

Resource Planning and Performance of Water and Sanitation Projects in Tharaka Nithi County, Kenya

Kiruja, Annie Rodah Nyawira¹, Dr. Nyawira Mary Mwenda²

¹MA Project Planning and Management, University of Nairobi, Kenya

²Lecturer, Faculty of Business and Management Sciences, University of Nairobi, Kenya

Abstract: Water is a vital resource and considered as one of the resources that sustains life. There have been numerous challenges associated with water supply and sanitation including waterborne diseases and diarrhea. Most of the poorly designed water and sanitation systems in the underdeveloped countries are one of the major issues that contribute largely to the problem. The research, using its main objective planning for project resources, determined how planning for project resources influences performance of water and sanitation projects in Tharaka Nithi County. The study was hinged on two theories; the Stakeholder Theory and the Theory of Constraints. The study embraced a descriptive survey research design with a target population of 22,401. A sample size of 390 was drawn from the target population of 22401 urban residents using the Krejcie and Morgan formula and further adopting a simple random sampling for the urban residents. The instruments were pilot-tested using 39 questionnaires that were administered to water resource users' associations and residents in Embu County (neighboring county) who have similar characteristics as the study area. The study interviewed all the key informants within Chuka, Tharaka-Nithi County in search for deeper information regarding the study. The study used semi-structured questionnaires and interview guides, close-ended questions generated quantitative data while open-ended questions and interview guides generated qualitative data. The results were analyzed and presented in terms of mean, percentages, frequencies and standard deviation while inferential statistics employed the use of Pearson Correlation to show the strength and direction of the association amongst the predictor variable and the response variable. Simple linear regression was run on the quantitative data in testing for the strength of the association amongst the independents variables and the dependent variable. It was established that planning for project resources with $r=0.808$, $r^2=0.653$, $\beta=0.808$, $t=9.487$ and the $F(1, 333) = 153.000$ at $p=0.000 < 0.05$, had a strong positive significant influence on performance of water and sanitation projects. The study recommended that that planning for project resources is an important factor in performance of projects and is crucial that other areas of planning in project management given equal consideration during the implementation and management to ascertain performance of water and sanitation projects. Adequate personnel on project plans, financial and material resources should be factored in undertaking any water and sanitation

Key Words: County funded projects, Performance of water and sanitation projects, Project resource

I. INTRODUCTION

According to (UNICEF, 2004) there is an estimation of about 1.1 billion people having difficulty in accessing improved water supply and around 2.6 billion people in scarce of adequate sanitation. United Nations (UN) 6th sustainable development goal is ensuring safe water access and enhanced sanitation. World Health Organization (2016) in reference to the 6th sustainable development goal of the UN, shows that an estimate of 4.5 billion people had a problem in accessing safely managed sanitation services while around 2.3 billion people lacked even the least bit of basic sanitation. Additionally, World Health Organization notes that around 2 billion people face water stress globally and around 70% of the world natural wetlands has been lost with around 80% of the countries in the world relying on integrated water resources management.

According to (Nique, 2014) one of the regions with the lowest levels of water coverage is sub-Saharan Africa. Water and sanitation in urban areas in Sub-Saharan Africa in general, has been inadequate, closely it can be linked to the growing urban population that has outgrown the infrastructure already set up. Many designs of water and sanitation projects are made with an assumption to provide a continuous supply. In developing countries however, the supply ends up being discontinuous. This kind of supply therefore has brought more issues of water and sanitation such as; severe losses of supply pressure and inequalities in distribution of water which is major (Mohan, 2007). Mostly the systems are poorly designed or have a low maintenance structure which equates it to poor quality. In many of the developing nations, most of the waste water in urban areas is directly disposed to open environment.

With a population close to 50 million, 40% rely on unimproved water sources in Kenya while about 70% of this population lack access to basic sanitation solutions (Parmet, 2020). Kenya Environmental Sanitation and Hygiene Strategic Framework noted that the methodology of solving sanitation issues will have to change with the coming in of the devolved governance system so as to accelerate progress in this sector. This therefore brought in several challenges in the need of seeking for a reform (Maina, 2019). For the reason stated above, the sector revised its policy and planning framework. Water Act 2016 was instituted and has been in line with the Kenyan constitution. At the national level, two ministries take up the responsibility of water and sanitation (Kimathi, 2017).

Ministry of Health and Ministry of Water and Sanitation are the two ministries involved. With such ministries, there is expectation that the responsibilities are clear to each, however, Water Sector Strategic Plan 2018 report notes that the roles are not clear to any of these ministries. Such unclear responsibilities to ministries show how much these institutions have an unclear communication plan which can translate to inadequate access to water as well as improper sanitation. A recent example in Kenya 2020, was an outbreak of water related infection- Kala azar that spread in Marsabit and Kitui Counties (Lomurukai, 2020).

Nithi Water and Sanitation Company (NIWASCO) in Tharaka-Nithi County was formed in 2006, and their statistics and records, show that the company has been looking into water and sanitation issues in the county. In an effort to provide adequate sanitation services in urban regions of that county as well as access to clean water by people living in urban areas, they have partnered with Water Sector Trust Fund. They have by far completed around 500 water based toilets to the septic tank and around 5000 people gained access to dignified household sanitation (Fredrick, 2020). NIWASCO further notes that it has had a milestone in construction of Decentralized Treatment Facility (DTF) which was not there before.

Statement of the Problem

One of the basic human right is accessibility to uncontaminated water, proper hygiene and acceptable sanitation (Hutton, 2012). Over years, the development of water and sanitation projects in Kenya has been done through different management models. Water Act 2016 section 72 (1) mandates providing water and sanitation facilities hence any board in the counties is tasked with the responsibility of developing regulatory tools that guide the different management models in water projects which include the design of putting up the plan and design of the said projects.

A study by (Mbeyu, 2016) on evaluation of determinants of implementation of water and Sanitations Projects in Kenya by focusing on the informal settlement within Mombasa County in Kenya, revealed that factors like political goodwill, community training/involvement/participation, infrastructure, security, skewed nepotism were some of the challenges. A similar study by (Njuguna, 2014) on an examination of factors that influence donor funded sustainability projects in Laikipia County, found out that project planning, monitoring and evaluation, human and capital resources had a major impact on projects that were donor funded. It is evident that in Kenya water supply and sanitation has a number of factors influencing their success from the studies. In Tharaka Nithi County, it is evident that limited studies on water and sanitation have been conducted.

Tharaka Nithi County Integrated Development Plan has incorporated over 30 different projects on water and sanitation in the county. Among these, there are a few in town centers of this county specifically being Chuka and Chogoria towns of

the county. The county further tasks NIWASCO- which is a licensed water service provider company- with providing the services and activities related to water sector with inclusivity of sanitation matters. In January 2020, a recent study by (Fredrick, 2020) on water quality assessment in Tharaka Nithi County highlighted that the County government has inadequate waste management disposal systems and policies as well as inadequate supply of water to the community that poses risks of discharge of effluents or any industrial-based wastes. In addition, there is still numerous problems associated with water projects such as water related infections and high mortality rates that are being realized. With all such problems, the study sought to find out if performance of the various water projects is linked to the planning of these projects. This study further intended to understand what might have been based on the project planning of water projects that could have caused the performance of such projects to be ineffective.

Objective of the Study

The objective of the research was to establish how planning for project resources influences performance of water and sanitation projects in Tharaka Nithi County.

Research Hypothesis

The following Null hypothesis was tested:

H₀: Planning for project resources has no significant influence on performance of water and sanitation projects.

II. LITERATURE REVIEW

Planning for Project Resources

Through the planning of a project there is the resource planning phase which creates a resource plan. The resource plan created therefore gives the outline of the resources that will be used during the project, in this case water and sanitation projects. A well-drawn resource plan summarizes the exact usage of finances, labor, equipment and materials needed to complete a certain project. (Odhiambo, 2010) argues that, planning for resources is essential for sustainability of a project both in a rural and an urban setting. The biggest challenge in resources of any project is insufficient of financial resources which mostly leads to either poor performance of a project, poor maintenance of a project or project failure in general according to the documented literature. What is significant across all instances is that activities such planning and analysis are thorough, systematic and open and are carried out in complete and constant coordination with planners, decision-makers, and the interested and impacted people in the region (Watkins, 2013). To optimized use of water resources, there is a crucial need in involving managerial and financial experts so as they can define budgets as well as find solution to budget limitations and improve utilization of water. The timing of application, size and allocation of investment funds should be changed, all expenses should be included and sources of recurring revenue

should be diversified and increased (Mehta, Meera, Andreas, 2004). In developing countries particularly there is need for organization of communities to participate in water and sanitation projects from the construction stages, operation to maintenance stages, so as to harvest maximum profits from the facilities while ensuring that all needs and costs are catered for. (Kahariri, 2014) conducted an examination on “Determinants of Successful Implementation of Water and Sanitation Projects in Kenya; a Case of Huruma estate, Nairobi County”. The study concluded that specific areas with broad investment found in the study would increase due to sustainability of projects.

In Tharaka Nithi County, their NIWASCO report, for water supply; there is indication that since 2003/04, financial allocations have increased six times while partners involved in development contributions has multiplied from 2006/07. Projections of capital expenditure needed and planned indicate that urban water supply has adequate water infrastructure funding though that additional funding criteria for urgent water supply systems and bulk transfers ought to be considered. In the last few years, there has been a notable change in resource allocation of water and sanitation subsectors in response to urban services deteriorating through 1980s and '90s (Jacobsen, 2012). A major revision and reform of the position of the institutions is still under way, and must be brought into line with Kenya's 2010 Constitution. Comparison between water supply and sanitation, sanitation sector has gained emphasis in the new policy that was published in Kenya. The challenge in Kenya is to fully implement the reforms on supporting aspects, including policies and investment plans, clarify more roles and responsibilities while dramatically expanding resources and systems to establish new on-the-ground services.

Theoretical Framework

In the 1980, Eliyahu developed the Theory of Constraints'. This theory opines that organization projects are met by a number of performance tests emanating from poor management practices and lack of proper mechanisms for intervention. It is noted that all system operates in a context of cause and effect. The theorist recommended that project managers should examine the specified budget in order to mitigate the challenges and limitations of project performance. The relationship between cause and effect can be very complicated, particularly in complex processes such as those of utilities like urban water and sanitation projects.

The ability to capture the dynamics of cause and effect within an entity's system, as well as recognize variables that reflect these relations, is critical to the effective completion of water and sanitation projects in urban areas. According to (Corder, McLellan &Green 2012), through concentrating on solving the key issue and in the case of water projects; by conducting scientific feasibility studies to determine whether the proposal is sustainable, by supporting the development of other project documents including such problem statements and project

execution, and by helping in the creation of other project documents including such problem statements and project implementation; The requirements and design of a project are normal and comprehensive and they provide a summary of the layout, dimensions, projects funds availability guaranteeing constant cash flow of funds, guidelines for implementation of contract management, improvement of project results and guaranteeing projects completion and outcomes. This theory relates to the variable on planning for resources. In the World Bank report in 2010, it was found that people do not have adequate services because systems failed, mostly because inadequate resources are invested to adequately build and sustain them, and also because of the burden on the water infrastructure of the rapidly increasing population.

III. METHODOLOGY

The researcher embraced the use of descriptive research design. This was because the study intended to obtain in depth data on specific variable chosen and its relationship to the performance of urban water and sanitation projects. A descriptive survey design is a method that establishes range and social characteristics and helps discover how these characteristics are related to certain behavior patterns and attitudes (Ryan, 2009). The study focused on target population of 22,388 people of urban residents in Chuka Tharaka Nithi county, drawing a sample size of 390 people using Krejcie and Morgan (1970) formula as follows;

$$S = \frac{X^2NP(1-P)}{d^2(N-1) + X^2P(1-P)}$$

s= Required sample size

X²= the table value of chi-square for 1 degree of freedom at desired confidence level (3.841)

N=Total population size

P= Proportion of Population (Taken as 0.50 because it would be enough to give the maximum sample size)

d=Degree of accuracy represented by proportion (0.05)

Hence the sample size is:

$$s = \frac{3.841 * 22388 * 0.5 * (1-0.5)}{0.05^2 * (22388-1) + 3.841 * 0.5 * (1-0.5)} = 377 \text{ respondents.}$$

All key informants were interviewed.

TABLE 1: SAMPLE SIZE

| Category | Target population | Sample Size |
|--|-------------------|-------------|
| County water Director | 1 | 1 |
| NIWASCO | 1 | 1 |
| Business community (urban residents)- in Chuka | 22388 | 377 |
| WRUAs representatives | 9 | 9 |
| Planning officer | 1 | 1 |
| Public health officer | 1 | 1 |
| Total | 22401 | 390 |

The study adopted simple random sampling to the business community. Further, the study interviewed all the key informants within Chuka, Tharaka-Nithi County in search for deeper information regarding the study. The study used semi-structured questionnaires and interview guides. Close-ended questions generated quantitative data while open-ended questions and interview guides generated qualitative data.

According to (Johanson ,2009), sample of pilot studies should at least be composed of 10% of the actual samples. Since the study covered 390 samples for Chuka Town, 39 of the pre-test questionnaires were used as samples in the pilot study and took place in projects undertaken in neighboring county that is Embu County. The responses obtained from the piloting exercise helped in refining the questionnaires and interview guides. Participants in piloting exercises were not involved in the main study. Data collection instrument validity and reliability were tested. Validity denotes the extent that an instrument measures what it was intended to and does it as per the planned way (Heale, 2015). Accuracy and precision depend on validity.

To test both content validity and construct validity, the pre-testing was undertaken before actual data collection. Construct validity related to addressing the vagueness and clarity of questions in the questionnaire.

Content Validity on the other hand denotes the correctness and usefulness of the inferences (Mugenda and Mugenda, 2003). Reliability of instrument was measured using Cronbach's Alpha range test. The values of Cronbach's alpha range from 0 to 1. The higher the values of Cronbach's alpha the more reliable the research instrument. However, while Cronbach's alpha values of 0.7 and higher were considered reliable whereas values below 0.7 were considered unreliable. To counter ethical practices, the researcher embarked on collecting data required for the research upon approval by the extra mural department in the University of Nairobi as well as a permit from NACOSTI. The researcher was also permitted by the department of water and sanitation services authority in Tharaka-Nithi County to undertake the data collection. Data gathering procedure entailed booking appointments with senior officials in Chuka, Tharaka-Nithi County. Appointments were booked prior to the interviews and quantitative data collection using questionnaires adopted the drop and pick method. The questionnaires dropped were collected after three weeks for coding and analysis. The analysis entailed using SPSS. Descriptive statistics was applied in analyzing data in terms of mean, percentages, frequencies and standard deviation while inferential statistics employed the use of Pearson Correlation to show the strength and direction of the association amongst the predictor variables and the response variable. Themes by grouping similar responses were analyzed through content analysis. The relationship between planning for project resources and performance of water and sanitation projects was analyzed using linear regression which was tested using the following model;

$$y = \alpha + \beta_1 X_1 + e$$

Where;

y = performance of water and sanitation projects;

α = constant,

β_2 = beta coefficient,

X_2 = Planning for project resources and

e = error term

IV. FINDINGS AND DISCUSSIONS

The sample size drawn from the target population was 390 who were issued with questionnaires. 334 questionnaires were duly filled correctly and returned. The questionnaire return rate achieved was 85.6% which is sufficient as opined by (Mugenda and Mugenda, 2003) who recommend that for social sciences, a return rate of 70% and higher of the study is appropriate for data analysis to proceed.

Performance of Water and Sanitation Projects

The dependent variable was performance of water and sanitation projects. The researcher sought to obtain responses on the dependent variable. The respondents were required to give their feedback on the statements provided which were derived by the researcher and approved by an expert panel as shown in table 2. To measure the response variable, the study employed the use of a 5 point Likert scale where 1=Strongly Disagree (SD), 2=Disagree (D), 3=Neutral (N), 4= Agree (A) and 5=Strongly Agree (SA). Table 2 exhibits the outcomes.

Table 2: Performance of Water and Sanitation Projects

| Statements | n | Mean | SDV |
|---|-----|-------------|--------------|
| 1. The estimated time in the plan is always the actual delivery time of the project | 334 | 3.98 | 0.627 |
| 2. There is timely service delivery in water and sanitation projects | 334 | 3.97 | 0.557 |
| 3. Water and sanitation treatment plans are sufficiently provided. | 334 | 4.06 | 0.667 |
| 4. Financial support for water and sanitation projects is available on time | 334 | 4.05 | 0.652 |
| 5. Water and sanitation projects are completed within set budgets and schedules | 334 | 3.91 | 0.718 |
| 6. The quality indicated on the plan is actually delivered at the end of the project and stakeholders are satisfied | 334 | 3.93 | 0.541 |
| 7. Water and sanitation resources are used effectively and efficiently | 334 | 3.98 | 0.588 |
| Composite Mean | | 3.96 | 0.547 |

The researcher computed a composite mean and standard deviation for comparison with the mean line item of each statement developed from the indicators of the response variable. Where the line item mean was found to be lower than the composite mean, the statement contributed negatively to the outcome of the variable and where the line item standard deviation compared to the composite standard deviation was found to be lower, there was an indication of divergent views on the statement.

Statement number one, estimated time in the plan is always the actual delivery time of the project, the results obtained were as follows; of the 334 respondents, 198(59.3%) indicated strong agreement, 92(27.5%) were in agreement, 18(5.4%) were neutral, 17(5.1%) were in disagreement whereas 9(2.7%) of the respondents strongly disagreed. The mean score obtained was 3.98 and standard deviation 0.517 which were both higher than the composite mean and standard deviation. The results show that majority agreed with statement being represented by 86.8%.

The study obtained responses on statement number 2, on whether there is always timely service delivery in water and sanitation projects. The results indicate that out of 334 respondents, 190 (56.9%) strongly agreed, 95 (28.4%) agreed, 22(6.6%) were neutral, 15(4.5%) disagreed and 14(4.2%) strongly disagreed with a mean and a standard deviation of 3.97 and 0.547 respectively. The statement when compared to the composite mean 3.96, implies that there were convergent views on timely service provision of water and sanitation projects. The statement has a positive contribution on the variable since the statement mean is greater than the composite mean and as supported by 85.3% of the respondents who agreed.

Statement number three, that water and sanitation plans are sufficiently provided, the findings obtained were; out of 334 respondents, 196(58.7%) strongly agreed, 99(29.6%) agreed, 22(2.7%) were neutral, 9(2.7%) disagreed and 8(2.4%) strongly disagreed with a mean and a standard deviation of 4.06 and 0.667 respectively. The mean score of the line item was 4.06 greater than the composite mean which meant that water and sanitation plans are sufficiently provided positively contributes to the variable which as compared to the composite mean 3.96 is greater than the composite mean.

The findings on the fourth line item statement revealed that financial support for water and sanitation projects is availed on time. The line item mean indicated 4.05 with standard deviation of 0.652. The findings however show that majority of the respondents (87.4%) agreed on the statement. The results indicate that of 334 respondents, 195(58.4%) strongly agreed, 97(29.0%) agreed, 21(6.3%) were neutral, 14(4.2%) disagreed and 7(2.1%) strongly disagreed with a mean and a standard deviation of 3.96 and 0.547 correspondingly. This implies that most of the respondents were in agreement that the statement was important in influencing performance of water and sanitation projects.

The findings obtained from the fifth statement sought to find out if water and sanitation projects are completed within set budgets and schedules. The findings were as follows; out of 334 respondents, 189(56.6%) strongly agreed, 85(24.5%) agreed, 25(7.5%) were neutral, 15(4.5%) disagreed and 20(5.9%) strongly disagreed with a mean and a standard deviation of 3.91 and 0.518 respectively. The findings indicate that these projects are very vital to the respondents albeit there

were different views as per the disparity between the composite mean and the line item mean.

The findings obtained from the sixth statement on whether the quality indicated on the plan is actually delivered at the end of the project and stakeholders are satisfied. The results obtained were as follows; 191(57.2%) strongly agreed, 89(26.6%) agreed, 28(8.4%) were neutral, 26(7.8%) disagreed. The mean and a standard deviation of the line item were 3.93 and 0.541 respectively. The composite mean and standard deviation ($M=3.94$, $SD=0.547$) were higher than the line item implying that there were divergent views pertaining the line item statement and the contribution to the variable. The findings indicate that the statement has a negative contribution on the variable.

The last statement gathered data on the effectiveness and efficiency of water and sanitation resources. The results were as follows; 186(55.7%) strongly agreed, 109(32.6%) agreed, 16(4.8%) were neutral, 15(4.5%) disagreed and those who strongly disagreed 8(1.8%) with a mean and standard deviation of 3.98 and 0.568 respectively. This implies that the statement contributes positively to the variable being supported by 84.2% of the respondents.

Planning for Project Resources

The study sought to establish how planning for project resources influences performance of water and sanitation projects in Tharaka-Nithi County using descriptive statistics. To achieve this, a Likert scale of 1 – 5 was applied and the respondents implored to show their degree of agreement with the statements. The statements were derived by the researcher guided by expert panel and would help in measuring the independent variable. The statements were also what informed the questionnaire for the urban business community. The results are exhibited in the Table 3.

Table 3: Planning for Project Resources and Performance of Water and Sanitation Projects

| Statement | n | Mean | SDV |
|--|-----|-------------|--------------|
| 1. There is adequate personnel on drawing water and sanitation project plans | 334 | 4.17 | 0.376 |
| 2. Water and sanitation project plans are submitted on time | 334 | 4.06 | 0.538 |
| 3. Financial resources on water and sanitation projects are available | 334 | 3.91 | 0.710 |
| 4. Project planners and implementers have financial freedom | 334 | 3.93 | 0.609 |
| 5. Material resources are procured easily | 334 | 4.11 | 0.444 |
| 6. Procedure for procurement is documented for references through the project life | 334 | 4.13 | 0.412 |
| Composite Mean | | 4.05 | 0.515 |

Statement 1 of the variable planning obtained the following descriptive statistical findings; 204(61.1%) strongly agreed, 82(24.6%) agreed, 30(8.9%) were neutral and 18(5.4%) disagreed that there were adequate personnel on drawing water and sanitation project plans. The statement drew a

mean of 4.17 and a standard deviation of 0.376 respectively. The findings show that the line item has a positive contribution to the predictor variable as compared to the composite mean of 4.05 and also supported by 85.7% of the respondents.

The statement number 2 on whether water and sanitation project plans are submitted on time, data obtained indicated that; 197(58.9%) strongly agreed, 91(27.2%) agreed, 26(7.8%) were neutral, 16(4.8%) disagreed and those who strongly disagreed 4(1.2%) with a mean and standard deviation of 4.06 and 0.538 respectively. This implies that the statement contributes positively to the variable as supported by 86.1% of the respondents.

The findings obtained from the third statement on the availability of financial resources on water and sanitation projects. The findings gathered were; 183(54.8%) strongly agreed, 89(26.6%) agreed, 33(9.9%) were neutral, 20(5.9%) disagreed and 9(2.7%) strongly disagreed with a mean and a standard deviation of 3.91 and 0.710 respectively. The findings indicate that the statement negatively contributes to the variable which as compared to the composite mean 4.05 was less than the line item statement implying that the statement could be reviewed to enhance the predictor variable.

The statement number 4 of the variable sought to establish whether project planners and implementers have financial freedom. The results indicated that 192(57.5%) strongly agreed, 92(27.5%) agreed, 28(8.4%) were neutral, 15(4.5%) disagreed and 7(2.1%) strongly disagreed with a mean and a standard deviation of 3.93 and 0.609 respectively. The statement when compared to the composite mean (4.05), implies that the line item had insignificant influence on the variable.

On the fifth statement, the study recorded the following results on whether material resources are procured easily; 201(60.2%) strongly agreed, 88(26.3%) agreed, 24(7.2%) were neutral, 19(5.7%) disagreed and 2(0.1%) strongly disagreed with a mean of 4.11 and a standard deviation of 0.444 respectively. The statement when compared to the composite mean (4.05), implies that ease of procuring materials has a positive contribution to the variable planning for project resources and therefore contributes to influencing the response variable as supported by 86.5% of all the respondents who agreed.

The sixth statement of the variable sought to find out whether procedure for procurement is documented for references through the project life. The descriptive statistics obtained were; 195(58.4%) strongly agreed, 97(29.0%) agreed, 21(6.3%) were neutral, 14(4.2%) disagreed and those who strongly disagreed 7(2.1%) with a mean and standard deviation of 4.13 and 0.412 respectively. The findings imply that the line item should be reviewed as it positively contributes to the variable planning for project resources as compared by the composite mean (M=4.05) and the line item (M=4.13).

Statements on planning of project resources (independent variable) that were set by the researcher were answered by the respondents to determine the strength and the relationship of the independent and dependent variable. The study determined that there was a strong relationship between the two variables. Adequate personnel on drawing water and sanitation project plans was the most outstanding one in relation to performance of water and sanitation projects.

Correlation Analysis between Planning for Project Resources and Performance of Water and Sanitation Projects

The researcher targeted to determine the association amongst planning for project resources and performance of water and sanitation projects using the Pearson Correlation Coefficient. The findings uncovered existence of a strong positive correlation of 0.808 amongst planning for project resources and performance of water and sanitation projects, which indicates a significant relationship with p-value of 0.000 that is below the test level of significance 0.05. This indicates that planning for project resources influences performance of water and sanitation projects has shown in table 4.

Table 4: Correlation Analysis between Planning for Project Resources and Performance of Water and Sanitation Projects

| Variable | | Planning for project resources | Performance of Water and Sanitation Projects |
|---|---|--------------------------------|--|
| Planning for project resources | Pearson Correlation Sig. (2-Tailed) n | 1 334 | +0.808** 0.000 334 |
| Performance of Water and Sanitation Projects | Pearson Correlation Sig. (2-Tailed) n | +0.808** 0.000 334 | 1 334 |
| **. Correlation is significant at the 0.05 level (2-tailed) | | | |

ANOVA was applied in determining the appropriateness of the regression model on Table 5. It was established that the F-significance value of 0.000 was below 0.05 (p<0.05). The F-ratio was significant, $F(1, 333) = 153.000$ was significantly higher than the critical value of $F=3.86$, and this translated to the model been regarded as significant.

Table 5: ANOVA for Planning for Project Resources and Performance of Water and Sanitation Projects

| Factor | Sum of Squares | Df | Mean Square | F | Sig. |
|--------------|----------------|------------|-------------|--------|-------|
| Regression | 4.896 | 1 | 4.896 | 153.00 | 0.000 |
| Residual | 10.536 | 332 | 0.032 | | |
| Total | 15.432 | 333 | | | |

- a. Dependent Variable: performance of water and sanitation projects.
- b. Predictors: (Constant) planning for project resources

Table 5 gives findings of the study that explain the degree to which the predictor variable is attributed for the change in the overall model. The results show the R Square being 0.653

which means that planning for project resources and its attributes contributes to 65.3% of the changes of the dependent variable performance of water and sanitation projects. This indicates that 34.7% of the changes in the model is credited to other factors not incorporated in the study. The study concluded that planning for project resources has a significant influence on performance of water and sanitation projects.

Table 6: Coefficients of Planning for Project Resources and Performance of Water and Sanitation Projects

| Variables | Un-standardized Coefficients | | Standardized Coefficients | T | Sig. |
|--|------------------------------|------------|---------------------------|-------|-------|
| | B | Std. Error | Beta | | |
| (Constant) | 0.346 | 0.281 | | 1.231 | 0.000 |
| Planning for Project Resources | 0.778 | 0.082 | 0.808 | 9.487 | 0.000 |
| a. Dependent Variable: performance of water and sanitation projects | | | | | |

The findings in Table 6 gave a standardized beta value of 0.808 indicating that a unit increment of planning for project resources contributed to 80.8 % increment in the variations of performance of water and sanitation projects. Overall model was suitable in predicting the performance of water and sanitation projects given planning for project resources at $p < 0.05$. The regression model would be as such;

Performance of water and sanitation projects = $0.346 + 0.808$ (Planning for project resources) + e; $t = 9.487$; $p < 0.05$.

The study findings demonstrated that planning for project resources has a significant influence on performance of water and sanitation projects. Hence, the null hypothesis of the study was rejected. The presence of adequate personnel in drawing project plans, timely submission of project plans, proper acquisition of project resources and proper project records management contribute to performance of water and sanitation projects.

The researcher further analyzed the qualitative data collected through interviews of the main informants. When asked about their views on quality of the project delivered in water and sanitation sector, one of the water resource users association representatives had this to say;

Most of the water users at first could not understand why the quality of water was not clear until the hydrologists came in and explained that ground water contains soil components which with a better filtration and treatment process will be eliminated. With time, the water became better in color and safer for human consumption. The water should consistently be treated to avoid contracting waterborne diseases and to boost the health of residents. The county should allocate funds for continuous treatment of the water points in the county.

These findings concur with (Odhiambo, 2010) findings as analyzed in the literature review that pointed out planning for

resources is essential for sustainability of both urban and rural projects. The study cites that the biggest challenge in resources of any project is insufficient financial resources which mostly leads to either poor performance of a project. Similar findings by (Kahariri, 2014) in a study on factors leading to water and sanitation projects being implemented successfully in Huruma, Nairobi County, Kenya were consistent in that levels of investment in projects should be increased.

V. CONCLUSION

In conclusion, planning for project resources has a strong influence on performance of water and sanitation projects. The study shows that majority of the respondents agreed that adequate personnel on project plans, timely submission of the plans, availability of financial and material resources and clear procedures of procurements with documented references throughout the project life influenced performance of water and sanitation projects. The study further rejected the null hypothesis and concludes that there is significance influence of planning for project resources on performance of water and sanitation projects.

VI. RECOMMENDATIONS

The study recommended the following;

- i. The research established that planning for project resources is an important factor in performance of projects. The study hence recommends that it is crucial that other areas of planning in project management given equal consideration during the implementation and management to ascertain performance of water and sanitation projects.
- ii. Adequate personnel on project plans, financial and material resources should be factored in undertaking any water and sanitation project.

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