which sustainability is influenced by community involvement in project planning					
The extent to which sustainability is influenced by community involvement in project implementation					
The extent to which sustainability is influenced by community involvement in project monitoring and evaluation process					



**PART III: Level of education and school water project sustainability**

9. To what extent does the level of education influence school water project sustainability?

- i. Very great extent ( )
- ii. Great extent ( )
- iii. Moderately extent ( )
- iv. Less extent ( )
- v. No extent ( )

10. To what extent do you agree with the following statement concerning level of education and school water project sustainability? Indicate your response by ticking in one of the boxes provided to the right of each task. Give one response for every question. Use the key below

5=SA=Strongly Agree, 4=A=Agree, 3=N=Neutral, 2=D=Disagree,  
1=SD=Strongly Disagree

Level of education and school water project sustainability	SA	A	N	D	SD
Do secondary school education influence school water project sustainability					
Do tertiary school education influence school water project sustainability					
Do university school education influence school water project sustainability					
Does project management skills influence school water project sustainability					

**PART IV: Managerial skills and school project sustainability**

11. To what extent do managerial skills influence school water project sustainability?

- i. Very great extent ( )
- ii. Great extent ( )
- iii. Moderately extent ( )
- iv. Less extent ( )
- v. No extent ( )

12. To what extent do you agree with the following statement concerning managerial skills and school water project sustainability? Indicate your response by ticking in one of the boxes provided to the right of each task. Give one response for every question. Use the key below

5=SA=Strongly Agree, 4=A=Agree, 3=N=Neutral, 2=D=Disagree, 1=SD=Strongly Disagree.

Managerial skills and school water projects sustainability	SA	A	N	D	SD
Does planning as a function of management influence school water project sustainability					
Does organizing as a function of management influence school water project sustainability					
Does directing as a function of management influence school water project sustainability					
Does controlling as a function of management influence school water project sustainability					
Does staffing as a function of management influence school water project sustainability					

**PART V: Follow up support and school water project sustainability**

13. To what extent does follow up support influence school water project sustainability?
- i. Very great extent ( )
  - ii. Great extent ( )
  - iii. Moderately extent ( )
  - iv. Less extent ( )
  - v. No extent ( )

14. To what extent do you agree with the following statement concerning follow up support and school water project sustainability? Indicate your response by ticking in one of the boxes provided to the right of each task. Give one response for every question. Use the key below

5=VE=very effective, 4=E=Effective, 3=FE=Fairly Effective,  
2=I=Ineffective, 1=VI=Very Ineffective.

Follow up support and school water project sustainability	VE	E	FE	I	VI
How are you involved in monitoring of school water project performance after implementation					
How are you involved in evaluation of school water project performance after implementation					
To what extent have you been involved in formulating school water project strategy after monitoring and evaluation					

#### **PART VI: Sustainability of Water Projects**

15. To what extent do you agree with the following statement concerning sustainability of school water project? Indicate your response by ticking in one of the boxes provided to the right of each task. Give one response for every question. Use the key below

5=SA=Strongly Agree, 4=A=Agree, 3=N=Neutral, 2=D=Disagree,  
1=SD=Strongly Disagree.

Sustainability of Water Projects	SA	A	N	D	SD
To what extent are water shortages					
Do we have school water project maintenance kitty					
Do we have continuity of benefit after funding					
Does the school community own the water projects					

Conclusion,

Is there anything you would like to say on school water project sustainability?

If only one thing would be done to ensure school water project sustainability, what would it be?

**Thank you for your participation**

### **Appendix III: Interview Schedule for School Administrators**

1. How does community participation influence school water projects sustainability?
2. What is the level of community participation in school water projects identification, planning and implementation?
3. How does the level of education influence school water projects sustainability?
4. What do you think is the level of education for those managing school water projects?
5. In what ways do managerial skills influence school water project sustainability?
6. Do those managing school water projects have skills in management functions (planning, organizing, directing, controlling and staffing)?
7. In your opinion, does follow up support influence school water project sustainability?
8. To what extent do follow up support take place after the implementation of school water projects?
9. How is school water project sustainability

Conclusion,

Is there anything you would like to say on school projects sustainability?

If only one thing would be done to ensure school projects sustainability, what would it be?


**Thank you for your participation**

**Appendix IV: Research Permit**

**THIS IS TO CERTIFY THAT:** **Permit No : NACOSTI/P/16/45868/144**  
**MR. SAMUEL KAMANDE NDUNGU** **Date Of Issue : 11th November, 2016**  
**of UNIVERSITY OF NAIROBI, 7508-610** **Fee Received :Ksh 1000**  
**Nairobi, has been permitted to conduct**  
**research in Muranga County**

**on the topic: FACTORS INFLUENCING**  
**SUSTAINABILITY OF WATER PROJECTS IN**  
**SCHOOLS:A CASE OF MUTHITHI WARD**  
**SCHOOLS, KIGUMO, MURANGA, KENYA.**

**for the period ending:**  
**11th November, 2017**

**Applicant's Signature**  **Director General**  
**National Commission for Science**  
**Technology & Innovation**