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INFLUENCE OF PROJECT MANAGEMENT PRACTICES ON PERFORMANCE OUTCOMES IN RURAL WATER PROJECTS DEVELOPMENT IN KENYA

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Abstract: **Project management is one of strategic competency that enables entities to link project outcomes to it particular objective. Nowadays stakeholders of the rural water project has embarked on a series of projects as part of the sustainable community development hence the primary objective of this study was to determine the influence of project management practices on performance outcomes in rural water projects development in Kenya. The study was guided by four research objectives namely: to determine the influence of project planning process on performance outcomes; to examine the influence of project execution process on performance outcomes; to investigate the influence of monitoring and controlling of projects on performance outcomes; and to establish the influence of project communication processes on performance outcomes in rural water projects development in Kenya. The research employed descriptive survey design. The study targeted 550 household heads within the Matete Sub-County according to Kenya National Bureau of Statistics 2009 census report. Simple random sampling was used to obtain 226 household heads and 22 water users committee representing 22 water sources among the 23 sources deemed to have been constructed within the last 20 years for the administration of questionnaires and interviews respectively. The data from the field were edited for accuracy, completeness, consistency and analyzed using descriptive statistical tools (Statistical Package for the Social Sciences V.17.0 and Excel). From the findings, 67 % of the respondents indicated that project planning influenced project outcome to a very great extent; 44% of the respondents agreed that project execution influenced project outcome to a very great extent; 75 % of the respondents recommended changes to the project monitoring and control procedures to positively influence project outcome. Also, it was established that 55% of the project outcome was influenced by project management processes. The study concluded that there was a significant relationship between project management processes and project outcome. The findings led to the conclusion that execution had the least influence on the project outcome. It was also concluded that the project closure process had the greatest influence on project outcome. The regression model indicated that the project communication process had the largest magnitude.The study recommended that: effective project planning activities to be applied to projects; emphasis be given to implementation activities that will ensure plans are effectively executed in order to fully meet set objectives; introduction of effective monitoring tools; training of staff on use of monitoring tools; use of effective communication; and improved reporting and documentation. Finally, the study recommended that project outcome should be evaluated from the local acceptance and satisfaction perspective**

Keywords: **project planning, project execution, project monitoring and evaluation and Project communication.**

1. INTRODUCTION

1.1 Background of the Study

Managing projects is one of the oldest and most respected accomplishments of mankind highlighted by the achievement of the builders of pyramids, the architects of ancient cities, the mason and craftsmen of Great Wall of China and other

wonders of the World. Project make up around fifty percent of all work carried out and as a result is deemed the vehicle for the execution of organizational growth. The accomplishment of project through the application and integration of the project management process of initiation, planning, executing, monitoring, controlling and closing, is known as project management (Peter, 2005). Project management integrates these functions progressively through the project life cycle with the aim of satisfying the stakeholders and constituents according to the project's established requirements. Stakeholders are those who have a direct stake in the project while the project's constituents are those who may be impacted by the consequences of the project. Project success is typically generated when the stakeholders and constituents express their collective satisfaction according to the degree of their involvement. Project management also includes planning, organizing, directing and controlling activities in addition to motivating what are usually the most expensive resources on the project. Project management is essentially about managing a project from its conception to its completion and needs to be discussed in terms of various stages of a project life cycle. A project could be viewed as a system, which is dynamic and ever changing from on stage to another in a life cycle (Atkinson, 1999).

Although, most important organizational developments in recent years has been the significant growth in project work across different sectors and industries (Maylor, 2006). Projects are used as a means of reducing problems of poverty, poor health, and unemployment which are predominant in rural set up of many developing countries (International Development Research Centre, 2004). Many developed and developing countries have invested in rural water projects to reducing problems of poverty, poor health, and unemployment. Mrema, Baker, and Kahan (2008) reveal that in some developed countries like U.S.A the government through the ministry of agriculture places a high emphasis on the performance of rural water projects. Since water is one of live saving resources that human being survives without. Moss (2009) emphasized that, water plays a vital role in the survival of living things. A sustainable supply of adequate safe water, sanitation and hygiene services are fundamental for a healthy, productive and dignified life, yet about 2 billion of the world‟s population is still struggling to achieve these services (WHO, 2010).

The stakeholders in Matete Sub-County have in the recent years developed water projects with the main aim of improving accessibility to adequate and safe water, this effort have no bored much fruits since only 43% of the households have access to safe water (Joint Monitoring Program report, 2011). Ministry of Water and Irrigation Strategic Plan (2009-2012) stated that, it is time-consuming for women and girls in pursuit of water thus preventing from taking up income generating activities and curtailing girl-child‟s education respectively. The report shows that, inadequate access to safe water has been due to lack of ownership and unsustainability of water sources which highly depends on influence of project management practices on performance outcomes in rural water projects development in Kenya. In this view, the study assess influence of project management practices on performance outcomes in rural water projects development in Matete Sub-County, Kakamega County.

1.2 Statement of the Problem

Efforts across the world have been made in development of water projects able to provide clean and sufficient water for human population. Water projects are usually expensive in terms of expertise, labour and financial resource. By not meeting the expected performance, water projects that are not functioning can result in a huge resource loss. In many parts of Kenya there are many cases of dry boreholes, washed away water pans and unfinished water projects. According to Ministry of Water and Irrigation Strategic Plan (2009- 2012) Project failure rates in Kenya are high and the costs involved in starting and running them are equally high . The findings of an impact assessment on projects management practices showed that only 5 out of 36 project groups in Kakamega County funded in 2017 were partially active, while the rest had become defunct and could not be traced after cessation of funding (Wabwoba & Wakhungu, 2013). The main water sources in Kakamega County are rivers, dams and boreholes. The average distance to the nearest water source in the county is 5 Kilometres and only 1514 (1%) of the households in the county access potable water (MCG, 2015). Matete Sub-County is part of Kakamega County characterized by inadequate access to water. In Matete Area there are both successful and unsuccessful water projects and challenges of water scarcity still persist. (MSC Records, 2016). Despite the knowledge in project management practices are that is project planning, project execution, project monitoring and evaluation and Project communication are necessary for an improvement in the attainment of results and performance of projects, several organizations, governments departments and institutions are yet to get a strong backing on the need to invest in monitoring and evaluation. This research is therefore important to donor agencies, governments, water service providers, policy makers and water users, who have a stake in water projects and other similar development projects. The study was undertaken in the semi-arid and water scarce location of Matete in Kakamega County of Kenya. Understanding

the influence project management practices helps introduce a new perspective leading to improved performance of water projects.

1.3 Objectives of the Study

1.3.1 General Objective of the Study

This study sought out to determine influence of project management practices on performance outcomes in rural water projects development in Kenya.

1.3.2 Specific Objectives of the Study

The study sought to meet the following specific objectives of the study.

1. To determine the influence of project planning on project outcome.

2. To examine the influence of project execution on project outcome.

3. To assess the influence of project monitoring and evaluation on project outcome.

4. To establish the influence of Project communication on project outcome.

1.4 Research Questions Of the Study

1. What is the influence of project planning on project outcome?

2. What is the influence of project execution on project outcome?

3. What is the influence of project monitoring and evaluation on project outcome?

4. What is the influence of Project communication on project outcome?

1.5 Scope of the study

The research focused on influence of project management practices on performance outcomes in rural water projects development in Kenya in the study area over the last 20 years. The research was carried on the households who use communal water projects in Matete Sub-County. The study area covers a surface area of 101 km2 as shown in the appended area map.

2. LITERATURE REVIEW

2.1 Introduction

This section reviews relevant literature on the area of study, which accounts for the previous research and findings in the area of study. It covers theoretical review, conceptual framework, empirical review, and critique of existing literature, research gaps and a summary.

2.2 Theoretical Review

In this study, the theoretical review consisted of theories, which exhibit the influence of project management practices on performance outcomes in rural water projects development in Kenya using five theories namely: Theory of constraints,; Resource based theory, System Theory and Communication Accommodation Theory.

2.2.1 Theory of Constraints (TOC)

Goldratt (1984) developed the Theory of Constraints which is a project management philosophy that states that the strength of any chain, either a process or a system, is only as good as its weakest link. It assists organizations in achieving their goals by providing a mechanism to gain better control of their initiatives. TOC is a systemic way to identify constraints that hinder system's success and to effect the changes to remove them. TOC consists of separate, but interrelated concepts such as performance measurement processes, logical thinking processes, and logistics. The logical thinking process of TOC gives us a series of steps that combine cause-effect, experience, and intuition to gain knowledge. The theory, in this case, addresses dependent variable, project performance. For any project to perform there is a need to minimize the constraints that can otherwise reduce the quality and quantity of the product and services delivered. These constraints may include poor management practices such as cost overruns caused by poor budgeting and corruption. The

theory points out the need for project management to identify project constraints that can limit the performance of the project and tries to give direct approaches on how to solve the constraints. This study will augur its discussion on this theory since it checks on issues that can limit project performance.

2.2.2 Resource based view theory

Barney (1991) developed a resource based view theory. The theory states the possession of strategic resources provides an organization with a golden opportunity to develop a competitive advantage over its rivals. This competitive advantage can help the organization to enjoy strong profits compared to similar rival groups. Project managers have a role to utilize the available resources all through the project cycle stages as follows; identify and classify the firm's resources, appraise strengths and weaknesses relative to competitors. Identify opportunities for better utilization of resources, Identify the firm‟s capabilities, Appraise the rent generating potential of resources and capabilities in terms of their potential for sustainability, Select a strategy which best exploits the firm‟s resources and capabilities relative to external and Identify resource gaps which need to be filled (Johnstone &Brenman,1996). This theory explores the need for proper planning and implementation based on resources available. In this way, the management takes an advantage of the available resources and utilizes them to maximize performance. The theory hence addresses the independent variables since it emphasizes proper planning, implementation, and monitoring of project resources.

2.2.3 Systems Theory

First proposed by Ludwig von Bertalanffy in 1945, systems theory has been used for decades as an analytical approach to understand the operation of complex systems. According to Mutong'Wa & Khaemba (2014), a system is a set of several independent and regularly interacting units or subsystems that work together to achieve a set of pre-determined objectives. Therefore, systems theory provides a framework for defining the subject entity, creating a formalized model of the entity, hence enabling the ability to understand the entity in terms of the elements and their properties, and thereby understanding results (Mutong'Wa & Khaemba, 2014). Systems theory states that real systems are open to, and interact with, their environments, and that they can acquire qualitatively new values through emergence, resulting in continual evolution.

The relevance of systems theory to this study cannot be overemphasized as it focuses on the importance of monitoring and evaluation as a way of providing regular feedback that is used to improve the performance of rural water projects development in Kenya. Rural water projects development in Kenya are taking a huge chunk of traditional banking revenues by the introduction of rural water projects development in Kenya.

2.2.4 Social Reciprocity Theory

A large body of evidence shows that reciprocity is a commanding determinant of human behavior. It is a powerful method for gaining one's compliance with a request. Experiments and questionnaire studies performed by economists and psychologists as well as remarkable literature in sociology, anthropology and ethnology emphasize the omnipresence of reciprocal behavior. The sociologist Gouldner, (1960) observed that the rule of reciprocity is "no less universal and important an element of culture than the incest taboo." The essence of reciprocity is very nicely captured in a quote from the Edda, the medieval collection of Icelandic epic poems: "A man ought to be a friend to his friend and repay gift with a gift. People meet smiles with smiles and lies with treachery.'

The quote includes positive reciprocity which is the reward of a kind treatment and negative reciprocity which means punishment of an unkind treatment. Importantly, reciprocity means a behavior that cannot be justified in terms of selfish and purely outcome oriented references. To avoid terminological confusion let us, therefore, clarify that reciprocity sharply distinguishes from "reciprocal altruism". A reciprocal altruism is only willing to reciprocate if there are future rewards arising from reciprocal actions. The rule of reciprocity has the power to trigger the feeling of the indebtedness even when faced with an uninvited favor and irrespective of liking the person who executed the favor (Gouldner, 1960).

This theory predicts the stylized facts of a wide variety of experimental games. In the ultimatum games, proposers offer between zero and half of the total pie. Rejections are decreasing gain the level of the offer and increasing in the strength of the responder's concern for reciprocity (Gouldner, 1960). In the dictator's game, the theory predicts offers which are lower in the ultimatum game. In the gift-exchange game, the theory predicts a positive relationship between wages and effort levels. Moreover, firms offer above-minimum wages as reported in the experimental literature. In the sequential prisoner's dilemma theory predict conditional cooperation. Similarly, in public goods games the more subject contributes, the more they expect others to contribute. Moreover, contribution increases in the marginal capital return on

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the investment of the public good. Finally, the theory explains why in bilateral relations results have a tendency to be 'fair' whereas in competitive markets extremely unfair distributions may arise. Evidence indicates that many people have a tendency to voluntarily co-operate if treated fairly and to punish non-co-operators. This is called behavioral propensity 'strong reciprocity' it can lead to almost universal co-operation in the situation which purely self-interest behavior which would lead to a complete breakdown of co-operation (Gouldner, 1960). This Social Reciprocity Theory is applicable to the project communication. According to Koskela & Howell, (2002), the Social Reciprocity Theory asserts that managerially, execution is about dispatching tasks to work stations and this is also regarded as the Social Reciprocity Theory. However, for execution to be effective, the Social Reciprocity Theory must be complemented with the language/action perspective the vice used in communicating the tasks dispatched to work stations must be completely comprehensive to the operatives. There should be feedback mechanisms that will convey the operatives understanding of the instruction passed and as such, enable tasks to be executed as it is envisaged in the plan.

2.3 Conceptual Framework

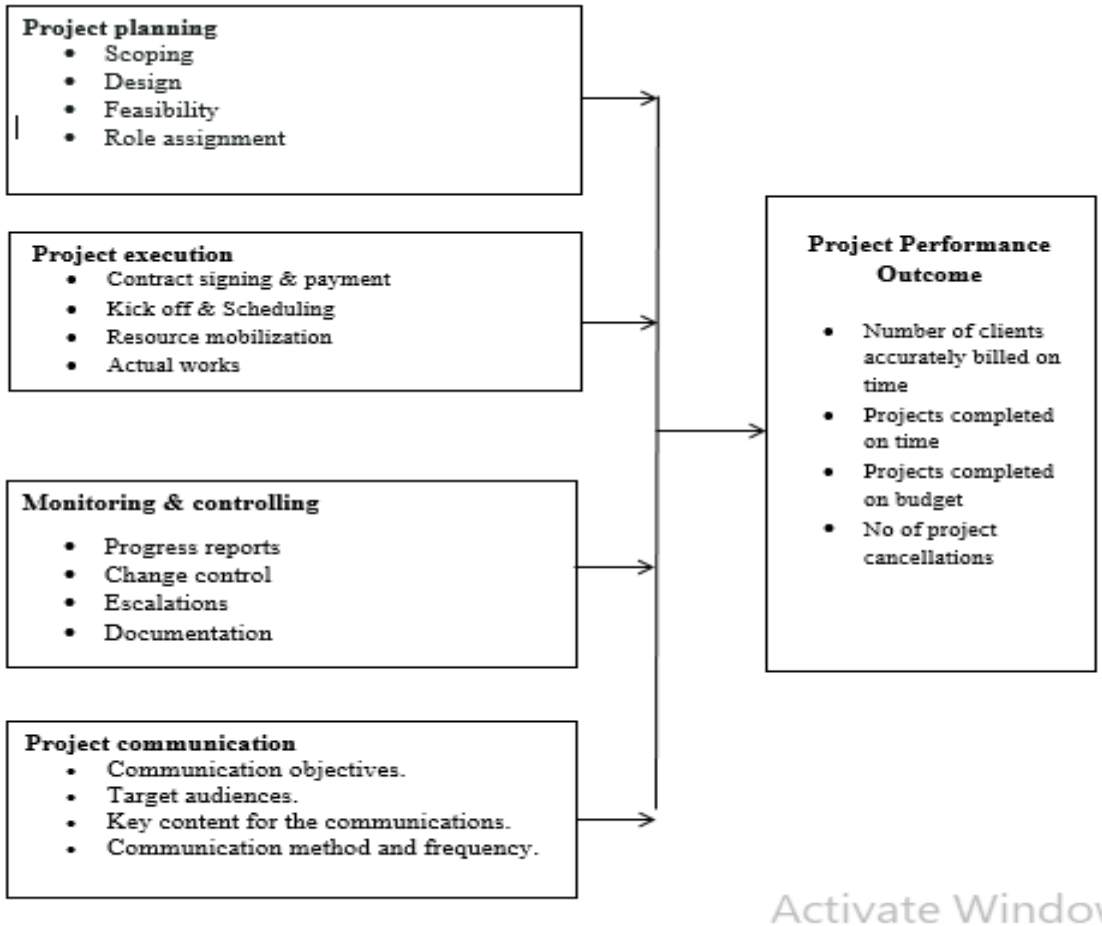

Figure 2.1 Conceptual Framework

2.4 Empirical Review of the Variables

2.4.1 Project Planning and Project Performance

According to Barry, Dent and Dubois (2000) on a study on Rural Planning in the Developing World rural planners done in developing countries have tended to focus on the provision of social infrastructures like roads, schools, and clinics. Planning for the rural areas has been mainly a top-down process, usually the domain of government departments concerned with rural development, agriculture and natural resources e.g. fisheries, forestry, wildlife, water. The findings of the study show that project plans have usually been made in offices, remote from the areas being planned and the people who would be affected. This approach makes plans lack domestication to the environments they are supposed to be implemented. In the long run, the farmers do not own the project, feel imposed to and the quality and quantity of produce are highly compromised. According to Botchie (2000) on Rural District Planning in Ghana, local strategic planning

requires information about the condition and trends of natural resources, social and economic conditions. Methods to gather, synthesize and interpret the information are well established. Methods and mechanisms to enable the participation of stakeholders also exist. There is an also a requirement for skilled and dedicated people to use the methods set in planning framework within which financial resources can be made sufficient to do the job at the local level. The findings of the study reveal that assistance in rural planning in a particular country will require a structured response which should first involve an assessment of current rural planning arrangements which is planning framework, institutional roles and responsibilities, skills base and an assessment of needs. The lead in such an assessment should be taken by nationals as part of the raising of awareness of the issues and possible responses. Weiss and Wysoiki (2012) add that commonly, procedures set out in planning manuals have been rigidly applied and their focus has been largely on the use of land and land resources. The planning process has relied, first, on the gathering of information about the natural resources and socio-economic conditions of the area under consideration, followed by analysis and interpretation, all as a professional exercise

The issues raised by this study are supported by Hedmanan (2002) which reveal that donor assistance is likely to require considerable investment in training, building capacity and skills, and providing incentives which will encourage bureaucracies to change which requires a long term commitment. Without this, continued investment in or support for projects which arise from flawed planning processes will lead to poor project performance and poverty.

According to Anandajayasekeram (2014) in the study on Agricultural project planning and analysis in Belgium, Project planning represents processes during the identification and preparation stages of the project life cycle in which the broad context of project operation is clarified. The planning stage is where particular problem areas are identified and clear objectives are set to achieve the required changes; where alternatives are developed and choices are made; and where appropriate actions are prepared for implementation**.**

2.4.2 Project Execution and Project Performance

According to Christen and Pearce (2005) on a study on managing risks and designing products for Agricultural projects and International Fund for Agricultural Development in Rome, bureaucracy in Government has affected implementation of policies related to food security issues. Sometimes these policies are inappropriate or unrealistic and may become vulnerable to economic and political dynamic shifts. The effect may cascade down and affect funding of agricultural activities especially those that are funded by donors and other providers involved with agricultural activities. The findings of the study show that red tape may increase the cost of credit thereby discouraging borrowers from financial institutions thereby hampering smooth project implementation. These policies cause a delay in the process of availing loans to farmers which will contribute to 50% failure interims of execution of the ventures. This will eventually lead to reduced food production and high poverty rates.

According to Nyariki & Wiggins, (2007) on a study titled household food insecurity in Sub Saharan Africa, reveal that for project management to achieve project performance, literacy levels of the implementers should be satisfactory to ensure minimal penetration in terms of growth and advancement in society. Lack of access to formal education and training has contributed greatly to low employment and understanding of issues that contribute to project implementation. The Millennium Development Goals (MDGs) include the important objective of full parity of enrolment of boys and girls at all levels of education. Education could and would inevitably have a positive effect on behaviour and performance. The study finds out that that the educated populations are able to internalize concepts and processes related to project management easily especially in agricultural setups in rural areas where women dominate. According to Laurent (2007) on a study on Currency Transfers by Denomination in Chicago points out that modern information and communication technologies have the potential to increase agricultural productivity through communicating knowledge and information to rural agricultural communities, providing capacity building, accessing markets and credit. The findings of the study reveal that Project managers have used ICT to advance their strategies in several ways to enhance successful project implementation. Over the last few years, several banks have embraced mobile banking technologies, enabling customers to access their bank via their mobile phones. This has helped quick access to funds that have facilitated the smooth running of the farming activities during the implementation of the project. Project Management Institute (2013) adds that educated society is geared towards correct implementation of setting up plans from management groups since they are able to interpret and apply the given agricultural activities. Dynamism in project activities requires fairly skilled manpower that can interact objectively to achieve project outputs and outcomes. Data exists which points to the fact in the market-place males can succeed with fewer years of schooling than can their female counterparts.

2.4.3 Project Monitoring and Evaluation and Project Performance

United Nations population Fund report (2004) on the study of Impacts on Monitoring and evaluation which was done in a study of Kenya showed that monitoring provides managers and other stakeholders with continuous feedback on implementation, identifies actual or potential successes and problems as early as possible to facilitate timely adjustments to project operation. Project monitoring is an ongoing process by which information is gathered concerning the performance and implementation of a project or a programme. M&E aims at providing regular oversight of the implementation of an activity in terms of input delivery, work schedule, targeted output among others. Findings of the study show how that effective monitoring requires adequate planning, baseline data, indicators of performance, and result and practical implementation mechanisms that include actions such as filed visits, stakeholders meetings, documentation of project activities, regular reporting. (UNFPA, 2004) points out that in adopting the results-based on M&E framework, care must thus be taken to ensure M&E processes, findings and results form an integral part of the overall project management system. Crucially important for an effective M&E system is the choice of what to track, document and analyze and who should be involved in this. Concepts for deciding what to monitor and evaluate are relevance, cost effectiveness, efficiency, results-orientation, and sustainability of the system. A common mistake in M&E is to gather too much information. This complicates analysis and creates delays, resulting in confusion and non-timely action or no corrective action at all being taken. It should result orientation meaning drawing attention to and highlighting successes as well as failures, rather than merely reporting on progress in meeting targets (Monterrey, 2012). Joe & Nay (2004) asserts that monitoring in general sense is used to describe a systematic framework to collect and analyze information on events associated with implementation policy with the view to improving the management. The findings in the study show that while perceptions as to the role and function of M&E may vary, its role as a key element of the project cycle is incontrovertible. The Project Cycle Management Guidelines (2002) for example, emphasize the use of M&E results for programming and project identification, as part of a structured process of feedback and institutional learning. Wood hill, (2007) on a study conducted on M&E as Learning: Rethinking the Dominant Paradigm M&E is at the heart of managing for impact which is meant to respond to changing circumstances and increased understanding, and managing adaptively so that the project is more likely to achieve its intended impacts. For the World Bank, monitoring and evaluation systems are designed "to inform project management of whether implementation of the project is going as the planned or corrective action is needed. Findings in the study revealed that a well-designed M&E system provides data on the progress of a project and whether it is meeting objectives. These data may indicate what adjustments are required in the project to take into account different circumstances in the local environment. M&E expenditure should be distinct from other management costs and should provide detailed budget items for staffing, training, workshops, and equipment, including computer hardware and software related to the MIS (World Bank, 2006). Being results-based means particular attention is given to providing timely information to management and other project stakeholders on whether and why the project is succeeding or failing. M&E‟s scope also extends to examining the significance and relevance of activities completed and outputs produced i.e. also addressing questions of‟ so what‟ and „then what‟. Hence, focusing solely on either end of the results chain is inappropriate. According to Muller (2010) points out the use of monitoring and evaluation in agriculture and rural development projects done in the U.S.A. The study reveals that while monitoring and evaluation (M&E) is recognized to be a key element in understanding and effectively tracking and documenting the results of development interventions, it is also admitted that there is a general need to improve M&E in development work. M&E methods and guidelines have received much international attention, but the problems of putting M&E into practice and drawing lessons from field experience, have been less studied. The findings show that As far as completed projects are concerned, with very few exceptions, the M&E systems have been poorly developed and implemented at the field level. Weaknesses in M&E are traced back to the design of the M&E system, particularly the absence of clearly identifiable monitoring indicators and a lack of ownership and participation by the stakeholders. M&E systems often reflect shortcomings in the description of project objectives, components, and implementation arrangements. According to Ndagi, Mugo, Keiyoro, Iribe, and Rambo (2016) on the study on Influence of M&E Planning on Sustainability of agricultural food crop projects in Kenya, Monitoring& Evaluation planning meetings or field visits are not conducted regularly by management. This implies that it might be a challenge to enhance experience sharing among the farmers hence hindering monitoring and realization of sustainability of food crop projects. The involvement of the members of a project is critical in monitoring and evaluation. The findings of the study show that the absence of a link between farmers and officers might deny farmers‟ knowledge, information; experiences and technologies required to boost productivity and sustainability.

2.4.4 Influence Of Project Communication On Project Outcome

Republic of Kenya (2006) paper in a study targeting rural areas in Kenya conducted by the ministry of water and irrigation reveals that lack of information as regards marketing facilities in institutions is some of the constraints to increased water irrigation.

Due to this constraints, the farmers are subjected to comprise high transportation costs due to dilapidated roads, improper handling, poor storage facilities, and wastage. These result in fluctuations in both productions and incomes. For livestock marketing, limited cattle holding grounds and meddling with stock-routes has limited access to markets. Dwyer and Blackstock (2007) revealed that government policy making was aimed at enhancing the performance of agriculture. The policy indicated that performance must be predicated upon research which provides evidenced-based recommendations drawn from holistic analysis of contemporary top project performance in different agricultural sectors. More research was to be done on improving ways of obtaining information from the farming press, electronic media, specialist advisers and training open days to gain information in respect to new developments in the farms. In their findings, promoting marketing of agricultural produce will require that holding grounds, watering points, stock-routes and livestock markets be developed; the private sector be encouraged to invest in slaughter houses and cold storage; local authorities in collaboration with the private sector invest in storage facilities; the government provides all-weather rural access roads, improve communication facilities and market information systems among others (ILO, 2002). The two sets of interventions, in enhancing agricultural productivity and marketing systems as recognized too by the (SRA, 2004) will lead to agricultural growth. According to Burrell and Matovu (2008) in a study on information use by smallholder farmers done in Uganda, access, and use of information and communication technologies (ICTs) by the smallholder rural farmer is envisaged to improve their welfare due to increased need for access to information about prices, new farming methods and markets. The findings show that a number of ICT-based projects have emerged in the last one decade in many developing countries to help the farmer‟s access relevant information. These projects use new and old generation ICT tools to provide market information to farmers in an attempt to resolve information access problems. However, the cost and availability of telecommunications determines the extent to which the ICTs are used and these access costs are often higher in poor countries Thong (2009) in a study conducted in Singapore on resource constraints and information systems in project performance. The study explains why rural inhabitants are not reaping from the fruits of the enormous wealth the country has. Lack of resources and required expertise are assumed to be a major reason that hinders the adoption of innovations by small scale farmers. Information services that will greatly enhance their productivity, transform their community into a lively and enlightened one, and empower their economic base, is not effective and relevant, and the service is not fashioned towards the set objectives due to infrastructural problems, official corruption in the allocation of funds, unstable political and economic policies growing insecurity and unstable power supply. The findings of the study show that in rural areas, there is an acute shortage of information services. This makes the rural community incapacitated and makes it difficult to associate with other communities to develop and make progress. There was a need to set up an information facility in which consolidated price information for all of the different markets is send by mobile phone Short Message Service (SMS) to many of the same people, who posted it on information boards in local markets (Diso, 2005). According to Ochora (2008) in a study on internet development in Kenya, the rapid development and applications of the Internet and other forms of ICTs in the agricultural sector have presented a whole new dimension in the transfer and access of agricultural information. This information was previously was difficult and expensive to obtain. While many projects mainly used electronic broadcast technologies like TV and radio in the beginning, internet and mobile based technologies have emerged during the last two decades.ICT now include computer-based applications and communication tools, such as social media, digital information repositories (online or offline), digital photography and video, as well as mobile phones (Balaji, Meera and Dixit 2007,). The improvement in ICT has led to the formation of a large number of IERD projects seek to provide farmers with the information they need in order to adapt their decision-making to increase knowledge in projects related agricultural sector. However, for ICTs to improve the provision of agricultural information, other inputs and/or conditions such as skill development, policy, and regulatory framework, and improved infrastructure are necessary.

2.5 Summary of research gaps

According to Barry, Dent, and Dubois (2000),in there titled Rural Planning in the Developing World rural planners in developing countries. They found that plans have usually been made in offices, remote from the areas being planned and the people who would be affected. Commonly, procedures set out in planning manuals have been rigidly applied. The

study fails to show the extent to which project managers are working to incorporate a local as the main stake holder in the planning of projects. The study seeks to have an inclusion of local and low management in the planning of projects given that the farmer understands better the challenges they face the field.

Also,in United Nations population Fund report(2004)in a study Kenya on Impacts of Monitoring and evaluation. The report found that Effective monitoring requires adequate planning, baseline data, indicators of performance, and result and practical implementation mechanisms that include actions such as filed visits, stakeholders meetings, documentation of project activities, regular reporting. The study fails to address the bench marking, sincerity and accountability aspects of management on reporting issues related to M&E. The study addressed additional ways like bench marking within management, auditing and emphasis on reporting correct information while undertaking an M&E activity.

Thong (2009), in his title Resource constraints and information systems in project performance. He found that Information services that will greatly enhance their productivity, transform their community into a lively and enlightened one, and empower their economic base, is not effective and relevant, and the service is not fashioned towards the set objectives due to infrastructural problems, official corruption in allocation of funds, unstable political and economic policies growing insecurity and unstable power supply. Study does not give approaches on how these factors derailing communication can be minimized in order to maximize production on projects The study through its recommendation had to show how some of the limiting factors can be mitigated for better agriculture project performance.

Brown and Adams (1999) however, used path analysis to measure the effect of project management on construction project performance. Path analysis accounts for both the direct and indirect relationships. This analysis suits examination of a project management quality model, which contains both direct and indirect relationships. However Structural Equation Modelling (SEM), is considered a better alternative to path analysis (Hair et al. (1998). Gowan and Mathieu (2005) examined the influence of project management practices on project performance using SEM as an evaluation too. The strength of this method was that it accounted for both direct relationships between variables and the interrelationships between the project management variables thereby accounting for the indirect relationships between variables and project performance.

The literature reviewed shows that, the rural communities have a limited understanding of the full range of their roles and responsibilities as primary stakeholders in the water sector and this limits their effective and meaningful participation in implementation, monitoring and evaluation of water and sanitation projects (KWAHO/UNDP, 2013). Therefore this research investigated specific factors which influenced community participation on rural water resources developments in Matete Sub- County Kakamega County.

3. RESEARCH METHODOLOGY

3.1 Introduction

This chapter covered methodology followed during this research. It described the research design, sampling procedure, data collection methods, validity and reliability of the research instruments, data analysis and presentation**.**

3.2 Research Design

A research design was defined by Kothari (2001) as an arrangement of conditions for collecting, analyzing and interpreting research findings. Orodho (2003) mentioned that research design provides strategies that help develop objectives and interpreted of data that answer the research question. This research employed descriptive survey design to determine the influence of project management practices on performance outcomes in rural water projects development in Kenya . This design helped collect data from the sampled population and determined the current status of that population with respect to the variables (Mugenda and Mugenda, 2003). Kothari (2004) stated that survey is concerned with conditions that existed in Matete SubCounty therefore, was appropriate for this study. This design described and summarized the data by determining the averages, frequencies, and percentages that allowed interpretation (Jaggi, 2012).

3.3 Target population

The target population was the entire aggregation of respondents that met the designated set of criteria (Burns and Grove 1997). Any group of people or observation which includes all the possible members of that category is called population. According to Mugenda and Mugenda (2003) and Kumar (2012), a population is an entire group of individuals, events or objects with some observable characteristics. A study population comprises of individuals, households, or organizations with similar characteristics about which a researcher wants to make inferences (Cooper & Schindler, 2014). The target

population for this research was 550 households head within the Matete Sub-County according to KNBS 2009 census report. The study also focused on 23 water user committees representing the 23 sources in the area that were developed within the last 20 years (Joint Monitoring Program report 2012). These were the people who deal with and are affected by the availability of water resources in that area.

3.4 Sampling Frame

The next step in the research design is to identify and select the sample to be used in the study. Sampling and selection are the means by which a researcher identifies and selects and gains access to the appropriate subjects (Sekaran, 2010). According to Mugenda and Mugenda (2008), a sampling frame is a list of all sampling units for a study. The sample frame for this study consisted of 550 households head within the Matete Sub-County according to KNBS 2009 census report and also 23 water user committees representing the 23 sources in the area that were developed within the last 20 years (Joint Monitoring Program report 2012).

3.5 Sample and Sampling Techniques

Kim and Park, (2010) defines a sample as a part of a large population, which is thought to be representative of the large population, as it is not possible to study all members of the population due to the tremendous amount of resources and time (Mugenda & Mugenda 2012). In this study, the expression below was used by the researcher used to obtain the sample size as suggested by Kothari and Garg (2014). The sampling procedure was the step followed in the selection of target population that represented the entire population in order to obtain information that answered the research questions. This research used the simple random sampling procedure to select the 226 household heads and 22 water users committees for the administration of questionnaires within Matete Sub-County. The household heads and the water committees were assigned random numbers ensured that each household head and committee member had an equalopportunity of being selected to participate in the research. This method was chosen because it was simple, practical, economical provided easy access to the respondents.

The sample size for this research was derived from Krejcie and Morgan (1970) formula as shown in appendix 2.

$s = X^2NP\ (1- P)\ ,\ d^2\ (N -1) + X^2\ P\ (1- P)$

Where:

s =required sample size.

X^2 = the table value of chi-square for 1 degree of freedom at the desired confidence level.

N = the population size.

P = the population proportion (assumed to be .50 for maximum sample size).

d = the degree of accuracy expressed as a proportion (.05).

A sample size of 226 household heads and 22 water user committees were obtained from the target population of 550 household heads (KNBS census report, 2009) and 23 projects that were developed in the area within the last 20 years respectively (Joint Monitoring Program, 2011).

3.6 Data Collection Instruments

Data collection can be derived from a number of methods, which include interviews, focus groups, surveys, telephone interviews, field notes, taped social interaction or questionnaires (Heaton, 2004). The choice of instruments was dictated by the nature of the problem and both the availability of time and financial resources. There were two major sources of data that were used by researchers. These are the primary and secondary sources. According to Mugenda and Mugenda (2003), primary data are those items that are original to the problem underway. Primary data was gathered using structured and semi-structured questionnaires (Creswell, 2009). This research used questionnaires to collect primary data from the household heads and water users committees. The quality of the questionnaires was achieved by validating and testing for reliability of research instrument.

3.7 Data Collection Procedures

The researcher obtained an introduction letter from the chairman department of Entrepreneurship, Technology, Leadership and Management and a research permit from National Council of Science and Technology. Research assistants was recruited to collect both primary and secondary data for this study. The primary data was collected from

respondents (source) using drop and pick later method, while the secondary data was collected from published materials and journals. The questionnaires was self-administered.

3.8 Pre-testing of the research instrument

According to Kothari and Garg (2014) at least 10% of the sample size will consist of the pilot test. Pre-testing of the research instrument was conducted by carrying out a pilot study in the study area. The research selected 15% of the sample sizes (40 household heads and 4 water user committees) to fill the questionnaires prior to the actual research begins. This enabled the researcher to get the thinking behind the answers that allowed accurate assessment on whether the questionnaires were understood by respondents, filled out properly and whether the questions were right and whether respondents are able to participate in the survey.

3.9 Data Analysis and Presentation

Data analysis refers to examining the coded data critically and making inferences. The presentation of data refers to ways of arranging data to make it clearly understood. Data was analyzed using both descriptive and inferential statistics. This is because descriptive statistics helps to describe the data collected and aim to summarize a sample while inferential statistics was used to interpret the meaning of descriptive statistics besides making propositions about population and helped in drawing conclusions. The SPSS Version 23 software was used because it is favored for it gave quantitative results.

The descriptive statistical tool helped the researcher to describe the data and features of data that was of interest. The mode (most commonly attained measurement or value) was used more so to analyze the responses in the questionnaires. This was used as the response measurement that appears most in a particular variable among a sample of subjects (Cooper and Schlinder, 2014).The questionnaires was edited for accuracy, consistency and completeness. The study used descriptive statistics and integrate both qualitative techniques in the data analysis and the data was edited; coded and classified so as to present the results of the data analysis in a systematic and clear way. This was done by the use of SPSS Version 25 software.

Both qualitative and quantitative data was analyzed. Qualitative data was analyzed by noticing, collecting and thinking about things. Noticing – means making observation, writing field notes, tape recording, interviewing and gathering documents. Collecting- means when you identify a piece you are noticing and coding them. When you sort out the pieces you are "collecting them". Thinking about things- means the researcher examines the things he/she has collected and the goals are to make some sense out of each collection. The researcher looked for patterns and relationships both within a collection and also across a collection. Finally, the researcher made a general discovery about the phenomena(s) he/she is/are researching (Seidel, John and Claus, 1995). Descriptive statistics (frequencies and percentages) was computed for all the five objectives of the study. Quantitative data was computed for inferential statistics with a 0.05 (5%) test significance level the resulting P values and coefficients was used to compare the variables, where two sets of the variables was compared to see the extent to which they are related and if they can be used to predict each other.

In this study, the findings was presented using tables, graphs, histograms, bar charts and pie charts. Data presentation made using of percentages, tabulations, means and other means of central tendencies. Tables was used to summarize respondents for further analysis and facilitated comparison. Percentages was used to determine the extent to which respondents view the contributions towards the influence of project management practices on performance outcomes in rural water projects development in Kenya. The influence of project management practices was X (independent variables) and dependent variable was Y (on performance outcomes in rural water projects development in Kenya).

3.9.1 Statistical Models

This study used multiple regression models to measure The influence of project management practices was X (independent variables) and dependent variable was Y (performance outcomes in rural water projects development in Kenya).. There was five (5) independent variables in this study thus: the multiple regressions to be used was:

$$Y= \beta_0 + \beta_1 X_1 + \beta_2 X_2 + \beta_3 X_3 + \beta_4 X_4 + \epsilon$$

Where Y was the dependent variable (performance outcomes in rural water projects development in Kenya) and β_0 was the regression co-efficient while β_1, β_2, β_3, β_4, and β_5 was the slopes of the regression equation.

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4. DATA ANALYSIS, PRESENTATION AND INTERPRETATION

4.1 Introduction

This chapter presents data analysis, presentation and interpretation of finding. The data presented in this chapter were processed using Statistical Package for Social Sciences (SPSS). The themes answering the research questions were presented and analyzed. The analyzed data was presented in both tables and narrative explained.

4.2 Questionnaire response rate

This was the proportion of the questionnaires returned after they have been issued to the respondents. The study revealed that, out of the 226 house heads and 22 Water User Committees sampled in the study, 204 (90.3%) of the house heads and 20 (87%) of the Water User Committees filled and returned questionnaires for data analysis. According to Mugenda and Mugenda (1999), a response rate of 50% is adequate for analysis therefore; this response rate was excellent for analysis and reporting. Therefore the return rate for the questionnaire was admissible.

4.3 Descriptive Analysis of the Study Variables

The purpose of descriptive statistics is to enable the researcher, to meaningfully describe a distribution of scores or measurements using indices or statistics. The type of statistics or indices used depends on the types of variables in the study and the scale of measurements. The study used mean average; percentages and deviations to present the study findings

4.3.1 Influence of Project Planning on Project Outcome

Table 4.1 Project Planning on Project Outcome

Statement	Mean	Std Dev.
Pre-project meeting with client is held to scope client specifications	1.57	0.604
Project analysis is done to determine commercial and technical terms	1.57	0.606
Business case is determined and technical feasibility evaluated	1.49	0.558
Project plan outlines all projects stages up to closure	1.99	1.014
Deliverables and milestones are reasonable and attainable	2.10	0.843
Required project resources are identified and committed	1.99	0.807
A contract outlining responsibilities of all key stakeholders is signed	2.06	0.931
Down payment is made before a project commences	2.23	1.038
Individual responsibilities and performance standards are well known	2.33	1.053
Standards and goals for measuring performance are clear and attainable	2.44	1.072
Testing and acceptance parameters are defined in advance	2.70	1.298

4.3.2 Influence of Project Execution and Project Outcome

Table 4.2: Project Execution on Project Outcome

Statement	Mean	Std Dev.
Activities are carried out in accordance with an execution plan	2.07	0.922
Responsibility for each task is clearly defined	1.91	0.794
Supervision roles and reporting structures are well defined	2.19	0.952
Project progress is monitored and compared with the project plan	2.50	1.087
Project activities are monitored to ensure compliance	2.36	1.077
Appropriate tools required for project tasks are availed	2.39	1.101
Regular meetings are held to review project progress	2.34	1.141
Communication methods and escalations are adequate	2.16	1.163
Project changes follow formulated procedures for review and approval	2.60	1.267

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4.3.3 Influence of Project Monitoring and Controlling on Project Outcome

Table 4.3: Project Monitoring and Controlling on Project Outcome

Statement	*Mean*	*Std Dev.*
Effective project monitoring processes exist	2.33	1.032
Project monitoring tools are effective	2.51	1.139
Individual assessment on performance is regularly conducted	2.50	1.213
Progress is monitored and compared with the project specifications	2.16	1.044
Status reports are regular and stakeholders are informed	2.23	1.169
Change control procedures are well defined at the start	2.39	1.219
Authority and responsibility for change requests is defined in advance	2.38	1.279
Changes in scope include risk and impact analysis	2.29	1.092
Project changes follow formulated procedures for review and approval	2.36	1.204
Decisions to approve or reject changes are well documented	2.80	1.368

4.3.4 Influence of Project communication on project outcome

Table 4.4 Influence of Project communication on project outcome

Statement	Mean	Standard Deviation
Project communication with the group has improved due to use of phones and local libraries	4.26	.902
Locals experience communication problems when using mobile phones due to network breakdown and lack of electrical power to charge the phones	3.13	1.316
Inter-team communication can occur both through meetings as well as reporting to seniors through emails, etc.	2.12	1.107
For meetings, managers always select the venue and timings that remain suitable to all the team members.	3.58	1.472
Members of the project group have required skills of using modern information gadgets like computers to get marketing Information	2.40	1.335
Project managers have ways of making their produce known to buyers through putting adverts about their produce in near centers or advertise by radio	2.12	1.107
Locals sell their products locally to middle men due to lack of clear marketing information	3.58	1.472
Effective communication with senior managers is not a one-off effort by an individual project manager	2.12	1.107
Projects managers must provide inter-team communication as well as a stakeholder communication schedule during the Project Planning Phase	3.58	1.472
Aggregate	3.098	1.226

4.5 Inferential Statistics

This section presents the inferential findings for the study. Pearson's moment of correlation is presented first then regression analysis follows.

4.5.1 Correlation Analysis of Independent and Dependent Variables

In this study, that is determining the influence of project management practices on performance outcomes in rural water projects development in Kenya, Pearson product moment correlation coefficient (r's) was used to establish the relationship between the independent variables. The study assessed the independent variables' influence on project outcome at 99% level of confidence. The Pearson's correlation is given as : -1< r +1; where 0 to 0.29 is considered weak positive correlation; 0.3 to 0.49 is moderately positive correlation; and 0.5 to 1 corresponds to strong positive correlation. Conversely, 0 to -0.29 is considered weak negative correlation; -0.3 to -0.49 is moderately negative correlation; and -0.5 to -1 corresponds to strong negative correlation

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Table 4.5: Correlation Analysis

		Planning	Execution	Monitoring	Project communication	Outcome
	Pearson Correlation	1	.810**	.672**	.514**	.453**
Planning	Sig. (2-tailed)		.000	.000	.000	.000
	N	204	204	204	204	204
	Pearson Correlation	.810**	1	.817**	.619**	.534**
Execution	Sig. (2-tailed)	.000		.000	.000	.000
	N	204	204	204	204	204
	Pearson Correlation	.672**	.817**	1	.704**	.607**
Monitoring	Sig. (2-tailed)	.000	.000		.000	.000
	N	204	204	204	204	204
	Pearson Correlation	.514**	.619**	.704**	1	.732**
Project communication	Sig. (2-tailed)	.000	.000	.000		.000
	N	204	204	204	204	204
	Pearson Correlation	.453**	.534**	.607**	.732**	1
Outcome	Sig. (2-tailed)	.000	.000	.000	.000	
	N	204	204	204	204	204

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

4.5.1 Regression Analysis

Multiple regression analysis was carried out to test the influence among predictor variables. The results are presented in tables 4.6, 4.7 and 4.8.

Table 4.6: Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.744[a]	.553	.525	.346

a. Predictors: (Constant), communication, Planning, Monitoring, Execution

From the results in Table 4.6, the study presents R-squared. This is a statistical measure of the closeness of the observed data to the fitted regression line. It defines the percentage of the dependent variable variation as explained by a given model. Hence, the model indicates that 55% of the changes in project outcome can be attributed to the predictor variables. The implication is that 45% per cent of the changes in project outcome can be attributed to other factors.

Table 4.7: ANOVA Results

Model		Sum of Squares	Df	Mean Square	F	Sig.
1	Regression	9.608	6	1.601	40.7379	.000[b]
	Residual	7.772	198	.0393		
	Total	17.379	204			
a. Dependent Variable: Outcome						
b. Predictors: (Constant), communication, Planning, Monitoring, Execution						

The probability of 0.000 indicates that the model is significant in predicting the influence of the project management processes on project outcome. The critical F-value is 40.7379 at 99% level of confidence.

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Table 4.8: Regression Coefficients

		Unstandardized Coefficients		Standardized Coefficients	T	Sig.
		B	Std. Error	Beta		
1	(Constant)	.798	.167		4.784	.000
	Planning	.029	.125	.032	.229	.820
	Execution	.007	.120	.010	.055	.956
	Monitoring	.091	.093	.155	.970	.336
	Communication	.375	.073	.599	5.101	.000
a. Dependent Variable: Outcome						
b. Predictors: (Constant), communication, Planning, Monitoring, Execution						

The regression model is derived from Table 4.20 as

5. SUMMARY OF FINDINGS, DISCUSSIONS, CONCLUSION AND RECOMMENDATIONS

5.1 Introduction

This section presents the discussions on key data findings, conclusions drawn and recommendations. These discussions, conclusions and recommendations were focused on the the four objectives of the study. These were: establishing the influnece of project plannning and initiation; execution; monitoring and controlling; and communication on the project outcome of in rural water projects development in Kenya. The research was carried on the households who use communal water projects in Matete Sub-County**.**

5.2 Summary of Findings

In this section, summary of findings follow the order of research objectives and data as presented in chapter four. The purpose of the study is to assess the influence of project management processes on the project outcome of in rural water projects development in Kenya.

5.2.1 The Influence of Project Planning on Project Outcome.

The study established that pre-sales meetings are held with clients to scope client needs and analysis is done to determine commercial and technical specifications as well as feasibility. The standard deviations of 0.604, 0.606 and 0.558 were the lowest of all the statements. The majority of the respondents agreed that project stages are outlined through closure, though with an observable wide variance of 1.014 about the mean. The respondents indicated that deliverables and milestones are reasonable and attainable. On whether resources are identified and committed, the respondents agreed. The study also showed that contracts outlining responsibilities for each stakeholder are signed and down payment paid. The study findings also show that performance standards, goals, are well known and attainable. The respondents are equally in agreement on testing and acceptance parameters are usually known in advance. There was a notable variation in the level of agreement with significant standard deviation of 1.053, 1.072 and 1.298. When asked to indicate the extent to which planning and initiation influenced project outcome; 67% answered to very great extent, 22% answered to great extent, while 10% indicated to a moderate extent.

5.2.2 The Influence of Project Execution on Project Outcome.

When respondents were asked about the extent to which execution influences project outcome, 44% said to very great extent; 39% said to great extent; 14% to moderate extent and 3% to little extent. Therefore, a higher proportion of respondents indicated that project planning and initiation has greater influence on project outcome than execution. With respect to the influence of project execution on project outcome, the respondents indicated that project activities are carried out in accordance to project plans. They agreed that responsibilities for each tasks, supervision roles and reporting structures are well defined. The findings also showed that project progress is monitored and compared with the project plan and to ensure full compliance. The respondents agreed that required tools are availed for project activities. The results also indicate that progress review meetings are held to address emerging issues. On communications, the findings

show that channels and escalation matrices exists and are effective. In regard to project changes, the respondents agreed that reviews and approvals follow formulated procedures.

5.2.3 The Influence of Monitoring and Control on Project Outcome.

The study sought to gauge the existence of effective project monitoring processes to which responded affirmatively. Asked whether individual assessment on performance is regularly conducted, they generally agreed with a varied level. On whether progress is review and status reports are shared with stakeholders, the respondents agreed. The findings also indicated that change control procedures, authority and responsibility are outlined well in advance. The results of the study also established that risk and impact analysis is of changes is conducted; that it is procedural and all decisions are well documented. The study also asked the respondents to propose changes to the monitoring and control processes. Their recommendations were broadly categorised into five. First, 17% suggested introduction of more effective tools; 18% were of the opinion that the existing tools were effective; 4% suggested training of staff on the effective use of monitoring tools; 16% asserted that effective communication with all stakeholders was key; 18% recommended improving reporting and documentation of project activities

5.2.4 The Influence of Project communication on Project Outcome.

The fourth objective sought to examine how Project Communication influences the project outcome of rural water projects development in Kenya. The objective when considered jointly through multiple regressions established that project communication had significant influence on performance of rural water projects development in Kenya. The study, therefore, confirms the expectation that project communication influenced project performance in Kenya. The hypothesis was significant meaning communication is important in the whole process of project management.

5.3 Conclusions of the Study

On the basis of the study findings, the following conclusions were arrived at proposing the adoption and application of modern project management practices. The results indicate significant relationship between project management processes and project outcome. The nature of rural water projects development in Kenya whose end user level of satisfaction is high requires effective and efficient project processes. Therefore, project planning influences project outcome.

From the study findings, it can be concluded that the execution process impacts the outcome of the project. It was established that execution activities are conducted according to the project plan. Of the 4 stages, the findings indicated that execution had the least influence on the project outcome.

The research results showed that monitoring and control has a significant influence on project outcome according to the regression model. The respondents further suggested the strengthening the existing tools to achieve desired project outcome. On this basis, the study concludes that monitoring and control influences project outcome to a large extent. Finally, the study concludes that the project communication process have the greatest influence on project outcome. The study established that perceived indicators of positive project indicators include project communication process. The respondents strongly agreed that customer acceptance and satisfaction and settlement of final account is a strong measure of positive project outcome. The regression model indicated that the communication process had the largest magnitude.

5.4 Recommendations of the Study

This study makes the following recommendations.

The study recommends that effective project planning activities be applied to all projects. This can be achieved by adopting and continuously enforcing project management best practices across the organization. This study also recommends that emphasis be given to implementation activities that will ensure plans are effectively executed in order to fully meet set objectives.

The study suggests the introduction of effective monitoring tools; training of staff on use of monitoring tools; use of effective communication and improved reporting and documentation in order to improve the monitoring and control process.

Project communication process have the greatest influence on project outcome according to the regression model. The study recommends that proper communication channel should be used to enable local acceptance and satisfaction perspective as well as that of the project objectives.

5.5 Suggestions for Further Studies

This report recommends that further research should be carried out to establish the other factors that are attributed to influencing 45% of the project outcome; according to the regression model.

The study on influence of project management practices on performance outcomes in rural water projects development in Kenya. It is recommended that this topic can be investigated more on community participation on rural water projects development in Kenya.

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