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## Project Management Practices and Performance of Organizations within the Water Sector in Kenya

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### ABSTRACT

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*This project is on project management practices and performance of water projects of Othaya-Mukurweini Water Services Company Limited. The need to implement successful water projects calls for optimum practices. As a developing country, Kenya is faced with project management challenges. Whilst projects in general have their challenges regarding implementation and consequently success, water projects in particular are plagued by a unique set of problems and challenges. This knowledge will provide important information that can be integrated to project cycle before or towards completion by government, private and non-governmental organizations. Lessons drawn from this study will be utilized by the communities, implementing water projects to address the project performance challenges and plan the better ways of implementing the water projects. The objectives of this study included how planning, stakeholder involvement, monitoring & evaluation affect the performance of Othaya-Mukurweini Water and Sanitation Company Limited. Key theories put into perspective in this study were systems theory, stakeholder theory, agency theory and balance score card theory. The study adopted the descriptive research design to allow the researcher to study phenomena without manipulation of variables. The target population was the clientele and staff of OMWASCO. The findings of this study were generalized to all other water companies in Kenya. The target population was 351 comprising of customers and staff of OMWASCO. This study employed systematic sampling on the beneficiaries of the two projects, whereby 30% of customers and project staff on each project area were interviewed. Primary data was collected using questionnaires. In the course of primary data collection unwilling respondents were encountered especially with revealing information classified as confidential. They were however reassured of utmost confidentiality and relevant authorization documents attached to the questionnaires. Secondary data was obtained from relevant publications and literature review from libraries. Data was tabulated and analyzed for purpose of clarity, using SPSS software. The study concluded that project planning, stakeholders' involvement and monitoring & evaluation have a positive and significant effect on the performance of water projects of Othaya-Mukurweini Water Services Company Ltd. The study recommends that the organizations within the water sector in Kenya should implement their project planning by first defining the steps involved in project planning so that they can determine what and processes where cost reduction can be done, what can be done to reduce costs. The study recommends that for organizations within the water sector in Kenya to achieve their objectives, they should align the annual goals to their major change initiatives or quality programs and integrate them into the stakeholder involvement. The study further recommends that organizations within the water sector in Kenya should identify monitoring & evaluation ways that can help enhance performance of organizations within the water sector in Kenya.*

**Key Words:** Project Management, Project Planning, Stakeholder Involvement, Project Monitoring and Evaluation

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**1. Introduction**

Nokes (2014) describes a project as a set of coordinated activities with a specific start and finish time, pursuing a specific goal with constraints on time, scope and resources. According to Nkamelu (2013) a project can only be considered successful if it realizes the outputs and outcomes originally set for it, comes on budget and schedule, and it is bought-in and used by the intended beneficiaries. Projects have particular attributes that differentiate them from any other goings-on within an entity or organization. These, according to Edwin, Mitullah and Manga (2014), can be attributed to the fact that projects are by their nature progressively elaborate due to greater uncertainty and uniqueness. Further, planning and the subsequent execution of project activities happen many times in separate phases or steps and can thus not be entirely understood either before or at project start. Water projects have been patronized with occasional delays and disruptions causing time and cost overruns (Gekara, 2013). These delays and disruptions are sources of impending risks that current studies are looking into ways to manage such as technical, social, economic, legal, financial, resource, construction and commercial (Kikwasi, 2013). Water projects are known to be a time-consuming and material depleting industry, due to its complexity and volatility occasioned by varied needs, wants and preferences. No investor would invest in a project that seems to last forever, with indefinite cost or budget. There is thus a direct co-relation between time and cost of project. Projects are deemed thus because they have definite start and finish time, consume resources and meet certain criterion in satisfaction to the beneficiaries. In a project, contracts are based on price or cost and time period needed to finish a project (Muturi, 2011).

Globally, studies conducted by researchers indicate that most the implemented projects fail to achieve their mission within cost and time constraints. United Kingdom (UK) in 2010 statistics showed that 52% of projects had cost overruns in excess of 10% while 45% of projects had time overruns of over 25% (Soon, 2015). Same research indicated that similar studies carried out in India showed that 56% of projects had cost overruns in excess of 20% while 49% had time overruns in excess of between 1 and 160 months. Projects were instigated by kings and other leaders to undertake epic projects to build a name for themselves and their generations to come (Mbatha, 2012). Causes of delays have been identified in various parts of the world such as Malaysia, Saudi Arabia, Jordan, Kuwait, Hong Kong and Thailand (Njuguna, 2013, Soon, 2015; & Sittivijan, 2015). The results reveal that there are differences and similarities as to the causes of delays. Some of the causes mentioned included delays and disruptions as; design changes, delays in payment to contractors, information delays, funding problems, poor project management, compensation issues and disagreement. Love (2015) states that cost and time overruns in Australia in traditional and new procurement systems accounts for 13-19% of cost overruns and 10 to 69% of time overruns. New procurement systems give 11% and 13 to 25% respectively.

Baloi and Price (2013) stated that many contractors are unfamiliar with these risk factors and do not have the managerial experience and knowledge to manage them effectively and efficiently. There is need to be foresight of improving management knowledge of the links between risk perception, attitude towards risk objects and actual behavior (Njuguna, 2013). Consultants use management practices, skills, knowledge and experience with care to ensure clients' interests are protected (Franagan & Norman, 2014). Smith (2013) sites improved effective project management practices clarify project issues from start. The management decisions are supported through analysis, continuous monitoring and clearer understanding of specific risks associated with projects. Studies carried out in Tanzania, Uganda, Nigeria, South Africa and Mozambique on management practices have revealed that poor project management practices leads to delays and disruptions in construction projects and cost overruns (Kikwasi, 2012; Ayodele, 2013; Radujkovic, 2012; Baradyana, 2013 & Dlakwa, 2015). The major causes of delays and disruptions as revealed by the above scholars includes; design changes, delays in payment to contractors, information delays, funding problems, poor project management practices, compensation issues and disagreement on the valuation of work done. The studies recommended that adequate planning, timely information, finalization of design and project management skills should be the main focus of the parties in project procurement process (Baloi, 2009).

Locally, a number of studies have been done on water projects implementation. The Bura Irrigation and Settlement Scheme (BISS) a projects funded mainly by the World Bank and the European Development Bank. Bilateral finance in the form of grants and soft loans was also provided by the UK, Finland, Holland and Japan (Howells, 2013). BISS was a large project, projected to cost about US\$ 98.4 million in 1977. There were however major delays from the onset of the implementation of the scheme in practically all managerial areas as well as major revisions on scheme design. As a result, costs soared, rising to about US\$ 121.7 million at 2000 prices (Habte, 2015). According to government officials, a key reason for the failure of BISS was that it was scaled back, leading to limited exploitation of scale economies, increasing the operations and maintenance costs of the project. In addition to the severe financial problems, the project suffered from many conceptual, technical, and institutional deficiencies (Lewis, 2014). In the Tana Delta Irrigation Project (TDIP) the Japanese Government had committed one of the largest amounts of foreign aid resources in Kenya to the Tana Delta Irrigation Project I and related investments (US\$ 149.710 million) (Elimelech, 2013). However, after the project was completed in December 1997, the site sustained enormous damage in the same month from floods caused by the El Nino phenomenon. The El Nino phenomenon caused extraordinarily heavy rains, and the resulting flooding in the lower Tana caused flood protection banks that had been constructed by the Kenyan government and TARDA in 1989 to the east and west of the project site to collapse at various locations. Only about 30 percent of the project has been rehabilitated so far, according to the 2006/07 Medium Term Expenditure Framework. Lack of finances and possible financiers has limited the pace of the rehabilitation (Njuguna, 2013).

The Nyeri Water Supply System is the only project where the government and the donor objectives were satisfactorily achieved (Njuguna, 2013). In June 1996, the Nyeri Municipal Council put a request to the German Technical Cooperation Agency (GTZ) to support the privatization of Council's Water and Sewerage Department. The policy of GTZ since the 1980s has been to build local capacity before investment in water projects. It is only in 2003 that KfW agreed to fund the US\$10.5 million rehabilitation of the Nyeri town water system. This approach was a major success for, technical cooperation is one of the most stable components of foreign

aid (Ndungu, 2014). The success is also credited to strong management practices that were used in the implementation of this project. Most of the studies carried out show that poor management practices have been the major cause of cost and time overruns in projects implementation. The company is mandated to utilize and maintain the assets previously under the National Water Conservation and Pipeline Corporation (NWCPC) as Othaya Water Project and those previously under the Ministry of Water and Irrigation as Mukurwe-ini Water Project. The company operates the two schemes both of which were constructed in early 1980s by the Ministry of Water Development. The government through the Ministry of Water operated and ran both schemes. After formation of National Water Conservation and Pipeline Corporation in 1989, various water schemes within the country were taken over. Among the schemes taken was Othaya water scheme while the Mukurwe-ini scheme remained under the Ministry of Water. To ensure the integrity of the internal procedures the Board of Directors has established an Audit Committee which oversees financial reporting and the effectiveness of financial and regulatory compliance, controls and systems. The board has also established Technical and Finance & Administration committee that is mandated to oversee the implementation and review of the governance objectives as clearly stipulated in the company policies. The Board has identified internal and external stakeholders on which they agree in policy on how to relate to them especially relation to appointing the Directors and monitoring the performance of the company. The Board has ensured that proper management structures that maintain integrity, reputation and responsibility are in place. (Omwasco, 2019)

## **2. Statement of the Problem**

Projects performance is based on three pertinent pillars, that is, cost, time, specifications/scope and also satisfaction (Hutton & Bartram, 2014). This has to do with management practices and the environment within which projects delivery teams operate. Many water projects frequently fail to realize their objectives owing to either their organizational or managerial problems (Kwak, 2012): delays during project implementation, imperfect project design, uncoordinated implementation, delays between project identification and start-up, poor stakeholder management, poor communication structures, coordination and cost overruns failures (Dvir, Song and Nedovic-Budic, 2013; Ahsan and Gunawan, 2010). The need to implement successful water projects calls for optimum practices. Knowing the success, or outcome or performance of a water project has a great deal of relevance to knowing the optimum practices. Kenya, as a developing country, is faced with a myriad of project management challenges both technical and non-technical. Whilst projects in general have their challenges regarding implementation and consequently success, water projects in particular are plagued by a unique set of problems and challenges.

IEG (2015) rates 62% of water projects implementation in Africa as failed, attributing this to among other factors: uncoordinated poor project implementation approaches, poor political commitment, inadequate participatory monitoring and evaluation, poor resource planning, incompetent project personnel among others. Mbatha (2012) while looking at cost and time overruns in Government water projects found out the same problem as the other researchers and made proposals on how to mitigate or cushion such occurrences as stated above. The study attributed the causes to inadequate designs, lack of understanding of project scope and size, poor project management practices and inadequate cost estimates. Love (2015) also attributed causes of overruns to inadequate project formulation, poor planning implementation, lack of proper contract planning and implementation, lack of project management during execution,

manipulation by project champions and natural calamities and environment within which the project lies.

According to OMWASCO's strategic plan (2017 – 2022), Othaya-Mukurweini Water services Company Ltd.'s key strategic objective was to develop, improve and maintain access to sufficient and high quality water service through facilitating improvement, maintenance and expansion of infrastructure. To achieve this, the company was implement a series of projects in order to reach up to 80% of households within their jurisdiction planned period. One of the challenges OMWASCO has faced in the past include failure to complete projects within defined timelines and cost estimates set out initially. This has been identified this as a threat that needs to be addressed for them to achieved the objectives set out in the current strategic plan 2017 -2022.

### **3. Objectives of the Study**

The general objective of the study was to analyse the effect of project management practices on performance of organizations within the water sector in Kenya.

This study was guided by the following specific objectives;

- i. To analyse the effect of project planning on performance of water projects of Othaya-Mukurweini Water Services company Ltd.
- ii. To determine how stakeholder involvement affects performance of water projects of Othaya-Mukurweini Water Services company Ltd.
- iii. To find out the extent to which monitoring and evaluation affects performance of water projects of Othaya-Mukurweini Water Services Company Ltd.

### **4. Theoretical Review**

Theories are formulated to explain, predict and understand phenomena either to challenge or extend existing knowledge within the limits of critical bounding assumptions. Theoretical review introduces and describes the theory which attempts to explain the research under study.

#### **4.1 Systems Theory**

Ashby (1956) developed a logical basis for dealing with system transformation. He argues that parts can, in general be coupled in different ways to form a whole. Complex systems richly cross connected internally, have complex behaviours which can be goal-seeking in complex patterns. Von Bertalanffy (1962) defined systems theory as a working hypothesis, the main function of which is to provide a theoretical model for explaining, predicting and controlling phenomenon. Hartman (2010) also observes that all organizations consists of processing inputs and outputs with internal and external systems and subsystems which is helpful in providing a functional overview of any organization. Organizations need a functional system to manage their projects well. Kuhn (2013) states that systems need to be controlled as failure in one system leads to failure in other. Water funded projects need good governance systems in order to ensure there is transparency and accountability. This theory views an organization as a social system consisting of individuals who cooperate within a formal framework, drawing resources, people and finances to produce products. Good governance of water companies will ensure efficient and effective management of their projects and other resources for maximum possible outputs. This study will therefore seek to evaluate the role of governance in water projects which in most cases have huge capital outlay and any delays in the project implementation leads to huge losses.

#### **4.2 Stakeholder Theory**

Freeman (1984) originally laid out this theory. He is credited with popularizing the stakeholder concept. Community members are stakeholders in community projects therefore it is important to involve them in projects activities from the start. According to Donaldson & Preston (2013) every legitimate person or group participating in the activities of a firm or organization, do so to obtain benefits, and that the priority of the interest of all legitimate stakeholders is not self-evident. This theory pays equal credence to both internal and external stakeholders; employees, managers and owners as well as financiers, customers, suppliers, governments, community and special interest groups. Community participation enhances social cohesion as they recognize the value of working in partnership with each other and organizations. It also adds economic value both through the mobilization of voluntary contributions to deliver regeneration and through skills development, which enhances the opportunities for employment and an increase in community wealth, gives residents the opportunity to develop the skills and networks that are needed to address social exclusion. Water companies need to ensure the community members also participate in the decision making, their staff are trained on handling the community members and also the community members' interests are considered. This theory shows the importance of stakeholder's involvement especially in areas which the projects touches the community. From the findings the study will evaluate the effectiveness of this theory in relation to water projects in developing countries where community participation is a new thing.

#### **4.4 Agency Theory**

This theory originates from Donaldson and Davis (1991). Agency theory deals with the principal agent problem, in which the principal delegates an activity to an agent. Principals and agents are assumed to be self-interested, rational and risk averse (Eisenhardt, 2013). Agency theory deals with two problems. The first is the agency problem, in which the agent's goals do not always meet with the principal's, and it is difficult or expensive for the principal to verify or control the agent's behavior. The second problem is that of risk-sharing. Since both the agent and the principal are risk-averse, they may prefer different approaches towards risk-sharing. This results in increased agency costs for developing monitoring and enforcing contracts. These costs may be predicted by outcome uncertainty, span of control, and programmability. Agency costs may decrease over time as principals and agents develop better relations through repeated transactions (Gong, 2003). Agency theory has several areas of overlap with transaction cost economics. It includes the assumption of opportunistic behavior through the belief that the agent will not behave in the principal's best interests. It also includes the assumption of bounded rationality through the belief that it is not possible to write a complete contract (Eisenhardt, 1989). There is also content overlap between the agency theory constructs of outcome uncertainty, span of control and programmability, and the transaction cost construct of imperfect information. Imperfect information is the condition that it is difficult for the principal to assess the performance of the agent, and a complete contingent contract is not possible, leaving open risk of opportunistic behavior by the agent (Gong, 2003). This would include ability to assess that the desired outcome would occur, ability to monitor and control the agent's behavior and the ability to write a complete contingent contract. The agency theory will thus be evaluated on whether organisations are serious in carrying their projects for the benefit of the principals who in this case are the investors, the government and the community at large.

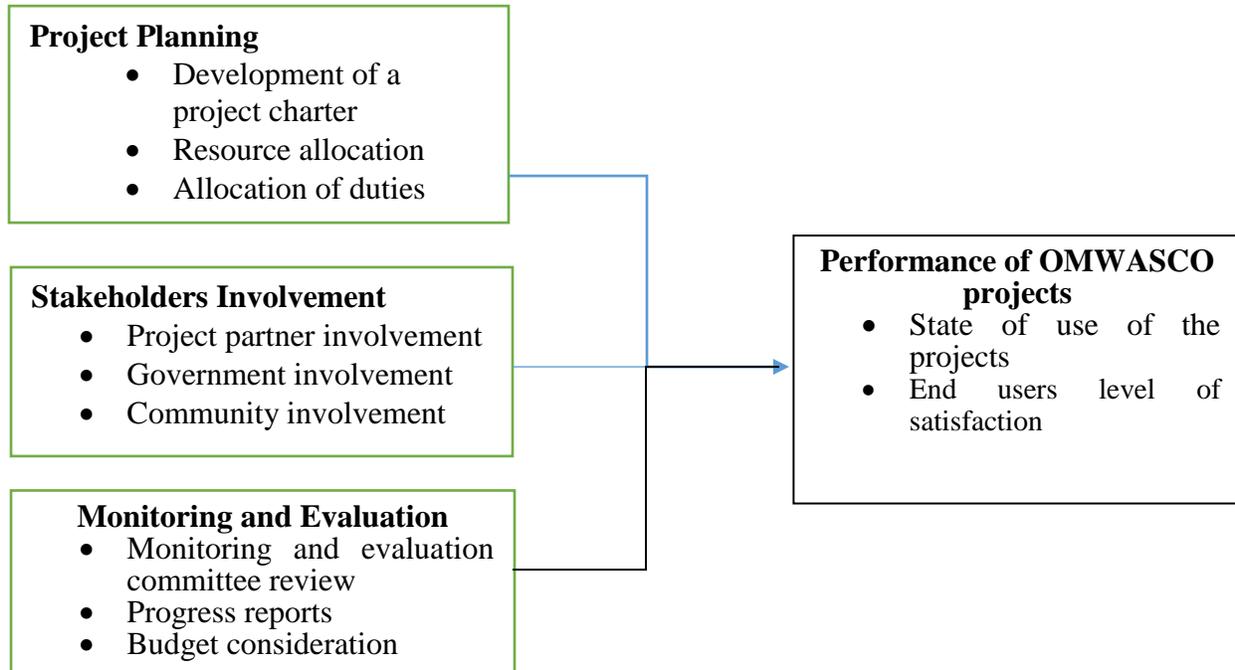
#### **5. Conceptual Framework**

This study conceptualized the relationship that exists between project management practices and performance of projects. The dependent variable was performance of water projects and the

independent variables were project planning, stakeholder involvement, monitoring and evaluation. Fundamental purpose of the research was to establish the relationship between the independent variables & the dependent variables.

### Independent Variables

### Dependent Variable



**Figure 1: Conceptual Framework**

**Source: Author (2020)**

## 6. Research Methodology

The research design that was adopted for this study was a descriptive research because it allowed the researcher to study phenomena without manipulation of variables as noted by Kombo & Tromp (2012). Borrowing from Mugenda and Mugenda (2011) descriptive research is a self-report study which requires the collection of quantifiable information from the top and middle level employees at Othaya OMWASCO. This study therefore was able to generalize the findings to all other water companies in Kenya. The population of the study included targeted consumers of the 2 water projects being implemented by OMWASCO. These are Thangathi Project-pipeline extension targeting 167 customers, extension pipe network Gichecheni–Karundu targeting 74 customers. The study covered 110 OMWASCO employees. This research employed systematic sampling each of the two projects and employees of OMWASCO. According to Mugenda and Mugenda (2013) when the study population is less than 10, 000, a sample size of between 10% and 30% is a good representation of the target population. Data was tabulated and analyzed for purpose of clarity, using SPSS version 21 software. It is a computer program used for statistical analysis and has the ability to handle statistical presentation with array of formulas for ease of interpretation. Descriptive statistics was used to analyse the collected data. Data was also be analysed using inferential statistics especially a regression model,  $Y= a+bx$ . Data was presented using tables, and pie charts to make them user friendly.

## 7. Data Analysis Results

Regression analysis was used to model, examine, and explore the relationships between the dependent variable (Performance of OMWASCO Projects) against the four independent variables (project planning, stakeholders' involvement and monitoring and evaluation) used for the study.

**Table 1: Results of multiple Regression**

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.909 <sup>a</sup>	.827	.753	.0730618

**Source: Research Data (2020)**

The three independent variables (project planning, stakeholders' involvement and monitoring and evaluation) that were studied, explain 82.7% of the performance of OMWASCO Projects as represented by the adjusted R square. This therefore means that other factors not studied in this research contribute 17.3% of the performance of water projects of Othaya-Mukurweini Water Services Company Ltd. Analysis of Variance (ANOVA) was used to determine the linear relationship among the variables under investigation. Using this method, the sum of squares, degrees of freedom (df), mean square, value of F(calculated) and its significance level was obtained. The results are shown in Table 2.

**Table 2: ANOVA**

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.211 <sup>a</sup>	.044	.023	.40435

The four independent variables (project planning, stakeholders' involvement and monitoring and evaluation) that were studied, explain 71.8% of the performance of County government of Mombasa as represented by the adjusted R square. This therefore means that other factors not studied in this research contribute 28.2% of the performance of OMWASCO Projects. The significance value is 0.001 which is less than 0.05 thus the model is statistically significant in predicting how the performance of water projects of Othaya-Mukurweini Water Services Company Ltd. The F calculated at 5% level of significance was 6.54. Since F calculated is greater than the F critical (p value = 2.562), this shows that the overall model was significant.

**Table 3: Coefficient of Determination**

Model	Unstandardized Coefficients		Standardized Coefficients	t	Sig.
	B	Std. Error	Beta		
1 (Constant)	0.542	.645		3.231	.001
Project planning	0.701	.082	0.135	4.421	.011

Model	Unstandardized Coefficients		Standardized Coefficients	t	Sig.
	B	Std. Error	Beta		
stakeholders' involvement	0.835	.214	0.051	3.715	.004
monitoring and evaluation	0.792	.234	0.001	6.687	0.02

a. Dependent Variable: ROA

The established regression equation by the study was  $Y = 0.542 + 0.701 X_1 + 0.835 X_2 + 0.792 X_3$  Where Y = Performance of OMWASCO projects, X1= Project planning, X2= Stakeholders' involvement, X3= Monitoring & Evaluation. From the above regression model, project planning, stakeholders' involvement and monitoring & evaluation, the performance of water projects of Othaya-Mukurweini Water Services Company Ltd would be 0.542. As shown in table 4.10 project planning, stakeholders' involvement and monitoring & evaluation had a positive and significant effect on the performance of water projects of Othaya-Mukurweini Water Services Company Ltd as indicated by beta values. The relationships ( $p < 0.05$ ) are all significant with project planning ( $t = 4.421, p < 0.05$ ), stakeholders' involvement ( $t = 3.715, p < 0.05$ ) and monitoring & evaluation ( $t = 6.687, p < 0.05$ ). Stakeholders' involvement was found to have a greater (83.5%) effect on the performance of water projects of Othaya-Mukurweini Water Services Company Ltd compared to Monitoring & Evaluation (79.2%) and project planning (70.1%). These study findings are consistent to (Kikwasi, 2012; Ayodele, 2013; Radujkovic, 2012; Baradyana, 2013 & Dlakwa, 2015) who found out that poor project management practices leads to delays and disruptions in construction projects and cost overruns. The major causes of delays and disruptions as revealed by the above scholars includes; design changes, delays in payment to contractors, information delays, funding problems, poor project management practices, compensation issues and disagreement on the valuation of work done. The studies recommended that adequate planning, timely information, finalization of design and project management skills should be the main focus of the parties in project procurement process (Baloi, 2009).

## 8. Conclusions

The study concludes that project planning has a positive and significant effect on the performance of water projects of Othaya-Mukurweini Water Services Company Ltd. Project planning enables the water projects of Othaya-Mukurweini Water Services Company Ltd to facilitate the achievement of the objectives of water projects. Furthermore it enables all the stakeholders in Othaya-Mukurweini Water Services Company Ltd be involved in the process of decision making and allocation of duties critical for successful completion of water projects. The study concludes that stakeholders' involvement has a positive and significant effect on the performance of water projects of Othaya-Mukurweini Water Services Company Ltd. Stakeholders' involvement is the key to ensuring quality and timely completion of projects. Stakeholders' involvement leads to undertaking of projects that respond to the users of the services' needs thereby embracing project quality and efficiency. Furthermore, engagement of stakeholders promotes their satisfaction, ownership and sustainability of a project. The study

concludes that monitoring and evaluation has a positive and significant effect on the performance of water projects of the Othaya-Mukurweini Water Services Company Ltd. Othaya-Mukurweini Water Services Company places more emphasis on monitoring & innovation in order to enhance the performance of SMEs in the County. The study found that assessing and tracking projects progress is always undertaken and brings the best in project efficiency and helps make activities more efficient, maximizing operational performance, reducing expenses and also eliminate unnecessary costs. It allows feedback to be provided to stakeholders.

## 9. Recommendations

The study recommends that the organizations within the water sector in Kenya should implement their project planning by first defining the steps involved in project planning so that they can determine what and processes where cost reduction can be done, what can be done to reduce costs. The study recommends that for organizations within the water sector in Kenya to achieve its objectives. They should align the annual goals to their major change initiatives or quality programs and integrate them into the stakeholder involvement. This will ensure that stakeholder involvement becomes part of the plan and sustainable. The stakeholder involvement should focus by embracing stakeholder involvement that enhances performance of organizations within the water sector in Kenya. The study recommends that organizations within the water sector in Kenya should focus on customer wants and expectations, provide stakeholders-centered services at the right time and focus on building constructive relationship with service users. The study recommends that organizations within the water sector in Kenya should identify monitoring & evaluation ways that can help enhance performance of organizations within the water sector in Kenya, drive the integration the processes and work towards further cost reduction in the project processes in order to enhance performance of organizations within the water sector further.

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