

# FACTORS AFFECTING EFFECTIVE IMPLEMENTATION OF WATER PROJECTS IN KIRINYAGA COUNTY, KENYA

<sup>1</sup>PATRICK MWANGI MURIUKI, <sup>2</sup>DR. PATRICK KARANJA NGUGI

<sup>1,2</sup> COLLEGE OF HUMAN RESOURCE DEVELOPMENT, JOMO KENYATTA UNIVERSITY OF AGRICULTURE  
AND TECHNOLOGY, KENYA

---

**Abstract:** The Kenyan government and international organizations have continued to invest in the implementation of water development projects to assist the rural communities to alleviate the problem of water scarcity. The performance of these projects is the major problem as they are not successful and falling out of use at an alarming rate. In order to make the investment in implementation of water development projects more effective and worth, success rates of these projects should be increased. The Study examined the factors affecting effective implementation of water projects in Kirinyaga County by focusing on four specific objectives: stakeholder policy factors, beneficiary factors, contractor factors and consultant factors. The study was guided specifically by the following four theories: Stakeholders participation theory, the complexity theory, constraints theory and project management competency theory. The unit of observation was Project managers, assistant project managers and the project supervisors of 40 water projects and the unit of analysis were the 40 water projects implemented in Kirinyaga County for the last four years. The study adopted a census survey design with the respect of the unit of analysis which is the 40 water projects that had been implemented in Kirinyaga County in the last four years. A census was conducted since only 40 projects were studied and a census is applicable when the entire population is small. Data was collected through the use of semi structured questionnaires which were administered to the project manager's, assistant project managers and project supervisors and analysed using statistical package for social sciences (SPSS) version 23.0. A pilot study was conducted to pre-test the validity and reliability of data collection instruments. Both quantitative and qualitative data were collected. Analysis of data was done using descriptive and inferential statistics. Multiple regression model was used to find out the relationship between the independent variables. The analysed results were presented using graphs and tables and qualitatively. The study found that that stakeholder policy factors, beneficiary factors, contractor factors and consultant factors positively and statistically influenced performance of water project implementation in Kirinyaga County. The study recommends that project stakeholders should be incorporated into the project by the team, project managers ought to ensure commitment of project beneficiaries by creating an atmosphere of feeling like they are part of the family of the project implementation team and consultants should provide work plans, capacity building, monitoring and evaluation immediately before commencing on a project. This study will enable the national government to position itself and establish ways in which it can effectively implement water projects as a stakeholder, give insight to effective implementation of water projects in Kirinyaga County, provide necessary information to the water projects construction industry on the factors affecting effective implementation of water projects and the findings of the study can be used as a source of reference for other researchers.

**Keywords:** water development projects, investment, implementation, Kirinyaga County.

---

## 1. INTRODUCTION

### Background of the study:

Availability of clean water has a big impact on the development of a nation. Governments have developed different regulations to improve water supply to both the local and the urban dwellers. According to Ndungu (2014), implementation of water projects in Kenya faces various challenges such as inexperienced project managers, inadequate monitoring of ongoing projects, inefficient resource utilization, and delayed disbursement of project development funds as some of the key challenges hampering progressive improvement in water supply coverage. As a result, this study focused on projects undertaken in Kirinyaga County. This would be hoped to fill the gaps left by other researchers in Kenya who have studied projects which are located in and around Nairobi and thus they recommended studies on rural and suburban counties (Kamotho, 2014), and other factors outside the project as suggested by Ndungu (2014).

Kirinyaga County borders Nyeri County, Murang'a County and Embu County. It covers an area of 1,478.1 square kilometers. The county lies between 1,158 metres and 5,380 metres above sea level in the South and at the Peak of Mt. Kenya respectively. Mt. Kenya, which lies on the northern side greatly, influences the landscape of the county as well as other topographical features.

The government of Kenya has released Sh2 billion to compensate landowners who will be displaced by the Sh20 billion Thiba Dam in Kirinyaga County. The project will be constructed along Thiba River in Kabare and Baragwi locations in Gichugu constituency. According to the Resettlement Implementation Unit (RIU), under the National Irrigation Board, 560 acres with 253 registered land parcels were earmarked for acquisition for the dam's 23million was spent in water supply supporting infrastructure across the county. Project nearing completion are: Kiangai water project, Kenera water project, Nguka Weteithie water project, Karia Irrigation project, Rukunya-Kutus water project, Rukanga water projects, Riamiatu and Kibaratani water project, Marurumo, Rurumi and Gategi boreholes are due for drilling. Kshs. 19 billion Thiba dam in Kirinyaga County has stalled after the cost of the construction increased by Kshs. 5 billion.

### Statement of the problem:

The UN Joint Monitoring Program estimates the failure rate for most water development projects in Africa at anywhere from 30 to 60%. Despite the failed water development projects governments and international financial institutions continue investing hundreds of millions of dollars to keep the projects going (WB, 2010) despite evidence that they have not succeeded. According to reports by Water Services Regulatory Board and Ministry of water and irrigation in the year 2013, 57% of completed projects in the board's area were completed late while 86% of ongoing projects were behind schedule (Ndungu, 2014). According to the Ministry of Water, Environment and Natural Resources, Kirinyaga County report (2016), 40 water projects were earmarked for implementation in the last four years. According to the report 44% percentage of the projects were completed while 56% of the projects were listed as incomplete or at various stages of implementation.

According to Sambasivan and Soon (2010), failure to achieve targeted time, budgeted cost and specified quality result in various unexpected negative effects on the projects. The delay of project implementation affects every stakeholder in the economy. Unsuccessful implementation of projects is a common problem in projects industry not only with an immeasurable cost to society but also with debilitating effects on the contracting parties (Ondari & Gekara, 2013).

There have been many documented studies on stalled or delayed construction projects. Loker (2010) did a study on the impact of a major environment and development project in the El Cajon region of Central Honduras in South America. His main concern in the study was to know what types of mismanagement in the execution of a project cause the failure of projects. Mbaluku and Bwisa (2013), studied time delay factors for housing projects of Kenya Agricultural Research Institute (KARI). Kamotho (2014), studied the effect of project management, contractors, consultants and finance in project performance for housing projects in Nairobi County while Ondari and Gekara (2013) studied the effect of management support. Studies conducted on water project sustainability such as (Ngetich, 2009) showed that most water projects did not function to the full capacity and recommended further studies to be done on water projects implementations. The studies conducted presented a research gap therefore the researcher sought to fill the gap by examining the Factors affecting effective implementation of water projects in Kirinyaga County by studying four variables; stakeholder's policy, beneficiary factors, contractor and consultant factors.

**General Objective:**

The general objective of this study was to examine factors affecting effective implementation of water projects in Kirinyaga County.

**Specific Objectives:**

The specific objectives of the study were;

To determine the influence of stakeholder policy factors on water project implementation in Kirinyaga County.

To examine the influence of beneficiary factors on water project implementation in Kirinyaga County.

To explore the influence of contractor factors on water project implementation in Kirinyaga County.

To determine the influence of consultant factors on water project implementation in Kirinyaga County.

**Justification of the Study:**

Water projects if not completed on time, within budget and as per the beneficiary specifications have an adverse effect on parties (owner, contractor, consultant) to a contract in terms of a growth in adversarial relationships, distrust, litigation, arbitration, cash-flow problems, and a general feeling of apprehension towards each other. Project Implementation time has always been recognized as an important indicator of project success (Korir & Were, 2014). Other success criteria include quality and cost (Kaliba et al., 2009). This study tries to examine factors affecting effective implementation of water projects in Kirinyaga County. This would help various actors involved in the construction industry to mitigate disruptions associated with construction projects. Since this study will focus on factors, the beneficiaries will be the national government, the Kirinyaga County government, water projects contractors and scholars.

## 2. LITERATURE REVIEW

**Theoretical Review:**

A theory is defined as a set of interrelated concepts, definitions, and propositions that present a systematic view of phenomena by specifying relations among variables with the purpose of explaining or predicting the Phenomena (Abok, 2013). Theories lay the foundation upon which research is built. They provide a particular perspective or lens, through which a topic is examined. Cooper and Schindler (2011) defines a theory as a set of interrelated concepts, definition, propositions that have been put forth to explain a scenario. Bull (2009) notes that a theory is a set of constructs, prepositions and definitions of an organized view of phenomena by pointing the relationship among variables with the purpose of examining the phenomena. The research will therefore be based on the following theories postulated by different scholars as discussed:

**Stakeholders Participation theory:**

Stakeholder theory is one that puts as a primary managerial task the charge to influence, or manage, or balance the set of relationships that can affect the achievement of an organization's or institution's purpose. Stakeholder theory is a managerial concept of organizational strategy and ethics (Donaldson & Preston, 1995; Evan & Freeman, 1993; Freeman & Evan, 1990; Rowley, 1997). The central idea is that an organization's success in its project initiatives is dependent on how well it manages the relationships with key groups such as customers, employees, suppliers, communities, financiers, and others that can affect the realization of its purpose. Stakeholder participation refers to the act of getting involved in the various aspects and stages in the project or program management cycle through material contributions and consultation.

Stakeholder's participation involves the process or activity of informing the public and inviting them to have input into the decisions that affect them. Whereas minor decisions and emergency situations are generally not appropriate for stakeholder participation, complex situations with far-reaching impacts warrant stakeholder involvement and when done proactively, rather than in response to a problem, help to avoid problems in the future. The focus of public participation is usually to share information with, and gather input from, members of the public who may have an interest in a project (Donald & Preston, 1995).

**Theory of constraints:**

The theory of constraints (TOC) can be used to demonstrate how managers can effectively 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 necessary for construction projects bring complications in project management (Lau & Kong, 2006) and therefore for effective project management, constraints have to be managed. According to 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. Project managers regard triple constraints as key to a project's requirements and success. Optimizing these three features ascertain project quality and timely completion. All three constraints of projects - scope (a measure of quality), cost and time - have their respective effects on projects' performance but since these elements have some correlation, one constraint bears an effect on the other two, eventually affecting projects deliverables to a greater extent (Hamid, Ghafoor, & Shah, 2012).

**Complexity Theory:**

Project management systems are considered dynamic systems, similar to those in nature, which means they change over time and are hard to predict. The complexity in projects can be in the form of structural, uncertainty, dynamic and social. Project time management is an important component in professionally managed projects in which many complexities and uncertainties occur and as a result, many activities in a project are often behind the schedule (Ahmadi & Golabchi, 2013). According to Dadzie et al. (2012), the construction industry is complex in its nature because it comprises large numbers of parties as owners (beneficiaries), contractors, consultants, stakeholders, and regulators

Project complexity has a direct relationship to project performance. Structural complexity is a trigger of project delay, cost over-runs, and scope challenges through its constituent elements, size and interdependencies as project managers have difficulties in managing large and complicated projects. Furthermore, uncertainty is by definition impeding project managers in making accurate forecasts and thus underestimating Project Implementation dates and costs (Miterev & Nedelcu, 2013). According to Williams (2005), reciprocal interdependencies bring a significant contribution to project complexity leading to reworks and feedback effects that translate into delays as the project deviates from the initial schedule and adopts an unpredicted behaviour.

Olatunji (2010), argue that the unique nature of the construction process presents complexities, uncertainties, and changing circumstances, which must be accommodated within the planning and control system used. This theory is linked to the objective of how contractor factors such as skills and equipment availability affects the effective implementation of project.

**Project Management Competency Theory:**

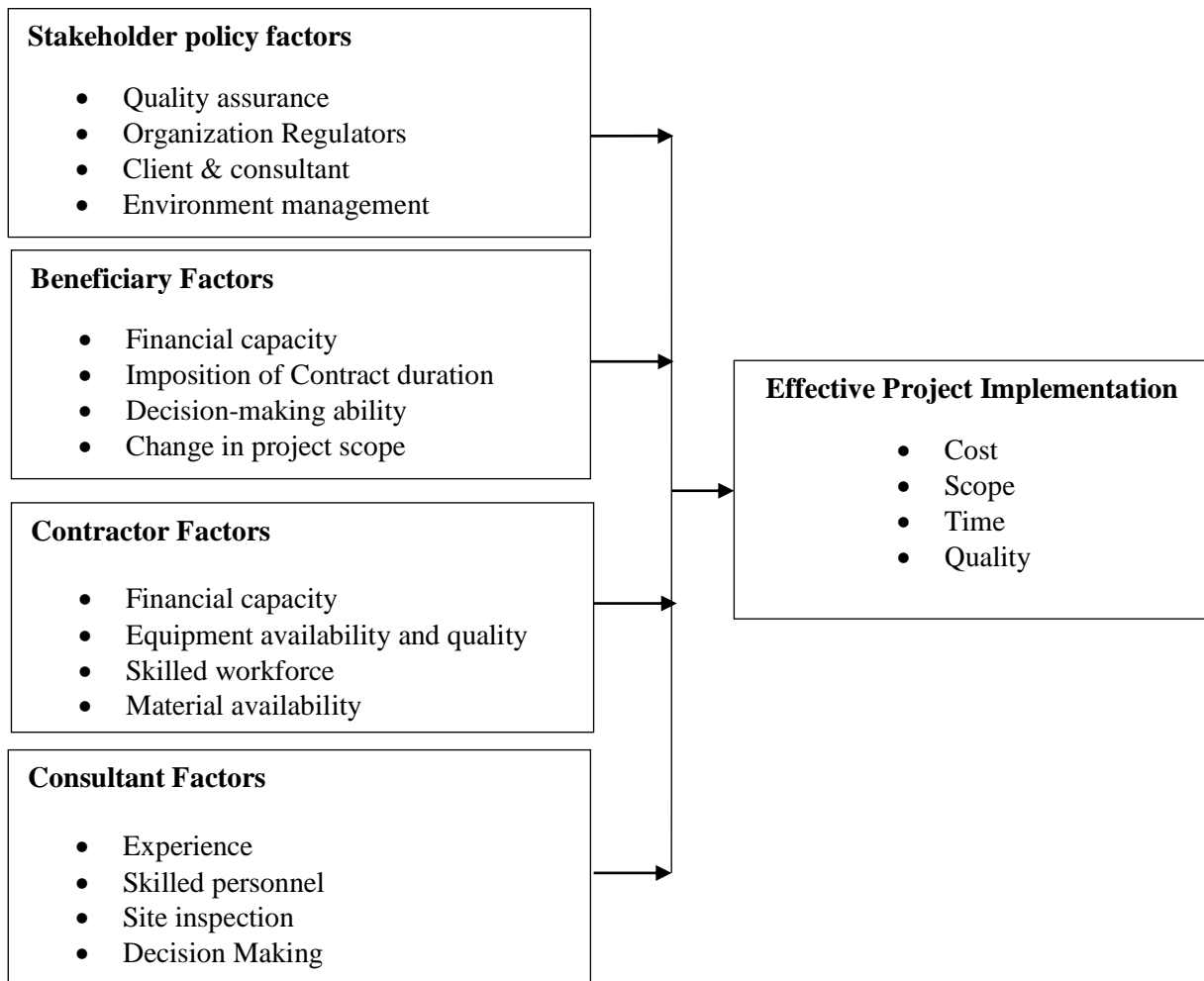
McClelland & McBer in the 1980s established the competence theory. The authors defined competency as the underlying characteristic of an individual that is causally related to criterion-referenced effective and/or superior performance in a job or situation. Interest in project management competence stems from the very reasonable and widely held assumption that if people who manage and work on projects are competent, they will perform effectively and that this will lead to successful projects and successful organizations (Beer, 1990; Smith, 1976).

Competence is generally accepted, however, as encompassing knowledge, skills, attitudes and behaviors that are causally related to superior job performance. Crawford (as cited in Boyatzis, 1982 & Spencer, 1993), stated that professional competence in project management is attained by combination of knowledge acquired from training and its subsequent application and other skills developed in the course of work.

In the context of construction project management; it is assumed that if the project manager and the project consultant have all the required competence for the work then the project implementation will be successful. The theory is linked to the objective of how consultant factors such as skills and experience affect the effective implementation of project.

**Conceptual Framework:**

A conceptual framework is a representation of the main concepts or variables under study and their presumed relationship with each other and it is a scheme of variables/concepts the researcher will operationalize in order to achieve the research objectives (Imenda, 2014). The conceptual framework used in this study is indicated in figure 2.1 below. The dependent variable is Effective Project Implementation while the independent variables are Stakeholder Policy Factors, Beneficiary Factors, Contractor Factors and Consultant Factors.

**Summary of literature reviewed:**

Project Implementation time, cost and quality objectives are an important parameter for measuring project completion. The major causes of unsuccessful completion of construction projects around the world were delayed payments, financial deficiencies on the part of the beneficiary or the contractor, contract modifications, economic problems, material procurement problems, changes in design drawings, staffing problems, unavailability of equipment, poor supervision, construction mistakes, poor coordination on site, changes in specifications, labour disputes and strikes, coordination problems, poor communication, site accidents (Abd El-Razek et al., 2008; Frimpong et al., 2003; Kaliba et al., 2009; Kikwasi, 2012; Koushki & Kartam, 2004; Madhura & Desale, 2013; Motaleb & Kishk, 2010). In Kenya, the main factors that influence Project Implementation included project management, contractors, consultants, finance, management support, design specifications (Kamotho, 2014; Mbaluku & Bwisa, 2013; Ondari & Gekara, 2013). These studies were for selected housing and road projects in Nairobi County. A study for water projects, implemented by Athi Water Services Board in Kiambu County, by Ndungu (2014), found that finance, contractor's capacity, Monitoring, and contract variations were the main factors that influenced completion time.

### 3. RESEARCH METHODOLOGY

The chapter describe the research design, study population, the sample and sampling frame, sampling techniques, research instruments, data collection procedures, validity, reliability, and data processing analysis. Research design according to Kothari (2003) constitutes the blue print for the collection, measurement and analysis of data. The study adopted a descriptive survey design. The design was appropriate for this study since it allowed the researcher to describe record, analyze and record and report the conditions of the water projects as they are. The target population for the study was 40 water projects implemented in Kirinyaga County. The unit of analysis was the 40 water projects whereas the unit of observation were the project managers, assistant project managers and project supervisors from each project since they were actively involved in the implementation of the projects. This study adopted a census survey design with the respect of the unit analysis which were water projects implemented in Kirinyaga County for the last four years. This therefore ruled out the application of a sampling technique. The study used census since the population of 40 water projects is small and the study aimed at reaching the project managers, assistant project managers and supervisors of the 40 projects since there were the ones who were responsible for overseeing the implementation of the projects. Therefore, the total numbers of respondents were 120. The data was collected by use of semi- structured questionnaire. The researcher collected primary data through administration of questionnaires to the key informants.

A pilot study was conducted to test the instrument's reliability and validity. Instrument validity according to Mugenda and Mugenda (2003) is the degree to which results obtained from the analysis of the data actually represent the phenomenon under study. Reliability according to Mugenda and Mugenda (2003) is a measure of the degree to which a research instrument yields consistent results or data on repeated trials. Data was coded in SPSS version 23 and analyzed using descriptive and inferential statistics. In descriptive analysis, the study used charts, tables and bar graphs to present respondent general information. Inferential statistics and Pearson correlation coefficient was done to find out whether there was correlation between Stakeholder policy factors, beneficiary factors, contractor factors and consultant factors on water project implementation in Kirinyaga County.

#### **Data Processing and analysis:**

The analysed data was done per objective. The analysis includes descriptive statistics featuring the survey response rate and demographic characteristics. The percentages, means, frequencies, standard deviations, Crobachs Alpha coefficients or reliability and correlations are also computed and presented.

Parametric statistical techniques namely; simple linear regression and multiple regression techniques were used to test the relationships. The choice and use of these parametric statistical methods was informed by the measurement scales used and the purpose of the study. Attempts are made to explain why the findings are the way they are and to what extent they are consistent with or contrary to past empirical findings and theoretical arguments. The discussion of the findings is guided by objectives of the study.

#### **Research Findings and Presentation:**

The number of questionnaires that were administered was 120. A total of 98 questionnaires were properly filled and this presents an overall successful response rate of 81.67%. According to Mendenhall et al., (2003), Nachmias and Nachmias (2004), Mugenda and Mugenda (2003) and Kothari (2004) a response rate of 50% is adequate for a descriptive survey study. Babbie (2004) asserted that return rates of 50% are acceptable to analyze and publish, 60% is good and 70% is very good. Based on these studies assertions, 81.67% response rate is adequate for the study.

#### **Influence of stakeholder policy factors on effective implementation of water projects:**

Regression analysis was performed by using the composites of the two variables. The data was input to the SPSS software. Stakeholder policy factors were found to be satisfactory variables on water project implementation. This is supported by coefficient of determination also known as the R square of 0.157. This means that stakeholder policy factors explain 15.7% of the variations in the dependent variable which is water project implementation in Kirinyaga County. This results further means that the model applied to link the relationship of the variables was satisfactory.

Analysis of the variance (ANOVA) results indicate that the model was statistically significant. Further, the results imply that the independent variables, stakeholder policy factors, is a good predictor of water project implementation. This was supported by an F statistic of 24.690 and the reported  $p=0.00$  which was less than the conventional probability of 0.05 significance level.

Regression of coefficients results shows that stakeholder policy factors and water project implementation are positively and significant related ( $r=0.207$ ,  $p<0.05$ ). These imply that a unit improvement in stakeholder policy factors improves water project implementation by 0.207 units.

#### **Influence of beneficiary factors on effective implementation of water projects:**

Regression analysis was performed by using the composites of the two variables. The data was input to the SPSS software. Beneficiary factors were found to be satisfactory variables on effective implementation of water projects. This is supported by coefficient of determination also known as the R square of 0.377. This means that beneficiary factors explain 37.7% of the variations in the dependent variable which is effective implementation of water projects in Kirinyaga County. This results further means that the model applied to link the relationship of the variables was satisfactory.

Analysis of the variance (ANOVA) results indicate that the model was statistically significant. Further, the results imply that the independent variable, beneficiary factors, is a good predictor of effective implementation of water projects. This was supported by an F statistic of 11.160 and the reported  $p=0.001$  which was less than the conventional probability of 0.05 significance level.

Regression of coefficients shows that beneficiary factors and water project implementation are positively and significant related ( $r=0.138$ ,  $p<0.05$ ). These imply that a unit improvement in beneficiary factors improves water project implementation by 0.138 units.

#### **Influence of contractor factors on effective implementation of water projects:**

Regression analysis was performed by using the composites of the two variables. The data was input to the SPSS software. Contractor factors were found to be satisfactory variables on effective implementation of water projects. This is supported by coefficient of determination also known as the R square of 0.161. This means that contractor factors explain 16.1% of the variations in the dependent variable which is effective implementation of water projects in Kirinyaga County. This results further means that the model applied to link the relationship of the variables was satisfactory.

Analysis of the variance (ANOVA) results indicate that the model was statistically significant. Further, the results imply that the independent variable, contractor factors, is a good predictor of effective implementation of water projects. This was supported by an F statistic of 6.372 and the reported  $p=0.013$  which was less than the conventional probability of 0.05 significance level.

Regression of coefficients results shows that contractor factors and effective implementation of water projects are positively and significant related ( $r=0.221$ ,  $p<0.05$ ). This implies that a unit improvement in contractor factors improves water project implementation by 0.221 units.

#### **Influence of consultant factors on effective implementation of water projects:**

Regression analysis was performed by using the composites of the two variables. The data was input to the SPSS software. Consultant factors were found to be satisfactory variables on water project implementation. This is supported by coefficient of determination also known as the R square of 0.300. This means that consultant factors explain 30.0% of the variations in the dependent variable which is effective implementation of water projects in Kirinyaga County. This results further means that the model applied to link the relationship of the variables was satisfactory.

Analysis of the variance (ANOVA) results indicate that the model was statistically significant. Further, the results imply that the independent variables, consultant factors, are a good predictor of effective implementation of water projects. This was supported by an F statistic of 41.196 and the reported  $p=0.000$  which was less than the conventional probability of 0.05 significance level.

Regression of coefficients shows that consultant factors and effective implementation of water projects are positively and significant related ( $r=0.315$ ,  $p<0.05$ ). This implies that a unit improvement in contractor factors improves water project implementation by 0.315 units.

#### 4. CONCLUSIONS

Based on the findings of the study above it can be concluded that stakeholder policy factors, beneficiary factors, contractor factors and consultant factors influence performance of effective implementation of water projects in Kirinyaga County.

The study concludes that stakeholders' participation in identification of project activities can increase the efficiency, effectiveness, self-reliance, coverage and implementation of water projects. People's participation is important component in the implementation of projects. Beneficiary involvement should be from concept to delivery of the project. It helps them get better visibility of the development process and its problems, and a better idea about the progress being made

The study concluded that the success on implementation of water projects depends on the willingness of the beneficiary to participate in the projects from their initiation to completion stages. It also depends on the policies being followed by the various stakeholders involved in the implementation of water projects.

The study concluded that contractors' awareness and knowledge has an impact on effective implementation of water projects. Timely availability of materials and possession of the right equipment by the contractors also positively affected implementation of water projects. Training of the staff also enhances project delivery.

Lastly, the study concludes that consultancy factors in water projects implementation has some implications for project design, implementation, monitoring and evaluation. Timely decisions from a competent consultant were found to have a positive impact on effective implementation of water projects. Finally, advice from the consultant always led to implementation of quality projects at a lesser cost. Finally, project consultancy affects the nature of beneficiaries, the time at which beneficiaries should be involved in the project, the choice of project activities, the sequence of their implementation and the techniques used in the process of project implementation.

#### 5. RECOMMENDATIONS

##### **Stakeholder Policy Factors:**

The study recommends that the stakeholder policy factors influence involvement and the level of involvement by the project implementation during the project implementation. The views, concerns or recommendations of the project stakeholders should be incorporated into the project by the team. Quality policies and environmental policies should always be adhered to for effective project implementation.

##### **Beneficiary factors:**

Based on the findings and conclusions, the study recommends that the project managers ought to ensure commitment of project beneficiaries by creating an atmosphere of feeling like they are part of the family of the project implementation team. The central and county government should consider a bottom up and a full participatory approach when considering the type of projects to benefit specific areas. For effective water projects implementation, beneficiaries should also be involved in making decisions on the project duration and when there is a change in scope. This will ensure has total control in terms of project ownership and implementation.

##### **Contractors Factors:**

The study also recommends that the contractors should involve beneficiaries of the water projects, so that they can participate in project implementation, monitoring and evaluation. The contractors should employ employees with the right qualifications and the contractor should also have the right machinery during water projects implantation. In addition, effective implementation of water projects will be impossible to undertake without timely availability of materials and the contractor should ensure that the materials are availed on time.

##### **Consultancy Factors:**

Lastly, proper consultancy leads to better service delivery in projects. Timely consultation enhances project quality and thus the consultant should always ensure that he provides communication relevant to the project in good time. The study recommended that consultants should provide work plans, capacity building, monitoring and evaluation immediately before commencing on a project.



**Areas for Further Research:**

In this section, suggestions for further research in areas related to this study are given. In future, it is recommended that research be done to address the limitations of this study. This study considered only one county Kirinyaga County, future researchers could consider carrying out a similar study in different counties to assess any variation in responses. It would be interesting to explore how the results obtained when the methods applied in this study are applied in other contexts for example in other counties at higher or lower stages of development. It would be worthwhile establishing the extent to which the findings of this study are generalizable to other industries, sectors or settings.

Future researchers could also introduce different variables other than the one used and test for moderation or mediating effect of such variables on the relationship between beneficiary knowledge, awareness, capacity building, monitoring and evaluation. Studies using other additional variables, such as community culture, government regulation as moderators or mediators can be carried out to gain further insights into the relationship. This is because the independent variables explain 83.5% of the variations in the dependent variable.

**REFERENCES**

- [1] Abd El-Razek, M., Bassioni, H., & Mobarak, A. (2008). Causes of delay in building construction projects in Egypt. *Journal of Construction Engineering and Management*, 134(11), 831-841.
- [2] Ahmadi, A., & Golabchi, M. (2013). Complexity theory in construction project time management. *International Research Journal of Applied and Basic Sciences*, 6(5), 538-542.
- [3] Bartlett, J. E., Kotrlik, J. W., & Higgins, C. C. (2001). Organizational Research: Determining Appropriate Sample Size in Survey Research Appropriate Sample Size in Survey Research. *Information Technology, Learning and Performance Journal*, 19(1), 43-50.
- [4] Dadzie, J., Abdul-Aziz, A., & Kwame, A. (2012). Performance of consultants on government projects in Ghana: Beneficiary and contractor perspective. *International Journal of Business and Social Research*, 2(6), 256-267.
- [5] Fraenkel, J., & Wallen, N. (2008). *How to Design and Evaluate Research in Education* (7th ed.): McGraw-Hill International Edition.
- [6] Gupta, M. C., & Boyd, L. H. (2008). Theory of constraints: a theory for operations management. *International Journal of Operations & Production Management*, 28(10), 991-1012.
- [7] Hamid, S. A. R., Ghafoor, H. A., & Shah, T. Z. (2012). Work Environment and its Impact on Triple Constraint of Project Management. *Information Management and Business Review*, 4(10), 545.
- [8] Kaliba, C., Muya, M., & Mumba, K. (2009). Cost escalation and schedule delays in road construction projects in Zambia. *International Journal of project management*, 27(5), 522-531.
- [9] Kamau, G., & Muturi, M. Factors Affecting Successful Completion of Constituency Development Funded Projects in Kenya: A Case Of Nyandarua County. *International Journal of Economics, Commerce and Management*, 3(5), 499-516.
- [10] Kamotho, J. M. (2014). Factors Influencing Project Implementation in the Housing Construction Industry, Nairobi County. (MA Thesis), University of Nairobi.
- [11] Kothari, C. R. (2004). *Research Methodology: Methods and Techniques* (2nd ed.). New Delhi: New Age International.
- [12] Mbaluku, H. N., & Bwisa, H. (2013). Delay Factors in Construction Project Implementation in the Public Sector; A Case Study of the Kenya Agricultural Research Institute Construction Projects. Paper presented at the JKUAT-SHRD Research Conference, JKUAT, Kenya.
- [13] Mugenda, O. M., & Mugenda, A. G. (2003). *Research Methods: Quantitative and Qualitative Approaches*. Nairobi: ACT Press

- [14] Ndungu, R. W. (2014). Factors Influencing The Completion Time Of Water Projects In Water Service Boards In Kenya: A Case Of Athi Water Services Board, Kiambu County. (MA Thesis), University of Nairobi.
- [15] Ondari, P., & Gekara, J. (2013). Factors influencing successful completion of roads projects in Kenya. International Journal of Social Sciences and Entrepreneurship, 1(6), 26-48.
- [16] Sambasivan, M., & Soon, Y. W. (2007). Causes and effects of delays in Malaysian construction industry. International Journal of project management, 25(5), 517-526.
- [17] Van, L. T., Sang, N. M., & Viet, N. T. (2015). A Conceptual Model of Delay Factors affecting Government Construction Projects. ARPN Journal of Science and Technology, 5(2), 92-100.
- [18] Williams, T. (2005). Assessing and moving on from the dominant project management discourse in the light of project overruns. Engineering Management, IEEE Transactions on, 52(4), 497-508.