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EFFECT OF PROJECT PLANNING ON THE SUCCESS OF WATER PANS PROJECT IN ELGEYO MARAKWET COUNTY

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ABSTRACT
In rural communities, development projects are vital for addressing social, economic, and environmental challenges. Effective project management techniques significantly influence the success of these initiatives. This research aimed to assess how various project management methods contribute to achieving development goals, focusing on water projects in Elgeyo Marakwet County. The study's specific objectives included examining project planning, risk management, public involvement, monitoring, and evaluation to the success of water pan projects. Utilizing three theoretical frameworks—program theory, results-based management theory, and participative theory—the study targeted seven completed water pan projects and employed a descriptive research approach. A total of 479 respondents were analyzed, including county employees, community leaders, and chairs of community water project committees. Stratified and random sampling techniques determined a sample size of 217 respondents. Primary data were collected through a semi-structured questionnaire, which underwent pilot testing for validity and reliability. Data analysis utilized descriptive and inferential statistics via SPSS software. Results indicated that project planning influences the success of water pan projects ($\beta = .567$; $p < 0.05$). These findings suggest that enhancing project planning processes and risk management strategies is essential for achieving project goals and ensuring community satisfaction. Additionally, involving more stakeholders in monitoring processes can improve project outcomes.

Keywords: *project management methods, public participation, risk management, project planning, monitoring and evaluation*

INTRODUCTION
In rural communities, development projects are essential for tackling a range of social, economic, and environmental issues. However, good project management techniques are crucial to these initiatives' success (Magagan & Ngugi, 2021). Project management is the process of accomplishing a project by applying and integrating the steps of planning, executing, monitoring, risk management, community involvement, and closing (Eyibio, & Daniel, 2020). Through a gradual integration of functions, project management satisfies stakeholders and constituents in compliance with the project's established needs throughout the project life cycle (Adeyemi & Aigbabvoa, 2018). According to Nokes (2014) a project is defined as a collection of planned actions with a start and end date that are intended to achieve a certain objective while adhering to time, scope, and resource restrictions. Nkamelu (2013), states that a project is deemed successful only if the intended beneficiaries support and utilize it, it adheres to budget and schedule, and it

achieves the goals and outcomes initially established for it. Projects are distinct from other activities occurring within an institution or organization due to their unique characteristics. Edwin, Mitullah, and Manga (2014) claim that this is because projects naturally get more complex as a result of increased unpredictability and originality. Furthermore, planning and the actual project execution occur frequently in discrete stages or phases, making it impossible to fully comprehend before or at the beginning of the project.

Project management encompasses the motivation towards project's most costly resources project planning, organizing, directing, and supervision of activities. Since project management essentially involves supervising a project from start to finish, it is best explained in terms of the many stages of a project life cycle. A project can be viewed as a dynamic system that evolves from one stage to the next during its entire life cycle (Maina & Kyalo, 2023). In order for stakeholders and the project team to work effectively and efficiently within the constraints of time, money, quality, and scope, project management techniques address fundamental difficulties that are inherent in the project (Ocharo & Kimutai, 2018). The most well-established methods are those related to scope, cost, and time management, according to the findings of a few empirical studies that have been done to explain the relationship between project success and project management approaches (Ibrahim &Yong, 2019).

Similarly, Ajmal, et al (2017) asserted that it is still difficult to pinpoint the behaviors that lead to effective project management and that there are differing views on what constitutes a project success. According to Crispim, Silva, and Rego (2019), project management strategies offer direction for projects to guarantee improved resource management, within the most typical limitations of time, money, and quality. For this study, the researcher will adopt project planning practices. As Pellerin and Perrier (2019) pointed out, planning is the core of any project or program. It entails documenting plans at every stage through careful consideration, investigation, and evaluation of every concept and option. It also includes a sketch of the anticipated timeliness, as well as planned outcomes, criteria, and requirements that must be upheld. Project planning, according to Beratan (2020), is associated with higher project success rates because it provides owners and managers with information on the projected amount of materials, the timetables, and the human resources required at each stage of the project's implementation. An efficient project is one where risks and losses are minimized to a greater extent when extensive planning is devoted to the project.

Planning, according to Friedmann (2020), is future-focused and aims to formalize the decision-making process by expressing facts, logicalizing concepts, and breaking them down. Prior to the implementation of the established plans and following business planning is project planning. Plans for stakeholder participation, project funding choices, technology selection and utilization, and management team expertise are all part of project planning (Mojtahedi & Oo, 2017). According to Shakeri and Khalilzadeh (2020), a project's success is mostly dependent on its preparation; hence project managers primarily spend their time organizing with team members and other project stakeholders. A number of studies have also stated that project managers' neglect to consider the views, worries, and effects of project stakeholders can lead to project failure, highlighting the importance of stakeholder management (El-Sawalhi & Hammad, 2015; Wessinger, 2012). As a result, regulating project participants is an indispensable component of management of project and that it affects how successfully projects are completed. It's evident that the fundamental thesis of

the majority of project stakeholder literature is that stakeholder management is a critical success factor for project success and a necessary part of all projects and project management processes (Atkin, Brian & Skitmore, 2008; El-Sawalhi & Hammad, 2015; Jepsen & Eskerod, 2013; Yang et al., 2011).

Kihuha, (2018) noted that Project control and planning are crucial components in project management. Planning is a decision-making process that aims to create a desired future and implement project components. It aids the project manager in directing, controlling, and coordinating with stakeholders. It proactively identifies potential problems before they affect the project's cost and schedule. Project planning creates a benchmark for execution, providing direction for the project team. It also considers cultural differences and requires a competent team to accomplish planning tasks. Both processes are essential for successful project execution. Proper project planning avoids open-ended requirements and supports sustainable benefits by adopting a phasing strategy over a longer period. Clear goals and objectives are needed at each end phase, and a business case should be moved through an initial pilot phase, followed by subsequent phases when there is ambiguity about local policy, capability, or guarantee (El-Sawalhi & Hammad, 2015).

According to Al-Rubaiei, Nifa, and Musa (2018), there hasn't been much research done in this area, but more research is necessary because project scope management is essential to success. A 2018 evaluation by the Standish Group found that relatively few projects are completed within the set design. Unexpected problems frequently require projects to be modified. However, poorly managed adjustments negatively impact the project's scope, which can result in missed deadlines, budget overruns, and a direct impact on the project's quality (Ahmad, Rehman & Ilyas, 2019). In industrialized nations, Harris and McCaffer (2005) opined that, contractors have embraced planning since the performance and profitability of the contract as well as the company are directly impacted by the outcomes of a well-planned, closely monitored, and controlled project. However, several issues make projects prone to failure in a down economy such as Nigeria. Project failure occurs when there are differences in plans, poor plans, and ineffective management, even when resources are adequate (Ubani, et al., 2010). This is made worse by the fact that Nigerian Indigenous contractors, or NICs, are unable to complete projects because of insufficient project planning under their contractual obligations.

In Elgeyo Marakwet Only fifteen of the fifty-three water projects launched between 2019 and 2022 are operational and show signs of sustainability. The study also stated that because of a person diverting water for personal use, some of the projects the auditors sampled during project physical verification did not benefit the public. The report also pointed out that, despite the completion of the Kilos Water Project in the Arror ward, the public did not benefit from it because the water was taken from two sites: a school compound and a private homestead that are off-limits to the public, and no explanation has been provided for why there isn't any public water available. Even though all fifteen of the projects were finished on time, it is still unknown if the completed projects will be profitable. Additional reports from Elgeyo Marakwet's network of civil society organizations (CSOs) in 2021 showed that while community involvement occurs during project identification and planning, different ward resident segments may not always have effective representation in public participation forums during these stages. The county administration does not give the public enough opportunity during the planning phase to raise concerns about the goals and scope of the

project proposals. The government's ideas are frequently given to the community during the public involvement forums, without providing the planned project details ahead of time for review. Since the public felt that the project idea was being imposed onto them, even though it was intended to meet their needs, this decreased the likelihood of any meaningful participation and increased the likelihood of resistance or rejection. This necessitated a study on how project management techniques affect Elgeyo Marakwet County's water project success.

Statement of the Problem

Water projects in Elgeyo Marakwet County continue to provide difficulties for many rural areas, even with the large investment in development projects. A large number of these water projects are not sustainable or completed with high success rates. This is mostly related to subpar project management techniques. Only 50% of the water pan projects in Elgeyo Marakwet County are finished, 30% are having sustainability issues, and 20% are operational. This begs the question of whether the special requirements and complexity of rural development water projects are being adequately addressed by the project management techniques in use today. This research aims to examine the effect of project management practices on the successful implementation of water projects in rural communities in a case of water pans in Elgeyo Marakwet County**.**

Specific Objectives

To establish the effect of project planning on the success of the water pans project in Elgeyo Marakwet County.

Significance of Study

Techniques in Project management must be implemented as part of the development process. Understanding how project management techniques affect the growth and success of community projects is crucial, even when taking into account different implementation levels. Development is greatly aided by the water sector, especially in rural regions. Community development professionals are the ones who plan and conceptualize projects; thus the study will be helpful to them. The knowledge they acquire from it will enable them to appreciate the importance of maintaining the projects, which will guide their design. In order for the communities to continue reaping the benefits of the initiative, they will also recognize the importance of participating in its activities. This study will be beneficial to Elgeyo Marakwet County and the national government since it will offer knowledge and insight into implementing policies that will result in the sustainability of the water projects. These governments will learn more about the implications of their assistance for neighborhood water projects for sustainability efforts and water project initiatives.

Scope of Study

With a focus on understanding the potential and difficulties associated with project management within the framework of Elgeyo Marakwet County's community development. The study's goal was to determine how project management techniques affect the outcomes of development initiatives, such as rural water projects. The water projects completed in the last five years (2018–2022) were the main focus of the study. Elgeyo Marakwet County water projects that are still in use and help the local people piqued the researcher's attention. The study was conducted between January and November of 2024 and focused on seven finished water projects. 53 of the 479 responders are chairpersons of community water project committees, 379 are members of the

community leadership, and 47 are county employees.

Limitations of the study

Because of the nature of the information being sourced and policy needs, the researcher encountered difficulties in contacting the target group. This restriction was lessened by making use of the study permit, getting approval from the sub-county directors, and setting up meetings with the respondents who were selected. Additionally, the researcher ran upon uncooperative subjects while doing the study. To shed away their fears, participants were assured that information provided was confidential and that they were for academic purposes. Thirdly accessing information from the management was likely a challenge and thus to mitigate this, the research provided the required assurances from relevant authorities before data was collected.

LITERATURE REVIEW

Theoretical Literature Review

Results-Based Management Theory

This study was anchored on results-based management theory, the theory was developed in the middle of the 1980s by the Australian government and was later popularized by (OECD) in the 1990s. This theory can be used in management procedures. All field workers who directly or indirectly support the accomplishment of project goals ensure that their efforts, products, and outputs have an impact on the final result (Crawford and Bryce, 2013). Understanding exactly who is responsible for what is the cornerstone of RBM. It outlines the final outcomes while also requiring performance tracking, self-evaluation, and progress monitoring toward long-term goals (UNDP, 2012).

The major components of results-based management are continuous improvement of project management features, beginning with the fundamentals of comprehensive planning, such as purpose and vision definition and framework tool development based on results. The decision to carry out several objectives through a program is made, and from this point on, quality project management techniques are essential to achieving lasting results. RBM is a continuous process that needs continual participant participation to promote lesson learning and process growth (UNDP, 2012). The main plans are updated regularly to take into account the knowledge gained from observation and evaluation. Previous plans are updated, and new plans are developed based on the most current learning. RBM places a strong emphasis on monitoring, but it does it constantly and often, going over the lessons learned along the way. The plan gives direction for completing the project by directing decisions and actions. Evaluations are conducted so that the project can be improved over time, the execution of suggested new initiatives and the enhancement of current programs.

Empirical Literature Review

A research constructing a moderated mediation model on the indirect impacts of project planning on project performance was carried out in China by Lin, Wang, Ning, Ma, and Chen in 2024. The study targeted data from 214 megaprojects using a questionnaire survey. Their findings indicated that the favorable link between project planning and megaproject performance is mediated by both process and information integration, with the mediating effect of process integration diminishing with increasing project complexity. While the present study will employ a multiple regression model to evaluate data, the previous study used a moderated mediation model.

Nzomo (2022) conducted research in Machakos County, Kenya, to investigate the sustainability of water projects and their impact on project development. The three completed water projects in the Mavoko Constituency were the beneficiaries of the study, which employed a descriptive research methodology and featured community elders, water committee members, and project managers among its participants. The results also showed that, in relation to water projects, stakeholder participation includes cost-sharing, community members doing repairs, inclusion in decision-making, and project monitoring. ICT for communications, water and pumping technologies, and cutting-edge, contemporary technologies that enhance the sustainability of water projects were all included in the technological choice aspect. Further research reveals that project management abilities, such as technical know-how, resource handling know-how, and project management expertise, contributed to the projects' increased sustainability. Project funding, including funds from donors, fundraisers, the CDF, and proper budgeting, also led to the sustainability of water projects. Therefore, efficient project planning is essential to the water projects' sustainability.

Osoro (2021) conducted research on how project management involvement affected the Masaba Water and Sanitation project's completion in Kenya's Trans-Nzoia County. The study involved 340 participants adopting a descriptive research design. In order for the 183 participants in the study to answer the survey questions, a stratified sampling procedure was used. The results showed that even a small amount of project management engagement could cause a project to fail before its intended completion date.

Rotich (2024) sought to ascertain the relationship between project planning and project implementation of water construction projects in Bomet County, Kenya. It was possible to target a population of 440 respondents by employing a descriptive survey methodology, with 164 respondents being the sample size. The results showed how crucial every variable is to the successful completion of water projects, including resource planning, communication planning, budget planning, schedule planning, and scheduling. The study recommends that arid and semi-arid countries replicate the findings in order to improve the access of their citizens to safe and clean drinking water.

Githenya and Ngugi's (2014) used a sample of 216 respondents taken into consideration for a descriptive case study on the delivery of housing projects in Nairobi County, Kenya. Both purposive and stratified samplings were employed in the study to choose the sample, and both descriptive and inferential statistics were utilized to analyze the data. It was discovered that project execution is greatly impacted by planning. However, the current research focuses on program performance, whereas the study focused on housing projects. The study provides a solid foundation for the current investigation, but because it concentrated on housing projects, its conceptual and contextual reach was constrained. By concentrating on water projects in an ASAL region with very distinctive features, the current study closes a gap in the literature.

Nzioka's (2017) assessed the effect of project management planning on project success in Kenya, particularly in the Kenya Power Infrastructure Development Projects, was investigated in study conducted in Nairobi. The study identified project-planning responsibilities and collected data through a Census Survey. The study found that the success of the Kenya power development

projects in Nairobi was strongly correlated with the project planning. Contextual gaps are also evident in this study because it focused on infrastructure development initiatives, which differ greatly from community-based programs, particularly in the water sector. The impact of project planning on Women and Girls Economic Empowerment initiatives in Nairobi and Kiambu is the main topic of the current study.

Mkutano and Sang's (2018) study examined the impact of project management practices on NGOs' performance in Nairobi County, Kenya. The study, which targeted 201 NGOs, found that successful project planning increased efficiency. The research focused on Women and Girls Economic Empowerment in Kiambu and Nairobi city counties, highlighting the importance of effective project planning in enhancing NGOs' performance. This study presents both geographical gaps, conceptual gaps and contextual gaps which limits its results from being generalized to other projects at the community level. Studying NGOs presents general understanding of the project management practices. The current study seeks to understand how these practices influence community development projects in the water sector. Simiyu's (2018) study examined the impact of project management practices on agricultural projects in Bungoma County, focusing on 138 community-based project groups, contrasting with current research on Women and Girls Economic Empowerment programs.

RESEARCH METHODOLOGY

Research Design

The design is the blueprint to guide the researcher in collecting data, the descriptive design as noted by Creswell and Creswell (2017) Descriptive survey research design was adopted for this study. According to Bryman (2016), descriptive research design aims to explain, make sense of, and evaluate the current situation. Analyzing a phenomenon that emerges at a specific time and place is the goal of descriptive analysis (Creswell, Klassen, Plano & Smith, 2011). The focus of descriptive work is on existing settings, practices, systems, disagreements, collaborations, opinions voiced about ongoing processes, or discernible trends. The study's analysis design makes it possible to collect and evaluate data in a way that aims to strike a balance between the object of the analysis's significance and procedural efficiency. According to Creswell and Clark (2017), descriptive research helps the study to reach its goals by examining the how, when, and when a phenomenon has occurred.

Target Population

The population is the total number of people to whom the study's claims applied; to answer the research questions, this group must be removed in advance (Creswell, Klassen, Plano & Smith, 2011). All seven of Elgeyo Marakwet County's finished water pan projects was the study's target population as indicated in Appendix 5. Therefore, the Elgeyo Marakwet Equitable Development Act and its corresponding framework for operationalizing project implementation committees stipulate that the study's respondents were county employees in the water department in each of the sub counties, ward women and youth leadership, and chairpersons of community water project committees.

Sample and Sampling Technique

A sample is a representative of a population that is chosen through a process to provide a scientifically valid sample from which the full population is then generalized. However, sampling is the process of choosing a group of individuals, occasions, or behaviors for a study or research project (Burns and Groove, 2001). Yamane 1967 was used to determine the study sample as seen below:

$$n = \frac{N}{1 + N(e)^2}$$

Where;

n is the sample size

N is the population size, (479)

e is the level of precision (0.05)

$$n = \frac{479}{1+479\ (0.05)^2}$$

$$= 217$$

The desired sample size for the study thus comprised of 217 respondents.

Sampling Technique

The study used basic random sample procedures along with stratified sampling to choose the 217 respondents. Three strata or groups—county employees, community leadership representatives, and chairpersons of committees managing community water projects—would comprise the participants. The stratified sampling technique would guarantee that each stratum obtains an equal proportion of responses from each group. Stratified sampling uses proportionality to pick samples to guarantee that each grouping has an equal distribution (Oso & Onen, 2011). By using simple random sampling, each member of the chosen population would be given an equal probability. Every selected respondent needs to be included in the study and assigned a unique number. This will be followed by the researcher selecting the sample using the proportionate random sampling technique. According to Saunders and Bezzina (2015), research findings from randomly chosen samples can be generalized to a larger population within specified statistical error limits. Random sampling often requires picking and assigning the subject solely by chance to reduce the impact of an unrelated component and eliminate systematic bias.

Table 1: Sample Size

Target group	Target population	Sample size
County staff	47	22
Community leadership members	379	171
Chairpersons of community water project committees	53	24
Total	**479**	**217**

Data analysis and presentation

To analyze the data, a simple regression analysis was adopted. The effects that were hypothesized were tested using simple regression equations. A simple linear regression model estimates the relationship between one independent variable and one dependent variable using a straight line.

RESEARCH FINDINGS

The research findings regarding the contribution of project planning to the water pans project's success in Elgeyo Marakwet County are highlighted in this section. Linear regression model of project planning and success of water pan Projects. The relationship between the independent variable of project planning and the dependent variable of the Elgeyo Marakwet County water pans project's success is modeled by the linear regression analysis. The findings are displayed in the ensuing section.

Table 2: Model Summary of project planning and success of water pan Projects

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.808[a]	.653	.651	.215

a. Predictors: (Constant), Project Planning

The degree of the association between project planning and the success of water pan projects is shown by the correlation coefficient (R) and coefficient of determination (R2). Table 2 linear regression findings show that R2 = 0.653 and R = 0.808. The success of the water pan project is significantly correlated with project planning, as indicated by the R-value. According to the R2, the independent variables have 0.653 percent explanatory power. This indicates that the regression model can account for about 65.3% of the variation in water pan project success, while variables other than the model can account for 34.7% of the variation.

A modified version of R2, known as adjusted R2, accounts for the model's predictor count by adjusting it by less than chance. Because it is sensitive to the addition of unrelated factors, the adjusted R2, which is 0.651, slightly lower than the R2 value, provides an accurate indication of the relationship between the independent and dependent variables. According to the updated R2, the model explains 65.1% of the variations in the success of water pan projects, while it is unable to explain 34.9% of the differences. This suggests that the Elgeyo Marakwet County water pan project's success is significantly influenced by project planning. These results are consistent with the study by Rotich (2024) indicated that efficiency in resource planning, communication

planning, budget planning, schedule planning, and scheduling leads to the successful completion of water projects.

Table 3: ANOVA of project planning and success of water pan Projects

Model		Sum of Squares	Df	Mean Square	F	Sig.
1	Regression	14.702	1	14.702	318.217	.000[b]
	Residual	7.808	169	.046		
	Total	22.509	170			

a. Dependent Variable: Project Success

b. Predictors: (Constant), Project Planning

From the aforementioned Table 3 an overall test of the fitted regression model's significance is provided by the F test. The total regression is significant because the F value shows that each and every variable in the equation has a meaningful role. There is a statistically significant association between project planning and the success of the water pans project since the F-statistics generated (F = 318.27) was significant at p=0.000, supporting the model's fitness.

Table 4: Coefficients of project planning and success of water pan Projects

Model		Unstandardized Coefficients		Standardized Coefficients		
		B	Std. Error	Beta	t	Sig.
1	(Constant)	1.736	.126		13.754	.000
	Project Planning	.566	.032	.808	17.839	.000

a. Dependent Variable: Project Success

Table 4 shows that the success of the water pans project in Elgeyo Marakwet County was positively correlated with project planning ($\beta = 0.567$; $p < 0.05$). This indicates that better project planning techniques translate into more successful water projects. Researchers Lin, Wang, Ning, Ma, and Chen (2024) showed that there is a positive correlation between megaproject performance and project planning.

CONCLUSION AND RECOMMENDATIONS.

Conclusion

According to the research, project planning has a positive and significant impact on the success of water pans projects in Elgeyo Marakwet County. It also helps the team communicate project goals and strategies and how they can be achieved. It also guarantees that the project's completion goals are met on time and within budget, and it aids in the realization of project objectives through feasibility planning.

Recommendations of the Study

The ensuing suggestions have been made in light of the findings, conclusions, and outcomes:

The research recommends that county governments enhance the efficiency of the project planning procedures applied to each project. Adopting and continuously enforcing the organization-wide project management best practices will help achieve this. Furthermore, this study recommends focusing on implementation steps that ensure plans are successfully carried out to fully realize goals. In terms of risk management, the study recommends that a suitable risk management protocol be adhered to support the local acceptability and satisfaction perspective as well as the

project's objectives. To improve the success of their initiatives, it was also advised that community water projects incorporate more important parties, including pertinent government agencies, financial advisors, the communities concerned, and other experts. According to the study, incorporating stakeholders and encouraging public engagement adds value to the project by improving community members' project management abilities and competencies. To improve the monitoring and control process, the study makes the following recommendations for project monitoring and evaluation: introducing efficient monitoring instruments; teaching personnel how to use them; using effective communication techniques; and improving reporting and documentation.

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