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An Empirical Analysis of the Relationship between Project Planning Management and Performance of Selected Mega-dam Projects in Kenya

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Date Published: ABSTRACT

23 April 2024 The main objective of this paper was to determine the relationship between project planning management and the performance of mega-dam projects in Kenya. This study was guided by positivist research philosophy. A descriptive cross-sectional survey research design was adopted. In this study, the unit of analysis was 18 mega-dam projects launched and completed across Kenya as listed under the Ministry of Water, Sanitation, and Irrigation (MoWSI) while the unit of observation was the respective three officials (project manager, project engineer, geospatial engineer) in the MoWSI. A Census of all mega-dams completed in Kenya was conducted. In addition, the study purposively interviewed 5 key stakeholders including the cabinet secretary, permanent secretary from the MWSI, donor, contractor, and one randomly selected beneficiary from the community with the target mega-dam. This formed a total sample size of 180 respondents. Primary data was collected using the semi-structured questionnaires as well as the Key Informant Interview (KII) guide. The combination of quantitative and qualitative data from multiple sources and perspectives provided a more comprehensive and robust understanding. Pretesting was done by way of pilot testing to ascertain the validity and reliability of the tools. Descriptive and inferential statistics were used to summarize and describe the key characteristics of the data, as well as draw conclusions and make inferences. Correlation analysis found that project planning management had a positive significant relationship with the performance of selected mega-dam projects in Kenya ($r= 0.869$, $p<0.05$). Furthermore, regression found that the project planning management coefficient is 0.497, suggesting that a one-unit improvement in project planning management corresponds to a 0.497 improvement in the performance of these mega-dam projects. Based on the findings, the study concluded that project planning management positively and significantly influences the performance of selected mega-dam projects in Kenya. This study therefore recommends that project managers should give priority to project planning management.

Keywords:
Project Planning Management, Performance, Mega-dam Projects

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INTRODUCTION

The project initiation phase is critical for defining the project, creating a business case, and obtaining approval (Meredith et al, 2017). During this phase, the project team conducts feasibility assessments, drafts a project charter, selects project management tools, and identifies important stakeholders. This phase requires a thorough understanding of the project's objectives, needs, and potential hazards.

In the context of mega-dam projects in Kenya, project planning management plays a crucial role. The government, in an effort to address water deficit challenges and increase hydropower production, has undertaken an ambitious mega-dam construction operation (Ngotho, 2022). However, securing financing for these projects has been challenging, and the costs of construction and maintenance often exceed initial estimates. The Kenyan government has signed agreements worth more than Sh. 700 billion for the construction of at least five mega-dams since 2013 (Baraza, 2020).

Despite the significant resources directed towards the construction of these mega-dams, their performance has been noted to dwindle. The construction of mega-dams in Kenya has resulted in significant social and cultural impacts, including deaths, displacement of local communities, and the loss of cultural heritage sites. For example, the African Development Bank (2020) reported that the Thwake mega-dam was designed to occupy land that included

homesteads, smallholders' crop cultivation land, and grazing land, impacting local communities.

The tragedy of the Solai dam bursting, resulting in deaths, displacement, and property damage, underscores the importance of considering social and environmental factors during the planning and construction processes. Thus, project planning management in the context of mega-dam projects needs to address these challenges through careful planning, design, and management to ensure the overall success and sustainability of the projects.

Statement of the Problem

The challenges confronting mega-dam projects in Kenya form a complex narrative that demands a nuanced understanding of the various impediments hindering their successful implementation. Among these challenges are the conspicuous stalls encountered by key projects, such as the Arror and Kimwarer mega-dams, both initially projected to cost substantial amounts – Sh38 billion and Sh. 28 billion, respectively (Baraza, 2020). The stagnation of these projects has been exacerbated by allegations of anomalies and improprieties, as unearthed in a parliamentary committee's report on the status of mega-dams in Kenya (Republic of Kenya, 2019).

Financial constraints emerge as a persistent hurdle, casting a shadow over the ambitious construction of mega-dams in the country. The inadequate availability of financial resources, coupled with reliance on counterpart funding and ineffective financing models, has led to setbacks

and stagnation, notably exemplified by the stalling of the Itare Dam Project due to the project contractor's bankruptcy proceedings. These financial challenges underscore the fragile economic underpinning of mega-dam construction in Kenya. The unresolved issues pertaining to Resettlement Action Plans (RAP) further complicate the landscape of mega-dam projects in Kenya. The intricate process of addressing community displacement, compounded by challenges in navigating RAP-related matters, contributes to project delays and heightened complexities. The social fabric of affected communities is entangled in these issues, reflecting the intricate balance that must be struck to ensure the well-being of communities impacted by mega-dam projects.

The social impacts of existing mega-dams in Kenya are deeply concerning, with reported deaths, widespread displacement affecting over 300,000 people, and property damage reaching millions of dollars (Kenya Human Rights Commission, 2018). The tragic bursting of the Solai dam serves as a poignant reminder of the human toll associated with mega-dam projects. This incident resulted in fatalities, extensive displacement, and significant property damage, laying bare the profound social and humanitarian costs embedded in the construction and management of mega-dams.

Moreover, the statement of the problem highlights crucial empirical and methodological gaps in existing studies. Research efforts, such as those by Maendo et al., (2018) on the impact of project monitoring and evaluation on the performance of road infrastructure projects completed in Kenya, Towet et al., (2022) investigation of the impact of project initiation, planning, execution, and monitoring on the project performance of the Output-Based Aid (OBA)-funded Sabasaba urban water supply project in Muranga County, and Muia's (2022) study on how project implementation factors affect the performance of water projects in Tharaka Nithi County, offer valuable insights but are constrained by conceptual, contextual, and methodological limitations. Bridging these gaps is imperative for

a more profound understanding of the challenges these projects face, paving the way for informed strategies and solutions that ensure the success and sustainability of mega-dam initiatives in Kenya.

Objectives of the Study

To establish how project planning management influences the performance of selected mega-dam projects in Kenya

Hypotheses of the Study

H0₁: Project planning management has no significant relationship with the performance of selected mega-dam projects in Kenya

LITERATURE REVIEW

Theoretical Literature

The Agency Theory

Meckling and Jensen formulated the agency theory in 1976. This theory was founded on economic principles and dominates the focus on financial regulation. This theory highlights the two forms of conflict that arise between managers and shareholders given the fact that managers may not hold the total claim, hence not able to capture the entire painful process of maximising their activities (Meckling & Jensen, 1976). The second conflict between debt holders and equity holders arises from the fact that debt holders provide equity holders with an incentive meant for optimal investment. According to Canella et al. (2003), the predominance of this nature of presumptions results from two reasons. According to this theory, management teams who are agents might prioritise their objectives over those of their owners.

Agency theory elucidates the agency issues that arise from an agent disregarding his principal's interests and failing to operate in their best interests (Karasev, 2022). Administrators or managers might not even perform their jobs effectively with the diverse objectives of owners who seek and require that the portfolio investment of investors be accorded immediate attention in order for financial reasons. On the other hand,

management might engage in actions that support positive personal objectives. Managers must be effective in their transactions, as shown in the institutions' credit risk.

The agency theory suffers several criticisms; it oversimplifies the complex relationships that exist between principals and agents in organisations. It assumes that agents are solely motivated by self-interest, which may not always be the case in practice. Agency theory places a strong emphasis on using financial incentives to align the interests of principals and agents. Further, the theory overlooks non-financial motivations that can drive agent behaviour, such as a desire for social or environmental impact, job satisfaction, or career advancement (Chrisman, 2019). According to Schlesinger and Doherty (2021), although the theory has these critics, the theory is strong that it provides a useful framework for understanding and managing principal-agent relationships in organisations, and its empirical support and practical applications make it a valuable tool for managers and researchers.

This theory underpins the second objective which is to what extent project planning influences the performance of selected mega-dam projects in Kenya. Agency theory is relevant to the study since it supports the study in that it supports the project manager's work of ensuring that finances and all other resources such as time, human resources, and materials are utilised effectively to ensure the performance of the projects. Further, the theory illustrated how different agents interlink to ensure improved project performance. Thus, management teams who are agents might prioritise their objectives and collaborate well with other agents to ensure the performance of the projects.

Empirical Literature Review

Werner and De Simone (2020) studied the influence of human resource planning on organizational performance. The study targeted the human resource managers, and an inferential research design was used. The study found that the planning of human resources helps companies in

the prediction of how changes in their strategy will affect the needs of their human resource. The study recommended that planning the labour force needs of any organization is very important as well as critical, particularly in the rapid changes in demands of the external market. The study concentrated on human resource needs and how they affect organizational performance, but it failed to address the whole issue of project planning, especially in infrastructural projects.

Antvik and Sjöholm (2019) studied the impact of cost on project performance. The study was a census. The study found that estimation of cost ought to be grounded on the scope of the project, and the WBS and be linked to the plan of the project. The study also found that for the project to reach a correct estimation, the cost of individual activities must be estimated based on the specific activity conditions. Due to the various factors of uncertainty in a project, it is wise to reserve some cost dedicated to activities with high risk and a low level of detailed information.

Kress (2018) studied the effects of material planning on project performance through a survey design of selected construction firms. The study targeted construction projects not completed in time in London. The study found that the project management's primary objective is to meet otherwise surpass the material usage sponsors anticipation of the project. According to the study, these anticipations are usually expressed within 3 groupings; a given project generates the preferred result with minimum defects, a given project generates the preferred result for the expected cost schedule, and a given project generates the preferred result within the expected period. However, the study did not consider many forces intervening and attempting to push projects off target.

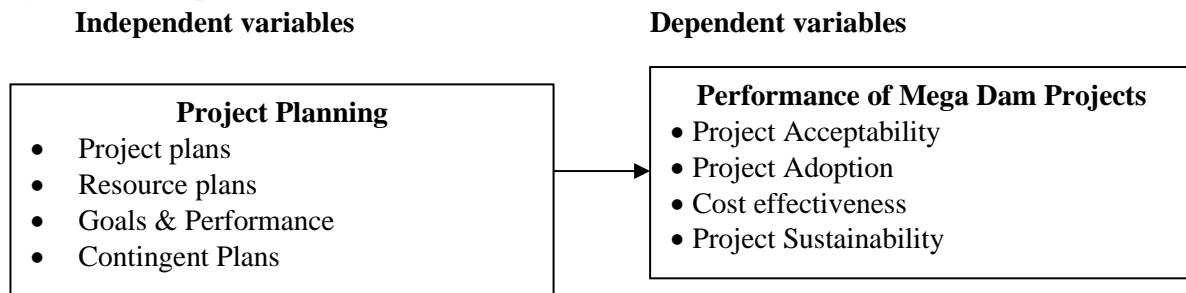
Akpan and Chizea (2019) studied the determinants of time planning systems in construction firms. A case study of failed projects in Nigeria was selected. The study found that the time planning system necessitates the sensible evaluation of actual implementation with standards that are pre-established and if the

implementation is different from the conventional objectives/goals then the corrective action is enforced immediately. Conversely, execution of a project refers to actualizing a project plan and at the same time, tracking the effectiveness of the plan in the achievement of the set goals and this can be defined as project control in action. The study did not establish the effects of planning on project performance.

The conceptual framework shows how the project planning relates with the dependent variable that the performance of the mega dam projects. Figure 2.1, presents project planning and their respective indicators. In sum therefore, both the more recent project performance studies and the traditional project performance analysis are used to provide significant insights into upgrading this conceptual framework.

Conceptual Framework

Figure 1: Conceptual framework



Source: Researcher (2023)

RESEARCH METHODOLOGY

This study was guided by positivistic research philosophy which holds the view that the reality is stable and can be observed and explained from an objective point of view (Flick, 2018). The study gathered both qualitative and quantitative data with highly structured instruments from fairly large measures measured on Likert scale. This study adopted a descriptive cross-sectional survey research design. The study's target population was the 18 mega-dam projects launched and completed across Kenya as listed under the Ministry of Water, Sanitation, and Irrigation (MoWSI). Mega-dam projects form the unit of analysis. From the available statistics as indicated in the annual reports (2022) of each mega dam project, there are a total of 18 mega-dam projects completed in Kenya as of 31st December 2022. The unit of analysis was 18 mega-dam projects launched and completed across Kenya as listed under the Ministry of Water, Sanitation, and Irrigation (MoWSI) while the unit of observation was the respective three officials (project engineer, project manager, geospatial engineer) in the Ministry of Water, Sanitation, and Irrigation. For qualitative data, the study also interviewed

key stakeholders including the cabinet secretary as well as the permanent secretary from the MWSI, donor, contractor, and beneficiary from the community who were involved with the construction and completion of the target mega-dams in Kenya.

A census was employed where all completed mega-dams in Kenya were studied. This method is favoured because it avoids selection or locational bias. Purposive sampling was used to select three officials (project engineer, project manager, geospatial engineer) and seven stakeholders in the MoWSI totalling 10 individuals from each of the 18 selected mega dams. This formed a total of 180 respondents. The study also interviewed 5 key stakeholders including the cabinet secretary as well as the permanent secretary from the MWSI, a donor, a contractor, and one beneficiary (who was randomly selected from the community) who were involved with the construction and completion of the target mega-dams in Kenya. Thus, the total sample size was 185 respondents. Primary data was gathered using semi-structured questionnaires. Data was input into Excel, where it was cleaned, organized, and coded before being

imported into SPSS version 26 for analysis. It was planned to gather both qualitative and quantitative information. The study used content analysis and thematic analysis of qualitative data. For inferential analysis, the study employed Pearson correlation and regression approaches

RESEARCH FINDINGS AND DISCUSSION

Out of 180 questionnaires that were issued, a total of 163 questionnaires were completely filled and returned to the researcher and the interviews were successfully completed. This gave a response rate of 168 which translates to 90.6%.

A 5-point Likert scale was employed, ranging from 1 (strongly disagree) to 5 (strongly agree). To interpret the findings, means and standard deviations were utilized. A mean value falling within the range of 1 to 1.4 indicates a strong disagreement, 1.5 to 2.4 reflects disagreement, 2.5 to 3.4 represents a neutral stance, 3.5 to 4.4

signifies agreement, and 4.5 to 5 corresponds to a strong agreement. A small standard deviation (<2) suggests that the majority of data points are closely clustered around the mean, indicating low variability and vice versa for a larger standard deviation (>2).

Project Planning Management

The objective of the study was to assess how project planning management influences the performance of selected mega-dam projects in Kenya. This section presents descriptive findings on the influence of project planning management on the performance of selected mega-dam projects in Kenya. On Likert scale questions, respondents were asked to indicate how far they agreed or disagreed with the statement by ranking their answer on a scale of 1-5. *Table 1* presents a summary of the findings where mean and standard deviations were used.

Table 1: Project Planning Management

	Mean	Std. Dev.
Project Plan		
The communication plan was developed to keep stakeholders informed about the project progress.	3.435	1.535
The project management established a budget and allocated resources accordingly.	3.404	1.501
For each team member involved, the project defined roles and responsibilities.	3.76	1.448
The project plan was regularly updated to reflect any changes in project scope or objectives.	3.484	1.483
Project progress was monitored and reported against the project plan.	4.349	1.199
Resource plan		
The project resources were adequate throughout the project implementation.	4.582	0.494
The availability of resources was regularly assessed to ensure they aligned with the dam's projected needs.	4.478	0.525
Resources were allocated efficiently and effectively to the dam Project	3.251	1.283
Resource procurement processes were streamlined to minimize delays and disruptions.	4.582	0.494
There was optimization on the use of resources allocated to the Dam	3.073	1.214
Goals		
The project team had clear goals for the dam project.	3.159	1.138
There was regular tracking and reporting progress toward dam project goals.	4.576	0.495
The project team identified possible potential barriers to achieving project goals	4.589	0.493
The Project team developed strategies to address any deviations from the goals set out during the planning stage	4.576	0.495
Continuous dam Project goals attainment monitoring was carried out adequately	3.055	1.218
Contingent plans		
A contingency plan was developed for the dam project.	4.57	0.496
Alternate strategies to complete the project were identified.	4.582	0.494
Regular review and updating of contingency plans were conducted.	3.711	1.115
Contingency plans were communicated and understood by all relevant team members.	2.975	1.116
Resources were allocated to support the execution of contingency plans when needed.	3.055	1.223

Regarding the project plan, the findings in Table 1 show that respondents expressed agreement (means falling between 3.5 and 4.4) that project progress was effectively monitored and reported against the plan, and that clear roles and responsibilities were defined for each team member. However, a neutral stance (means ranging from 2.5 to 3.4) was observed regarding the regular updating of the project plan to reflect changes in scope or objectives, the development of a communication plan to keep stakeholders informed about project progress and the establishment of a budget with corresponding resource allocation. These findings align with the insights of Werner and De Simone (2020), emphasizing the crucial role of a well-defined project plan in guiding the seamless implementation of projects.

In the context of the resource plan, respondents strongly agreed (means above 4.5) that project resources remained sufficient throughout implementation, and that streamlined procurement processes minimized delays and disruptions. Additionally, there was consensus that the availability of resources was regularly assessed to align with the dam's projected needs ($M = 4.478$, $SD = 0.525$). However, neutrality prevailed (means between 2.5 and 3.4) concerning the efficient and effective allocation of resources to the dam project, as well as the optimization of the allocated resources. These findings resonate with the insights of Antvik and Sjöholm (2019), emphasizing the pivotal role of a well-executed resource plan in project implementation to ensure optimal utilization and prevent wastage of resources.

Concerning project goals, respondents expressed strong agreement (means above 4.5) that the project team successfully identified potential barriers to achieving the set goals. Additionally, they affirmed that the project team developed effective strategies to address any deviations from the goals established during the planning stage, and there was regular tracking and reporting of progress toward the dam project goals. However, a neutral stance (means between 2.5 and 3.4) was observed regarding whether the project team had

clearly defined goals for the dam project and whether continuous monitoring of goal attainment was carried out adequately. These findings align with the insights of Kress (2018), highlighting the pivotal role of well-defined project goals in aligning the implementation process and minimizing deviations from the planned objectives.

Regarding contingent plans, respondents strongly agreed (means above 4.5) that the project team successfully identified alternate strategies for project completion, and a comprehensive contingency plan was developed for the dam project. Furthermore, there was agreement that regular reviews and updates of contingency plans were conducted ($M = 3.711$, $SD = 1.115$). However, a neutral stance (means between 2.5 and 3.4) emerged concerning whether resources were allocated to support the execution of contingency plans when needed, and whether these plans were effectively communicated and understood by all relevant team members ($M = 2.975$, $SD = 1.116$). Akpan and Chizea (2019) established that contingent plans are essential in ensuring projects are implemented as per the plan in place which agrees with this study's findings.

Generally, the respondents have agreed on average that project planning influences the performance of selected mega-dam projects in Kenya. Therefore, the study results are in line with the findings of Werner and De Simone (2020) who revealed planning of human resources helps companies in the prediction of how changes in their strategy will affect the needs of their human resource. The study recommended that planning the labour force needs of any organization is very important as well as critical, particularly in the rapid changes in demands of the external market. In addition, Antvik and Sjöholm (2019) found that for the project to reach a correct estimation, the cost of individual activities must be estimated based on the specific activity condition. Akpan and Chizea (2019) also established that a time planning system necessitates the sensible evaluation of actual implementation with standards that are pre-established and if the implementation is different from the conventional

objectives/goals then the corrective action is enforced immediately

The key informants emphasized the critical role of project planning management in the success of mega-dam projects in Kenya. One respondent stated, "Project planning is paramount in navigating the scale and complexity of mega-dam projects, breaking down the multifaceted nature of these endeavors into manageable components." Another added, "Effective project planning ensures thorough analysis and consideration of technical, environmental, and social factors, reducing the likelihood of oversights that could lead to costly errors or delays." Furthermore, they highlighted that mega-dam projects often span long timelines and entail multiple construction phases. A respondent noted, "Project planning

sets realistic and achievable timelines for each phase, considering dependencies and potential delays." Another emphasized, "This proactive approach enables project managers to identify and address issues early, maintaining the overall project schedule and mitigating the risk of cost overruns."

Performance of Mega-dam projects

The dependent variable in this study was the performance of selected mega-dam projects in Kenya. This section therefore presents descriptive findings on the performance of selected mega-dam projects in Kenya. On Likert scale questions, respondents were asked to indicate how far they agree or disagree with the statement by ranking their answer on the scale of 1-5. Table 2 presents a summary of the findings

Table 2: Performance of mega-dam projects

	Mean	Std. Dev.
Project acceptability		
On completion, the project was acceptable to stakeholders.	3.619	1.423
The dam project goals and objectives were clear and well-defined	4.036	1.369
Project Adoption		
The dam project was implemented within the planned timeline and budget.	3.803	0.986
The dam project is successful in achieving its intended outcomes	4.294	0.935
The project has been embraced by the local community	3.202	1.252
Cost-effectiveness		
The dam project was completed within the allocated budget.	4.251	1.084
The project team consistently monitored and controlled costs, ensuring that the budget remained intact.	4.589	0.844
Cost-benefit analyses were regularly conducted to evaluate the financial efficiency of the dam project.	3.963	1.211
Project sustainability		
The mega-dam project outcomes are sustainable after project completion.	3.711	1.27
There was adequate planning for the maintenance and upkeep of project outcomes.	4.036	1.121
Stakeholders were trained to ensure the sustainability of dam project outcomes.	4.582	0.494

In the assessment of Project acceptability, respondents generally agreed that the dam project's goals and objectives were clear and well-defined, and upon completion, the project was acceptable to stakeholders. The perceived success in achieving intended outcomes, adherence to planned timelines and budget were also acknowledged. However, a neutral stance emerged regarding whether the project has been embraced by the local community. This echoes the importance of community acceptance and involvement in project success, as emphasized by

literature such as studies by Mitchell and Nicholas (2015).

Turning to cost-effectiveness, a strong agreement was observed among respondents regarding the project team's consistent monitoring and control of costs to ensure budget adherence. Furthermore, respondents agreed that the dam project was completed within the allocated budget, with regular cost-benefit analyses conducted to assess financial efficiency. These practices align with the literature, where effective cost management is

recognized as vital for project success (Kerzner, 2017).

Regarding project sustainability, respondents strongly agreed that stakeholders were trained to ensure the sustainability of dam project outcomes. Additionally, they concurred that there was adequate planning for the maintenance and upkeep of project outcomes, contributing to the overall sustainability of the mega-dam project. This resonates with the sustainability literature, which emphasizes the importance of capacity building and long-term planning for project outcomes (Lehtonen et al., 2020).

Inferential Analysis

The study computed Correlation analysis to determine the strength and the direction of the relationship between the variables being studied. If the correlation values are $r = \pm 0.1$ to ± 0.29 then the relationship between the two variables is small, if it is $r = \pm 0.3$ to ± 0.49 the relationship is medium, and when $r = \pm 0.5$ and above there is a strong relationship between the two variables under consideration (Schober, et al., 2018). Table 3 presents the findings obtained.

Table 3: Correlation Analysis

		Project Performance	Project Planning Management
Project Performance	Pearson Correlation	1	
	Sig. (2-tailed)		
	N	163	
Project Planning Management	Pearson Correlation	.869**	1
	Sig. (2-tailed)	.023	
	N	163	163

Project planning management is also seen to have a positive significant relationship with the performance of selected mega-dam projects in Kenya ($r = 0.869$, $p < 0.05$). Since the p-value (.023) was less than the selected level of significance (0.05), the relationship was considered significant. This therefore suggests that Project planning management affects the performance of selected mega-dam projects in Kenya. This is in line with Werner and De Simone (2020) that planning human resources helps companies in the prediction of how changes in their strategy will affect the needs of their human resource. Also, Antvik and Sjöholm (2019) observed that for the project to reach a correct estimation, the cost of individual activities must be estimated based on the specific activity conditions. Due to the various factors of

uncertainty in a project, it is wise to reserve some cost dedicated to activities with high risk and a low level of detailed information.

The objective of the study was to establish how project planning management influences the performance of selected mega-dam projects in Kenya. The corresponding hypothesis was:

H_{01} : Project planning management has no significant relationship with the performance of selected mega-dam projects in Kenya.

A univariate analysis was therefore conducted to test the null hypothesis. The model summary (Table 4) was used to test the amount of variation in performance of the selected mega projects that can be attributed to project planning management.

Table 4: Model Summary for project planning management

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.519 ^a	.269	.267	.68365

a. Predictors: (Constant), Project planning management

From the model summary findings in *Table 4*, the r-squared for the relationship between project planning management and the performance of selected mega-dam projects in Kenya was 0.269; this is an indication that at 95% confidence interval, 26.9% variation in the performance of selected mega-dam projects in Kenya can be attributed to changes in project planning management. Therefore, project planning management can be used to explain 26.9% change in performance of the mega-dam projects in

Kenya. However, the remaining 73.1% variation in the performance of selected mega-dam projects in Kenya suggests that there are other factors other than project planning management that explain the performance of selected mega-dam projects in Kenya.

Analysis of variance was used to determine whether the model developed for predicting performance was significant. *Table 5* presents the findings.

Table 5: ANOVA for project planning management

	Model	Sum of Squares	df	Mean Square	F	Sig.
1	Regression	51.159	1	51.159	345.67	.000 ^b
	Residual	23.817	161	0.148		
	Total	74.976	162			

a. Dependent Variable: performance of selected mega-dam projects in Kenya

b. Predictors: (Constant), Project planning management

From the analysis of variance (ANOVA) findings in *Table 5*, the study found that that $\text{Prob} > F_{1,161} = 0.000$ was less than the selected 0.05 level of significance. This suggests that the model as constituted was fit to predict the performance of selected mega-dam projects in Kenya. Further, the F-calculated, from the table (345.67) was greater than the F-critical, from f-distribution tables

(3.900) supporting the findings that project planning management can be used to predict the performance of selected mega-dam projects in Kenya.

The coefficients findings in *Table 6* were used to fit the regression model.

Table 6: Beta coefficients for project planning management

Model	Unstandardized Coefficients		Standardized Coefficients	t	Sig.
	B	Std. Error	Beta		
1 (Constant)	1.792	.188		9.523	.000
Project Planning Management	.479	.046	.519	10.462	.000

a. Dependent Variable: Performance of selected mega-dam projects in Kenya

From the results in *Table 6*, the following regression model was fitted.

$$Y = 1.792 + 0.497 X$$

(X is project planning management)

The coefficient analysis reveals that the constant has a coefficient of 1.792, indicating that if project planning management is held constant at zero, the performance of selected mega-dam projects in Kenya would be at 1.792 units. Furthermore, the project planning management coefficient is 0.497, suggesting that a one-unit improvement in project

planning management corresponds to a 0.497 improvement in the performance of these mega-dam projects. The associated p-value for the project planning management coefficient is 0.000, falling below the predetermined 0.05 significance level. This establishes the statistical significance of project planning management. Consequently, the study rejects the null hypothesis and supports the alternative, affirming that enhancing project planning management significantly and positively influences the performance of selected mega-dam projects in Kenya.

CONCLUSIONS

The second null hypothesis test was ‘Project planning management has no significant relationship with performance of selected mega-dam projects in Kenya’. The study found that project planning management is statistically significant in explaining the performance of selected mega-dam projects in Kenya’. The influence was found to be positive. This means that unit improvement in project planning management would lead to an increase in the performance of selected mega-dam projects in Kenya’. Based on the findings, the study concluded that project planning management positively and significantly influences the performance of selected mega-dam projects in Kenya.

Knowledge Contribution

The study contributes significantly to the understanding of planning in the context of mega-dam projects in Kenya. One notable knowledge gap identified is related to the effective utilization of project charters. The study emphasizes the pivotal role of project charters in aligning project objectives with government goals. The need for consistent reference to these charters throughout the mega-dam project life cycle emerges as a critical aspect of ensuring successful initiation and implementation, underlining the importance of meticulous planning from the project's inception.

Furthermore, the knowledge contribution related to advanced project tracking tools is pertinent to planning. The study emphasizes the importance of tailored and efficient project tracking mechanisms, directing future research towards refining tools that better suit the unique needs of mega-dam projects. This insight is particularly relevant to the planning phase, as it encourages a more nuanced and efficient approach to tracking project progress and potential challenges.

Lastly, the optimization of resource allocation, as addressed in the study, aligns with planning considerations during the initiation phase of mega-dam projects. The contribution underscores the importance of developing guidelines and

strategies to optimize resource allocation, emphasizing continuous monitoring throughout the project life cycle. Effective planning for resource allocation is crucial in the early stages to ensure that the necessary resources are efficiently utilized, contributing to the overall success of mega-dam projects in Kenya.

Recommendations

The study recommends mega-dam projects in Kenya adopt an integrated approach to project planning that considers all aspects of the mega-dam project. This includes technical, environmental, social, and financial aspects. Ensure that planning addresses the entire project lifecycle. In addition, involve relevant stakeholders, including local communities, government agencies, and environmental groups, early in the planning process. Their input is crucial for identifying potential issues and ensuring alignment with community and regulatory expectations.

Recommendations for Further Studies

This study was limited to performance of the mega-dam projects in Kenya. The study thus recommends a similar study to be conducted in other projects in the sectors of the economy. Also, the study was limited to project planning management which explained 26.9% of all variation in performance of the mega-dam projects in Kenya. There is therefore need for a study to be conducted on other factors that can explain the remaining variation in the performance of the mega-dam projects in Kenya

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