



## INFLUENCE OF STAKEHOLDER MANAGEMENT ON SUSTAINABILITY OF WATER PROJECTS IN MAKUENI COUNTY, KENYA

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### ABSTRACT

This study sought to analyse the influence of stakeholder management on sustainability of water projects in Makueni County, Kenya. Specifically, the study sought to determine the influence of stakeholder communication on sustainability of water projects in Makueni County, Kenya and to establish the effect of stakeholder identification on sustainability of water projects in Makueni County, Kenya. This study adopted a descriptive research design. The target population was the 6 sub counties in Makueni County. The total population was 420 consisting of 60 community leaders, 40 government officials, 6 project management committees and 12 county water engineers. The sample size was obtained using the Nassim formula. The 130 respondents were chosen with the help of stratified random sampling technique. This study relied on both primary and secondary data. Primary data was collected through use of semi structured questionnaires. The study also conducts pilot test to test the validity and the reliability of the data collection instrument. The data collection instrument generated both qualitative and quantitative data. The study used both descriptive and inferential statistics for data analysis with the aid of Statistical Package for Social Sciences (SPSS version 25). Descriptive statistics such as mean, standard deviation, frequency and percentages were used in this study. In relation to inferential statistics, the study used correlation analysis. This was used to establish the relationship between the independent and the dependent variables. The study concludes that stakeholder communication has a positive and significant effect on the sustainability of water projects in Makueni County, Kenya. In addition, the study concludes that stakeholder need identification has a positive and significant effect on the sustainability of water projects in Makueni County, Kenya.

## **Background of the Study**

Project sustainability is one of the poorly managed subjects in project management (Project Management institute, 2017). According (Okeniyi, 2018) to More than a third of projects worldwide fail to reach their objective that has led to questioning of project management and sustainability. Project management discipline focuses on managing the various activities in a project intended to deliver the objectives of the intervention. Projects are temporary organizations to the original organization; they operate within defined timeframes, budget and quality and normally follow a chronological procedure in the inception through to the implementation. A number of different project management approaches such as iterative, lean, phased and incremental approaches may be used. Effective methodology employed must put into considerations the overall objectives of the project, cost, time in addition to roles and responsibilities of all the stakeholders of the project. Generally, project objectives express goals of a project in SMART terms. These project goals and objectives are set on the onset of the project.

Whilst some goals can be defined in quantifiable terms others are difficult to define in quantifiable parameter such as quality and soft project goals such as project reputation (Ahmed & Fazel, 2016). Project objectives aids in the definition of a project in terms of benefits perceived and project purpose. Project management main challenge is to achieve all its set project goals within its given constraints in terms of time, quality, budget and scope. Project goals and objectives can be viewed as contract between the project sponsors and the project managers (Smith, 2016). A project attracts different stakeholders with varying expectations of the outcome from the project. The level of urgency and priorities by the stakeholders tends to change during the lifecycle increasing the project management challenge. Most cost overruns and delays in project are caused by issues in project management rather than the technical aspect (Ayatah, 2012).

According to Abrams (2018) defines sustainability as “whether or not something continues to work over time”. He further elaborated that it is the test of sustainability is whether water continues to be abstracted at the

same rate and quality as when the supply system was designed, continue to function and be used as planned, and whether environmental quality continues to improve. In his writings, he identified key factors that influence sustainability including availability of money for recurring expenses and occasional repair, acceptance from users of the service, adequacy of service providers, appropriate design and quality of works. The sustainability of the commissioned projects is enhanced by ensuring that only projects prioritized by the beneficiaries are implemented, building the capacity of the beneficiaries and enhancing project ownership. Project implementers ensure that a management and sustainable operations concept is established to ensure projects continues to meet the needs of the recipients over time. This is through key stakeholder’s involvement from project preparation phase. (Irrigation, 2016)

Worldwide, governments have given stakeholder management a green light. In spite of this, many water projects fail due to inadequate stakeholder management (El Khatib, Alabdooli, Al Harmoodi, & AlKaabi, 2020). Projects are very sensitive to decision and actions taken by any stakeholder (Aaltonen, 2010). Almost all the projects operate in a context where its respective stakeholders play a primary role in the accomplishments of tasks (Hammad, 2013). Stakeholder support is critical for the success of any project. Project stakeholders may be within or outside the organization. A project stakeholder may be an entity that have sponsored the project, have an influence in the project completion or have an interest in the completion of that particular project. Stakeholders of a particular project will vary during the life cycle of the project in terms of needs, numbers and influence. The interests, perception as well as the motivation of all the project stakeholders that have an influence on the success of the project should not be ignored. Stakeholder review and identification should be conducted throughout the project life cycle (Njogu, 2016).

In Africa water scarcity is increasing due to growing population and limited water resources. In Ethiopia, the main problem to sustainability of water projects is weak collaboration between stakeholders (Kituku, 2020). The analysis of stakeholder management (SM) in the context of project management shows that managing stakeholders is vital to the successful execution of

various water projects (Xia, Zou, Griffin, Wang, & Zhong, 2018). Many problems in projects can be avoided or reduced by observing stakeholders, identifying their expectations, and thinking about how to fulfil them, since stakeholders may define a project's success (Eskerod, Huemann, & Savage, 2015). Understanding stakeholders and analysing their interests promotes better project management and helps products to be created and developed accordingly (Elias, Cavana, & Jackson, 2018). Freeman (1984) published a book encouraging a managerial team to consider and analyse groups or individuals who can affect or be affected by a company's objective. The concept of stakeholder analysis was embraced by project management theorists and practitioners, and this field of research has been increasing since then.

In Kenya access to safe clean water supply in rural areas remains low. In particular, over the past eight years access to piped water has only increased from 9 to 10 percent of rural households (Maier & Aşchilean, Importance of stakeholder management for sustainable construction industry, 2020). 20%-30% of community managed projects will collapse within the first three years after completion (Masombe & Omwenga, 2020). In Makueni County only 68% of county funded water projects are successful (Chaudhury, Summerlin, & Ginoyaa, 2020). The Makueni development report 2019 showed that cost, time and quality were not the only causes of water project failure. Poor stakeholder management played a key role in to it.

According to the Republic of Kenya National Policy on Disaster Management (2004) almost 70 % of Kenya's land mass is affected by drought. This covers most parts of Rift Valley, North Eastern, Eastern provinces and coast province thereby classified as arid and semi-arid areas. 75% of Kenya's population earns its living from agriculture which in turn depends on rainfall. Extreme weather and climate events influence the entire economy, which depends mostly on agricultural products like cash crops, food crops and animals (UNDP, 2020).

Many parts of Kenya happen to lie on the Arid and semi-arid areas. Makueni lies on the semi-arid area. It has little rain reception the people therefore have to make efforts to have other sources of water to supplement the little amount received through the rainfall (Brammah,

Amponsah, & Asibey, 2016). Despite the continuous efforts that have been made to provide water supply projects, problems have emerged that defer sustainability of the water projects. Many of these problems emanate from the nature of the environment, limited resources, and poor management skills (Kariuki, 2020). The problems that needs to be addressed includes means of living with the changing environment, proper management, financial systems, ensuring proper monitoring and evaluation of the water supply projects. For success the sources need to have sustainability (Maier & Aşchilean, 2020).

### **Statement of problem**

The Kenyan Government through its ministry of Water and sanitation has successfully done more than 50 annual water budgets since independence. Despite this, 18 million people still struggle to get sustainable water supply in Kenya. This has been caused by fast growing population, global warming and poor management of water projects (Mulwa, Li, & Fangninou, 2021). According to the Kenya vision 2030, clean water and sanitation is one of the key sustainable development goals. Kenya is a water-scarce country and to ensure that water and sanitation services are not only available, but also sustainably accessible to all Kenyans. The drought situation in kenya remains critical due to the late onset and poor performance of the much-anticipated short rains, coupled with four previous consecutive failed rainfall seasons. Currently, many counties like makueni in the arid and semi-arid areas are in alarm drought phase (National drought management authority, 2023)

In Makueni County, only 36% of its population has access to clean water. This is despite the many projects and policies done in the county to mitigate water shortage (Kituku, 2020). According Makueni County Development report (2019), the county has a water shortage of an average of 54.7% to meet its demand. People in the county walk approximately 8KMs to access water (Mulei & Gachengo, 2021). Makueni County has many water projects that have been established, but have collapsed immediately after the project closure. A good example is the Mbooni CDF water project and Ndukuma water project. According to (Masombe & Omwenga, 2020) on factors hindering sustainability of water projects, inadequate stakeholder management during project planning is one key factor. This is the reason for many collapsed projects in the

county. On realizing this gap, this research will be done to show the influence of adequate stakeholder management on the sustainability of water projects in Makueni County.

In Kenya, Mwanza, Namusonge and Makokha (2020) conducted a study on the influence of project stakeholders' practice on performance of construction projects in Kakamega County. Mabrouk, Sperandio and Girard (2017) conducted a study on stakeholder management in a Collaborative Project for a Sustainable Development. However, none of these studies showed the influence of stakeholder management on sustainability of water projects Makueni County. Therefore, to fill the highlighted gaps, the current study seeks to assess the influence of stakeholder management on sustainability of water projects in Kenya, Makueni County.

This research will focus on stakeholder communication, need identification; mapping and participation lead to project sustainability. For proper implementation and future sustainability of water projects, there is need for genuine stakeholder management (Suhaiza & Muhammad, 2022). This ensures that the stakeholders are empowered and their needs are met, leading to minimal conflict of interest. The willingness of stakeholders to support depends on how much their needs will be met (Maier & Aşchilean, 2020).

### **General objective**

To analyse the influence of stakeholder management on sustainability of water projects in Makueni County, Kenya

### **Specific objectives**

- i. To determine the influence of stakeholder communication on sustainability of water projects in Makueni County, Kenya
- ii. To establish the effect of stakeholder identification on sustainability of water projects in Makueni County, Kenya.

## **LITERATURE REVIEW**

### **Theoretical Framework**

#### **Social exchange theory**

The genesis of social exchange theory goes back to 1958, when American sociologist George Homans published an article entitled "Social Behavior as Exchange." Homans devised a

framework built on a combination of behaviorism and basic economics. In the immediate years that followed, other studies expanded the parameters of Homans' fundamental concepts (Mambweet *al.*, 2020). Social exchange theory is a concept based on the notion that a relationship between two people is created through a process of cost-benefit analysis. In other words, it's a metric designed to determine the effort poured in by an individual in a person-to-person relationship. The measurement of the pluses and minuses of a relationship may produce data that can determine if someone is putting too much effort into a relationship (Magassouba, 2019).

The theory is unique in the sense that it doesn't necessarily measure relationships on emotional metrics. Rather, its systematic processes rely on mathematics and logic to determine balance within a relationship. While the theory can be used to measure romantic relationships, it can also be applied to determine the balance within a friendship (Njogu, 2019).

Social exchange theory is a sociological and psychological theory that studies the social behavior in the interaction of two parties that implement a cost-benefit analysis to determine risks and benefits. The theory also involves economic relationships the cost-benefit analysis occurs when each party has goods that the other parties value. Social exchange theory suggests that these calculations occur in romantic relationships, friendships, professional relationships, and ephemeral relationships as simple as exchanging words with a customer at the cash register. Social exchange theory says that if the costs of the relationship are higher than the rewards, such as if a lot of effort or money were put into a relationship and not reciprocated, then the relationship may be terminated or abandoned (Nturibi, 2016). This study will use social exchange theory to assess the influence of stakeholder communication on sustainability of water projects in Makueni County, Kenya

#### **General System Theory**

Systems theory was proposed in the 1940s by Ludwig von Bertalanffy. It was originally developed for biological sciences but later incorporated into other fields as it was modified into general systems theory. According to the theory, a system can be said to consist of elements, attributes and internal relationships and that it exists in an environment. A system,

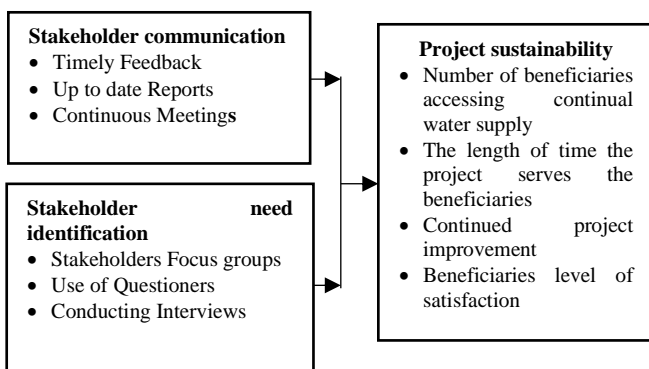
therefore, is a set of things that affect one another within an environment and form a larger pattern that is different from any of the parts (Rosen, 2018).

According to this theory, all systems are interrelated parts constituting an ordered whole and each sub system influences other parts of the whole. This implies that strengthening one part of the system will improve the whole. Similarly weakening one part will have negative implications on the whole. It is used to develop a holistic view of a system within an environment and is best applied to situations where the elements within the system inextricably connect and influence one another.

In applying the theory, the study holds the view that a project (system) comprises various elements (in this case stakeholders); the donors, implementing agencies and beneficiaries, among others. These interact and all have a key role in contributing to the success of a project. Neglecting one element will have an effect on the project performance. Stakeholder participation is one attribute that has been overlooked resulting in project failure. Therefore increasing participation by stakeholders will contribute to the good of the whole. This study will therefore use general systems theory to assess the influence of stakeholder need identification on sustainability of water projects in Kenya, Makueni County.

**Conceptual Framework**

The conceptual framework as indicated in figure 2.1 presents the association between the research variables; independent variables (stakeholder communication and stakeholder need identification) and dependent variables (the sustainability of water projects in Kenya, Makueni County).



**Stakeholder Communication**

Stakeholder communication is an important task in stakeholder management. Stakeholders can

promote or hinder a project, they can change their goals and attitudes and also help in communicating with other stakeholders. The more important a stakeholder is, the more important communication with them becomes. The regularity of stakeholder communication depends on the importance of the stakeholder, the required and appropriate frequency, manner and timing (Muthuveloo, Ping & Meng, 2020). The key to keeping stakeholders on-side is consultation. This involves the development of constructive and productive long-term relationships. Stakeholder consultation aims to build relationships based on mutual trust and benefits. Listening to and understanding the views and feedback from stakeholders can help shape and improve the overall operations of a business (Hassan, 2015).

The stakeholder consultation process is an opportunity for key groups to be kept informed, and for their views and feedback to be heard. It is important that any consultation is thoroughly planned with clear objectives set at the beginning. The “planning” stage is where the aims and objectives of the stakeholder consultation are discussed and agreed upon. After the aims and objectives have been determined, the “planning” stage is used to discuss how the process will be carried out. Process owners allocate resources and select an appropriate consultation method. Several questions need to be asked at this stage to ensure every facet of the process is considered (Ali & Gitonga, 2019).

**Stakeholder Need Identification**

Stakeholder need identification is the first step in stakeholder management. Identifying, analyzing and communicating – these are the three essential activities in dealing with stakeholders. Stakeholder identification therefore takes place before the stakeholder analysis. It aims to identify all organizations and individuals who are directly or indirectly affected by a company’s activities or who have a specific interest in these activities. The result should be a list of all stakeholders (Muthuveloo, Ping & Meng, 2020).

According to Ali and Gitonga (2019) stakeholder identification is a process of determining who your project’s stakeholders are and what can be their effects on your project’s objectives. It takes place before the process of stakeholder analysis. It is critical to identify the stakeholders in the early phases of a project and manage them

throughout the entire project's life cycle. Typically, at the beginning of a project, everything is quite complicated. Therefore it is difficult to understand who is affected by the project. Stakeholder identification is a perpetual process because as the project progresses new stakeholders arise and some of them may disappear. There are many useful tools and techniques that can be used for stakeholder identification and analysis (Hassan, 2015).

Kinyua (2016) indicates that the work of identifying stakeholders and analysing them is done not just by the Project Manager alone. The entire project team, in consultation with subject matter experts, project managers of past similar projects and even senior executives need to be involved in this. Records of past projects and data gathering techniques help in determining and analysing stakeholders. A document that assimilates all the information collected related to stakeholders is called the Stakeholder Register. It is maintained by the Project Manager and his team. All the information about stakeholders is compiled in this stakeholder register, an output of the "Identify Stakeholder" process (Muthuveloo, Ping & Meng, 2020).

### **Empirical Review**

#### **Stakeholder Communication and Project Sustainability**

Maosa and Muturi (2019) conducted a study on factors influencing performance of public-private partnerships in healthcare provision in Kenya. The descriptive research design was employed in the study. The population of the study was drawn from the 64 senior top managers of the partnering organizations in the area where the 32 health facilities are located. Questionnaires with five-point Likert scale supplemented with interviews were conducted to collect primary data. Multiple regression analysis with the aid of a computer programme, SPSS was used to establish the influence of stakeholder communication in healthcare provision in Nyamira County. The study findings established that stakeholder communication had positive influence on healthcare provision.

Mwonjoria (2017) conducted a study on the factors influencing utilization of health services of private health facilities in Thika sub-county. The study adopted a descriptive research design. The population comprised 311,035 people that

made up Thika Sub-County. A stratified sampling technique was used. Stratification was based on the first three of the four tiered health system described in Kenya Health Policy (2012-2030). These were: community care, primary care and primary referral. Data was collected from a total sample of 96 respondents using a structured questionnaire. The study findings revealed that stakeholder communication influences project implementation.

Bouphana, Apipalakul and Ngangb (2015) researched on the factors affecting public health performance evaluation of sub district health promoting hospital directors. This cross sectional descriptive design was employed and conducted for duration of time from year 2011 to 2012. A total of 220 samples drawn from a population of 350 sub-district health promoting hospital directors by using systematic sampling technique. Research instrument is a self-administered questionnaire which developed by researchers. The questionnaire contained of four session including seven items on general information, 36 items and 30 items five-rating Likert scale on administrative resources and public health performance evaluation respectively. In addition, respondents are required to give problems and suggestions at the last session of the instrument as three open ended questions. The study found that stakeholder communication influence project implementation.

#### **Stakeholder Need Identification and Project Sustainability**

Ali and Gitonga (2019) conducted a study on the influence of stakeholders identification on the performance of national government constituency development fund projects in Wajir west constituency, Kenya. The study adopted a descriptive research design. The target population for this study was 261 comprising of Community leaders, Constituency Development Fund Committee, Project Management Committee and County officials. The study used a sample of 78 selected using stratified random sampling techniques. Primary data was obtained using self-administered questionnaires. The study found that stakeholder identification influences project implementation.

Hassan (2015) conducted a study on the influence of stakeholders identification on performance of constituencies development fund projects a case of Isiolo north constituency, Kenya. The research

study adopted a descriptive survey design. The target population for this study was representatives from all one hundred and fifty five CDF projects (155) in Isiolo North Constituency. Data was also collected from fifteen (15) CDF committee members and five (5) government representatives (departmental Heads). The study found that stakeholder identification influences project performance.

Muthueloo, Ping and Meng (2020) conducted a study on the impact of stakeholder identification on organizational commitment: evidence from Malaysia. This study attempts to identify key aspects pertaining to care of organizations towards their stakeholders and their impact on organizational commitment based on the Social Exchange Theory (SET). A quantitative research approach was applied and a total of 287 samples were collected from working individuals across different organizations located in Penang, Malaysia. This study found that among all the organizational stakeholder care that was provided to employees, extended family, CSR, suppliers and customers, employees and suppliers were found to be positively and significantly associated with organizational commitment and all its dimensions.

## RESEARCH METHODOLOGY

### Research Design

This study adopted a descriptive research design. The target population was the 6 sub counties in Makueni County. The total population was 420 .60 Bore hole Project managers, 40 small dams project managers, 6 project management committees and 12 county water engineers. In this study, the sampling frame was a list of all the 420 respondents.

A section of a research process that is selected as an element of data collection is referred to as sampling (Sekara & Bougie, 2019). According to (Oribhabor & Anyanwu, 2019) the sample size should be sufficient and should give efficient results. The sample size was obtained using the Nassim formula

$$n = Nc^2 / (c^2 + (N-1) e^2)$$

Where: n = sample size N= accessible population  
c= Coefficient of Variance (0.6) e= standard

Error (0.05)

$$N=420(0.6)^2 / [0.6^2 + (420-1)0.05^2] =130$$

The 130 respondents were chosen with the help of stratified random sampling technique. Stratified random sampling technique was used since the population of interest is not homogeneous and could be sub-divided into groups or strata to obtain a representative sample. The study then used simple random sampling to select respondents from each group. The study collected primary data.

This study adopted the self-administered questionnaire approach. Before embarking on data collection, relevant approvals were obtained. An introductory letter from the JKUAT Nairobi campus introducing the researcher to relevant authorities for field data collection was obtained. This letter was used to obtain the permit for research from the National Commission for Science, Technology and Innovation (NACOSTI). In addition, the researcher sought permission from the respective county government in order to be allowed to collect data.

The data collection was done with the help of research assistants. The research assistants were trained on research ethics and on the research instrument and its administration, interview skills and data recording. An introductory letter for the research assistant to collect data on the researcher's behalf was given to the research assistants.

A pilot study was conducted to test the instrument's reliability and validity, the completeness or responses, and analyze the various measures within the instrument. Piloting was done on 11 questionnaires; this constituted 10% of the target sample. According to Cooper and Schilder (2011), 5% to 10% of the target sample should comprise the pilot test for assisting in the establishment of reliability of the questionnaire. The respondents used in pilot test were excluded from the final study. This study used both inferential and descriptive statistics to analyze the data.

The study used correlation and regression analysis. Pearson R correlation was used to measure strength and the direction of linear relationship between variables. Multiple regression Analysis was used in this study because it uses the independent variables in predicting the dependent variable. It is a statistical tool attempting to establish whether some

variables can be used together in predicting a particular variable (Mugenda & Mugenda, 2008).

**RESEARCH FINDINGS**

**Descriptive Statistics Analysis**

**Stakeholder Communication and Sustainability of Water Projects**

The first specific objective of the study was to determine the influence of stakeholder communication on sustainability of water projects in Makueni County, Kenya. The respondents were requested to indicate their level of agreement on statements relating to stakeholder communication and sustainability of water projects in Makueni County, Kenya. A 5 point Likert scale was used where 1 symbolized strongly disagree, 2 symbolized disagree, 3 symbolized neutral, 4 symbolized agree and 5 symbolized strongly agree. The results were as presented in Table 1.

From the results, the respondents agreed that stakeholder communication influences sustainability of water projects. This is supported by a mean of 3.943 (std. dv = 0.981). In addition, as shown by a mean of 3.866 (std. dv = 0.850), the respondents agreed that feedback to stakeholders influences sustainability of water projects. Further, the respondents agreed that performance reports to stakeholders plays a significant role on sustainability of water projects. This is shown by a mean of 3.731 (std. dv = 0.914).

The respondents also agreed that stakeholder meetings influence the sustainability of water projects. This is shown by a mean of 3.696 (std. dv = 0.947). With a mean of 3.689 (std. dv = 0.856), the respondents agreed that they are satisfied with the level of stakeholder communication.

**Table 1: Stakeholder Communication**

	Mean	Std. Dev.
stakeholder communication influences sustainability of water projects	3.943	0.981
Feedback to stakeholders influences sustainability of water projects	3.866	0.850
Performance reports to stakeholders plays a significant role on sustainability of water projects	3.731	0.914
Stakeholder meetings influences the sustainability of water projects	3.696	0.947
Am satisfied with the level of stakeholder communication	3.689	0.856
<b>Aggregate</b>	<b>3.788</b>	<b>0.873</b>

**Stakeholder Need Identification and Sustainability of Water Projects**

The second specific objective of the study was to establish the effect of stakeholder need identification on sustainability of water projects in Makueni County, Kenya. The respondents were requested to indicate their level of agreement on the statements relating to stakeholder need identification and sustainability of water projects in Makueni County, Kenya. The results were as shown in Table 2

From the results, the respondents agreed that stakeholder need identification influences sustainability of water projects. This is supported by a mean of 3.896 (std. dv = 0.865). In addition, as shown by a mean of 3.819 (std. dv = 0.945), the respondents agreed that use of focus groups influences sustainability of water projects. This is shown by a mean of 3.819 (std. dv = 0.945). The respondents also agreed that use of questioners to identify stakeholder needs play a significant role on sustainability of water projects. This is shown by a mean of 3.798 (std. dv = 0.611). With a mean of 3.731 (std. dv = 0.908), the respondents agreed that use of interviews influences the sustainability of water projects. In addition, the respondents agreed that they are satisfied with the stakeholder need identification strategies used. This is shown by a mean of 3.661 (std. dv = 0.776).

**Table 2: Stakeholder Need Identification**

	Mean	Std. Dev.
Stakeholder need identification influences sustainability of water projects	3.896	0.865
Use of focus groups influences sustainability of water projects	3.819	0.945
Use of questioners to identify stakeholder needs play a significant role on sustainability of water projects	3.798	0.611
Use of interviews influences the sustainability of water projects	3.731	0.908
Am satisfied with the stakeholder need identification strategies used	3.661	0.776
<b>Aggregate</b>	<b>3.772</b>	<b>0.841</b>

**Inferential Statistics**

Inferential statistics in the current study focused on correlation and regression analysis.

**Correlation Analysis**

The present study used Pearson correlation analysis to determine the strength of association between independent variables (stakeholder communication and stakeholder need



identification) and the dependent variable (sustainability of water projects in Makueni County, Kenya) dependent variable. Pearson correlation coefficient range between zero and one, where by the strength of association increase with increase in the value of the correlation coefficients.

**Table 3: Correlation Coefficients**

		Project Sustainability	Stakeholder Communication	Stakeholder Need Identification
Project Sustainability	Pearson Correlation	1		
	Sig. (2-tailed)			
	N	121		
stakeholder communication	Pearson Correlation	.851**	1	
	Sig. (2-tailed)	.002		
	N	121	121	
stakeholder need identification	Pearson Correlation	.852**	.289	1
	Sig. (2-tailed)	.001	.061	
	N	121	121	121

From the results, there was a very strong relationship between stakeholder communication and sustainability of water projects in Makueni County, Kenya (r = 0.851, p value =0.002). The relationship was significant since the p value 0.002 was less than 0.05 (significant level). The findings are in line with the findings of Maosa and Muturi (2019) who indicated that there is a very strong relationship between stakeholder communication and project sustainability.

Moreover, the results revealed that there is a very strong relationship between stakeholder need identification and sustainability of water projects in Makueni County, Kenya (r = 0.852, p value =0.001). The relationship was significant since the p value 0.001 was less than 0.05 (significant level). The findings conform to the findings of Ali and Gitonga (2019) that there is a very strong relationship between stakeholder need identification and project sustainability.

**Regression Analysis**

Multivariate regression analysis was used to assess the relationship between independent variables (stakeholder communication and stakeholder need identification) and the dependent variable (sustainability of water projects in Makueni County, Kenya)

**Table 4: Model Summary**

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.929	.863	.864	.10120

a. Predictors: (Constant), stakeholder communication and stakeholder need identification

The model summary was used to explain the variation in the dependent variable that could be explained by the independent variables. The r-squared for the relationship between the independent variables and the dependent variable was 0.863. This implied that 86.3% of the variation in the dependent variable (sustainability of water projects in Makueni County, Kenya) could be explained by independent variables (stakeholder communication and stakeholder need identification).

**Table 4: Analysis of Variance**

Model	Sum of Squares	df	Mean Square	F	Sig.
1 Regression	12.027	4	3.018	53.893	.000 <sup>b</sup>
1 Residual	6.568	118	.056		
Total	18.595	120			

a. Dependent Variable: Sustainability of Water Projects

b. Predictors: (Constant), stakeholder communication and stakeholder need identification

The ANOVA was used to determine whether the model was a good fit for the data. F calculated was 53.893 while the F critical was 2.416. The p value was 0.000. Since the F-calculated was greater than the F-critical and the p value 0.000 was less than 0.05, the model was considered as a good fit for the data. Therefore, the model can be used to predict the influence of stakeholder communication and stakeholder need identification on sustainability of water projects in Makueni County, Kenya.

**Table 5: Regression Coefficients**

	Unstandardized Coefficients B	Std. Error	Standardized Coefficients Beta	t	Sig.
1 (Constant)	0.205	0.038		5.395	0.000
stakeholder communication	0.369	0.099	0.367	3.727	0.000
stakeholder need identification	0.486	0.107	0.487	4.542	0.000

a Dependent Variable: Sustainability of water projects

The regression model was as follows:

$$Y = 0.205 + 0.369X_1 + 0.486X_2 + \epsilon$$

According to the results, stakeholder communication has a significant effect on sustainability of water projects in Makueni County, Kenya  $\beta_1=0.369$ , p value= 0.004). The relationship was considered significant since the p value 0.004 was less than the significant level of 0.05. The findings are in line with the findings of Maosa and Muturi (2019) who indicated that

there is a very strong relationship between stakeholder communication and project sustainability.

The results also revealed that stakeholder need identification has significant effect on sustainability of water projects in Makueni County, Kenya,  $\beta_1=0.486$ ,  $p$  value= 0.001). The relationship was considered significant since the  $p$  value 0.001 was less than the significant level of 0.05. The findings conform to the findings of Ali and Gitonga (2019) that there is a very strong relationship between stakeholder need identification and project sustainability.

### Conclusions

The study concludes that stakeholder communication has a positive and significant effect on the sustainability of water projects in Makueni County, Kenya. Findings revealed that feedback, reports and meetings influence the sustainability of water projects

In addition, the study concludes that stakeholder need identification has a positive and significant effect on the sustainability of water projects in Makueni County, Kenya. Findings revealed that focus groups, questioners and interviews influence the sustainability of water projects

### Recommendations

The study found that stakeholder communication has a positive and significant effect on the sustainability of water projects in Makueni County, Kenya. This study therefore recommends that Makueni county government should ensure an effective and timely stakeholder communication to enhance sustainability of water projects.

In addition, the study found that stakeholder need identification has a positive and significant effect on the sustainability of water projects in Makueni County, Kenya. This study therefore recommends that Makueni county government should ensure an effective and efficient framework is implemented to enhance stakeholder need identification

### Suggestions for Further Studies

This study focused on the influence of stakeholder management on sustainability of water projects in Makueni County, Kenya. Having been limited to sustainability of water projects in Makueni County, Kenya, the findings

of this study cannot be generalized to sustainability of other projects. The study therefore suggests further studies on the influence of stakeholder management on sustainability of the other projects in Makueni County.

Further, the study found that the independent variables (stakeholder communication and stakeholder need identification) could only explain 86.3% of sustainability of water projects in Makueni County, Kenya. This study therefore suggests research on other factors affecting sustainability of water projects in Makueni County, Kenya.

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