

DETERMINANTS OF COMPLETION OF WATER PROJECTS IN KENYA A CASE OF  
MINISTRY OF WATER AND IRRIGATION

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**ABSTRACT**

*The existing poor coverage of water supply has been mostly attributed to and/or aggravated by the lack of sustainability of the water supply systems. For instant, in many counties in Kenya Regional state alone , from the total number of 242 water supply schemes ,87(36%) are non functional by the year. Meanwhile, only a few of the water supply systems in rural areas in Kenya have currently attained their financial status needed to run the schemes effectively through the collection of service charges from community members. This, however, is in contrary to the claim of the current water policy of the country that requires communities to cover the operation and maintenance costs. The study examined the determinants of completion of water projects in Kenya. The study was guided by the following research objectives, which include; finding out to what extent organizational structure, stakeholder influence, project management skills and government policy contributes to completion of water projects in Kenya. The study adopted a descriptive survey and case study design. The study targeted 778 employees at ministry of water and irrigation Head Office a sample of 78 employees or 10% of the target population was considered. The study used questionnaires for data collection. The study employed both quantitative and qualitative analysis techniques. A regression model was used to analyze the objectives the collected data was processed using SPSS and presented using frequency tables, bar charts,*

*and pie charts. The study found out that Organizational Structure affect Completion of Water Projects in Ministry of Water and Irrigation as the respondents agreed that Project manager's authority; Resources availability; Control of project's budget and Project management staff affects Completion of Water Projects in Ministry of Water and Irrigation. From the findings it was also found that Stakeholders influence the Completion of Water Projects in Ministry of Water and Irrigation. Since most of respondents agreed to the statement that Participation; Awareness; Communication and coordination influence the Completion of Water Projects.*

**Key Words:** *Completion of Water Projects in Kenya*

## INTRODUCTION

The study sought to investigate determinants of completion of water projects in Kenya with reference to Ministry of Water and Irrigation. According to Mobey and Parker (2002), to increase the chances of a project succeeding it is necessary for the organization to have an understanding of what are the critical success factors, to systematically and quantitatively assess these critical success factors, anticipating possible effects, and then choose appropriate methods of dealing with them.

According to Amade, Ogbonna and Kaduru (2010) commitment of contracting firms, project staff's skills, collective responsibility among project stakeholders, project management tools and techniques, accuracy of project cost estimates, supplier commitment to project specifications, project financing, environmental factors, accuracy of designs, and accuracy of project schedules contributes to 55.2% of successful project implementation in Nigeria. India, Tabish and Jha (2011) argues that project management support, owners need thoroughly understood and defined, a high degree of trust shared by project participants, timely and valuable decision from top management, availability of resources as planned throughout the project, regular monitoring and feedback by project management ,thorough understanding of scope on the part of project manager and contractor, quality control and quality assurance activities, and adequate communications among all project participants are important factors for success of water construction projects.

Similar studies have been carried in Kenya with a wide range of success factors identified. Ondari, (2013) considers management support, design specifications, contractor's capacity and supervision capacity as influencers of completion of water projects in Kenya. In the same

way, Meroka (2011) contends that financial viability, management, market analysis and quality of project management to be success factors of industrial and commercial projects in Kenya. Mono, (2013) concludes that contractor's experience, contractor cash flow, site management, employer's ability to honour contractor's certificates on time, and adequacy of funding from external sources to be determinants of successful delivery of projects in the Ministry of water and irrigation.

Wanjiku (2012) contends that financial issues, human resources conditions, site characteristics and design quality aspects to be factors influencing performance of contractors of government funded projects. Wambugu (2012) identifies strategy, project term capacity, project communication, monitoring and evaluation, and client consultation as factors influencing success of projects. Moreover, Kabutu (2013) argues that Stakeholders influence, Organizational structure, training and competence, organizational resource, and funds management to be success factors for offshore software development and implementation projects in public organizations.

### **Statement of the problem**

In Kenya, both governmental and non-governmental development agents have been involved in order to enhance the coverage of water projects in different parts of the country. But, the coverage of the service in the country still lags behind and remains only less than 18 % (Kvale, 2007). Even this low figure is not reliable as it presupposes a situation in which schemes that had been constructed so far are 100% functional, a presupposition that doesn't reflect the reality on the ground (Sahle, 2002).

The existing poor coverage of water supply has been mostly attributed to and/or aggravated by the lack of sustainability of the water supply systems. In this regards, Sahele (Ibid, 2012) stated that in the country's Rural Water Supply (RWS), almost invariably from region to region sustainability of systems is the main constraint. For instant, in many counties in Kenya Regional state alone , from the total number of 242 water supply schemes ,87(36%) are non functional by the year 2002 (Inventory Report, 2002 ; and own calculation). Meanwhile, only a few of the water supply systems in rural areas in Kenya have currently attained their financial status needed to run the schemes effectively through the collection of service charges from community members (Sahle, 2002). This, however, is in contrary to the claim of the current water policy of the country that requires communities to cover the operation and maintenance costs (Water Policy 1999/2000).

Empirical Studies done on completion of water projects include (Odhiambo, 2003; Owegi, 2006; Eyaa, 2011). Others which centered on ministry of water and irrigation projects include (Juma, 2010; Wanja, 2012). However, none explains Successful completion of water projects according to (Eyaa, 2011; Juma, 2010; Odhiambo, 2003; RoK, 2011-2013) have failed to materialize. However, Owegi and Aligula (2006) say that negative impacts on completion of water projects reforms may be explained, in part, by weak implementation of the existing government policies, management skills, change management and organizational structure.

### **General objective**

The general objective of this study was to investigate the determinants of completion of water projects in Kenya a case of ministry of water and irrigation.

### **Specific objectives**

- i. To establish the effects of organizational structure on the completion of water projects in Kenya
- ii. To find out how stakeholders influence the completion of water projects in Kenya
- iii. To assess the effects of project management skills on the completion of water projects in Kenya
- iv. To determine the extent to which government policy affects the completion of water projects in Kenya

### **Justification of the study**

This research study will be of great importance to the government of Kenya as it will provide information on determinants of successful completion of water projects. Therefore the study will be of great importance to the policymakers in both the national government and county government as it will provide information that can be used to formulate sound economic policies.

In addition, the study will provide information that can be used as literature review by researchers on determinants of successful completion of water projects and highlight the issues that need to be addressed. The outcomes of this study will provide effective ways of mitigating the challenges faced by project managers in the completion of water projects.

Moreover, the findings of the research could be used to develop new models for implementing cost effective and collaborative ways in successful completion of water projects. The findings of the study will embolden government ministries to invest fully in the field of projects.

### **Scope of the study**

The study was undertaken at ministry of water and irrigation offices situated in Nairobi. The target population comprised of 778 employees which was divided into three categories of the organization namely, top management, middle management and the support staff. Sample size of approximate 78 respondents which is 10% of the population was selected using stratified random sampling technique. The study emphasized in gathering data that helped to determine completion of water projects in Kenya a case study of ministry of water and irrigation. The study specifically demonstrated how organizational structure, stakeholders influence, project management, and government policy determines completion of water projects in Kenya. The study was undertaken within a time frame of one month.

### **Limitation of the study**

The study is likely to be limited by lack of information coming from the Ministry of Water and Irrigation staff for fear of information confidentiality not being honored by the researcher. This limitation was mitigated by the use of an introductory letter to the Ministry of Water and Irrigation to seek permission to conduct this study.

The study to faced unwillingness by the respondents who were the top level management, departmental heads and supervisors in revealing information which is thought confidential. However, the researcher assured the respondents that the information was confidential and was to be used for academic purpose only.

## **LITERATURE REVIEW**

### **Theoretical Review**

A Theory is a set of statements or principles devised to explain a group of facts or phenomena especially one that has been repeatedly tested or is widely accepted and can be used to make predictions about natural phenomena (Popper, 1963).Theories are analytical

tools for understanding, explaining, and making predictions about a given subject matter (Hawking, 1996). A formal theory is syntactic in nature and is only meaningful when given a semantic component by applying it to some content (i.e. facts and relationships of the actual historical world as it is unfolding (Zima, 2007).

### **Resource –Based Theory**

Penrose is credited with establishing the foundations of resource-based view as a theory (Roos & Roos, 1997). Resource-based theory has been developed to understand how organizations achieve sustainable competitive advantages (Barney, 1986). The theory focuses on the idea of costly-to-copy attributes of the firm as sources of business returns and the means to achieve superior performance and competitive advantage (Conner, 1991; Hamel & Prahalad, 1996).

Barney, (1991) contends that a firm can be understood as a collection of physical capital resources, human capital resources and organizational resources. Resources that cannot be easily purchased, that require an extended learning process or a change in the corporate culture, are more likely to be unique to the enterprise and, therefore, more difficult to imitate by competitors (Barney, 1991). It is argued that performance differentials between firms depend on having a set of unique inputs and capabilities (Conner, 1991). According to resource-based theory, competitive advantage occurs only when there is a situation of resource heterogeneity and resource immobility (Barney, 1991). Heterogeneity refers to different resources across firms while resource immobility is the inability of competing firms to obtain resources from other firms.

### **Institutional Theory**

According to Oliveira and Martins (2011) institutional theory emphasizes that institutional environments are crucial in shaping organizational structure and actions. The theory stipulates that organizational decisions are not driven purely by rational goals of efficiency, but also by social and cultural factors and concerns for legitimacy. Institutions are transported by cultures, structures, and routines and operate at multiple levels. The theory claims that firms become more similar due to isomorphic pressures and pressures for legitimacy. This implies that firms in the same field tend to become homologous over time, as competitive and customer pressures motivate them to copy industry leaders. For example, rather than making a purely internally driven decision to adopt e-commerce, firms are likely to be induced to

adopt and use e-commerce by external isomorphic pressures from competitors, trading partners, customers, and government.

### **Katz's theory of managerial skills**

Management is a set of goal-directed, interrelated and interdependent activities, aimed at accomplishing organizational goals in an efficient and effective manner (Mantha & Shna, 2006). Robert Katz identified three types of management skills, technical, human and conceptual skills (Koontz & Weihrich, 1988). Technical skills incorporate the knowledge of and proficiency in activities involving methods, processes and procedures which involves working with tools and apply specific techniques in a task (Koontz & Weihrich, 1988). Human or interpersonal skills entail the ability to work with people and involve the creation of an environment in which people feel secure and free to relate while conceptual skills involve the ability to see the big picture and entails recognizing significant elements in a situation (Koontz & Weihrich, 1988).

### **Agency theory**

Agency theory argues that in the modern association, in which share ownership is widely held, managerial actions depart from those required to maximize shareholder returns (Berle and Means 1932; Pratt and Zeckhauser 1985). In agency theory terms, the owners are principals and the managers are agents and there is an agency loss which is the extent to which returns to the residual claimants, the owners, fall below what they would be if the principals, the owners, exercised direct control of the corporation (Jensen and Meckling 1976). Agency theory specifies mechanisms which reduce agency loss (Eisenhardt 1989). These include incentive schemes for managers which reward them financially for maximizing shareholder interests. Such schemes typically include plans whereby senior executives obtain shares, perhaps at a reduced price, thus aligning financial interests of executives with those of shareholders (Jensen and Meckling 1976).

### **Conceptual Framework**

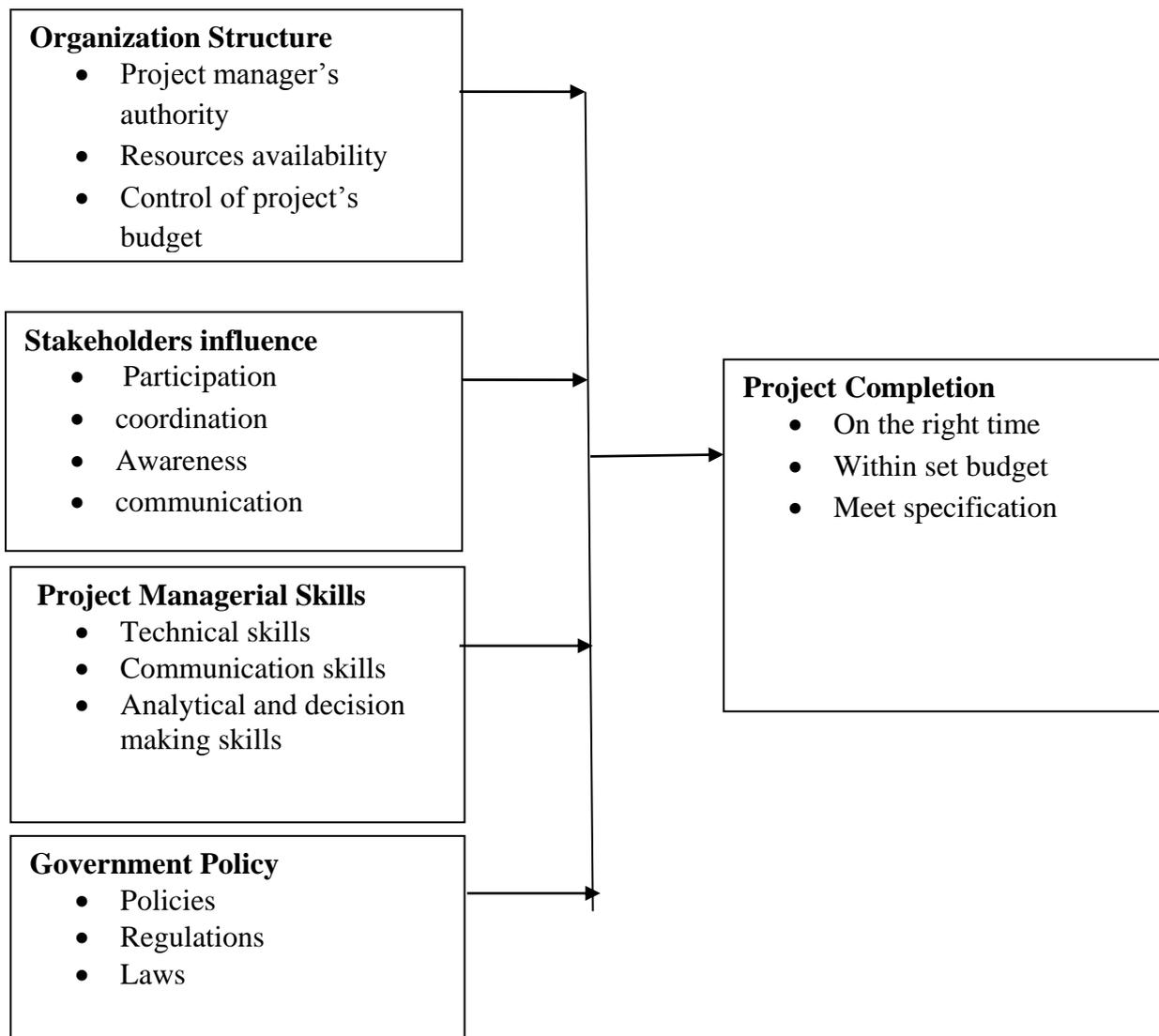
According to Jabareen (2008) a conceptual framework is a network of interlinked concepts that together provide a comprehensive understanding of a phenomenon or phenomena. The concepts that constitute a conceptual framework support one another, articulate their respective phenomena, and establish a framework-specific philosophy

Figure 2.1 shows the conceptual framework adopted by the research study. In the conceptual framework, the independent variables are; organizational resources, Stakeholders influence, project management skills and government policy. The dependent variable is the determinants of successful water projects.

**Figure 2.1: Conceptual Framework**

### Independent Variables

### Dependent variable



### Empirical review

#### Organization Structure

Luthaus, (2002) considers organizational structure as the ability of an organization to divide labour and assign roles and responsibilities to individuals or groups in the organization as well as the process by which the organization attempts to coordinate its labour and groups.

According to Pugh, (1990) an organizational structure consists of activities such as task allocation, coordination and supervision, which are directed towards the achievement of organizational aims. Organizational structure is the pattern or arrangement of jobs and groups of jobs within an organization. According to Schlesinger, (2005) this pattern pertains to both reporting and operational relationships, provided they have some degree of permanence. Jacobides, (2007) considers organizational structure as the viewing glass or perspective through which individuals see their organization and its environment.

PMI (2004) identifies functional, projectized, weak matrix, balanced matrix and strong matrix as typical organization structures. According to Nahodand Radujkovic, (2007) measure of organizational structure influence on projects include project manager's authority, resources availability, control of project's budget, role of project manager and project management administrative staff. In view of the evidence provided in the reviewed literature, the researcher hypothesizes that organizational structure is positively related to completion of water projects in Kenya.

### **Stakeholder Influence**

A project stakeholder is a person or group of people who have a vested interest in the success of a project and the environment within which the project operates (McElroy & Mills, 2000). The implication is that a stakeholder is any individual or group with the power to be a threat or a benefit (Gibson, 2000). The demands of the community exert pressure on organisations to develop new methods of working and communicating with stakeholders (Watson, Osborne-Brown, & Longhurst, 2002). A negative perception by stakeholders can hinder a construction project. Similarly, inadequate management of stakeholders' concerns can lead to conflicts that can hinder implementation of a construction project. To avoid this, project managers should try to acknowledge concerns of all stakeholders and in a dialogue seek to reconcile conflicting interests (Davy, 1987).

Stakeholders can be affected by a construction project in both positive and negative ways. The positive effects can be better roads, access to electricity or higher standards of living. The negative side of a construction project can be deterioration of the physical environment for the affected stakeholders (Olander, 2002). Different stakeholders have various demands.

### **Government Policies**

Government policy entails the general principles by which a government is guided in its management of public affairs, or the legislature in its measures. As applied to a law,

ordinance, or Rule of Law, the general purpose of government policy is directed to the welfare or prosperity of the state or community (RoK, 2013).

In particular Sub-Saharan African economies embrace the opportunity to implement government policies that reflected their changed economic structure with mixed results (OECD, 2004). A variant of the Dutz and Vagliasindi (2000) model, previously applied to measuring the implementation experience of competing government policies within transition economies, illustrates deficiencies within the country's economy under three separate categories (law enforcement, competition advocacy and institutional effectiveness) (Smith-Hillman, 2004). First and foremost, the higher taxes or the further borrowing that is required to finance growing government expenditures inhibit growth. These are expected to influence economic growth negatively, because they serve as disincentives for households to invest, take risks and find jobs.

Secondly, a large government sector increases potential profits from rent-seeking activities; this might lead to a movement of resources into more unproductive use (Fölster and Henrekson, 1997). Rent-seeking occurs when people try to obtain income by having government transfers to themselves rather than providing goods and services to others. Rent-seeking benefits the recipient but drains the economy as a whole and economic growth suffers.

### **Research Gaps**

The empirical studies indicates that research in the area of determinants of successful water projects has been done but not in a comprehensive approach. A few studies that have been done have focused on determinants of successful water projects in on other sectors of the economy rather than water and irrigation ministry. Ondari, (2013) carried a study on factors influencing successful completion of water and irrigation projects in Kenya. The study found management support, design specifications, contractor's capacity and supervision capacity as factors influencing success completion of water projects in Kenya. Road projects are different from water projects which are under the study.

Ubani (2012) evaluated the effects of organizational structures on the effective delivery of civil engineering projects in Nigeria. The study found caliber of supervisors/level of lean staffing, level of flexibility, level of authority/power and communication flow, level of accountability and quality oriented index were found to significantly influence EDCEP in the NDRN. Civil engineering project are different from power projects which are under the

study. Nahm et al (2003) did a study on the impact of organizational structure on time-based manufacturing and plant performance in USA. This study can be criticized that it focused on time based manufacturing and plant performance instead of water projects.

## **RESEARCH METHODOLOGY**

### **Research Design**

Orodho, (2003) defines a research design as the scheme, outline or plan that used to generate answers to research problems. According to Mugenda and Mugenda (2003), research design is the framework or blue print for the research. Research is a roadmap of how one goes about answering the research questions (Bryman & Bell, 2007).

The research study adopted a descriptive survey design. A descriptive study is concerned with finding out the what, where and how of a phenomenon (Donald & Pamela, 1998).Creswell, (2003) observes that descriptive research design was used when data is collected to describe persons, organizations, settings or phenomena. Descriptive research design is chosen because it enables the researcher to generalize the findings to a larger population. According to Mugenda and Mugenda (1999), the purpose of descriptive research is to determine and report the way things are and it helps in establishing the current status of the population.

### **Target Population**

Muijs, (2004) defines population as a group of people from which a sample can be drawn for the purposes of research. According to Mugenda and Mugenda, (2003) population is an entire group of individual or objects having common observable characteristic.

Data available from the Ministry of Water and Irrigation records reveals there are 778 employees at Ministry of Water and Irrigation. The target population was 778 employees which was divided into three categories of the organization namely, top management, middle management and the support staff.

**Table 3. 1: Target Population**

<b>Stratum</b>	<b>Target Population</b>	<b>Percentage</b>
Top management	18	2%
Middle Management	122	16%
Support staff	638	82%
<b>Total</b>	<b>778</b>	<b>100%</b>

**Source: Ministry of Water and Irrigation, 2014**

### **Sample and Sampling Technique**

A sample is a group of people representing the whole population. Stratified random sampling was applied in the study as it was based on different levels of position. It was a representative of a population taken to show what the results were like. The population was grouped into different categories called stratum on the basis of divisions (Mugenda & Mugenda, 1999) Kerlinger (1986) indicates that a sample size of 10% of the target population is large enough so long as it allows for reliable data analysis and allows testing for significance of differences between estimates. According to Patton (2002), the sample size depends on what one wants to know, the purpose of the inquiry, what is at stake, what is useful, what credibility and what can be done with available time and resources.

Therefore, a proportionate sample size of approximate 78 respondents which is 10% of the population was selected using stratified random sampling technique. Orodho (2003) states that stratified sampling are applicable if a population from which a sample is to be drawn does not constitute a homogenous group.

**Table 3. 2: Sample Size**

<b>Stratum</b>	<b>Target Population</b>	<b>Frequency</b>	<b>Percentage</b>
Top Management	18	2	10%
Middle Management	122	12	10%
Support Staff	638	64	10%
<b>Total</b>	<b>778</b>	<b>78</b>	<b>10%</b>

### Data Collection

According to Creswell (2002), data collection is a means by which information is obtained from the selected subjects of an investigation. The primary data was collected from employees of Ministry of Water and Irrigation, using questionnaires. According to Kothari (2004), questionnaires have low cost even when the universe is large and is widely spread geographically and it is free from the bias of the interviewer, answers are in respondents' own words.

### Pilot Test

According to Bordens and Abbott,(2008) Pilot study is as a small-scale version of the study used to establish procedures, materials and parameters to be used in the full study. According to Cooper and Schindler (2010), pilot test is conducted to detect weaknesses in design and instrumentation and to provide proxy data for selection of a probability sample. Pilot study is an activity that assists the researcher in determining if there are flaws, limitations, or other weaknesses within the interview design and allows him or her to make the necessary revisions prior to the implementation of the study (Kvale, 2007).A pilot study was undertaken on at least 10 respondents to test the reliability and validity of the questionnaire. The rule of thumb is that 1% of the sample should constitute the pilot test (Creswell, 2003).

## RESEARCH FINDINGS AND DISCUSSION

### Organizational Structure

The objective was to determine the Extent to Which Organizational Structure affect Completion of Water Projects in Ministry of Water and Irrigation. From the findings in table

4.3 respondents agreed to the statement that Project manager's authority; Resources availability; Control of project's budget and Project management staff affect Completion of Water Projects in Ministry of Water and Irrigation as indicated by a mean of 3.8, 3.6, 4.6 and 3.7 respectively. These echoed findings by Nahod and Radujkovic, (2007) who found that organizational structure factors which influence projects include project manager's authority, resources availability, control of project's budget, role of project manager and project management administrative staff. Therefore, it can be concluded that organizational structure is a key factor in Completion of Water Projects in Ministry of Water and Irrigation.

### **Stakeholders influence**

The study sought to determine the extent to which Stakeholders influence the Completion of Water Projects in Ministry of Water and Irrigation. From the findings respondents agreed to the statement that Participation; Awareness; Communication and coordination influence the Completion of Water Projects in Ministry of Water and Irrigation as indicated by a mean of 2.5, 3.9, 4.8 and 4.3 respectively. These finding are in line with Maina, (2013) who found out that Stakeholders' involvement is paramount in development projects. Even though, minor decisions and emergency situations are generally not appropriate for stakeholder participation, a complex situation with far-reaching impacts warrant stakeholder involvement and when done proactively, rather than in response to a problem, helps to avoid problems in the future. Therefore, it can be inferred that Stakeholders influence is a key in the Completion of Water Projects.

### **Project Managerial Skills**

The study sought to determine the extent to which Project Managerial Skills Influence the Completion of Water Projects with reference to ministry of water and irrigation. From the findings respondents agreed to the statement that Technical skills; that Communication skills; that Analytical and decision making skills and Negotiation skills Influence the Completion of Water Projects as indicated by a mean of 4.6, 3.9, 3.4 and 2.4 respectively. These finding are in line with Saleemi (2009) argues that, managers need to have Project Managerial Skills in order to ensure Completion of Projects in any field. Therefore, it can be inferred that Project Managerial Skills Influences the Completion of Water Projects.

### **Government Policy**

The study sought to determine the extent to which Government Policy Influence the Project Managerial Skills on Completion of Water Projects with reference to ministry of water and irrigation. From the findings, respondents agreed to the statement that General Project

Policies; that Regulations on development of water projects; that Set Laws on project development influence Completion of Water Projects with reference to ministry of water and irrigation as indicated by a mean of 3.8, 4.1 and 2.3 respectively. These finding are in line with A study by Mbugua (2000) indicated that there was a strong relationship between Government Policy and Project Managerial Skills on Completion of Projects where it was observed that the persons with higher Managerial Skills provided efficient services as compared to their counter parts with low levels of Managerial Skills. Therefore, it can be inferred that Government Policy is a key ingredient of Completion of Water Projects.

### Linear Regression Model.

The study further carried out regression analysis to establish the statistical significance relationship between the independent variables notably, (X<sub>1</sub>) Organizational Structure, (X<sub>2</sub>) Stakeholders influence, (X<sub>3</sub>) Project Managerial Skills and (X<sub>4</sub>) Government Policy and dependent variables (Y) Completion of Projects. According to Salkind (2003) regression analysis is a statistics process of estimating the relationship between variables. Regression analysis helps in generating equation that describes the statistics relationship between one or more predictor variables and the response variable. The regression analysis results were presented using regression model summary table, Analysis Of Variance (ANOVA) table and beta coefficients table. The model used for the regression analysis was expressed in the general form as given below:

$$Y = a + B_1 * X_1 + B_2 * X_2 + B_3 * X_3 + B_4 * X_4 + B_5 * X_5 + e$$

For this model, Completion of Water Projects was used as the dependent variable (Y) and independent variables included (X<sub>1</sub>) Organizational Structure, (X<sub>2</sub>) Stakeholders influence, (X<sub>3</sub>) Project Managerial Skills and (X<sub>4</sub>) Government Policy. The relationships between the dependent variable and independent variables, and the results of testing significance of the model were also respectively interpreted. In interpreting the results of multiple regression analysis, the three major elements considered were: the coefficient of multiple determinations, the standard error of estimate and the regression coefficients. R squared was used to check how well the model fitted the data. R squared is the proportion of variation in the dependent variable explained by the regression model. These elements and the results of multiple regression analysis were presented and interpreted accordingly in table 4. 7, table 4.8 and table 4.9

From the findings of the study it shows that the regression model coefficient of determination (R<sup>2</sup>) is 0.783 and R is 0.855 at 0.05 Significance level. This is an indication that the four independent variables notably Organizational Structure, Stakeholders influence, Project Managerial Skills and Government Policy were significant in contributing to Completion of Water Projects. The coefficient of determination indicates that 94.9% of the variation on Completion of Water Projects is determined by independent variables (X<sub>1</sub>) Organizational Structure, (X<sub>2</sub>) Stakeholders influence, (X<sub>3</sub>) Project Managerial Skills and (X<sub>4</sub>) Government Policy. This implies that there exists a strong positive relationship between independent variables and Completion of Water Projects. The remaining 6.1% of the variation on Completion of Water Projects can be explained by other variables not included in the model. This shows that the model has a good fit since the value is above 75%. This concurred with Graham (2002) that (R<sup>2</sup>) is always between 0 and 100%: 0% indicates that the model explains none of the variability of the response data around its mean and 100% indicates that the model explains all the variability of the response data around its mean. In general, the higher the (R<sup>2</sup>) the better the model fits the data.

#### Regression Model Summary

Model	R	R Square
1	.855	.783

Predictors: (Constant), X<sub>1</sub>, X<sub>2</sub>, X<sub>3</sub>, X<sub>4</sub>

The study further used one way Analysis of Variance (ANOVA) in order to test the significance of the overall regression model. Green & Salkind (2003) posits that one way Analysis of Variance helps in determining the significant relationship between the research variables. Table 4.7 hence shows the regression and residual (or error) sums of squares. The variance of the residuals (or errors) is the value of the mean square which is 2.234. The predictors X<sub>1</sub>, X<sub>2</sub>, X<sub>3</sub> and X<sub>4</sub> represent the independent variables notably; (X<sub>1</sub>) Organizational Structure, (X<sub>2</sub>) Stakeholders influence, (X<sub>3</sub>) Project Managerial Skills and (X<sub>4</sub>) Government Policy. as the major factors determining Completion of Water Projects.

Table 4.8 presents the results of ANOVA test which reveal that all the independent variables notably; have a significance influence on Completion of Water Projects. Since the P value is actual 0.00 which is less than 5% level of significance. Table 4.8 also indicates that the high

value of F (81.209) with significant level of 0.00 is large enough to conclude that all the independent variables significantly determine Completion of Water Projects.

## **SUMMARY, CONCLUSIONS AND RECOMMENDATIONS**

### **Summary**

The study found out that Organizational Structure had a positive influence on completion of water projects because P value = 0.002. These echoed findings by Nahod and Radujkovic, (2007) who found that organizational structure factors which influence projects include project manager's authority, resources availability, control of project's budget, role of project manager and project management administrative staff. Additionally the study found out that Stakeholders influence had a positive influence on completion of water projects because P value = 0.036. The study found out that Project Managerial Skills had a positive influence on completion of water projects because P value = 0.001.

### **CONCLUSIONS**

The study concludes that Organizational Structure, Stakeholders influence, Project Managerial Skills and Government Policy positively influenced completion of water projects at the ministry of water and irrigation. According to Nahodand Radujkovic, (2007) measure of organizational structure influence on projects include project manager's authority, resources availability, control of project's budget, role of project manager and project management administrative staff. In view of the evidence provided in the reviewed literature, the researcher hypothesizes that organizational structure is positively related to completion of water projects in Kenya

The study further concludes that a negative perception by stakeholders can hinder a construction project. Similarly, inadequate management of stakeholders' concerns can leads to conflicts that can hinder implementation of a construction project. To avoid this, project managers should try to acknowledge concerns of all stakeholders and in a dialogue seek to reconcile conflicting interests (Davy, 1987).

The most important factor was found to be Project Managerial Skills followed by Organizational Structure as pointed out by most of the respondents. This was because Skills can be observed by others, unlike attributes that are purely mental or are embedded in personality. Whereas people with different styles and personalities may apply the skills

differently, there are, nevertheless, a core set of observable attributes in effective skill performance that are common across a range of individual differences.

## **RECOMMENDATIONS**

Specifically, the study recommends that in order to increase success in completion of project, extra attention should be given to Organizational Structure, Stakeholders influence, Project Managerial Skills and Government Policy. Secondly collective responsibility among project stakeholders should generate accurate designs, cost and time estimates and commitments of clients to project financing obligations as they are the determinants of completion of projects. Thirdly information technology should be used well in order to improve the productivity of design, project management, general administration, and quality of documents and the speed of work. Finally good organizational structure should be developed in order to stand out in its contribution to better project performance.

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