



# **INFLUENCE OF COMMUNITY PARTICIPATION ON PERFORMANCE OF KISUMU WATER AND SANITATION COMPANY PROJECTS IN KISUMU COUNTY, KENYA**

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## **Abstract**

*To make investment in water projects more effective, failure rates of these systems should be reduced. This study examined project management dynamics and performance of Kisumu Water and Sanitation Company in Kisumu County. The study objectives included; to evaluate the influence of community participation on performance of KIWASCO, to determine the influence of project management skills on performance of KIWASCO, to establish the influence of technology on performance of KIWASCO and to assess monitoring & evaluation practices on performance of KIWASCO. This research was anchored on systems theory, resource dependence theory and theory of constrain. The study adopted cross sectional research design where data was collected across projects undertaken by Kisumu Water and Sanitation Company at one point in time. The project targeted a population of 228 who constituted stakeholders including the community directly*

from water services and staff at KIWASCO. This included directors, managers, administrators, accountants, supervisors, junior staffs and stakeholders benefiting. From the sample frame, stratified random sampling method was used to collect data from 145 respondents. The project used questionnaires to collect data. Reliability of the instrument was measured using Cronbach's Alpha Coefficient registering a score of 0.966. Validity was tested using Pearson Product Moment correlations using SPSS where the significance value was less than ( $<0.05$ ) and depicted that the questionnaire items were valid. Qualitative data was analyzed and presented in themes while quantitative data was analyzed descriptively (using percentage, frequencies, mean and standard deviation) and inferentially (Pearson correlation coefficient and multiple regression analysis). The study revealed existence of project managers who possess adequate experience in project management at KIWASCO and the need for continuous professional development of these managers. The study exhibited a significant relationship between project management skills and performance. Despite the fact that technology increases chances of proper project management and accountability alongside influencing innovation, there is still unsatisfactory use of modern technology in most of the water projects at KIWASCO resulting to poor project performances. The study established a high degree of positive correlation between the independent and dependent variables with technology being the best predictor of project performance. Further, the result showed inadequate allocation of water project resources at KIWASCO during the project life cycle and lack of involvement of entire staff in monitoring and evaluation. Even though projects have clear documentation, KIWASCO does not release project progress reports therefore portraying slow projects which is a red flag. Besides, the study revealed lacking controls in water project activities to ensure resources meet the set objectives and to sustain new quality projects. The study concluded regarding performance that project managers in Kisumu County stand better chance of adding value to various water projects being undertaken at KIWASCO by improving various areas identified in this study.

*Keywords: Community participation, Project Management skills, Performance, Technology, Monitoring and Evaluation practices*

## **INTRODUCTION**

### **Background of the study**

Worldwide over 1.2 billion people lack access to safe drinking water (World Bank, 2016). This lack of access to safe drinking water made leaders sat at United Nations Sustainable Development Summit in July 2015, Addis Ababa and committed to Sustainable Development Goals (SDGs); one of them being to have the proportion of people with access to safe drinking

water and sanitation hence providing access to clean, affordable and accessible water is therefore a top priority.

United Nations International Children's Emergency Fund (2015) reveals that approximately 3 billion individuals or 40% and in America 8% of the total world population reside in nations where it is hard to get enough water to both sustain and fulfill the fundamental human needs. The report further alludes that most communities have missed the mark in regard to the Millennium Development Goal (MDGs) focus of decreasing considerably the number of individuals lacking accessibility to safe water supply by 2015. The report demonstrated that in six developing regions of the world, to be specific; Sub-Saharan Africa, Oceania, Latin America, South East Asia, Southern Asia, and Northern Asia, a greater majority of rustic population are still in need of sufficient and safe water supplies. According to Sabastian & Nathan; 2017, this scenario aggravates the already worse situation in regard to the living conditions of the general population in these regions hence constraining the social economic advancement of the rural economy. Nonetheless, such strides which are geared at expanding new services are threatened of destabilizing the practical sustainability by encouraging hurried building of infrastructure as opposed to the long term, much required interests in operation and support.

Regionally, Tanzania is one country in East Africa that can be said to be having a population structure that has almost a pure peri-urban settlement. This is evident in towns like Dar es Salaam, Tanga, Dodoma and Mwanza Stacey et al. (2015). According to African Development Bank (2014) ,in April 2013 discussions with staff from Dar es Salaam's water utility, Dar es Salaam Urban Water and Sewerage Authority (DAWASA), it was noted that Dar es Salaam residents with connections now have "rationing" where supply is only available for short periods. This was attributed in part to minimal investment over the last 40 years, though AfDB funding of the Dar es Salaam Water Supply and Sanitation Project (DWSSP) is enabling systematic rehabilitation of the existing infrastructure. Stacey et al. (2015) add that, in this country where its annual water resources are at present average 2700 Cubic meters of water per year, the situation is worse in informal settlements in urban areas like Arusha, Tanga, Mwanza and Dar es salaam where, between one third of the urban population live without complete access to piped water and organized waste control and management. The latter study is in the Tanzanian context. The present study therefore seeks to unearth similar challenges but in Kenya, specifically among water projects in Kisumu County.

Mbui & Wanjohi (2018) affirm that lack of universal access to safe water and sanitation, results in over a million preventable deaths each year. They note that nearly 16% of the global population has no access to adequate, clean and safe water. Kenya, like numerous other Sub-Saharan African countries, is water scarce. Community water projects exist to supplement or

complement government efforts to avail water to rural citizens. The scholars did not provide the reasons as to why Kenya is water scarce which the current study seeks to determine.

### ***Community Participation***

Participation is a process through which stakeholders influence and share control over development initiatives and the decision and resources which affect them. Unless the poor are given an opportunity to participate in the development of interventions designed to improve their livelihood, they will continue to miss the benefits of any intervention. World Health Organization (2010) defines community participation to include involvement of members of the beneficiary community in development, empowering people and helping them make decisions on desired developmental outcomes. WHO also advocates for community participation in health issues globally, since is the best strategy of ensuring improved health and better livelihoods for global citizens. Thomas (2013) opines that participatory development emerged to curb the drawbacks of top down development, which entails conception, planning and implementation of projects by the elite without involvement or consultation with the masses, the latter being considered too uninformed and unsophisticated to engage in development work. However, this is not the usual practice thus the current topic deserves a discussion. Besides, Mbui & Wanjohi (2018) supports participatory development by asserting that people require opportunities to participate in development projects designed for their benefit as this entrenches a sense of responsibility and ensures project sustainability. Participatory development is therefore a grass root movement that rejects 'top-downism' and 'statism' as the recognized channels of development. However, despite the latter definitions of participation, it has been common practice in developing countries that the public are left out in water projects and to affirm the latter, the current study is being conducted.

WHO and UNICEF (2014) notes that, water is a social good, community participation is therefore very vital in the management of these water resources in order to ensure maximum social benefits to communities. The community cannot be a passive participant since it understands its needs, the dynamics of implementing projects in the locality and the accruing benefits, better than external donors. Social acceptability of the project, reasonable sharing of benefits, mobilization of local resources and project sustainability are some of the reasons advanced for active community participation in project management. Water projects in particular call for participation of local communities in development initiatives since water is a basic but scarce commodity, often at the centre of conflicts between various types of users. The scarcity of water sources demands prudent conservation, extraction, distribution and management, all of which depend, largely, on the understanding and cooperation of local people who are also the beneficiaries. However, it is not clear as to whether the community members are not interested

in participating in water projects or if they are simply excluded from the process therefore, the need of the present study in Kisumu County.

According to WHO (2010), over one billion (nearly 16%) global citizens lack clean and safe water for drinking. About 120 million Europeans lack clean and safe water. Developing nations are most affected, particularly people living in rural areas. Of the 49 countries in the Asia-Pacific region, 37 are water insecure. Nearly three quarters of these countries are likely to face water crises at any time. Piped water is not available for about 60% of the population. According to UNEP (2010), Africa is the second driest continent, with water availability being critical for survival. Most people still live in rural areas, relying on rain-fed agriculture for livelihood. Only 40% of Sub-Saharan Africa population access clean, safe water. The present study hence seek to find out what challenges deter governments from providing the necessary water resources with the main focus being on water projects in the community and the participation approach.

### ***Project performance***

Project performance include hard metrics such as delivering the project on time and within budget, achieving the project scope, meeting milestone dates, cost targets, project quality requirements, project risks, safety, health, environmental and security requirements. Thus project performance implies effective communications, increased collaboration, and stakeholder involvement. A closer look at Kenya's water projects leaves no doubt that performance is a challenge. This scenario is evident in most of the water projects that have been undertaken over time with little impact afterwards despite the resources used. The largest slum in the world for example-Kibera- has only 10% of the population connected to water from the Nairobi county government and has a rationing rate of 67% being experienced and this rises to about 83% in dry seasons. The sanitation situation was wanting in that; the people had resulted into using what was commonly known as 'flying toilets' (Water Services Regulatory Board, 2014). The study sought to establish if involvement of the community in water projects could therefore increase the sustainability of water projects and thus improve access to water with specific reference to Kisumu county water projects.

Therefore, effective management skills, by competent project managers, played a number of different roles in water projects. Much (2001) cited in Edwin (2015) suggested that project managers should possess sufficient technical knowledge and skill to perform their jobs. He further noted that a project manager should have at least a working level understanding of the technical challenges the project team is facing. Technical skills enhance the ability of the project manager to lead and manage through an understanding of the complex issues that

persist during a project life cycle. The project intended to establish the extent to which management skills applied in water projects in Kisumu County impacted on their performance. It is also significant for any project intended to addressing development issues to have an efficient M & E system to ensure competent services delivery with long term intention of sustainability of the project benefits, and policy implementation (Water Services Regulatory Board, 2014). The current study seeks to evaluate the extent to which M&E is practiced in water projects being implemented in Kisumu County.

### ***Kisumu County***

Kisumu County is one of 47 counties in the Republic of Kenya. Its headquarters is Kisumu City. It has a population of 968,909 (according to the 2009 National Census). The land area of Kisumu County totals 2085.9 km<sup>2</sup>. Kisumu County's neighbors are Siaya County to the West Vihiga County to the North, Nandi County to the North East and Kericho County to the East. Its neighbor to the South is Nyamira County and Homa Bay County is to the South West. The county has a shoreline on Lake Victoria, occupying northern, western and a part of the southern shores of the Winam Gulf. Kisumu County sits on the shores of Lake Victoria, providing it with the potential to be a major centre of fishing. However, the use of old technologies hampers the full development of the industry. Also, the recent water hyacinth menace on the lake has reduced fish catches significantly. The new county government has pledged to fight the hyacinth problem. Despite Kisumu county government effort of setting an ambitious target to provide access to safe drinking water and basic sanitation facilities to her people in line with SDG, the county still faces considerable challenges in reaching the water and sanitation goals which spurs the current study.

A project is considered successful if its implementation facilitates community empowerment which can be assessed on factors such: Whether communities are participating in decision making, whether accountability has been enhanced, whether organizational capacity has been enhanced at the community level, whether operation and maintenance arrangements are in place, whether communities are accessing information to make informed decisions. Hence, project staff, the community, and other resources are engaged to achieve a successful outcome, (Kikuvi, 2016).

### **Statement of the Problem**

Kenya lacks satisfactory safe drinking water, yet water is an important commodity for human life and sustenance Mbui & Wanjohi (2018). According to Water.org (2018), 41% of Kenya's 46 million people depend on water sources that are unimproved like rivers, shallow wells and



ponds, for their water needs. Moreover, only about 16% of the designated water suppliers in the country provide water on a continuous basis. Wateraid.org. (2018) further asserts that more than 30% of Kenyans do not have access to clean water. Consequently, majority of Kenyans have to device their own solutions to the water crisis facing the country. Community water projects are significant machinery in the water provision matrix especially in rural areas where government-owned and run water companies do not offer services (Macharia, 2015). However, while many rural citizens depend on community water projects, the latter often fail to provide clean, safe and reliable water to targeted beneficiaries. Participatory development experts speak out that projects implemented with the active participation of the community and beneficiaries are likely to execute efficiently and sustainably, Mbui & Wanjohi (2018).

KIWASCO initiated its water Projects in 2003 as an independent company after the transformation of The Kisumu municipal council. The project purposes to meet the water and sewerages needs of people living in Kisumu Area. However, despite more than a decade of existence, the community-run projects especially in local areas of Kisumu like Ojola, Obwolo among others has failed to experience smooth water flow and targeted beneficiaries still experience extended water shortages and maintenance issues.

Further, other critical challenges facing KIWASCO is providing safe drinking water and sanitation as affirmed by empirical evidences? For instance Njuguna (2014) conducted a study on factors influencing sustainability of donor funded projects: the case of water and sanitation projects in Laikipia East district, Laikipia County, Kenya. He discovered that M&E, project planning, human resources and capital resources affected sustainability of donor funded projects. It was evident that despite of the fact that the study was conducted in Kisumu County, it was noted that the study did not consider critical variables such as community participation, management skills and role of technology. The study therefore aimed at examining the influence of community participation, management skills and role of technology on performance of Kisumu water and Sanitation Company projects in Kisumu County – Kenya.

## **Research Objectives**

### ***General Objective***

To examine the influence of community participation on performance of Kisumu Water and Sanitation Projects in Kisumu County - Kenya.

### ***Specific Objectives***

- i. To evaluate the influence of community participation on performance of Kisumu Water and Sanitation Company

- ii. To establish the influence of project management skills on performance of Kisumu Water and Sanitation Company
- iii. To evaluate the influence of technology on performance Kisumu Water and Sanitation Company
- iv. To assess the influence of monitoring and evaluation practices on performance of Kisumu Water and Sanitation Company

### **Research Questions**

- i. What is the influence of community participation on performance of Kisumu Water and Sanitation Company?
- ii. How do project management skills influence performance of Kisumu Water and Sanitation Company?
- iii. How does technology influence performance Kisumu Water and Sanitation Company?
- iv. To what extent does monitoring and evaluation practices influences performance at Kisumu Water and Sanitation Company?

### **Justification of the Study**

The study will inform the government and empower project managers at County levels to improve planning and implementation towards the goal of sustaining water projects benefits. On the other hand, Non-Governmental Organizations will use the findings and recommendations of this study to evaluate the performance and sustainability of water projects Vis a Vis the participatory Monitoring and Evaluation at all stages of the project cycle.

The community will also be empowered in regard to health benefits since their incorporation and participation in water projects will result in increased quantities of clean water being consumed and used for hygienic purposes.

The findings of this study will strengthen local organizations as the community therefore will be organized into units with the ability to identify various development needs and forward them to the concerned government institutions for implementation.

Other researcher may use the findings as a point of reference for further research. It will also be an additional literature on influence of community participation, management skills and technology on performance of water projects which is currently very scanty.

### **Scope of the Study**

This study was conducted in Kisumu city, Kisumu County, where Kisumu Water and Sanitation Company is located. This study examined the Influence of project management dynamics and



performance of Kisumu Water and Sanitation Projects. The main concept discussed in this study included community participation, project management skills, technology, monitoring & evaluation practices, and how they influence water project performance. The study was completed in September 2019 and final submission done in November 2019.

### **Limitations of the study**

The ability of some of the respondents to understand the questionnaire items was a major challenge. The researcher had to take a bit of time and explain to some respondents what was expected of them. Transport costs were also another challenge. There were instances where the researcher had to go more than once to trace some respondents. In cases where the questionnaire was dropped to be picked later, the researcher was inconvenienced since there were cases where researcher had to go back to collect the questionnaires and failed to get the respondent, forcing her to go back again.

## **LITERATURE REVIEW**

### **Theoretical Literature Review**

The study was guided by the following theories; System Theory, Theory of constraints and Resource Dependence Theory with the anchor theory being Systems theory.

### ***System theory***

System theory is one of the theories that have gained popularity in different fields. It has a background in science traced back to 1968. Systems theory was proposed in the 1940's by the biologist Ludwig von Bertalanffy (General Systems Theory, 1968), and furthered by Ross Ashby (Introduction to Cybernetics, 1956). This theory involves analysis of multidisciplinary fields to understanding a problem. System theory looks for holistic patterns in scientific and metaphysical contexts, and the management approach to systems theory it is especially effective for recognizing and leveraging the particular pattern that company's operation follows.

The theory presupposes that any approach to problem solving must consider the systematic thinking where one views any living being as subject to influence by many other factors from both inside and outside Midgley, 2003 & Kerzner, (2006). This theory recognizes the role of harmony between people and their nature or environment (Mbiti. 1996). Water project management involves systematic and logical processes involving several interplays. The idea behind system theory as applied in this study is those individuals, groups, organizations, institutions and other organs whether natural or manmade do not exist in isolation. As environmental occupants they exist in an environment characterized with several and complex

interrelationships. Understanding how a project itself operates is a system within other systems and this is crucial in approaching the issues of community capacity in managing a project, (Beata, 2014). Socio-Political, cultural, economic, technological and legal environment determine water project sustainability. In their journal, Beata et al indicates that systematic thinking on project is a contextual competence required by project management leaders and team and this is a support to the system theory.

A system theory developed by Ludwig von Bertalanffy and others provides an analytical framework which can be used to explain some of the many factors concerned in projects, (Whitehorse & Tamas, 2000). Some of the key concerns in projects, such as leadership, culture, and project life cycle, can be understood and described using system theory. Project management capacity environment, existing community development structural frameworks and organizations structures are some of the components of system under which project operates but within a macro system that influences them. These components together with others not covered in this study may interact to influence project sustainability. Expressions such as systems and sub-systems, closed and open systems, system boundaries, the transfer of energy or influence across boundaries, feedback and system balance can be used to clarify what sometimes seems to be a confusing collection of information involved in work (Mendes, 2008). Project is an open system with all and other characteristics mentioned by Mendes and understanding performance issues is well placed when one considers system theory.

In the context of this study, there is agreement with other authors that the use of System theory concepts can help the water project manager in organizing information and see the patterns in complex processes as they plan and carry out activities with their teams. Following the system theory argument, project management and its development stages conform to system theory. The stages of projects may exhibit different challenges in terms of capacity especially where people assume all project stages have the same characteristics. Empirical study that considers the variation of project characteristic and its likely influence on project performance will most likely form a foundation of “why and what” questions as proposed in this study. Besides, as applied to this study the systems theory has been related to the independent variables of the study. The theory postulates that project management is system of processes which include community involvement and participation, use of project management skills, conducting monitoring and evaluation and use of technological advancements to achieve performance. The study is therefore anchored on this theory since it holds projects are about systems and until one system is done you cannot move to another system and successfully accomplish all the project objectives.

### ***Theory of Constraints***

Dr. Eliyahu Goldratt conceived the Theory of Constraints (TOC), and introduced it to a wide audience through his bestselling 1984 novel, "The Goal". Since then, TOC has continued to evolve and develop, and today it is a significant factor within the world of management best practices. The theory of constraints (TOC) can be used to reveal how managers can efficiently manage organizations based on the assumption of system thinking and constraint management Kohli & Gupta, (2010). TOC-based management philosophy focuses on change at three levels; mind-set of the organization, measures that drive the organization, and methods employed within the organization Gupta & Boyd, (2008). Needs and constraints in a multi-party working situation which is required for construction projects bring complications in project management Lau & Kong, (2006) and therefore for effective project management, limitations have to be managed.

According Jacob and McClelland (2001), most projects are difficult to manage because they involve uncertainty, and involve three different and opposing commitments i.e. due date, budget, and content. Triple constraints criteria (time, scope and cost) in project management have been accepted as a measure of project success. Venture supervisors see triple limitations as key to a venture's prerequisites and achievement. Streamlining these three elements learn extend quality and auspicious finish. Every one of the three limitations of tasks scope (a measure of value), cost and time have their individual impacts on ventures' execution yet since these mechanism have some association, one imperative bears an impact on the other two, in the long run influencing ventures expectations to a more prominent degree Hamid et al, (2012).

This study was based on the triple constraint theory where most of adopted monitoring practices from organizational perspectives might work well or fail hence leading to delays if this theory is not well embraced. Hindrances in project completion are a common problem in the construction industry not only with an immense cost to society but also with devastating effects on the contracting parties Ondari & Gekara, (2013). Other factors which determine project performance comprise cost and quality requirements Nwachukwu & Emoh, (2011).

### ***Resource Dependence Theory (RDT)***

Resource Dependence Theory was first published in 1970s, with the publication of The External Control of Organizations: A Resource Dependence Perspective, Pfeffer and Salancik (1978). Resource Dependence Theory (RDT) is based upon how the external resource of organizations affects the behavior of the organization. The theory is based upon the following tenets: Organizations are reliant on resources, these resources in the end originate from the environment of organizations, the environment to a substantial extent contains other

organizations, the resources one organization requires are thus often in the hand of other organizations, resources are a basis of power, legally independent organizations can therefore be dependent on each other Pfeffer and Salancik (1978).

The theory of Resource Dependence needs a closer examination. Its very disadvantage lies in its assertions of dependence. With varying trends of financial uncertainties, there is a necessity of leaning towards other theories of uncertainties. According to this theory, organizations depend on resources for their survival; therefore, for any organization to achieve sustainability, resources are indispensable. For water projects to achieve sustainability, resources are important. These resources will come in the form of human resource that is the team members and community as a whole, therefore the need to involve all the stakeholders in the project for sustainability, other resources are land and finances. The view that the resource dependence theory integrates resource dependence is relevant for this study since managerial skills and technology are some one of the resource variables investigated in the study.

## **Empirical Literature Review**

### ***Community Participation***

Thomas (2013) opines that participatory development emerged to curb the drawbacks of top down development, which entails conception, planning and implementation of projects by the elite without involvement or consultation with the masses, the latter being considered too uninformed and unsophisticated to engage in development work. However, this is not the usual practice thus the current topic deserves a discussion. Mbui & Wanjohi (2018) supports participatory development by asserting that people require opportunities to participate in development projects designed for their benefit as this entrenches a sense of responsibility and ensures project sustainability. Participatory development is therefore a grass root movement that rejects 'top-downism' and 'statism' as the recognized channels of development. However, despite the latter definitions of participation, it has been common practice in developing countries that the public are left out in water projects and to affirm the latter, the current study is being conducted.

World Health Organization and United Nations International Children's Emergency Fund (2014) notes that, water is a social good, community participation is therefore very vital in the management of these water resources in order to ensure maximum social benefits to communities. The community cannot be a passive participant since it understands its needs, the dynamics of implementing projects in the locality and the accruing benefits, better than external donors. Social acceptability of the project, reasonable sharing of benefits, mobilization of local resources and project sustainability are some of the reasons advanced for active community

participation in project management. Water projects in particular call for participation of local communities in development initiatives since water is a basic but scarce commodity, often at the centre of conflicts between various types of users. The scarcity of water sources demands prudent conservation, extraction, distribution and management, all of which depend, largely, on the understanding and cooperation of local people who are also the beneficiaries. However, it is not clear as to whether the community members are not interested in participating in water projects or if they are simply excluded from the process therefore, the need of the present study in Kisumu County.

According to WHO (2010), over one billion (nearly 16%) global citizens lack clean and safe water for drinking. About 120 million Europeans lack clean and safe water. Developing nations are most affected, particularly people living in rural areas. Of the 49 countries in the Asia-Pacific region, 37 are water insecure. Nearly three quarters of these countries are likely to face water crises at any time. Piped water is not available for about 60% of the population. According to UNEP (2010), Africa is the second driest continent, with water availability being critical for survival. Most people still live in rural areas, relying on rain-fed agriculture for livelihood. Only 40% of Sub-Saharan Africa population access clean, safe water. The present study hence seek to find out what challenges deter governments from providing the necessary water resources with the main focus being on water projects and sanitation offered by KIWASCO.

This study operationalized community participation to include; formation of project management committees by the community members, attending company public participations and participating in decision making including monitoring of water pipes and resources to minimize vandalization.

### ***Project Management Skills***

Sunindijo (2015) investigated Project Manager Skills for Improving Project Performance in Australia. The research objective was to determine skill components that influence time, cost, and quality performance in construction projects. Data were collected from 107 project managers using a questionnaire survey method. The study findings showed that interpersonal influence has positive impact on project time performance; emotional intelligence, interpersonal skill, apparent sincerity, and budgeting influence project cost performance; and visioning, emotional intelligence, interpersonal skill, transformational leadership, interpersonal influence, apparent sincerity, quality management, and document and contract administration influence project quality performance. The study also recommended that project managers should focus on the development of these skills so that they are better equipped to meet project objectives.

Hassan and Abdul (2016) investigated the Impact of Managers' Leadership Skills on Construction Project Performance in Dubai. The objective of the research was to demonstrate the impact of managers' leadership skills within Dubai's construction sector, and how it can impact the overall performance of projects. A descriptive and an explorative mixed approach were used in this research to investigate practical experiences of professionals working within the industry. The research reported that leadership skills are a major factor that differentiates between effective leaders and managers. The research recommended that since effective leadership is highly attached to peoples' life and the quality of relations developed by the leader, this should be given priority in construction projects. The study therefore concluded that there are different opinions about effective leadership and the convergence point among these opinions is people oriented and accommodated with the surrounding environment as a key factor for success.

McDade (2004) indicated that individuals with excellent management skill are considered to be superior leaders and therefore, through their leadership organizations are steered to success. Precise nature of leadership and its relationship to key criterion variables such as subordinate satisfaction, commitment, and performance is still uncertain, leadership does remain pretty much of a 'black box' or unexplainable concept." However, not all leaders are good managers. Therefore, in the quest to establish effect of management skills on sustainability of water projects, leadership should be distinguished from management. Chemers and Mahar, (2004) indicated that management involves planning, organizing, staffing, directing, and controlling, and a manager is someone who performs these functions.

Nishtha, Sandra and Tridas (2008) carried a study on How do Project Managers' Skills Affect Project Success in IT Outsourcing?. The objective of this study was to identify what factors impact Information Technology project outcomes, such as costs and client satisfaction, given the project characteristics and Project Management's hard and soft skills. They examined data collected from a field study conducted at a major Information Technology service provider in India. The study results suggested that while hard skills such as technical or domain expertise may be essential in a PM, soft skills such as tacit knowledge of organizational culture and clients are the most important contribution that PMs bring to a project. The study recommended that soft skills not only improve project outcomes directly, but are especially helpful when projects have greater coordination complexity or when there is less familiarity with the task and client.

Rutayisire (2013) examined the project managers' skills and project performance in Rwanda: A Case Study of Grain Bulking Center Project of ENAS Ltd - Kirehe District applying

cross-sectional survey research design. The study results specified that there was a significant positive relationship between project planning skills and project schedule performance.

Musembi, Guyo, Kyalo, & Mbuthia (2018) investigated the effect of employees' leadership skills on project performance in the energy sector in Kenya. The objective of the study was to establish the effect of employees' leadership skills on project performance in the Kenyan public energy sector. The study employed both cross-sectional and correlation design. Purposive sampling technique was employed to select the projects that were studied in the energy sector ending between January 2016 to December 2018 of which a total of 85 ongoing projects were selected. The study established that employees' leadership skills positively affect project performance. The study recommended that both transactional and transformational leadership styles should be used in the management of projects with a greater emphasis on transformational leadership style.

Ubah (2016) explored influence of project management skills of staff on performance of government funded projects in Kenya: the case of Kazi kwa Vijana initiative in Kibera, Nairobi county, Kenya. Research by Ubah (2016) adopted descriptive survey design with a view of collecting information through administering questionnaires and interviews to 217 sampled respondents. The study recommended that organizations should recruit employees with experience from similar projects; train them regularly so as to increase knowledge which will promote proper budgeting, monitoring and evaluation of all schedules and activities to ensure that necessary actions are taken in good time

Kenedy (2014) assessed the role of project management skills on performance of construction projects: a case of selected construction firms in Mombasa County, Kenya. In his study, he adopted descriptive research design with a sample of 33 respondents. He found that Projects are constrained by inadequate planning skills which are a pre-requisite for effective planning for project success. Besides, the same study revealed that project planning is complicated and risky, hence requires varying skills sets for successful project implementation and management.

### ***Technology***

Project managers have constantly appreciated the role technology plays in the production process, project performance, and human welfare (Sampat, 2006). Repeated economic crises and steadily increasing failure in projects, brought about in particular by poor management and accountability, are forcing an unprecedented rationalization of resources (Hagedoorn and Cloudt, 2003). Sustainability has thus become a concern of all water projects. At the same time, technology is developing with blinding speed and is becoming the principal instrument for



meeting this concern. This explains why many stakeholders are investing large amounts of money in implementing information systems. However, the advantages offered by technologies, especially in terms of enhancing productivity, depend upon how well these technologies are integrated into the projects objectives.

Recently, Information Technology (IT) has moved beyond the implementation of IT applications to an age of IT-enabled change. The trend towards increasing use of IT continues and the challenge remains how to better manage IT projects in order to maximize their economic benefits. Mbithi and Rasmuson, (1999) stressing the significance of technology on sustainability of water projects indicated, sustainability of water project depends on factors controlled by the project like; training, technology, cost of the project and construction quality and factors that are not controlled by the project for instance, communities' poverty level, access to technical assistances and spare parts.

The advances in information technology have significantly changed the way computerized information systems can be used in projects. The function of information technology in service-sector firms and its impact on the effectiveness of the firm's operations and sustainability have been identified (Rubenstein and Greisler, 2000).

In addition, increased reporting requirements by stakeholder for ease of assessment of projects have made it necessary for many projects to invest in information systems. Information technology can support a number of functions in such project. Information technology can significantly change the way projects interact with stakeholders. Stakeholders "see" the effect of automated admissions into the project for those who were not there at inception, fault reporting, and the improved efficiency and accuracy of billing and office systems. In addition, project member's information systems can provide information extracted from their records to improve member's satisfaction (Li, 1997); this ensures personalized service delivery to members. Adoption of technology is key in sustainability of water projects as it eases operations and maintenance. The effective operation and maintenance of project is crucial element for the sustainability of the water project. The management of water project on operation and maintenance if not successful, if financing resources are not available and frequent supports are not provided (Binder, 2008).

Budgeting sufficient funding for water project is an important issue for sustainability and proper maintenance but not only one. Technological innovation has huge influence on project (Nohria and Gulati, 2006). Technological innovation should also be an important factor influencing the improvement of performance and therefore ensuring project sustainability. With more speedy technical change, it has turn out to be clear that the ability of organizations to develop innovative new products and services is a critical influence on sustainability (Hitt &

Rothaermel, 2003). Many studies have repeatedly revealed a positive relationship between a project's technological innovation and project sustainability, and concluded that technological innovation is key for sustainability (Foster, 1986).

### **Monitoring and Evaluation Practices**

UNICEF (2012) conducted a study on Progress on drinking water and sanitation in Sri Lanka, Philippines, India and Indonesia in 2011/2012. It found out that there should be a link on water sector policies and sustainability of these the water projects. In these countries where almost a half of their populations live under slum like conditions, for sustainable WSS in the peri-urbans, there needs to be well trained personnel for the continuous and monitoring of the projects' success, there should be continuous timely evaluations and reporting, there should be enough finances allocated for the M&E and there should be well defined policies that make M&E exercise be part of the operations of the projects. According to World Bank (2010), no matter how much is invested in water projects in the slums, without proper M&E, there seems to be a risk of most of these projects fail. In 2009 alone for example, 45% of the WS projects in east parts of Manila failed due to poor monitoring and evaluation; despite the enormous amounts of funding from the local and international community.

WHO (2012) did a study on the sustainability of WSS projects in Angola. According to the study, the sustainability of the goal that target clean water and safe environment for all was not attainable by 2015. This is due to poor mechanism of monitoring and evaluating the various water projects in the rural area and the peri-urban slums. The study continues to demonstrate that, effective, participatory and regular monitoring of SDP can advance management, participation, accountability, learning, trust and development (Görgens, Nkwazi&Govindaraj, 2005). M &E is a vital tool of development and management in any project, and should start at the planning stage of the project (Khan, 2003). It is imperative for any project aimed at addressing development issues to have an effective M & E system to guarantee efficient services delivery with long term intention of sustainability of the project benefits, and policy implementation (Water Services Regulatory Board, 2014).

In their study on Upscaling Access to Sustainable Sanitation, Gakubia, Pokorski&Onyango (2010) argue that, much money is wasted every year on thousands of WSS around the world that become abandoned, break, and prove to be unsustainable at the long run. In their study that focused in the situation of the projects in the slums of Tanzania, Ethiopia, Kenya and Uganda, water and sanitation has been the second most un-provided for service by both the national and local governments to the slum dweller. This is slightly behind the security. The major challenges facing the breakdown of proper providence of the WSS to the slum

dwellers includes: poor M&E, poor planning (projects planning and urban planning), poor political perceptions, poor funding and many more. In the case of M&E, most people confused it with witch-hunting, some confused it with continuous supervision, while countries like Kenya did not have a specific budget for WSS projects M&E, did not well laid down standards, policies, expertise etc.

Njuguna (2014) did a study in Laikipia east district, Laikipia County, Kenya. In his study, he has tried to show how M&E can help water projects like any other projects to be sustainable. According to him, in management of projects, monitoring can be used to improve the way governments and private organizations achieve results and ensure project sustainability. This can be ensured through investing in and strengthening a national system in place for M & E. Investing in M&E is vital, as it will eventually help to ensure resources are saved (WB, 2014). Global Fund (2012) notes that, M&E could help save resources which could otherwise be used in areas such as inefficient programs or overlapping activities which are supported by partners that are different. According to IFAD (2012), a sustained M&E system is very useful as it could help an organization achieve its goals and objectives (IFAD, 2012).

Studies by various scholars have shown that, M&E systems are designed and structured in a manner that they aim at informing project management of whether projects implementation is going as planned or it has deviated from its initial plans and thus calling for corrective action. A M&E system that is well-designed therefore, provides relevant data to the management and project implementers on projects progress and whether the projects are meeting objectives (World Bank, 2012). If this is espoused by the various projects being run in the Kenyan slums by various bodies like the KIWASCO, the rates of success of WSS in the country could rise by 24% per-annum. This is depicted in the research which was conducted in Lakes region of Kenya (western parts of and the southern parts of Nyanza) by World Bank that helped in development of basic approach towards an effective implementation of community based monitoring and evaluation system (World Bank, 2013). It includes a system for its use and the operational tools to use in facilitating to its sustainability. The findings were intended for trainers and development workers with aim of introducing of monitoring and evaluation system in their projects and programs for their sustainability. The World Bank suggested that project monitoring would be of little or no use if it is not consistently supported by all the stakeholders towards addressing the sustainability issues of the projects (World Bank, 2014).

### **Summary of research gap**

From the literature, the concept of water project performance is gaining popularity very fast in Africa and the rest of the world. This has been followed by the concept of water and sanitation in

the peri-urbans that has been dominated by numerous challenges including lack of community participation, management skill, technology, monitoring and evaluation on project sustainability. Literature reviewed reveals the need for further studies on factors influencing water project sustainability in order to achieve generalization of results. The resource-based view (RBV) offers critical and fundamental insights into why firms with valuable, rare, inimitable, and well organized resources may enjoy superior performance.

Based on a pronounced literature reviews, lots of studies have been undertaken in Western countries. From the extensive literature review, very few studies have been undertaken locally, and therefore is little or no documentation that has been made in line with critical factors affecting project sustainability. Furthermore, very few research authors have attempted to provide conceptual sets that determine influence of water project sustainability and even less empirical studies have attempted to explore it. Therefore, this is the gap which this study sought to fill in.

### Conceptual Framework

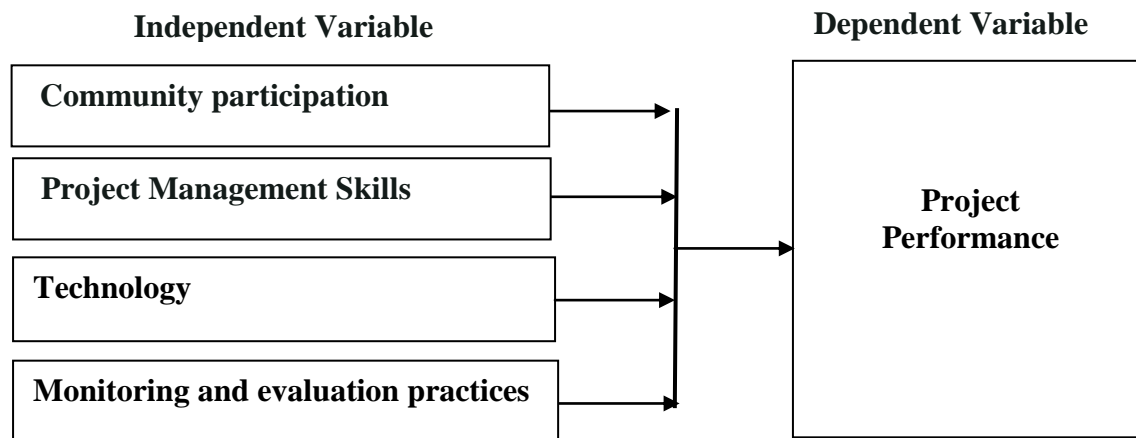


Figure 1: Conceptual framework

The study dependent variable is project performance while independent variable is project dynamics which includes; community participation, project management skills, technology and monitoring and evaluation practices. According to the framework, there is a direct influence or relationship between independent variables (strategic change management) and dependent variables.

### Operationalization of variables

Management of projects involves increasing the alignment of projects with stakeholder's priorities and coordinating aid efforts at all levels that is local, national, and international to increase ownership and efficient delivery of services. It is therefore basically offering leadership to achieve certain laid objectives. The advances in information technology have significantly changed the way computerized information systems can be used in projects. The role of information technology in service-sector firms and its impact on the effectiveness of the firm's operations and sustainability have been identified. Community participation in M&E is critical in project sustainability since it offers new ways of assessing and learning from change that are more inclusive and more responsive to the needs and aspirations of those most directly affected. Monitoring and evaluation is geared towards not only measuring the effectiveness of a project, but also towards building ownership, empowering beneficiaries, building accountability and transparency and taking corrective actions to improve performance and outcomes.

Table 1: Operationalization of variables

Sub-variables	Indicators	Type of analysis	Scale
<b>Community participation</b>	<ul style="list-style-type: none"> <li>• Involvement in projects management committee</li> <li>• Involvement in public participations</li> <li>• Community monitoring roles</li> </ul>	Descriptive	Likert scale
<b>Management skills</b>	<ul style="list-style-type: none"> <li>• Sufficient technical expertise</li> <li>• Sufficient human resource for performance of the project</li> <li>• Experience in project management</li> </ul>	Descriptive	Likert scale
<b>Technology</b>	<ul style="list-style-type: none"> <li>• Technological solution to poor management and accountability</li> <li>• Expedites timely information on project performance</li> <li>• Enhanced innovations &amp; creativity in the course of project</li> </ul>	Descriptive	Likert Scale
<b>Monitoring &amp; valuation</b>	<ul style="list-style-type: none"> <li>• Proper allocation of resources in project life cycle</li> <li>• Clear control measures</li> <li>• Availability of project progress reports</li> </ul>	Descriptive	Likert scale

## RESEARCH METHODOLOGY

### Research Design

The study adopted a cross sectional research design. In a cross-sectional study, the investigator measures the outcome and the exposures in the study participants at the same time. The study used cross-sectional design in that data was collected across several projects undertaken at KIWASCO at one point in time in order to determine the relationship among the study variables.

### Target Population

A population is a group of individuals, objects or items from which samples are taken for measurement (Cooper, Robinson & Patall, 2006; Schindler 2008). The study targets an estimated population of 228 who constitutes of stakeholders (community and all officers involved) that is the community that benefit from water service and KIWASCO staff. This included directors, managers, administrators, accountants, supervisors, junior staffs and stakeholders.

Table 2: Target population

Categories	Target
Director	2
Manager	2
Administrators	4
Accountants	6
Supervisors	10
Subordinates	37
Stakeholder	167
<b>Total</b>	<b>228</b>

### Sample and Sampling Technique

A sample is the representative part of the total population chosen for analysis during a research (Bryman & Bell, 2007). The characteristic of the interest sample of the population are KIWASCO employees and stakeholder involved in the water projects. The main aim of using sampling in this study is because it is impractical and undesirable to study the whole population being that the actual stakeholders in water projects could be vast. From the sample frame, stratified random sampling method will be used to collect the data from 145 respondents who will form

the sample Size. The respondents were stratified based on areas so that data will be collected from those coming from Ojola, those from Obwolo among other areas.

Yamane, (1967) provided a simplified formula to calculate sample sizes. A 95% confidence level and  $P = 0.5$  are assumed for the equation. Where  $n$  is the sample size,  $N$  is the population size, and  $e$  is the level of precision. The sample size is calculated at 95% confidence level, an alpha level of 0.05 which is margin of error of  $\pm 5\%$  and 0.5 as the standard deviation which shows how much variance the research expects in as responses.

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

Where.

- $n$ = the sample size.
- $e$ = the error of 5%
- $N$ =population

$$N = \frac{228}{1 + (288 * 0.05)^2}$$

$N = 145$  (sample size)

Table 3: Stratification of sample size

No	Area/homogeneity	Sample size/ Strata
1	Ojola	36
2	Obwolo	36
3	Upper Nyakach	37
4	Muhoroni	36
<b>Total</b>		<b>145</b>

### Data collection Instruments

The main primary source was response in the questionnaires which were administered to the respondents. The questionnaires in the study were designed to include both structured and unstructured questions. This made simple analysis of data collected as well as permitting a larger response (Mugenda and Mugenda 2003).



### **Pilot study**

A pilot study was conducted and questionnaires were given to just a few people different from that actual stratum. The study used 15 questionnaires for the pre-test for this study which represented 10% of target population so that for each category, the researcher issued 4 questionnaires. The results from the pilot study was analyzed to detect if the targeted respondents were able to comprehend the questions and if there were omissions so that in the final roll out, the errors would be corrected to enable achievement of the research objective.

### **Validity**

Validity was tested using Pearson Product Moment correlations using SPSS 25 This test was done by correlating each item in the questionnaire. The significance value was less than ( $<0.05$ ) and therefore portrayed that the questionnaire items were valid.

### **Reliability**

Cronbach's Alpha was used to interpret and test the reliability rate. Cronbach's alpha reliability coefficient normally ranges between 0 and 1. The closer the coefficient is to 1.0, the greater is the internal consistency of the items (variables) in the scale. This is illustrated in table 4.

Table 4: Reliability Statistics

Cronbach's Alpha	Cronbach's Alpha Based on Standardized Items	N of Items
.966	.963	6

To interpret the output, the rule of George and Mallery (2003) was used of which as per table 4, the Cronbach's alpha was 0.966 thus excellent portraying that there was greater internal consistency of the variables under study.

### **Data Collection Procedure**

Primary data was randomly collected through administration of questionnaires to project managers and project team members that were involved in each of the identified projects. For each project, project team members comprised of consultants, contractors and WSP representatives. Data collection instruments were administered through a drop and pick later approach. For each questionnaire, there was an introduction letter explaining the purpose of the study and assuring the respondent about confidentiality of data collected.

## Data Analysis and Presentation

Descriptive statistics, regression and correlation analysis was employed to analyze the data. Statistical package for social sciences (SPSS 25) was used to determine various coefficients, standard error, regression equations tests, one way as well as paired Analyses of variance (ANOVA). The regression model will be adopted as the analytical model for the research.

$$Y = \beta_0 + \beta_1X_1 + \beta_2X_2 + \beta_3X_3 + \beta_4X_4 + \varepsilon$$

Where,

$Y$  = Dependent variable-Performance

$\beta_0$  = Constant of the model

$X_1$  = Community participation

$X_2$  = Project management skills

$X_3$  =Technology

$X_4$  =Monitoring & Evaluation practices

$\varepsilon$  =Standard error

$\beta_1, \beta_2, \beta_3, \beta_4$  = Regression Standardized Co-efficient of Independent variables

## Ethical considerations

### *Informed consent*

While conducting the study, the researcher observed ethical issues. This was achieved by the researcher seeking approval and authority to carry out the research from Management University of Africa. Before embarking on the research during the design of the questionnaire, care had been taken not to ask offensive or sensitive personal information from the respondents. The researcher made prior arrangements and booked appointments with the respondents to avoid inconveniencing them. The researcher explained to the respondents the nature and purpose of the research and that no financial benefits would be received by the respondent for participating in the study.

### *Voluntary participation*

The researcher sought respondents' approval to participate in the study before issuing the questionnaire and gave them the option to withdraw from the study at any point during the study.

### *Privacy/Anonymity*

The researcher assured respondents of anonymity, and that information given would be treated professionally and for the purpose of the study only.

## FINDINGS AND DISCUSSION

### Response Rate

The study targeted the 228 respondents. Out of the 228, 145 were sampled of which the study managed to obtain complete data from 145 respondents therefore making up a response rate of 100%, which was considered adequate for the research as illustrated in table 5.

Table 5: Response rate

	Frequency	Valid Percent	Cumulative Percent
Valid Male	85	58.6	58.3
Valid Female	60	41.37	100.0
<b>Total</b>	<b>145</b>	<b>100.0</b>	

### Demographic information

#### *Gender of Respondents*

From the respondents, 58.6% were male while 41.37% were female. It therefore implied that there was no biasness as the ratio of men to women was almost equal.

Table 6: Gender of the respondents

	Frequency	Valid Percent	Cumulative Percent
Valid Male	85	58.6	58.3
Valid Female	60	41.37	100.0
<b>Total</b>	<b>145</b>	<b>100.0</b>	

#### *Age bracket of the respondents*

From the findings, 16% of the respondents were in the age bracket below 25 years, 58.3% were in the age bracket of 25 -34 years, 19.8% were in the age of 35-44 years while 5.9% were in the age of 45 and above. Majority of the respondents were in the age group between 25-34 years. This is a clear indicator that they had experience and could easily respond to the questionnaire items as illustrated in figure 2.

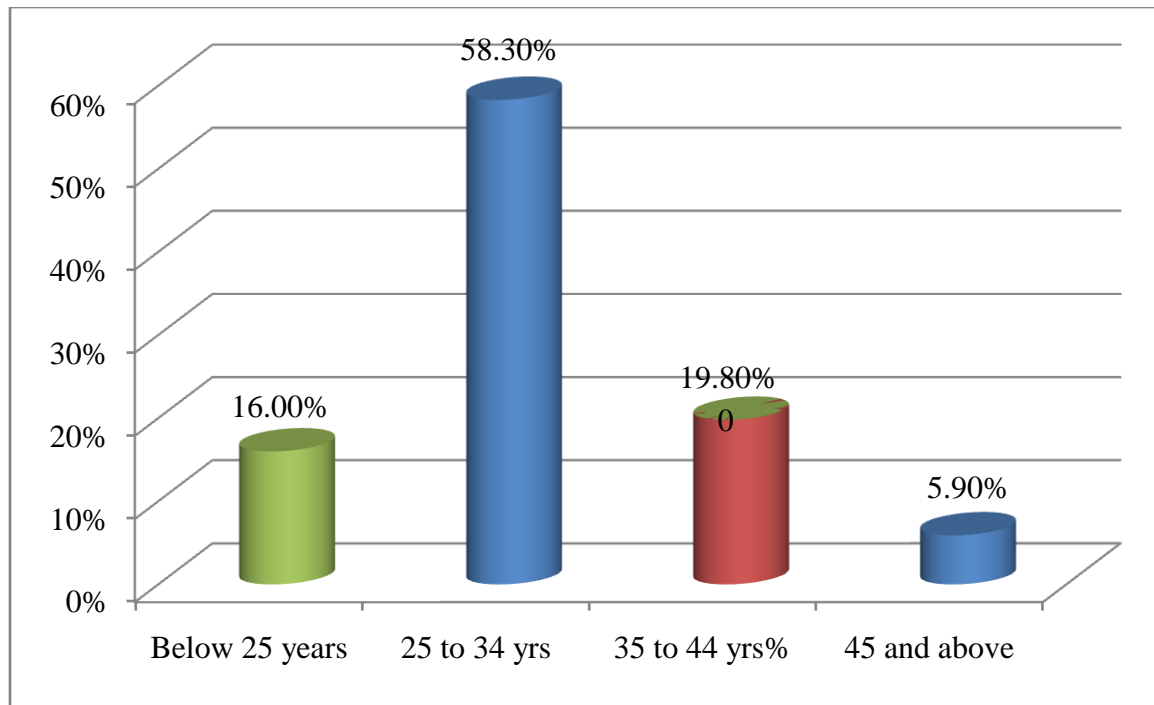


Figure 2: Age bracket of the respondents

**Job category**

In table 7, majority of the respondents were junior staff. This is an indicator that those who do most water implementation projects are the junior staff under the supervision of the supervisors and in consultation with various authorities in the structure. This enabled achievement of the research objective in the sense that most of the individuals in direct contact with the project activities were well represented (79%).

Table 7: Job Category

		Frequency	Percent	Valid Percent
Valid	Director	1	2.0	2.0
	Manager	1	2.0	4.0
	Administrator	6	4.0	8.0
	Accounts assistants	5	3.0	11.0
	Subordinates	115	79.0	90.0
	Stakeholders	17	10.0	
	<b>Total</b>		<b>145</b>	<b>100.00</b>

**Level of Academic qualification**

Table 8: Academic qualification

	Frequency	Valid Percent	Cumulative Percent
PHD	3	2.0	2.0
Masters degree	21	14.5	16.5
Bachelors degree	75	51.7	68.22
Valid Diploma	32	22.0	90.2
Certificate	9	6.2	96.4
High School	5	3.4	100.0
<b>Total</b>	<b>145</b>	<b>100.0</b>	

It is evidenced in table 8 that that majority of the respondents had bachelor's degree. This therefore signified the literacy level and the ability of the research respondents to understand the theme of the study.

**Work experience**

In table 9, 7.6% of the respondents have worked below three years, 9% have got work experience of up to 3-5 years, 47.6% have got 6-10 years' work experience, and 35.9% have got over ten years' experience. Majority of the respondents (83.5%) have got more than 4 years' work experience which therefore helped the study as the respondents fully had the knowledge of the questionnaire items.

Table 9: Work experience

	Frequency	Valid Percent	Cumulative Percent
Below 3 years	11	7.6	7.6
3-5 years	13	9.0	16.6
Valid 6-10 years	69	47.6	64.2
Over 10 years	52	35.9	
<b>Total</b>	<b>145</b>	<b>100.0</b>	<b>100.0</b>

**Descriptive Statistics****Communication**

In table 10, 8.4% of the respondents strongly agreed that the community members together with the project team are often together involved in water projects within Kisumu County throughout

the project life cycle, 7.6% agreed, 69.7% disagreed some stating that, the projects at times could run and stalled at given times and resumed without notifying the community, 11% strongly disagreed while 3.4% did not comment. It is therefore true that the community members are often involved in the projects. However, the community members are not involved in the project throughout the project life cycle apart from the beginning stages as majority (80.7%) were in support of the same.

Table 10: Community and project team meet throughout the project life cycle

		Frequency	Percent	Valid Percent
Valid	Strongly agree	12	8.4	8.3
	Agree	11	7.6	15.9
	Disagree	101	69.7	85.6
	Strongly disagree	16	11.0	96.6
	Neutral	5	3.4	
<b>Total</b>		<b>145</b>	<b>100.0</b>	<b>100.0</b>

In figure 3, 12% of the respondents agreed that the two water companies in Kisumu County do communicate their objectives to the community who understand their responsibilities, 8% agreed, 52% strongly disagreed, 21% disagreed and the remaining respondents were not sure. It is therefore evident that the companies do not communicate their objectives with the public and in most cases, what they intend to implement comes as a surprise. This finding can be used to arrive at the information that the community does not participate and hence a contributor to low performance in implementation of water projects in Kisumu County.

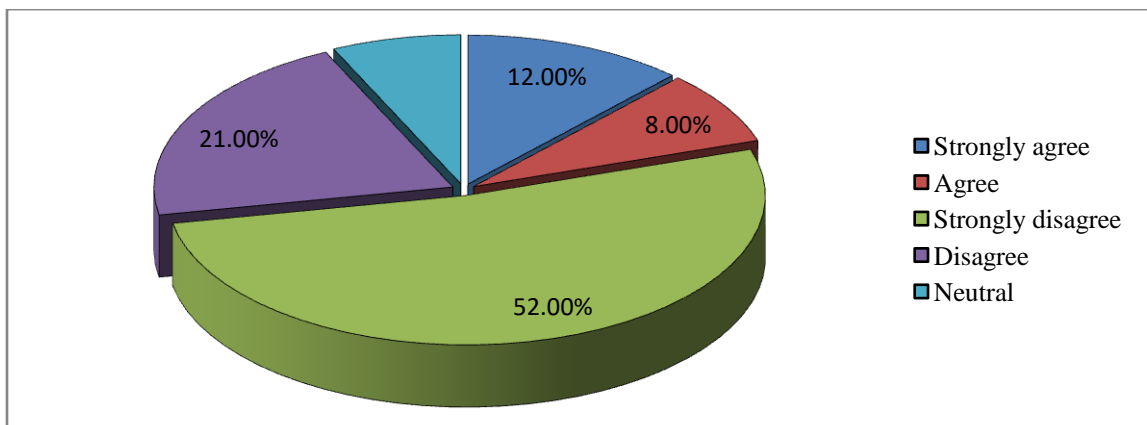


Figure 3: Company communicates the projects objectives to community

In figure 4, 2% of the respondents agreed that Kisumu Water and Sewerage Company do get and respond on timely to information with regard to water project performance, 1% agreed, 71% strongly disagreed, 22% disagreed while the remaining 4% were indifferent. It is hence true to comment that the community members are served on a timely basis with information relating to project performance. To emphasize on this, other respondents further described that it can even take over six months before the public request is responded to and that at times it may take long to an extent that other issues emerge before the reply.

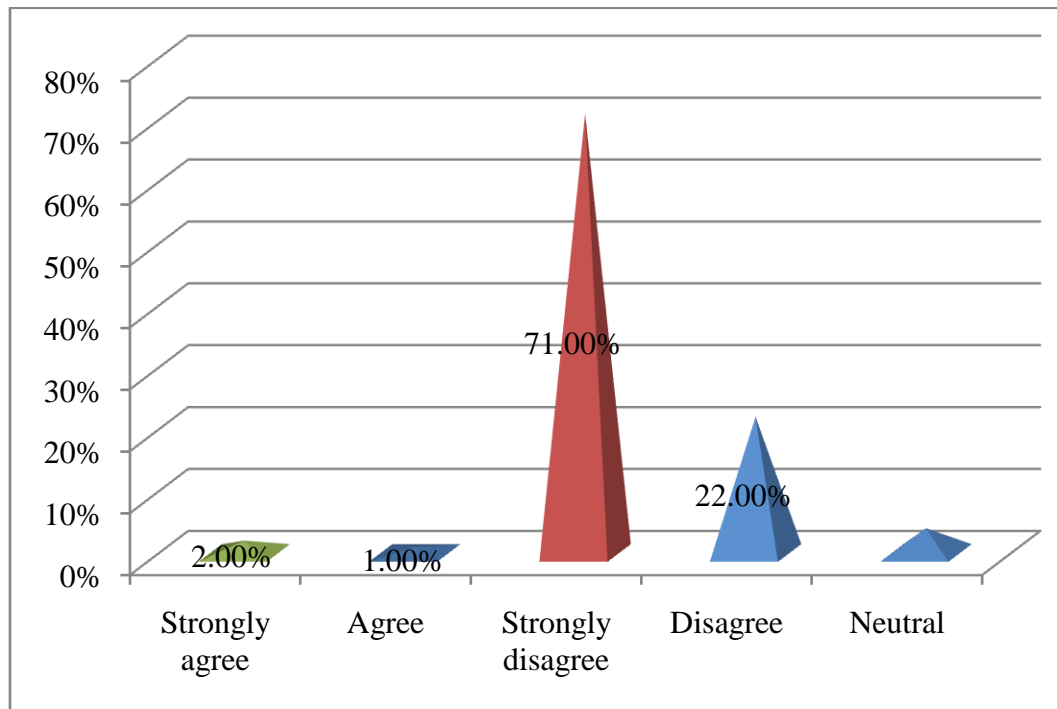


Figure 4: Company gets and responds timely to information on project performance

In figure 5, 17.6% of the respondents strongly agreed that the company do get involved in corporate social responsibility, 4% agreed with this opinion, 60.7% strongly disagreed, 11.8% disagreed and the remaining 6% remained neutral on this. Figure 5 reveals that the water company in Kisumu County does not participate in corporate social responsibility. Some respondents specified on the questionnaire that if there is a mere portion of pipe destroyed accidentally by the public, then the water officers instead of correcting it immediately, they would rather look for the person who destroyed the pipe to pay or buy the spare parts after which they can go ahead and correct the challenge.



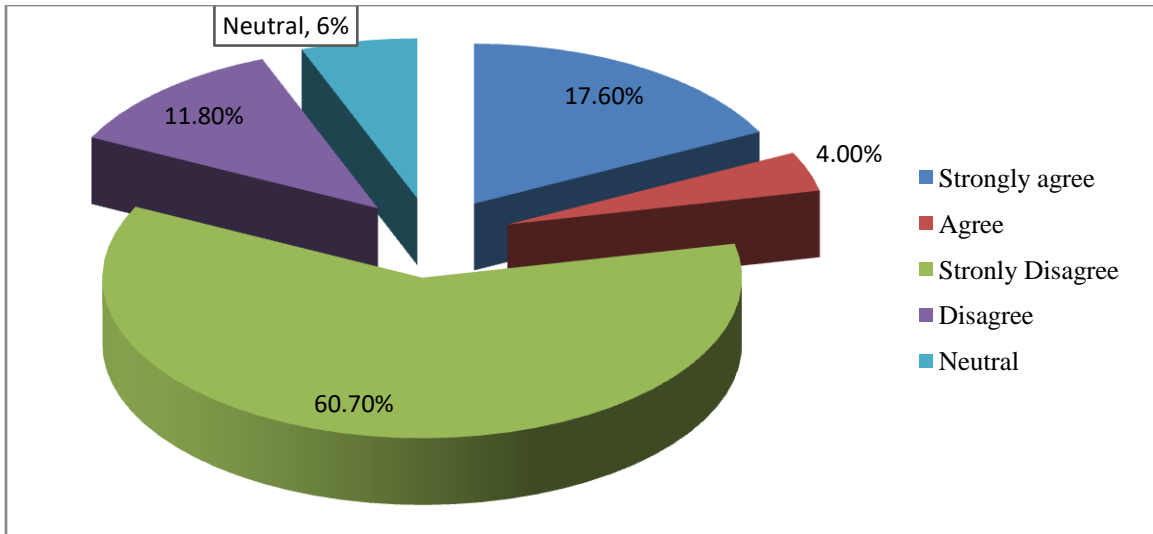


Figure 5: The company gets involves in corporate social responsibility

In figure 6, 8% of the respondents strongly agreed that the company communicates plan reviewed regularly, 16% agreed, 66% strongly disagreed and 2% were neutral. From the responses, the research therefore found it that the company does communicate the regular plan but not intensively as majority of the respondents (68%) strongly disagreed. This is therefore a pointer that communication with the community is wanting and has to be looked into to enhance performance of water projects in Kisumu County.

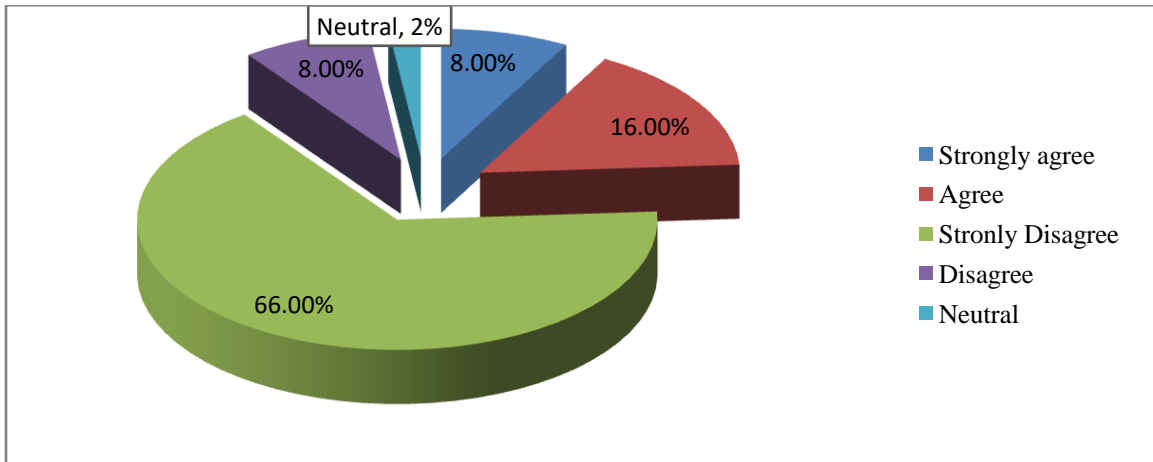


Figure 6: The Company communicates plan reviewed regularly

**Community participation**

In table 11, 8.4% of the respondents strongly agreed that the community members are often involved in water projects management committees 6% agreed with the same opinion, 69.7% disagreed that they are not involved on project management committees, 11% strongly

disagreed while 3.4% did not comment. It is therefore true as per the study findings that the community members are often not involved in the projects. This is contrary to the findings by Mbui & Wanjohi (2018) who supports participatory development by asserting that people require opportunities to participate in development projects designed for their benefit as this entrenches a sense of responsibility and ensures project sustainability.

Table 11: Community involvement in project management committee

		Frequency	Percent	Valid Percent
Valid	Strongly agree	12	8.4	8.3
	Agree	11	7.6	15.9
	Disagree	101	69.7	85.6
	Strongly disagree	16	11.0	96.6
	Neutral	5	3.4	
Total		145	100.0	100.0

12% of the respondents disagreed that KIWASCO do not carry out public participations to hear from the citizens on their challenges that they feel the firm should address, 8% agreed with this opinion, 52% strongly disagreed, 21% disagreed and the remaining respondents were not sure. It is therefore evident that management at KIWASCO does not embrace participatory approach such that the public are not involved to aid in ensuring project success. This finding increases the chances of water project failure and as explained by WHO and UNICEF (2014) water is a social good, and community participation is therefore very vital in the management of these water resources in order to ensure maximum social benefits to communities.

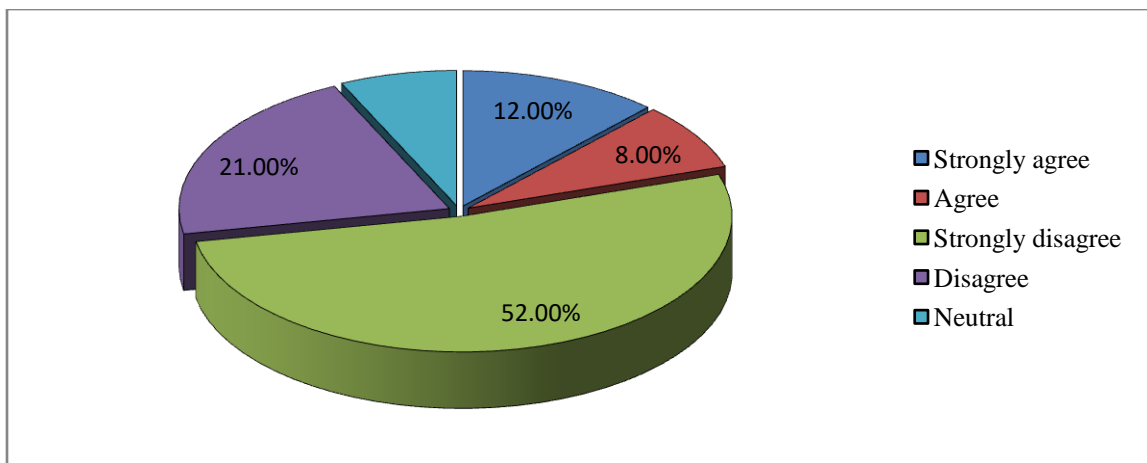


Figure 7: Community involvement in public participation

In figure 8, 2% of the respondents agreed that Kisumu Water and Sewerage Company do involve the community in monitoring roles. 1% agreed, 71% strongly disagreed, 22% disagreed while the remaining 4% were indifferent. It is hence true to comment that the community members are not in any way participating or involved by management of KIWASCO in monitoring roles. To emphasize on this, other respondents further described that it is not easy for anyone to even stop vandalization in any case there is because no one understands how the company operates and who provides permission. Thomas (2013) opined that participatory development emerged to curb the drawbacks of top down development, which entails conception, planning and implementation of projects by the elite without involvement or consultation with the masses. However, at KIWASCO, the management is not keen on the finding by Thomas explain the underperformance at KIWASCO on achievement of water projects performance.

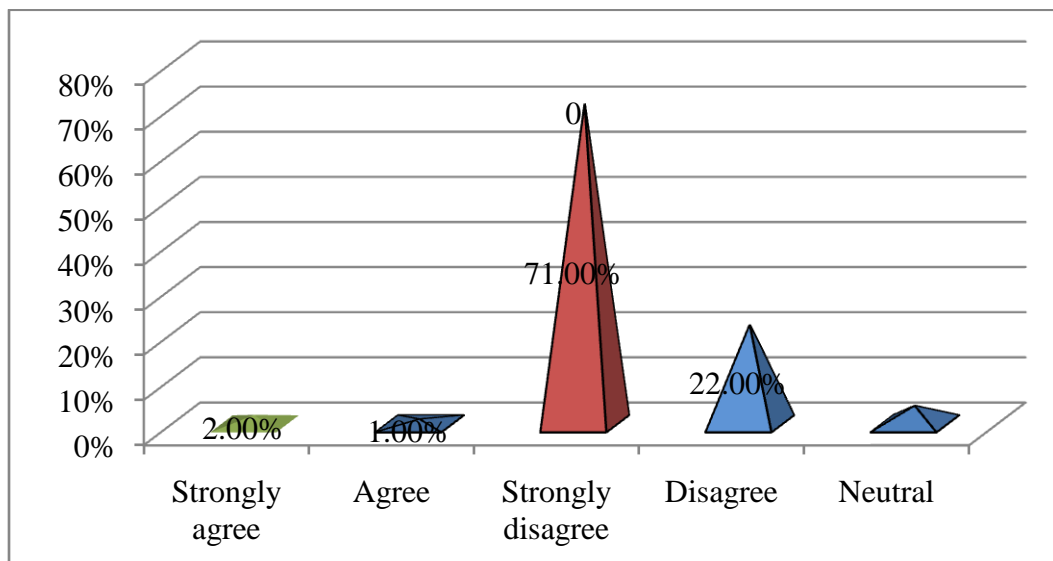


Figure 8: Community involvement in monitoring roles

### ***Project Management Skills***

In table 12, 71% of the respondents strongly agreed that the water company in Kisumu County has sufficient technical expertise to manage various water projects, 6.9% agreed with the same opinion, 13.8% disagreed, 2.8% strongly disagreed while 5.5% were neutral. It is realized that there are teams of experts at Kisumu Sewerage and Water company and that they are capable of effectively handling water projects with less deficiency.

Table 12: There is sufficient technical expertise to manage the project

		Frequency	Percent	Valid Percent
Valid	Strongly agree	103	71.0	71.0
	Agree	10	6.9	77.9
	Disagree	20	13.8	91.7
	Strongly disagree	4	2.8	94.5
	Neutral	8	5.5	
<b>Total</b>		<b>145</b>	<b>100.0</b>	<b>100.0</b>

In table 13, 7.5% of the respondents strongly agreed that project managers have adequate and experience in project management in Kisumu County, 41.4% agreed with this opinion, 35.9% disagreed, 4.8% strongly disagreed and 10.3% remained indifferent. From the findings, the researcher can comment that there exist project managers who have adequate experience in project management as majority of the respondents (48.9%) were in support of the same. The findings also point out that to a good extent, the project managers' management skills can easily be challenged as almost half (40.6%) of the respondents indicated the same. It is therefore advisable to the county management that there is need toward looking into the expertise of the project managers in Kisumu County.

Table 13: Project managers have adequate experience in project management

		Frequency	Percent	Valid Percent
Valid	Strongly agree	11	7.5	7.5
	Agree	60	41.4	48.9
	Disagree	52	35.9	84.8
	Strongly disagree	7	4.8	89.65
	Neutral	15	10.3	
<b>Total</b>		<b>145</b>	<b>100.0</b>	<b>100.0</b>

As per table 14, 47.6% of the respondents strongly agreed that there is sufficient human resource for performance of the project in Kisumu County, 47.6% of the respondents disagreed with the same opinion, 10.3% were neutral. It is clear that people were divided in the opinion and that there could be or there could not be sufficient human resource for performance of project.

Table 14: Sufficient human resource for performance of the project

		Frequency	Percent	Valid Percent
Valid	Strongly agree	12	8.3	8.3
	Agree	57	39.4	47.6
	Disagree	54	37.2	84.8
	Strongly disagree	15	10.3	95.1
	Neutral	7	4.8	
<b>Total</b>		<b>145</b>	<b>100.0</b>	<b>100.0</b>

In table 15, 48.2% of the respondents agreed Advice about technical architecture is made available for the project, while 48.2% were in disagreement with the same opinion as 3.4% remained neutral. It therefore signifies that to a good extent the technical advice is often offered on the other hand there are a good part of the respondents commenting that they have not often been in contact with such information. On analyzing the qualitative comments on the questionnaire, some respondents commented that apart from the bill of quantities, they could not see other cost statements indicating any revision or project progress.

Table 15: Advice about technical architecture is made available for the project

		Frequency	Percent	Valid Percent
Valid	Strongly agree	25	17.2	17.2
	Agree	45	31.0	48.3
	Disagree	64	44.1	92.4
	Strongly disagree	6	4.1	96.5
	Neutral	5	3.4	
<b>Total</b>		<b>145</b>	<b>100.0</b>	<b>100.0</b>

### **Technology**

In table 16, 24.8% of the respondents agreed that the current Kisumu water project use modern technology, 73.1% disagreed with this opinion, while 2% reminded neutral. This implies that the water projects do not use the modern technology in Kisumu County.

Table 16: The project is using modern technology

		Frequency	Percent	Valid Percent
Valid	Strongly agree	14	9.6	9.6
	Agree	22	15.2	24.8
	Disagree	100	70.0	93.8
	Strongly disagree	6	4.1	97.9
	Neutral	3	2.0	
	<b>Total</b>	<b>145</b>	<b>100.0</b>	<b>100.0</b>

In table 17, 17.2% of the respondents strongly agreed that modern technology help in curbing poor management and accountability, 51.7% agreed with this idea, 20.7% disagreed, 4.8% strongly disagreed while 5.5% did not comment. It is then true to arrive at the information that technology enables reduction in poor project performances and increases chances of proper management and accountability. Majority of the respondents (68.9%) were in support of this.

Table 17: Modern technology curb poor management and accountability

		Frequency	Percent	Valid Percent
Valid	Strongly agree	25	17.2	17.2
	Agree	75	51.7	68.9
	Disagree	30	20.7	89.7
	Strongly disagree	7	4.8	94.4
	Neutral	8	5.5	
	<b>Total</b>	<b>145</b>	<b>100.0</b>	<b>100.0</b>

In table 18, 34.4% of the respondents strongly agreed that technological innovation has enormous influence on community project, 28.2% agreed, 22.0% strongly disagreed, 12.4% disagreed while 2.8% did not comment. It therefore portrays that technological innovation influences community project.

Table 18: Technological innovation influences community project

		Frequency	Percent	Valid Percent
Valid	Strongly agree	50	34.4	34.4
	Agree	41	28.2	62.6
	Disagree	32	22.0	84.6
	Strongly disagree	18	12.4	97.0
	Neutral	4	2.8	
<b>Total</b>		<b>145</b>	<b>100.0</b>	<b>100.0</b>

In table 19, 11.0% of the respondents strongly agreed water projects which embrace technology exhibits better performance, 49.0% agreed with this idea, 17.9% strongly disagreed, 15.1% disagreed while 6.9% did not comment. This reveals that technological advancement if embraced in water projects, would lead to positive and improved performances.

Table 19: Water projects that embrace technology exhibits better performance

		Frequency	Percent	Valid Percent
Valid	Strongly agree	16	11.0	11.0
	Agree	71	49.0	60.0
	Disagree	26	17.9	77.9
	Strongly disagree	22	15.1	93.0
	Neutral	10	6.9	
<b>Total</b>		<b>145</b>	<b>100.0</b>	<b>100.0</b>

### ***Monitoring and Evaluation Practices***

In table 20, 9.6% of the respondents strongly agreed that project resources are properly allocated during project life cycle, 22.0% agreed, 47.6% disagreed, 3.4% strongly disagreed while 17.2% were not sure. From the findings, it is clear that water project resources in Kisumu County are not properly allocated during the project life cycle, 74% being in support of the same. This explains to a great extent the reason of failure of water projects in Kisumu County.



Table 20: Project resources are properly allocated during project life cycle

		Frequency	Percent	Valid Percent
Valid	Strongly agree	14	9.6	9.6
	Agree	32	22.0	31.6
	Disagree	69	47.6	79.2
	Strongly disagree	5	3.4	82.6
	Neutral	25	17.2	
<b>Total</b>		<b>145</b>	<b>100.0</b>	<b>100.0</b>

In table 21, 13.8% of the respondents supported that all the staffs involved in the water projects in each stage does monitoring and evaluation, while 81.3% disagreed with 4.8% remaining neutral. This therefore implies that not all the staff are involved in monitoring and evaluation.

Table 21: All the staffs are involved in monitoring and evaluation stages

		Frequency	Percent	Valid Percent
Valid	Strongly agree	8	5.5	5.5
	Agree	12	8.3	13.8
	Disagree	89	61.3	75.1
	Strongly disagree	29	20.0	95.1
	Neutral	7	4.8	
<b>Total</b>		<b>145</b>	<b>100.0</b>	<b>100.0</b>

Table 22, 29.7% of the respondents strongly agreed that projects have clear documentation, 42.8% of the respondents agreed, 21.4% disagreed, 4.1% strongly disagreed while 2.0% remained neutral. It is then evidenced that projects have clear documentation in Kisumu County as majority of the respondents recommended it.

Table 22: Projects have clear documentation

		Frequency	Percent	Valid Percent
Valid	Strongly agree	43	29.7	29.7
	Agree	62	42.8	72.5

Disagree	31	21.4	93.9
Strongly disagree	6	4.1	98
Neutral	3	2.0	
<b>Total</b>	<b>145</b>	<b>100.0</b>	<b>100.0</b>

Table 22

In table 23, 19.3% agreed that the water company in Kisumu County has project progress reports, 59.3% disagreed while 21.7% did not comment. This implies that the company does not release project progress reports which are an indicator of slow projects.

Table 23: The Company has project progress reports

		Frequency	Percent	Valid Percent
Valid	Strongly agree	9	6.2	6.2
	Agree	19	13.1	19.3
	Disagree	76	52.4	71.7
	Strongly disagree	10	6.9	78.6
	Neutral	31	21.7	
<b>Total</b>		<b>145</b>	<b>100.0</b>	<b>100.0</b>

Table 24 shows that 18.6% agreed that the water company in Kisumu County has clear control measures, 65.5% disagreed while 17.9% were indifferent. This convinces that there are no proper controls in the water project activities to ensure resources meet the set objectives and to sustain the new projects.

Table 24: The Company has clear control measures

		Frequency	Percent	Valid Percent
Valid	Strongly agree	7	4.8	4.8
	Agree	20	13.8	18.6
	Disagree	81	55.9	74.5
	Strongly disagree	11	7.6	82.1
	Neutral	26	17.9	
<b>Total</b>		<b>145</b>	<b>100.0</b>	<b>100.0</b>

**Project Performance**

Majority of the respondents (63%) agreed that Water Company in Kisumu County takes part in implementing policy issues. This is in evidence that quality is embraced in the water projects and therefore is a good indicator of performance.

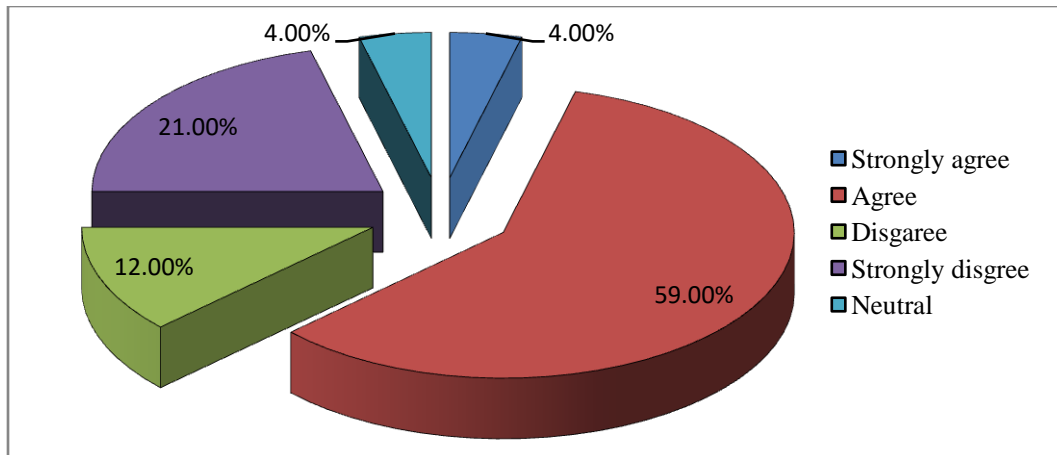


Figure 9: The Company takes part in quality policies implementation

Figure 10 portrays that 29.2% strongly agreed that project managers are better placed to make proper contribution towards project performance, 45.3% agreed with this opinion, 17.6% disagreed, while 25 strongly disagreed with the remaining respondents not commenting. The research therefore concludes from the findings that the project managers in Kisumu County stand better chance of adding value to the various water projects being conducted in the county.

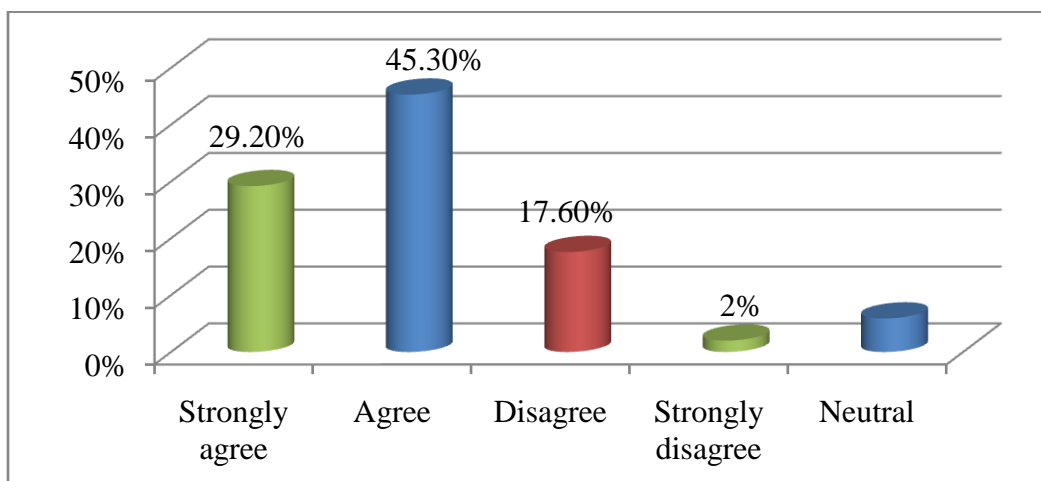


Figure 10: Project managers are well placed to make contribution towards project performance

In figure 11, 26% of the respondents agreed that the company has program for sustainability of the already implemented water projects. However, a major portion of the respondents, 72% were in disagreement. It is therefore true to conclude that water company in Kisumu county lacks proper sustainability plans to sustain the already implement projects.

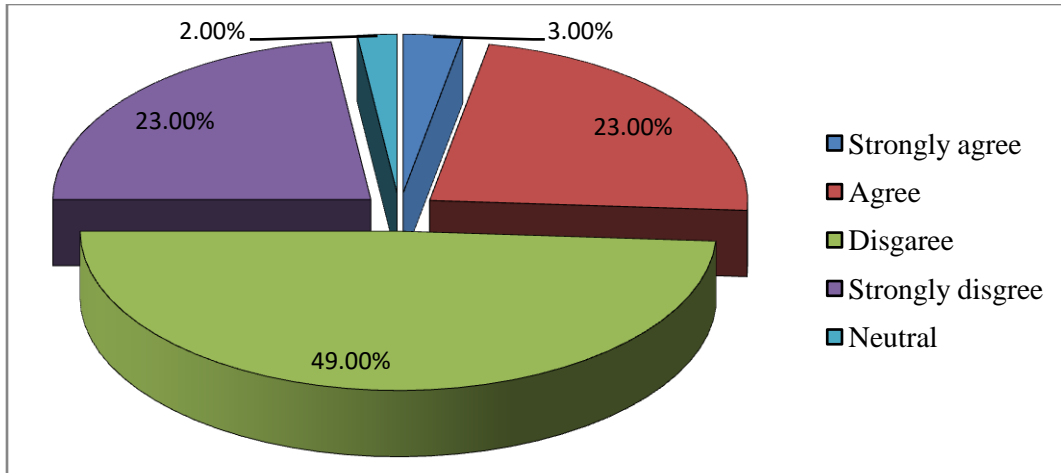


Figure 11: There is no framework for considering sustainable development

Figure 12 shows that 49% of the respondents agreed that the project meet the general satisfaction of project performance, while the other 49% of the respondents disagreed with this opinion with 2% remaining neutral. This could hold two meanings, either the projects are not meeting the required levels or they are meeting. The researcher based on this finding can conclude that water projects in Kisumu County are not meeting general satisfaction in regard to performance. Performance standards should be above 50% in the opinion of the researcher and therefore should be above dissatisfaction level.

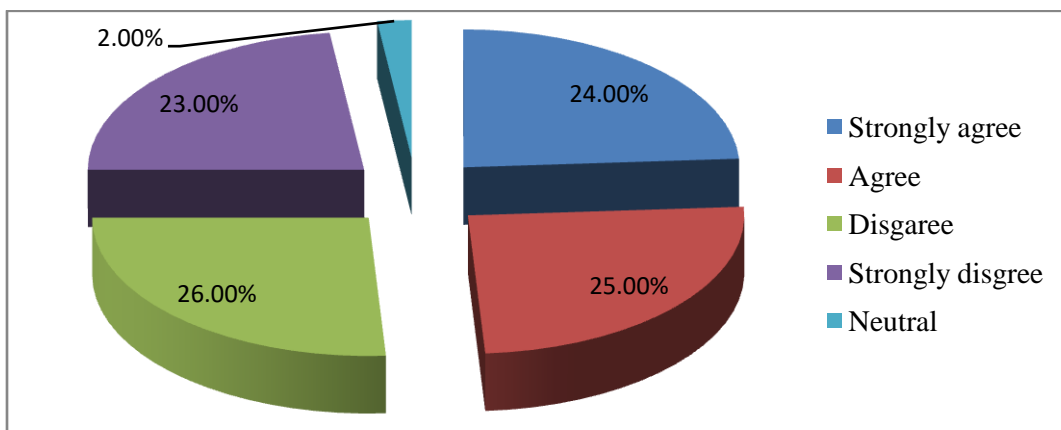


Figure 12: The project meet general satisfaction of project performance

## Inferential statistics

### Model Summary

Table 25: Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Change Statistics					Durbin-Watson
					R Square Change	F Change	df1	df2	Sig. F Change	
1	.909a	.826	.821	.658	.826	164.502	4	139	.000	.189

a. Predictors: (Constant), community participation, project management skills, Technology, Monitoring and evaluation,

b. Dependent Variable: Project performance

The statistical model testing illustrates that the association of the three independent variables (project management skills, community participation, technology, M & E) with the dependent variable (project performance) after inter-correlation to be (R= 0.909) implying that there is a high degree of positive correlation. In the model summary the R-Square (R<sup>2</sup>= 0.826) is the explained variance so that the three independent variables explain the dependent variable to the tune of 82.1% other factors ( $\epsilon$ ) being (100-82.1) % is unexplained, that is, 82.1% of project performance is significance.

Table 26: ANOVAa

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	284.825	4	71.206	164.502	.000b
	Residual	60.168	139	.433		
	Total	344.993	143			

a. Dependent Variable: Project performance

b. Predictors: (Constant), community participation, project management skills, Technology, Monitoring and evaluation

The Analysis of Variance (ANOVA) results on table 26 demonstrate that the regression model is significant since the P value is less than the significance value ( $0.000 < 0.05$ ). This indicates that the model is fit and is a good predictor of the relationship between project dynamics and project performance.

**Regression Coefficients**

Table 27: Coefficients

Model	Unstandardized Coefficients		Standardized Coefficients	t	Sig.	95.0% Confidence Interval for B	
	B	Std. Error	Beta			Lower Bound	Upper Bound
1 (Constant)	-.649	.242		-2.680	.008	-1.128	-.170
Community participation	.218	.064	.148	3.389	.001	.091	.346
Technology	.592	.081	.559	7.310	.000	.432	.752
Project management skills	-.162	.090	-.115	-1.804	.073	-.339	.016
Monitoring and evaluation	.478	.108	.376	4.424	.000	.265	.692

a. Dependent Variable: Project performance

The model  $Y = \beta_0 + \beta_1X_1 + \beta_2X_2 + \beta_3X_3 + \epsilon$  is used.

Where by: Y= dependent variable (Project performance)

$\beta_0$ = Population's regression constant

$\beta_i$  (i= 0,1,2,3,...n) = are the population's regression coefficients for each independent variable

$\epsilon$ = the model error variable

Assumption; - the multiple regression model is based on the assumption that for any specific value of the independent variable, the value of the dependent variable are normally distributed and that the variances for the dependent variable are the same for each of the independent variable, Robert, Elmad & Anyira (2018).

Substituting into the equation;

Project performance= -6.49 +0.218\*Community participation+0.592\*technology-0.162\*project management skills +0.478\*Monitoring & evaluation

Rearranged beta values gives;

Modified table

1	0.592	Best predictor
2	4.78	
3	0.218	
4	0.162	

Rearranging the values according to the absolute magnitude (ignoring signs) using the Beta values under the unstandardized coefficients in the coefficient gives the best predictor for water

projects performance among other predictors, that is, rearranged beginning with the highest value. It is hence true to conclude from the table that the best predictor for enhancing water project performance is technology ( $B= 0.592$ ). To determine which of the predictors is highly significantly related, the significance figures are rearranged beginning with the smallest; 0.162, 0.218, 0.478 and 0.592. Water project performance is hence highly significantly related to project management skills.

## SUMMARY OF FINDINGS

The study discovered that community participation influences water project performance at KIWASCO though to a smaller extent. It was also revealed that there is existence of project managers who have adequate experience in project management as majority of the respondents supported the same. This signifies, therefore that it is advisable for KIWASCO to constantly recruit considering those with high level of expertise. Besides, it has been discovered that there is no sufficient human resource for performance of projects which lowers performance. The study findings validates the findings by Espinosa, *et al.* (2007) that skills and experience is important in the projects and this is usually linked to performance which in turn is linked to sustainability.

This study further revealed that KIWASCO water projects do not use very modern technology. Also revealed is that usage of technology could enable reduction in poor project performances and therefore increasing chances of proper management and accountability. Further, it was learnt that technological innovation influences community project of which if technological advancement is embraced in water projects, then it leads to positive and improved performances. These findings are affirmed by Rubenstein and Greisler (2000), that the role of information technology in service-sector firms and its impact on the effectiveness of the firm's operations and sustainability have been identified implying that if technology is embraced, then the positive results are mandatory.

This study established that project resources at KIWASCO are not properly allocated during the project life cycle and this explains to a great extent the reason as to failure of water projects in Kisumu County since it was also discovered that not all the staff are involved in monitoring and evaluation.

This study also evidenced that projects have clear documentation at KIWASCO as majority of the respondents commended it. Also revealed was that the company does not release project progress reports which is a red flag portraying slow projects. Further, the study found that there are no proper controls in the water project activities to ensure resources meet the set objectives and to sustain the new projects. Lack of proper controls is an evidence that

quality is not embraced in the water projects through despite that the fact that quality is a good indicator of performance. The research therefore concludes from the findings that the project managers at KIWASCO stand better chance of adding value to the various water projects being conducted in the county.

It was established that there is a high degree of positive correlation of the four independent variables, that is, project management skills, community participation, technology, Monitoring and evaluation with the dependent variable (project performance) since they explained up to 82.1% of project performance ( $R^2 = 0.826$ ) leaving the un-explained variance to be just 17.%. This implies that the study objectives here in has to be taken seriously by the management of KIWASCO since they are the major project dynamics without which may result to failure in project implementations. The Analysis of Variance (ANOVA) results explained that the study model was a good fit since there was a significant relationship between community participation, project management skills, technology and monitoring and evaluation against project performance. The P value ( $0.000 < 0.05$ ) indicated that the association was significant. Coefficient correlations evidenced that when ranked, technology is the best predictor of water project performance, followed by monitoring and evaluation, then community participation and finally project management skills. However, in regard to significance, project management skills is the first project dynamic that influences water project performance.

## RECOMMENDATIONS

There is need of the community members to be included in the study so as to develop their interest in participating during project activities. Participation should be initiated at the initial stage of water project with constant facilitation, support and monitoring from relevant institutions at different levels which will in the long run enables project sustainability.

The government representatives and project managers in charge of water projects should facilitate communication on progress of the projects communicated in clear and understandable manner on a timely basis. This will therefore enable cohesion which will enable the water projects to carry the community along such that they are at all times informed.

Accountability is mandatory and therefore the present study recommends that there is need for those in charge of projects to constantly report to the public not only to the political leaders which in the long run may divert the actual project. It is true that if resources allocated to the project are publicly communicated, then misappropriations are reduced.



## CONCLUSION

The study concludes that community members are often involved in the projects only at the beginning stages. Besides, the study concludes that community participation is not practiced in water projects by KIWASCO in Kisumu County. The study further concludes that KIWASCO does not serve community members on a timely basis with information relating to project performance and that the water company does not participate in corporate social responsibility. Additionally, it is concluded that the company do communicate their regular plans and objectives but not intensively.

Management skills is the most significant predictor of project performance and the study concluded that there exist project managers who have adequate experience in project management at KIWASCO and that there is need toward looking into the expertise of the project managers since it is significant factor in enhancing performance. Besides, it is concluded that there is no sufficient human resource to enable performance of projects to be successful at KIWASCO and the management should take this as an urgent issue.

In regard to technology, the study concludes that technology is the best predictor of water project performance. However, water projects do not use the modern technology as expected despite the fact that technology enables reduction in poor project performances and increases chances of proper management and accountability. Further, it was concluded that technological innovation influences community project of which if technological advancement is embraced in water projects, then it leads to positive and improved performances.

In regard to monitoring and evaluation, the study concluded that M& E is the lifeline of the project since it is a quality aspect which involves continuous review of project processes. However, water project resources in Kisumu County are not properly allocated during the project life cycle and that not all the staff are involved in monitoring and evaluation. This study also concluded that projects have clear documentation at KIWASCO. However, the company does not release project progress reports which are concluded to be an indicator of slow projects. Further, the study concluded that there are no proper controls in the water project activities to ensure resources meet the set objectives and to sustain the new projects and that quality is embraced in the water projects and therefore is a good indicator of performance. The research therefore generalized that project managers at KIWASCO are the ones standing a better chance of adding value to the various water projects being conducted by the company.

The study concludes that community members are often involved in the projects only in the beginning stages. Besides, the study concludes that community participation is not practiced in water projects in Kisumu County. The study further concludes that Water Company in Kisumu County does not serve community members on a timely basis with information relating to project

performance and that the water company does not participate in corporate social responsibility. Additionally, it is concluded that the company do communicate their regular plans and objectives but not intensively.

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