

**ORIGINAL RESEARCH ARTICLE****Communication planning and technology integration on implementation of water construction projects in Bomet County, Kenya****Emmy Chelangat Rotich¹, Elegwa Mukulu², Samson Nyang'au Paul³**

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ABSTRACT

Globally over 40 million people are faced with deficiency supply of water and more than 110 million of the worlds' 240 million population have no access to clean and safe drinking water. In Africa, water shortages are related to both under-development of potentially available water resources and their uneven distribution while conserving the catchments' sustainability. The country like many other developing countries is facing formidable freshwater planning and management challenges. Despite the fact that a lot of resources have been invested in water infrastructure, there has been little impact on implementation water infrastructures and water supply systems in most parts of the countries. Communication planning is the key component to project success, but the main focus has been on project management practices and project performance. The main objective of this study was to assess the influence of communication planning on implementation of water projects in Bomet County, Kenya. Communication theory was used to guide this study. The study used descriptive survey design and ideally data was collected by use of self-administered Questionnaires. The study targeted 440 respondents and the sample size was 164 respondents. This study carried out a census on 88 initiated water projects in the county of Bomet. Pre-test study was administered to 18 respondents of Kajiado County to test the reliability and validity of the instruments. Data was collected through self-administered questionnaires. Regression results showed that communication planning, positively influenced effective implementation of water project with the F statistics value of 98.068, and P-value of 0.000. Regression resulted in R² of 0.43. In conclusion, therefore communication planning influenced implementation of water projects. The study recommends that the government can embrace the use of technology to equally enhance communication among stakeholders of water projects. The study can be replicated in other counties so as to improve water services.

Key words: Communication, Planning, Implementation, Water Projects

1.0 Introduction

Over 40 million people all over the world are faced with deficient access to improved water and more than 110 million of the world's 240 million population have no access to clean and safe drinking water. Over the years, governments, NGOs, and local and international organizations from all over the world have invested in the implementation of water projects to encourage safe rural water supply and cleanliness. However, there has been minimal impact on the implementation of these water infrastructures and water supply systems in most project areas. According to UNEP (2015), only five of the potential water resources of Africa are currently developed, with an average per capita of 200 m³ (compared to 6,000 m³ in North America). With over 75% of the poorest Africans living in rural areas, the need to develop sustainable water services in these areas is imperative. Water projects fail due to various aspects, including misunderstanding the specific context of the community or a lack of effective support structures.

Kenya has experienced tremendous population increases in the last 40 years, with an estimated rate of 2.63% in 2010 (World Bank, 2010) among the citizens. Further challenges are the fact that fluoride is found in different sources of water, with a higher concentration found in groundwater due to the presence of fluoride-bearing mineral rocks (WHO, 2002). The government has sunk boreholes, constructed catchment dams and provided infrastructure in the last three decades to increase accessibility to water (Ngigi & Macharia, 2006). Adek (2016) asserts that despite this development, water scarcity remains a major challenge across the majority of counties in Kenya today.

The government of Kenya has applied various strategies in its effort to improve access to water services for its citizens. Section 53 (2) of the Water Act 2002 stipulates that WSPs shall only be either a company, a non-governmental organization or a person providing water services under and following an agreement with a licensee (the WRSB) (GoK, 2002). Section 15(5) states that WRUAs will be responsible for conflict resolution and cooperative water resource management (GoK, 2002). Thus, it is the case in Bomet, where Bomet Water Company (BOMWACO) supplies and bills water usage in the county.

Findings by Pulse indicate that fewer projects globally are being completed within budget or meeting original goals, and there is an essential need to improve project performance. Results show that the position of the project outcomes that were completed within the original budget constitute 55%, projects completed on time 51%, and failed projects' budgets lost 32% (PMI, 2016). To enhance project implementation, Lin, Ho, and Huang (2007) recommended understanding the processes of rework, effectiveness, and efficiency in project delivery within time, cost, and quality standards. In addition to the water needs contained in the plan, the Kenyan constitution promulgated in 2010 further treats the enjoyment of clean and safe water in adequate quantities by every Kenyan citizen as a basic right. The increased water requirement, therefore, demands great efforts from the Kenyan water sector management in water resources conservation and water services development.

The fact that local regulations for environmental flows are lacking means of monitoring and controlling water resources means they have not been thoroughly implemented (KNBS, 2016). Different activities such as deforestation, water abstraction for livestock and agricultural irrigation, among others, are heavily affecting the ecosystem (Ndambiri et al., 2011), but the major cause of the deteriorating access to household water demand from improved sources remains unknown. The study focused on water projects in the county of Bomet, which is the unit of analysis. This includes county government water projects, water supply schemes, rehabilitation plans, irrigation schemes, springs and plastic water tanks.

In Kenya, about 25% to 30% of recently completed water projects become dysfunctional in the first three years following completion. In many areas, constructed water projects remain incomplete (GoK, 2012), so the country still faces serious challenges related to the provision of water to its citizens. Despite great efforts in water resource management and the construction of large water projects, there is still an underprovision of water for domestic use, particularly in the rural and slum areas of Kenya, because 67% of rural households cannot access clean and safe drinking water (UNDP, 2015).

The county's water resources are well equipped. Permanent rivers originating from the Mau Forest and flowing through the county are Oinab Ng'etunyet, Nyongores, Kipsonoi, Itare, Kiptiget, Chemosit, Amalo, and Maramara. The Sisei River originates from several swamps in Bomet Central Sub-county and is fast diminishing due to intensified cultivation along its banks and catchment areas. A majority of the population draws water from rivers, water pans, and springs. Rainwater harvesting is done by households that have corrugated iron roofs. The county government has protected a total of 27 springs since 2013 (GoK, BCDP 2018).

The fact that some people draw water from unprotected springs and open streams is also worrying, given that such water is shared with animals and is also highly polluted due to intensive agriculture and an increasing population. During the dry seasons, the distance covered to the water point increases considerably, reaching about 5 km (GoK, BCDP, 2018).

Bubshait, Siddiqui, and Al-Buali (2014) carried out a two-stage case study of construction phase delay control for an oil and gas industrial project. According to the findings of the study, communication and coordination are critical to the successful completion of complex projects. Communication tools impact different phases of project progress. According to Kisumbi et al. (2017) on the role of citizen participation in the sustainability of water projects, they found that citizen power and water project sustainability were not important (0.637). Further findings revealed that households did not participate fully in the project cycle. The planning stage of the project falls under the project life cycle and hence, stakeholders (households) were not involved. These studies did not consider communication planning as a factor in project success; therefore, the goal of this study was to fill this knowledge gap.

The study adopted the theory of communication as postulated by Paolo Freire (1970). It asserts that the fact that human nature involves dialogue and, therefore, communication plays a significant role in human life. Human beings are in constant dialogue with others, and it is



therefore through these processes that we create human nature. Freire is of the view that dialogue is a right that favors the democratic decisions of educators to support free and critical learning, thus promoting the inquisitiveness of the learner. The purpose of the dialogue is always to unveil the truth by interacting with others and the world. In his dialogic action theory, Freire differentiated between dialogical actions—those that promote understanding, cultural creation, and liberation—and non-dialogic actions, which deny dialogue, distort communication, and reproduce power. This theory was significant in explaining the role of effective communication in carrying out water projects. This theory was relevant to the study because it can be applied in the implementation of water projects to foster dialogue and resolve stakeholders' conflicts in resource use. Dialogue, particularly between leaders and the community, is essential to better address the community's concerns and needs, especially concerning projects intended to better their lives. Freire's theory places emphasis on dialogue, which is related to this study. The communication theory helped in analyzing the influence of communication because it is the oil that lubricates the implementation of water projects.

Communication planning is significant in the implementation of projects. The capabilities of communication are the main factor for the project's success, especially where project management appears to be done (Weldearegay & Biedenbach, 2012). Additionally, communication is important in a complex environment for maintaining projects and carrying out innovation. The communication process ensures that project information is always communicated from a centralized point and relevant information is usually communicated within a reasonable period to the project team and other stakeholders.

Tipili, Ojeba and Ilyasu (2014) carried out a study in which they sought to evaluate the influence of communication on construction project delivery in Nigeria. The research was a survey of a sample of 40 professionals working in the construction industry in Bauchi, Nigeria. The study found that within the Nigerian construction industry, project communication is a key success factor. However, there were numerous communication hindrances. These hindrances include unclear communication objectives, unclear channels of communication, ineffective reporting systems, and ineffective communication between the parties on the project. The study established that poor communication led to project delays, cost overruns, and eventual project abandonment. The study concluded that communication had a strong effect on project performance. (PMBOK, 2000) opined that updated project scope, schedule, and budget are communicated to key stakeholders and buy-in and consensus are gained.

The main objective of an efficient and effective communication strategy is to advertise the organization. This is a marketing technique organizations use to target their customers since it is difficult to communicate about a specific product or service since each product is different from the others (Goozol & Scoubreau, 2003).

Communication goals are defined according to the interests of stakeholders. During the execution of the project, the project manager's ability to communicate is crucial to the success of the project. One of the important tasks for project managers is to communicate with the

stakeholders (Tonnquist, 2008). Successful communication may not always be successful persuasion. Hence, it is a significant basic tool of communication to enable exchanging the right information. In the modern, dynamic environment, communication is still a constant and desirable for managing projects (Henderson, 2008). The research study in this area by Locovou et al. (2009) asserts that quality communication is relayed by credible, complete, accurate, and timely information for the input of the project officials.

The internal and external communication systems in an organization are very important for the success of projects. External communication is related to managing the flow of information or managing communication to satisfy the demands of external stakeholders (Johannessen, 2012). When the complexity of projects is limited, the interpretation of communication is serviceable. Internal and external communication increases when the rate of exchange is great (Engwall, 2002), cited in Johanssen (2012), who discussed the main reasons why projects fail; he highlighted inadequate leadership (coordination, planning, and technical solutions), opposition from important stakeholders, insufficient resources, and changing objectives. The communication on projects stated that project complexity and rate change when the social needs related to the project change. The importance of project communication will escalate as the project size increases and becomes more complex (Johannessen, 2012). Bigger projects require more coordination mechanisms to cope with systematic dependence.

2.0 Materials and methods

2.1 Research design

The study adopted a descriptive survey design using both qualitative and quantitative approaches (Mugenda & Mugenda, 2003). The target population was the entire group of individuals and objects having similar observable characteristics (Kothari, 2004; Mugenda & Mugenda, 2003). This study is comprised of 440 from each category involved in water projects in the county of Bomet. These included project managers, finance managers, project team leaders, project consultants, and county administrators. In total, there are 88 projects and each represents the target category of respondent, which brings the total target population to 440 respondents.

Table 1: Population of the Study

| Serial No. | Population Category | Total |
|------------|------------------------------|-------|
| 1. | Water Supply Scheme Projects | 13 |
| 2. | CGB Water Projects | 28 |
| 3. | Community Water Projects | 23 |
| 4. | Proposed Water Projects | 24 |

The sampling frame for this study was drawn from both on-going, completed and stalled water projects managed and funded by the county government of Bomet; water supply schemes and community-based projects as shown in table 2.

Table 1 : Respondents Sample Population

| Serial No. | Population Category | Population Category | | | | | TOTAL |
|------------|--------------------------|---------------------|------------------|--------------------|---------------|---------------------|-------|
| | | Project Manager | Finance Managers | Project Consultant | Site Engineer | Ward Administrators | |
| 1. | Water Supply Scheme | 13 | 13 | 13 | 13 | 13 | 65 |
| 2. | CGB Water Projects | 28 | 28 | 28 | 28 | 28 | 140 |
| 3. | Community Water Projects | 23 | 23 | 23 | 23 | 23 | 115 |
| 4. | Proposed Water Projects | 24 | 24 | 24 | 24 | 24 | 120 |

2.2 Sample size

The target population of this study was 440 (four hundred and forty), and the researchers adopted both stratified sampling and purposive sampling since the population is homogenous. In the determination of the sample size, the Slovia’s formula was used to calculate the sample size (at 95% confidence level and = 0.05) as indicated in equation 1 below;

$$n = N / (1 + Ne^2) \dots\dots\dots \text{Equation 1}$$

Where;

n = is the desired sample size

N = is the population size

e = is the margin of error (at 95% confidence level)

Therefore, the sample size will be;

$$n = N / (1 + Ne^2)$$

$$n = 440 / [(1 + 440(0.05^2))]$$

$$n = 440 / [(1 + 440(0.0025))]$$

$$n = 440 / [(1 + 2.1)]$$

$$n = 440 / [2.1]$$

$$n = 164$$

The sample size n = 164.

Table 3 : Sample Size

| Population Category | Total Population | Sample size |
|--------------------------|------------------|-------------|
| Water Supply Scheme | 65 | 24 |
| CGB Water Projects | 140 | 52 |
| Community Water Projects | 115 | 43 |
| Proposed Water Projects | 120 | 45 |

2.3 Data collection instruments

The data collection instrument used was questionnaires. This method provides straightforward information to be analyzed. According to Saris, the instrument used was a questionnaire. This method provides straightforward information to be analyzed. According to Saris (2017), a questionnaire is a self-reported data collection research tool that each research participant fills out as part of a research study. The researcher used this method because questionnaires are free from the bias of the interviewee and, at the same time, the respondent had enough time to adequately give well-thought-out answers.

2.4 Pilot testing

A pilot test was done to assess the capability of the research instruments to collect the required data for research. To ensure the reliability and validity of research instruments in this study, eighteen respondents were picked out in Kajiado County. The study used Cronbach's alpha and factor analysis to test the instruments of the study, and out of eight items, an alpha value of 0.472 was recorded, and after one item had been removed, the overall alpha coefficient recorded was 0.742, which was above 0.7. To test for validity, the researcher used factor analysis to investigate 8 items on communication plans using an instrument comprised of 8 items, and in this case, no item was deleted. Factor loading values recorded were between 0.500 and 0.768. Since no item recorded a factor loading lower than 0.50, the items were therefore considered to be valid to measure the effect of communication plans on the implementation of water construction projects in Bomet County, Kenya.

2.5 Data analysis

Once data was collected, it was coded and edited for uniformity and wholeness. Data were analyzed using descriptive statistics and inferential analysis using SPSS and Analysis of a Moment Software (AMOS). The regression model was in the form of:

Model with moderating variable

$$Y = \beta_0 + \beta_1 X_1 + \beta_2 X_1 Z + \varepsilon$$

Where:

Y = Implementation of Water Projects

β_0 = Intercept term

X_1 = Communications planning

Z = Moderating Variable

ε = Error term

3.0 Results

3.1 Distribution of respondents by age-group

The study sought to establish the age groups of the respondents in the study. The distribution of the respondents according to their age groups is shown in Figure 2. According to the

findings, 45.5% of the respondents in the study were between the ages of 20 and 30, 30.5% were between the ages of 31 and 40, and 16% were between the ages of 41 and 50, accounting for 8.4%. This meant that the sample used by the study was well distributed in terms of age and could therefore give reliable information. The study established that the highest respondents were mainly young adults (ages 31–40). This age group is innovative and creative in problem-solving and solution-finding; they are the key to helping communities meet their subsistence needs and, in doing so, improving local people’s long-term security and control, including creating stable societies. A workforce composed of different age demographics thus creates an environment where each generation brings different skills and talents to the table.

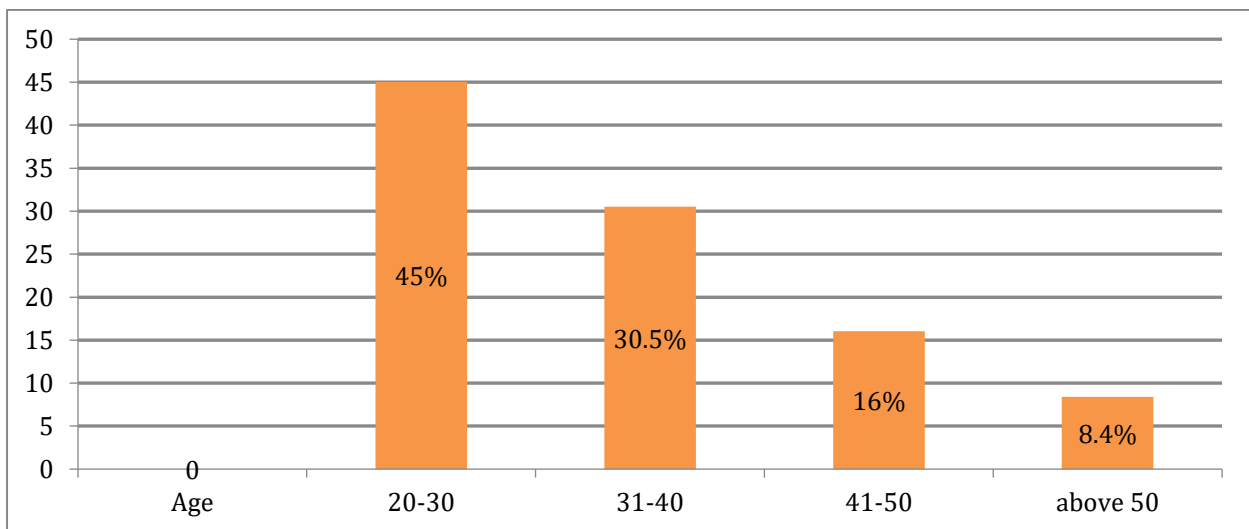


Figure 2 Ages of Respondents

3.2 Distribution of respondent by education

The results of table 4 show that the majority of the sample, or 54.2% of respondents, had a university degree. 3.0% had completed their master's degree, and 2.3% had finalized their PhD. This showed that the majority of respondents were well-informed and offered answers to the research question about the influence of planning on the execution of water development projects in Bomet County, Kenya, that was reputable, trustworthy, and more precise. Therefore, the education level was crucial in this regard.

Table 4: Education of Respondents

| | Frequency | Percent |
|-------------------|-----------|---------|
| PhD | 3 | 13 |
| Masters | 4 | 28 |
| Bachelor’s Degree | 71 | 23 |
| Diploma | 53 | 24 |

3.3 Respondents' opinion on communication plans

The study sought to establish the existence of clear channels of communication. The study found that 9.2% of the respondents strongly disagreed. A further 30.4% of the respondents disagreed, 23.9% of the respondents were neutral, 30.4% of the respondents agreed, and 6% of the respondents strongly agreed. The findings, therefore, indicate that a majority of the respondents (30.4%) both disagreed and agreed that there is an existence of clear channels of communication. Overall, 39.6% of the respondents generally disagreed that there are clear channels of communication. On the other hand, 36.4% of the respondents generally agreed that there is an existence of clear channels of communication.

On whether the reporting system put in place is effective, the study established that 7.1% of the respondents strongly disagreed. A further 23.4% of the respondents disagreed, 21.7% of the respondents were neutral, 42.9% of respondents agreed, and 4.9% of respondents strongly agreed. Overall, 47.8% of the respondents generally agreed that the reporting system put in place is effective. The results are a clear indication that although the reporting system put in place is effective, they need to improve since it is only a simple majority who concurred with this statement, i.e., less than 50%.

The study sought to establish if communication between the parties on the project is effective. The study found that 6% of the respondents strongly disagreed. A further 15.2% disagreed, 2.5% of the respondents were neutral, 42.4% of respondents agreed, and 11.4% of respondents strongly agreed. Overall, 53.8% of the respondents generally agreed that communication between the parties on the project is effective.

On whether all the required information is sent to the relevant receiver, the study established that 4.9% of the respondents strongly disagreed. A further 28.8% of the respondents disagreed, 31.5% of the respondents were neutral, 29.3% of the respondents agreed, and 5.4% of the respondents strongly agreed. In an ideal situation, all the required information would be sent to the relevant receiver. This is shown in Table 5 below. These findings did not corroborate with the findings on communication strategy for the water sector reform program, which found that realistic timelines and expectations were communicated to the people in the initial phase of the reforms in all four countries (MoWRM&D, 2004).

Table 5 Respondents opinion on communication Plans

| Statement | Strongly disagree (%) | Disagree (%) | Neutral (%) | Agree (%) | Strongly agree (%) |
|--|-----------------------|--------------|-------------|-----------|--------------------|
| The project has clear channels of communication | 9.2 | 30.4 | 23.9 | 30.4 | 6 |
| The reporting system put in place is effective | 7.1 | 23.4 | 21.7 | 42.9 | 4.9 |
| The communication between the parties on the project is effective. | 6 | 15.2 | 25 | 42.4 | 11.4 |
| All required information is sent to the relevant receiver. | 4.9 | 28.8 | 31.5 | 29.3 | 5.4 |
| It is clear who is responsible for which communication. | 20.1 | 38 | 19 | 19.6 | 3.3 |
| Channel of communication used effectively to share Information on a timely manner. | 13 | 21.2 | 23.9 | 38.6 | 3.3 |
| Communication channels are regularly reviewed to match changes. | 3.8 | 22.3 | 28.3 | 40.8 | 4.9 |
| Community members participate in the conception and design of the water projects. | 1.1 | 8.7 | 28.8 | 49.5 | 12 |
| Average | 6.3 | 18.8 | 26.5 | 40.5 | 7.9 |

3.4 Regression analysis for communication planning and implementation of water constructions projects

A simple regression analysis was conducted to find out if there was a significant relationship between communication planning and the implementation of water projects. The null hypothesis tested was that there was no significant relationship between communication planning and implementation of water construction projects in Bomet County, Kenya, as against the alternative that there was a significant relationship between communication planning and implementation of water construction projects in Bomet County, Kenya. The results obtained showed that R-the square value was 0.432, implying that 43.2% of the implementation of water construction projects in Bomet County, Kenya was explained by communication planning in the absence of a moderator, which was technology integration. On the other hand, if the moderator is included, the R-square value increases to 0.493, showing that 49.3% of the dependent variable was explained by communication planning. This demonstrates that the relationship between the dependent variable and communication planning improved.

Communication planning and technology integration on water construction projects

Further details of the finding show that the F-statistic was 98.068, as presented in table 6, with a corresponding p-value of 0.000, which was less than 0.05, indicating that the model was significant. The model was sufficiently good as the null hypothesis that the regression model between the dependent variable and the explanatory variable was not good was rejected. The implication was that there was a significant relationship between communication planning and the implementation of water construction projects in Bomet County, Kenya. In the presence of a moderator, the F-statistic increased to 62.247 with a p-value of 0.000<0.05 indicating a better model between the dependent variable and communication planning. In the absence of a moderator (Technology Integration), the regression equation between communication planning and implementation of water construction projects in Bomet County, Kenya was expressed as $Y=2.703+0.344X_3$, as shown in Table 6. The p-value corresponding to t-statistics was 0.000 and this was also less than 0.05. Similarly, if a moderator is included in the model, then the model can be expressed as $Y=2.317+0.331X_3+0.123X_3*Z$. A p-value of 0.000<0.05 was recorded. The finding based on tables 6 and 7 implies that there was a significant relationship between communication planning and the implementation of water construction projects in Bomet County.

Table 6. Regression analysis for communication planning and implementation of water constructions projects with no moderator.

| Model | R | R Sq. | Adjusted R Sq. | Std. Error of the Estimate | Durbin-Watson |
|-------|-------------------|-------|----------------|----------------------------|---------------|
| 1 | .657 ^a | .432 | .427 | .23263 | 1.849 |

a. Predictors: (Constant), communication planning and implementation of water constructions projects.

Analysis of Variance

| Model | | Sum of Sq. | Df. | Mean Sq. | F | Sig. |
|-------|-----------|------------|-----|----------|--------|-------------------|
| 1 | Reg | 5.307 | 1 | 5.307 | 98.068 | .000 ^b |
| | Residual. | 6.981 | 129 | .054 | | |

a. Dependent Variable: Implementation of water constructions projects

b. Predictors: (constant), communication planning.

Overall regression coefficients

| | Un Std Coeff | | Std Coeff | t | Sig. | Collinearity Statistics | |
|------------------------|--------------|---------|-----------|--------|------|-------------------------|-------|
| | B | Std. Er | Beta | | | Tolerance | VIF |
| (Constant) | 2.703 | .130 | | 20.822 | .000 | | |
| Communication Planning | .344 | .035 | .657 | 9.903 | .000 | 1.000 | 1.000 |

Table 7: Regression analysis for communication planning and implementation of water constructions projects with moderator.

| Model | R | R Sq. | Adjusted R Sq. | Std. Error of the Estimate | Durbin-Watson |
|-------|-------------------|-------|----------------|----------------------------|---------------|
| 1 | .702 ^a | .493 | .485 | .22061 | 1.780 |

a. Predictors: (Constant), Communication Planning and Implementation of water constructions projects.

The coefficient of communication plans was found to be significant. The study found that communication plans embrace teamwork in undertaking water projects. There were conflicts among the project members. It was also noted that local firms were inefficient and ineffective when undertaking project activities, which resulted in poor implementation of the projects. The lack of a proper channel of communication in the project caused delays in completing the project within the required time and hence affected the effective implementation of the project.

The objective of this study was to analyze the influence of communication planning on the implementation of water projects in Bomet County, Kenya. Communication planning is understood as the task of determining how an organization intends to achieve its strategic goals and objectives. These findings indicate that communication planning positively influences the implementation of water projects in Bomet County, in that efficient and effective communication enhances stakeholders' participation and leads to team cohesiveness. The communication process ensures that project information is always communicated from a centralized point and relevant information is usually communicated within a reasonable period of time within the project team and other stakeholders. Hence, leading to the successful implementation of water construction projects.

4.0 Discussion and conclusions

Based on the study findings, it can be concluded that communication planning in the county of Bomet must be taken into account while developing a mode and media of communication to enhance the successful implementation of water projects. A communication strategy for the water sector in the county of Bomet needs to communicate realistic timelines and expectations to the residents of Bomet County in the initial phase of the water project. Therefore, there is a need to improve communication to enhance the participation and involvement of stakeholders.

5.0 Recommendations

Based on the conclusion on communication planning, it is recommended that technology should be applied in the dissemination of information in other countries. Therefore, the study further recommends that national governments enhance policies on financial allocation to ensure the success of projects by enhancing stakeholders' participation.



The study concentrated on water-based projects. The researcher's recommendation is that other studies be carried out on areas such as road construction projects, housing projects, agricultural projects, etc.

6.0 Acknowledgement

6.1 General acknowledgement

The authors are grateful to Bomet County's 164 respondents, who took part in a survey that evaluated the validity and reliability of the instruments. Additionally, the 18 Kajiado County respondents who took part in the pre-test study that evaluated the validity and reliability of the instruments

6.2 Declaration of interest

Self-administered questionnaires were used to collect the data, which ensured anonymity and acquired informed consent with the promise that the data would only be used for educational purposes.

The author's presentation is a requirement for the Jomo Kenyatta University of Agriculture and Technology's "PhD in Project Management" degree. The writers are solely responsible for the content, editorial decisions made, the compilation of the document, expressed opinions, approval of the finished product, and any inaccuracies.

6.3 Conflict of interest

None.

7.0 Reference

- Adek, R., T. (2016). *Determinants of successful project implementation of infrastructure project in devolved units; a case of Mombasa County, Kenya*. Unpublished Doctoral dissertation, University of Nairobi, Kenya.
- Bubshait, A., Siddiqui, M., & Al-Buali, A. (2014). Role of Communication and Coordination in Project Success: Case Study. *Journal of Performance of Constructed Facilities*, 29(4), 401-410.
- Engwall, M. (2002). *The ambiguous project concept(s). Projects as arenas for renewal and learning processes*. Boston: Kluwer Academic Publishers.
- GoK. (2012). *Water Privatization in Kenya issue paper*. Nairobi: Government Printer.
- GoK. (2002). *An Act of Parliament to provide for the Management, Conservation, Use and Control of Water Resources and Acquisition*. Nairobi: Government Printer.
- Goozol, J., & Scoubreau, C. (2013). Corporate communication and strategy in the field of projects, *International Journal*, 8(1), 60-66.
- Henderson, L. (2008). The impact of project manager's communication competencies: Validation and extension of a research model for virtuality, satisfaction and productivity on project teams. *Journal of Project Management*, 39 (2), 48-59.



- Johannessen, M. K.. (2012). Checklist of Critical Success factors for Building Projects. *Journal of Management in Engineering*, 9(3), 243-249.
- KNBS. (2016). *Kenya 2009 Population and Housing Census*. Nairobi: Government Printer.
- Kisumbi, C., K., & Isaboke O., K. (2018). Influence of Tokenism in Sustainability of Rural Community Water Projects in Kenya. *International Journal Of Innovative Research & Development* 7(1), 294-304.
- Kisumbi, C., K., Isaboke O., K. & Nassiuma, B. (2017). Role of Citizen Participation in Sustainability of Water Projects in Makueni County, Kenya *International Journal Of Innovative Research & Development* 6(11), 1-15.
- Kothari, C., R. (2014). *Research Methodology: Methods and Techniques*, (2nd ed). New Delhi: New Age International.
- Locovou, L., Tomson, R., & Smith, F. (2009). Selecting status reporting in information systems projects. *MIS Quarterly*, 33 (4), 785-810.
- Lin, T., Ho, Y., & Huang, Y. (2007). Seasonal Effect of Pavement on Outdoor Thermal Environments in Sub-Tropical Taiwan. *Building and Environment*. 42(12), 4124- 4131.
- Ministry of Water and Resource Development (2004). *Communication strategy for the water reform sector program in Kenya (2004)*. Nairobi: Government Printer.
- Mugenda, O., & Mugenda, A. (2003) *Research Methods*. Nairobi: Acts Press.
- Ngigi, A., & Macharia, D. (2006). *Kenya Water Sector Review Paper (2006)*. Retrieved on May 30, 2021. From <http://www.enable.nu>. Kenya Water Policy Overview.pdf.
- Ndambiri, Hillary K., Ritho C. N., Mbogoh S. G. (2011), An Evaluation of Farmers' Perceptions of And Adaptation to the Effects Of Climate Change In Kenya; *International Journal of Food and Agricultural Economics*. 1(1), 1-22.
- Paulo F., (1970). *Pedagogy of the Oppressed*, (30th Ed.) New York : Continuum.
- Project Management Institute. (2013). *A Guide to the Project Management Body of Knowledge (PMBOK Guide)* (5th ed.). Newtown Square, PA: Project Management Institute.
- Saris, W., E. (2007). *Design, Evaluation and Analysis of Questionnaires for survey research*. Hoboken, NJ: Wiley-Interscience.
- Shannon, C., E. & Weaver, W. (1949). *The Mathematical Theory of Communication*. (Republished ed. 1962). Urbana: The University of Illinois Press.
- Tipili, L. G., Ojeba, O. P., & Ilyasu, M., S. (2014). Evaluating the Effects of Communication in Construction Project Delivery in Nigeria. *Global Journal of Environmental Science and Technology*, 2(5), 048-054.
- Tonnquist, B. (2018). *Project management; A guide to the theory and practice, project, program and portfolio management and business change*. Stokholm: Utbilding.
- United Nation Environmental Program. (2015). *Global Environmental Outlook 2000*, UNEP Earth Scan 1997, (Publication Series. Paper 2). Geneva: UNEP.
- United Nations Development Program, UNDP.(2015). *The human development reports*. New York: UNEP.



- Weldearegay, H., & Biedenbac, T. (2012). The role of communication in managing Projects. Unpublished Master's thesis, UMEA University.
- World Bank. (2010). *World Development Indicators*. World Bank. World Bank. (Retrieved on April 5, 2021). From <https://openknowledge.worldbank.org> Washington D.C.
- WHO, (2002). Fluorides, Geneva, World Health Organization. Environmental Health Criteria 227, 268.