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PROJECT MANAGEMENT PRACTICES AND IMPLEMENTATION OF RENEWABLE ENERGY PROJECTS IN KENYA

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ABSTRACT

Project implementation assesses all processes, operations and resource utilization of a project. Implementation of projects is determined by many factors such as resource allocation, planning, and management. The study aimed to find out project management practices and implementation of renewable energy projects in Kenya. The specific objectives were to establish the effect of contract administration and relationship management on implementation of renewable energy projects in Kenya. The theories that guided this study were resource-based theory and stakeholder theory. This study used a descriptive design with questionnaire as the instrument for data collection. Reliability of the study instrument was established using Cronbach Alpha, internal consistency method. Validity of the research instrument was determined using content, face and construct validity. The target population was 45 renewable energy projects in Kenya. The unit of observation was one project engineer from the renewable energy projects.The study conducted a census on all the projects. Data collected was analyzed using SPSS version 28 to produce frequencies, descriptive and inferential statistics were used to derive conclusions. The study conducted a multiple regression analysis to determine the relationship between project management practices affecting implementation and success of renewable energy projects. The study concluded that contract administration has the most positive significant influence on implementation of renewable energy projects in Kenya. The study also concluded that relationship management has a positive and significant influence on implementation of renewable energy projects in Kenya. Based on the findings, the study recommends that project managers and stakeholders involved in implementing renewable energy projects should ensure frequent contract monitoring, provide adequate resources for project implementation and ensure availability of capacity building to improve project implementation. In addition, the study recommends establishment of clear conflict management guidelines to prevent any hindrances to project implementation success.

Key Words: Project Management Practices, Contract Administration, Relationship Management, Implementation of Renewable Energy Projects

Background of the Study

According to Schmidt et al. (2020) implementation of projects entails decision making. Implementation requires development of structures and procedures to align with the project objectives and help solve problems encountered during the implementation process. Howlett (2019) assert that implementation of projects requires making fundamental decisions that determine project success. Successful execution of contracts is critical to implementation of projects. Bullock and Lavis (2019) assert that successful implementation of projects requires adequate resource management, efficient procedures and engagement of key stakeholders in contract administration.

The use of project management practices has increased among institutions and agencies to enhance effective project implementation. Organizations have adopted project management practices as a strategy to enhance project implementation outcomes. According to Yaw and Hadija (2019), project management practices provides an efficient manner of achieving desired outcomes of project implementation. Organizations have adopted the practices to enhance project implementation processes of major projects that require extensive financial and resource investment.

According to Chism (2019), project implementation requires effective contract administration and good project management. Poor contract management, planning and leadership are key constraints in the successful implementation of projects in the public sector. The study conducted in Norway found that performance management has significant influence on project implementation. Chism (2019) assert that performance management led to significant improvement in project implementation success and performance.

The African region faces great challenges in project implementation. According to Flyvbjerg et al. (2019) project failures and uncompletion are high in the African region due to factors such as poor planning and contract administration. Yaw and Hadija (2019) study in Ghana found that the use of performance management and contract administration were guided by State regulations to enhance compliance. The study found that adoption of performance management aided in performance management of projects and their success. In addition, performance management and contract administration provided for effective monitoring to assess achievement of targets and the effectiveness of project implementation.

In Kenya there are increased rates of project failure, abandonment and suits associated with contract administration. According to Ndung'u (2019), contract administration is critical in implementation of projects. Ndung'u (2019) asserts that the public sector in Kenya is faced by increased constraints of project implementation and performance. According to Omondi (2019) inadequate contract administration, lack of leadership and poor management of resources are key issues facing infrastructural project implementation. The poor performance of projects witnessed in the public sector affects economic development and contribute to poor performance in the public sector. The study found that factors such as inadequate contract monitoring resulted to inefficiencies in project implementation and performance. Omondi (2019) asserts that adoption of contract management practices is crucial in promoting development and project success.

Renewable rollouts have substantially improved energy access. In 2013, around 28% of Kenyans had access to electricity. By 2020, this had risen to over 71%. This was achieved as the population grew by over seven million over the same period, while the rate of urbanization continued to gather pace. According to the World Bank, barely one million Kenyans had electricity in 1990. Solar energy is almost ubiquitous across Kenya, both at utility scale and through solar home systems (SHS). SHS have provided an affordable route to energy access for millions across Kenya – especially amongst rural communities – as it allows them to bypass central grid connection, which can often be prohibitively expensive.

Approximately 200,000 rural homes in Kenya have SHS and the country sells between 25,000 and 30,000 photovoltaic modules each year, making it the second most dynamic commercial solar marketplace in the world after India.

Alongside geothermal energy is wind and solar generation; both of which have grown rapidly in Kenya, the Lake Turkana Wind Plant (LTWP), the largest wind farm on the African continent made up of 365 turbines. In 2019, the LTWP alone was able to supply about 30% of Kenya's off-peak electricity demand and 17 percent of its peak demand. LTWP consistently operates at a capacity factory of around 57%, a healthy margin above the global average of between 28% and 40%. Kenya introduced a feed-in tariff (FiT) on electricity generated from wind, biomass, and small hydropower in 2008 before extending the tariffs in 2010 to include geothermal, biogas, and solar energy. The rate of renewable installations has accelerated and, as a result, Kenya has garnered substantial investment into its energy section. A Bloomberg NEF report from 2019 ranked Kenya as fifth globally in terms of investment opportunities in clean energy. The Kenya Government aim is to have the sector produce 600 MWp by 2030. To attain this goal it has launched several renewable energy projects across the country. The country currently generates about 45% percent of its energy from geothermal energy and 19% from hydropower – the mainstay of its energy generation. Its solar and wind capacity currently account for 17% and 3%; the remainder of its energy use is supplied by a mix of other sources including thermal (fossil fuel-based) energy sources.

Statement of the Problem

Renewable energy projects play a critical role in increasing energy access and economic growth of the nation, however; these projects face challenges resulting from contract administration and performance (Obong'o, 2021). In 2021, 81% of Kenya's electricity generation came from the low carbon sources of geothermal, hydro, wind, and solar power. Over half of this low carbon electricity came from geothermal energy, which Kenya has in abundance. According to the Rural Electrification and Renewable Energy Corporation (2023), installed geothermal capacity in Kenya could be increased by at least eightfold, which could open opportunities for scaling up green manufacturing capacity or exporting excess electricity to neighboring countries. Kenya has an ability to leverage its energy abundance, yet, renewable energy makes up a small amount of the energy mix, due to delay in project implementation. In 2018, geothermal energy made up slightly over 1% of the energy mix despite high geothermal capacity in Kenya. To improve energy levels at the rate required, geothermal generation needs to increase by 13% a year through to 2030. Flyvbjerg et al. (2019) asserts that projects have a high probability of experiencing challenges related to contract administration to a tune of 86%. According to Sulle (2019), performance management is likely to contribute to 80% improvement in project implementation. In Kenya, challenges in contract administration contributes to only 12% successful project implementation. Gitonga, Muchelule and Nyang'au (2022) study on performance of projects in Kenya indicate that many projects failed due to factors of project management such poor planning, poor contract design and administration and poor management. According to Hassan and Guyo (2017), Kenya reported a failure rate of 47% in projects which shows challenges in project implementation.

Previous studies on project implementation by Braithwaite et al. (2018); Howlett (2019); Maxwell (2020) found that adoption of project management practices faces numerous challenges. Thus, it is unclear how best to ensure effective implementation that guarantees a designed outcome. However, a study by Hudson, Hunter, and Peckham (2019) noted that there exists a notion that implementation does not succeed or fail dependently. Therefore, project management practices has continued to gain interest in management since it's the backbone of effective project management (Heath, 2018).

Among State corporation like the Rural Electrification and Renewable Energy Corporation, project implementation processes have been operated against inefficient resources, poor procedural alignment, lack of stakeholder's engagement, and numerous conflicts (Musyoki, 2018; Otungu, 2020; Schmidt et al., 2020). The studies found that variables such as resources, procedural alignment, stakeholders' engagement, and conflicts helped implement policies effectively when considered during the project implementation processes. These studies however, present conceptual gaps since they do not consider all the components of project management practices in project implementation. Besides, these studies present contextual gaps since majority do not focus on renewable energy projects. This study bridged these gaps by examining project management practices and implementation of renewable energy projects in Kenya.

Objectives of the study

General Objective

The general objective this study was to establish the influence of project management practices on implementation of renewable energy projects in Kenya

Specific Objectives

i. To determine the influence of contract administration on implementation of renewable energy projects in Kenya.
ii. To assess the relationship between relationship management and implementation of renewable energy projects in Kenya.

Theoretical Framework

Resource-based Theory

Resource-based theory by Barney (1991) states that the possession of resources which is valuable, difficult to imitate, rare, and cannot be substituted is critical. The resource-based theory suggests that organizations should look inside the company to find the sources of advantage through the use of their resources. A firm's advantage evolves from the resources that the organization has. Resource-based theory prescribes that organizations position themselves strategically based on their resources and capabilities rather than their products and services. Theory holds that unique capabilities and resources are essential in creating an ideal strategy for the firm in order to remain sustainable. Therefore, an organization must have the capabilities to implement projects. Resources can be tangible or intangible. Therefore, organizations that wish to achieve effective project implementation should possess resources such as technology, human resource and financial capabilities.

Having an ideal performance rate is as a result of the unique skills and resources a company utilizes in its operations(Day &Wensley, 2008). The theory supports contract administration variable under study. Organizations should therefore place a premium on trying to nurture and develop their firms' resources to support project implementation. This superiority of skills and resources is as a result of strategies implemented in the firm which improves performance. And in order for the firm to continue enjoying the superiority of the skills and resources, there is need to develop and implement strategies that are favorable to the development of the unique resources and capabilities. Contract management through resource management, capacity building can enhance project implementation and performance (Mukira et al., 2022). Therefore, the theory demonstrates the link between contract administration and project implementation.

Stakeholder Theory

Researchers have attributed the fame of the stakeholder theory and literature in management domain to the book, "Strategic Management: Stakeholder Management Approach" by Edward Freeman in 1984 (Freeman, 2017). Stakeholder theory states that an organization should take into account the views of a wider range of interested parties known as stakeholders. Stakeholder theory has evolved out of the need to consider all stakeholders and is fundamentally about managing stakeholder relationships and their divergent interests (Preble, 2018).

According to Rana (2018), stakeholders include customers, shareholders, suppliers, employees, community, government, competitors and trade groups. The stakeholder theory states that organizations success can be determined by the value it delivered to the mentioned stakeholders who have different interests. Stakeholder theory states that an organization should take into account the views stakeholders to develop and maintain good relationships (Rana, 2018). The theory emphasizes that when employee is included in the stakeholder list, they produce more value for the company due to perceived recognition. Such value is passed on to customers through good service hence, more retention rates and productivity. In the context of project implementation, when employees are valued as stakeholders in project implementation, they can deliver better output and enhance project implementation success.

In this study, the theory explains the importance of relationship management with the stakeholders to foster project performance. All stakeholders such as suppliers, contractors, project managers should be involved in the implementation process through information sharing, effective communication and feedback mechanisms. According to Waithiki and Kihara (2017), establishment of effective feedback mechanisms and communication with stakeholders is essential for implementation success.

Conceptual Framework

Conceptual framework is the graphical representation of variables, which are the dependent variable and the independent variables.

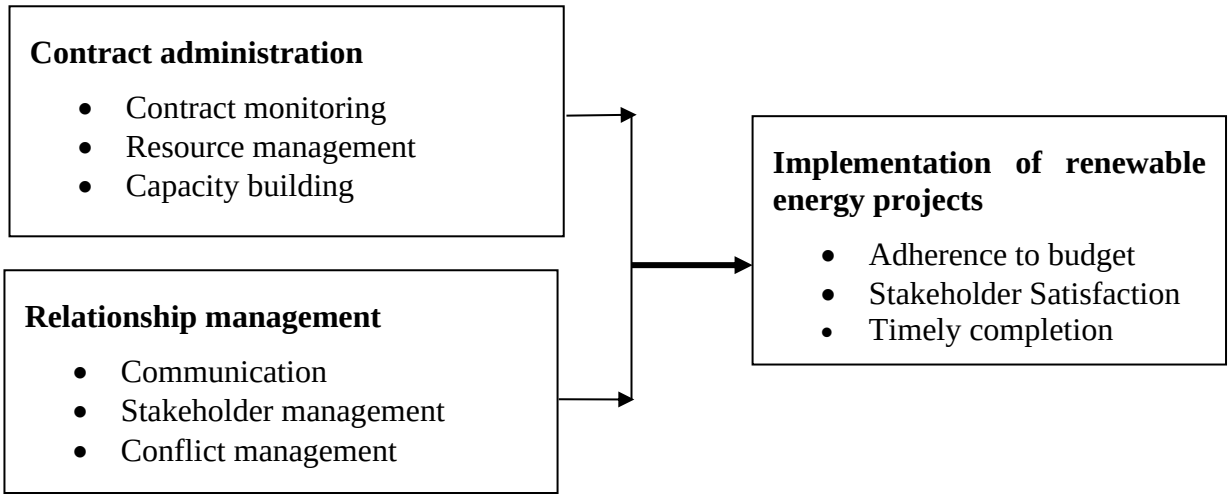

Figure 2.1 Conceptual Framework

Contract Administration

According to Flyvbjerg et al. (2019), contract administration is the process of developing bidding documents between parties involved in project implementation. It involves executing the contents of the agreement ensuring that all terms and conditions are met. Contract

administration process involves overseeing the implementation of projects to ensure that projects are implemented as desired, within the stipulated time and budgets. Yeri (2018) asserts that contract administration involves addressing any deviations to the contract agreements through contract modification, solving disputes an ensuring the contract is executed within the agreed timelines.

According to Mwangi and Yusuf (2022), contract administration is a critical aspect of project implementation. Contract administration entails ensuring that all resource requirements are addressed to ensure successful project execution. In addition, contract administration entails developing project implementation plans to ensure that resources are availed. Besides, contract administration measures the contractors financial, technical and resource capacity to implement a project. It is the process of ensuring that the contractor has the capacity and leadership to implement a project successfully.

Contract administration entails development of plans to ensure that project costs fall within the contract agreement and schedules. According to Andreas and Johanseb (2018) contract administration team should have adequate knowledge of the project risks to develop mitigation measures. In addition, contract administration team should have adequate knowledge of the tools necessary to complete the project, the project scope and all plans involved in project execution to ensure they are within the contract terms and conditions and determine any need for contract modification.

Contract monitoring element in project implementation enables communication with stakeholders and track a project's performance based on the allocated timelines and budget. Contract monitoring ensures the project is executed within the allocated time by eliminating challenges of cost overruns and project delays. In addition, contract monitoring provides a clear picture of the project progress, which enhances decision making on any adjustments. It also enables project managers to forecast any risks, which could affect project execution.

Further, contract monitoring establishes measures for project managers to use monitoring tools to identify any variations from the requirements, budget and costs arising from changes in project scope. Tracking contract execution is crucial to enhancing project performance and creating value for stakeholders as stipulated in the public value theory. Project managers should ensure there is accountability in resource use through control measures to enhance project implementation. It ensures all changes are monitored and submitted. Project managers can monitor the changes that affect the costs of project implementation.

Relationship Management

Relationships are essential in project implementation. According to Ling and Li (2019), relationships develop between the parties involved in project implementation. Relationships ensure effective project implementation through effective communication and understanding of the project requirements, deliverables and required schedules and budgets. Ling and Li (2019) assert that contractual relationships are formed based of mutual interests for successful project execution and completion based on the stipulated budgets and schedules.

According to Schönbeck, Löfsjögård and Ansell (2020), information sharing is critical in fostering contractual relationships. All parties involved in the development of contracts and execution of contracts have an obligation to share information to ensure development of effective contracts and successful implementation of projects. Schönbeck, Löfsjögård and Ansell (2020) posit that positive relationships among contractual parties facilitates performance of critical tasks which in return prevents litigations. In addition, contractual relationships can be enhanced through timely information sharing, effective communication and adequate reporting and documentation of project progress.

Empirical Review

Contract Administration and Implementation of Renewable Energy Projects

Nsanzimana and Mulyungi's (2020) assessed contract management strategies and implementation of projects in Rwanda. The study found a positive and significant association between contract management processes and implementation of projects. The study recommended utilization of effective project implementation tools to enhance planning, availability of key resources, financial capacity and effective execution of contracts.

Flyvbjerg et al. (2019) examined the high rate of project implementation failures in Sub-Saharan Africa. The study examined factors such as cost overruns, planning, contractor capacity. The study found that there was a high rate of incomplete projects resulting from cost overruns, lack of financial capacity to execute the projects and poor planning. The findings indicated that project implementation was constrained by schedule delays, poor project leadership and execution capacity. The study recommended effective project implementation planning, leadership and availability of financial and technical resources for project success.

Ayee (2018) conducted a study on the influence of project leadership on project performance in Sub-Saharan Africa. The findings showed that poor planning led to insufficient allocation of resources, contractual disputes and project failure. In addition, lack of effective leadership, work structures and resource capacity resulted to depletion of finances and poor contract execution during project implementation leading to incomplete projects and high number of project failures. The study recommended effective project leadership, financial and resource capacity to sustain contractual agreements and enhance project performance.

Lienert (2018) conducted a study on performance contracting strategy and performance of projects in Ghana. The study assessed the factors affecting implementation of performance contracting and found that factors such limited structural capabilities, lack of technical and financial capacity and ineffective information management systems affected contract administration and implementation of projects. The study recommended utilization of oversight agencies in contract administration to ensure compliance with contracts and ensure resource capabilities and availability.

Mwangi and Yusuf (2022) assessed project management and infrastructural health projects in Nairobi County, Kenya. The study found that financial constraint was a major factor affecting completion of projects in the County. The sources and availability of finances to meet project obligations were not clearly outlined in project management which resulted to contractual disputes and project failures. The study recommended conducting financial analysis during contract development and administration for proper planning for successful project implementation.

Salome (2018) examined the relationship between contract management and housing project performance in Kenya. The study assessed factors such as contractor financial capacity and leadership and found that these factors have positive and significant influence of project completion rates and performance. The study recommended the establishment of effective contractor administration team to ensure resource availability and provide guidance in project implementation.

Relationship Management and Implementation of Renewable Energy Projects

Nor et al. (2022) studied project implementation in Malaysia. The study examined the causes of project delays and cost overruns which reduced project completion rates. They found that stakeholder confidence was critical for successful project implementation. Building

stakeholder confidence through information sharing, maintaining good relationships and good supplier relationships was crucial for project implementation success.

Frimpong and Oluwoye (2018) conducted a study on construction project implementation in Ghana. The study examined the effect of stakeholder relationships on project implementation and established that stakeholder relationships had positive and significant impact on project implementations success. The study recommended effective stakeholder relationships during project implementation to maintain positive contractual relationships for project success.

Ibrahim and Mutuku (2022) assessed procurement practices and implementation of renewable energy projects in Kenya. The study assessed factors such as information sharing, contract management and supplier relationships in project implementation. The study found that information sharing, establishing positive relationships with suppliers and effective contract management had significant influence on project success. The study found that these factors associated with procurement practices had positive and significant association with performance of renewable energy projects in Kenya. The study recommended utilization of good practices such as supplier relationships and information sharing to enhance project performance.

Mbua and Sarisar (2018) assessed adoption of performance contracting in Kenya. The stud examined the factors affecting successful adoption and implementation of performance contracts in Kenya and found that contractual relationships were critical for successful implementation of performance contracts. The study recommended development of mutually beneficial contractual relationships to enhance project implementation and performance.

RESEARCH METHODOLOGY

Research Design

The study adopted descriptive research survey design. In a descriptive survey method research, participants answer questions administered through interviews or questionnaires. After participants answer the questions, researchers describe the responses given. One reason for the choice of the survey research design is its usefulness in describing the characteristics of a large population (Niyonambaza et al., 2019).

Target Population

The target population was 45 renewable energy projects implemented by MoEP, Kenya Power (KP), Kenya Electricity Generating Company PLC (KENGEN) and Rural Electrification and Renewable Energy Corporation (REREC). According to Ministry of Energy and Petroleum (MoEP) (2024) there are 45 renewable energy projects across the country. The unit of analysis was 45 renewable energy projects implemented by MoEP, Kenya Power (KP), Kenya Electricity Generating Company PLC (KENGEN) and Rural Electrification and Renewable Energy Corporation (REREC). The unit of observation was project engineers from each renewable energy project who are key personnel in implementing renewable energy projects managed by MoEP, Kenya Power (KP), Kenya Electricity Generating Company PLC (KENGEN) and Rural Electrification and Renewable Energy Corporation (REREC).

Sampling Frame, Technique and Sample Size

The sampling frame for this study consists of a list of 45 project engineers from the 45 renewable energy projects in Kenya managed by MoEP, Kenya Power (KP), Kenya Electricity Generating Company PLC (KENGEN) and Rural Electrification and Renewable Energy Corporation (REREC). The study adopted a census of all the renewable energy projects in Kenya managed by MoEP, Kenya Power (KP), Kenya Electricity Generating Company PLC (KENGEN) and Rural Electrification and Renewable Energy Corporation

(REREC). The study respondents consisted of project contractors, procurement managers, project engineers and project managers from each renewable energy project who are involved in contract development and implementation of renewable energy projects. The study used census since the population of 45 was small and the study aimed to reach all the renewable energy projects. Scholars such as Bernard (2011) and Seltman (2014), state that, census approach is effective when the target population is small, that is below 200 respondents.

Data Collection Instruments

The primary data was collected using a questionnaire with both open ended and closed-ended questions. Questionnaires were used for all respondents. The main advantage of using questionnaires is that a large number of people can be reached relatively easily and economically (Robson, 2011).

Pilot Study

A pilot study, or, pilot test, or pre-test is defined as small-scale preliminary research that is conducted to evaluate time, cost, and feasibility to improve on the design of a particular study before conducting the actual one or full-scale research project (Kultar, 2017). The researcher carried out a pilot study to ensure the data collection tool is reliable and valid. The pilot test helped correct some of the challenges encountered before undertaking the final study. The pretesting sample was made of 5 respondents, representing 10% of the sample size. The pilot study was conducted among renewable energy projects within Nairobi City County. The respondents included project engineers who oversee and implement renewable energy projects. The results from the pilot test were not be used in the main study. In addition, the respondents will be excluded from the final study.

Data Analysis and Presentation

Seltman (2014) posits that data collected should be interpreted and presented to draw conclusions. Data was analyzed using descriptive statistics to produce percentages and means and frequencies. The tool used for analysis will be SPSS version 28. Data was also be analyzed using inferential statistics which are regression and correlation analysis. Analyzed data was presented in form of tables and diagrams prepared from SPSS. ANOVA was used to determine the significance of the analysis model. In addition, the relationship between components of contract management practices and implementation of renewable energy projects was checked using a multiple regression analysis.

RESEARCH FINDINGS AND DISCUSSION

Descriptive Findings and Analysis

This part provides the results of the descriptive analysis carried out by the study consisting percentages, mean and standard deviation. The findings were presented as per each objective.

Contract Administration

The first objective was to determine the influence of contract administration on implementation of renewable energy projects in Kenya. The respondents were asked to indicate the extent to which the agree with the statement on contract administration based on a Likert scale where Strongly agree -5, Agree -4, Moderate -3, Disagree -2, Strongly disagree -1. The results of the study were as shown in table 4.1.The findings revealed that majority of the respondents, 60.5%, indicated that they agreed that cost administration practices are used in project implementation, 31.2% strongly agreed (mean=4.23). The study findings also showed that majority of the respondents, 56% agreed that the contractors have financial capacity to execute performance contracts, 10.8% strongly agreed (mean=4.63). Moreover, majority of the respondents, 65%, agreed that the contractors have technical capacity to

execute contracts while 25% strongly agreed. Further, the results of the study were not clear on whether the respondents agreed that project implementation team has strong leadership, 47.4% of the respondents agreed, 19.2% were neutral while 6.7% strongly disagreed (mean=3.29). The results of the study showed that 30.8% of the respondents agreed contract administration adheres to contractual terms and conditions,18.6% strongly agreed, 30.3% were neutral while 20.3% disagreed. Results showed that majority of the respondents, 65%, agreed that the contract administration improve project performance while 25% strongly agreed.

The results showed that majority of the respondents indicated that they agree with the statements on contract administration as shown by a mean of 3.92. The responses given by the respondents had little variation (standard deviation=0.89). The findings are of the study are consistent with the results of a study by Nsanzimana and Mulyungi's (2020) which found a positive and significant association between contract management processes and implementation of projects

Table 1: Contract Administration

Statements	Strongly disagree	Disagree	Neutral	Agree	Strongly agree	Mean	Std Dev
Cost administration practices are used in project implementation	0.0%	7%	1.3 %	60. 5%	31.2%	4.23	0.91
The contractors have financial capacity to execute performance contracts	0.0%	4.0%	29.2 %	56. 0%	10.8%	4.63	0.78
The contractors have technical capacity to execute contracts	0.0%	5.0%	5.0 %	65. 0%	25.0%	4.84	0.35
Project implementation team has strong leadership	6.7%	11.7 %	19.2 %	47. 4%	15.0%	3.29	1.15
Contract administration adheres to contractual terms and conditions	0%	20.3 %	30.3 %	30. 8%	18.6%	3.13	1.24
There are no contractual changes during project implementation	6.7%	11.7 %	19.2 %	47. 4%	15.0%	3.29	1.15
Contract compliance increases project completion rates	0%	20.3 %	30.3 %	30. 8%	18.6%	3.13	1.24
Contract administration improve project performance	0.0%	5.0%	5.0 %	65. 0%	25.0%	4.84	0.35
Average						**3.92**	**0.89**

Relationship Management

The second objective was to assess the influence of relationship management on implementation of renewable energy projects in Kenya. The results as shown in table 2 indicated that majority of the respondents agreed that project implementation team mains positive stakeholder relationships as shown by a mean of 4.13. Majority of the respondents agreed that project implementation team maintain good relationships with suppliers as shown by a mean of 4.62 (80.8% strongly agreed). Moreover majority of the respondents strongly agreed that suppliers deliver materials in a timely manner as shown by a mean of 4.85 (85% strongly agreed). Results indicated that there is adequate information sharing among all stakeholders, majority of the respondents strongly agreed (60%). Results also showed that 46% of respondents agreed that there are well-functioning communication mechanisms during project implementation while 13% strongly agreed. Results indicated that feedback is encouraged from stakeholders on project progress (mean=4.11). Results showed that majority

of respondents strongly agreed that good contractual relationships enhance project implementation (mean=4.85).

The results showed that majority of the respondents indicated that they agree with the statements on relationship management as shown by a mean of 3.99 (standard deviation=0.97). The findings are of the study are consistent with the results of a study by Ibrahim and Mutuku (2022) which found that information sharing, establishing positive relationships with suppliers and effective contract management had significant influence on project success.

Table 2: Relationship Management

Statements	Strongly disagree	Disagree	Neutral	Agree	Strongly agree	Mean	Std Dev
Project implementation team mains positive stakeholder relationships	0.0%	0.0%	10.0%	40.0%	50.0%	4.13	0.94
Project implementation team maintain good relationships with suppliers	0.0%	0.0%	19.2%	0.0%	80.8%	4.62	0.79
Suppliers deliver materials in a timely manner	0.0%	0.0%	0.0%	15.0%	85.0%	4.85	0.36
There is adequate information sharing among all stakeholders	0.0%	0.5%	5.5%	34.0%	60.0%	3.28	1.16
There are well-functioning communication mechanisms during project implementation	0.0%	18.0%	23.0%	46.0%	13.0%	3.11	1.26
Feedback is encouraged from stakeholders on project progress	0.0%	0.0%	0.0%	56.0%	44.0%	4.11	1.22
Project implementation team fosters strong contractual relationships	0.0%	41.7%	58.3%	0.0%	0.0%	3.58	1.40
Good contractual relationships enhance project implementation	0.0%	0.0%	0.0%	15.0%	85.0%	4.85	0.36
Contracts are well understood by your team	0.0%	21.1%	78.9%	0.0%	0.0%	3.38	1.31
Average						**3.99**	**0.97**

Correlation Results

The study carried out correlation tests to determine the relationship between the independent and dependent variables. Pearson correlation, which ranges between -1 and +1 was used because the data was discreet. A positive Pearson correlation value indicates a positive relationship while any negative Pearson correlation value indicates a negative relationship. The association between the variables becomes stronger as the Pearson correlation value approaches either +1 or -1. The results of the correlation analysis are shown in table 3.

The findings of the study revealed that there was a positive and significant correlation between contract administration and implementation of renewable energy projects in Kenya as shown by a Pearson coefficient of 0.726 and significance level of 0.000. This implies that adopting effective contract administration techniques lead to a positive and significant effect in implementation. The study findings are consistent with the results of a study by Nsanzimana and Mulyungi's (2020) which found a positive and significant association between contract management processes and implementation of projects.

The results also showed that there was a positive and significant correlation between relationship management and implementation of renewable energy projects in Kenya as shown by a person correlation value of 0.660 and significance level of 0.000. This implies that an improvement in contract relationship management leads to a positive and significant effect on implementation. The findings are consistent with the results of a study by Nor et al. (2022) which found that stakeholder confidence was critical for successful project implementation.

Table 3: Correlation Analysis

Correlations		Contract administration	Relationship management	Implementation
Contract administration	Pearson Correlation	1		
	Sig. (2-tailed)			
Relationship management	Pearson Correlation	.272**	1	
	Sig. (2-tailed)	0.003		
Implementation	Pearson Correlation	.726**	.660**	1
	Sig. (2-tailed)	0.000	0.000	
	N	37	37	37

Regression Results

The model summary was used to test the amount of variation in the dependent variable (implementation of renewable energy projects) resulting from the changes in the independent variables (constructs of project management practices). Thus, the amount of variation on implementation of renewable energy projects resulting from contract administration and relationship management was determined, as detailed in table 4.

Table 4: Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.837[a]	.700	.696	.10518

a. Predictors: (Constant), contract administration, relationship management

The findings in Table 5 showed that project management practices which comprises contract administration and relationship management had a high positive correlation with implementation of renewable energy projects as shown by a joint Pearson Correlation value of 0.837. In addition, the results showed project management practices has a coefficient of determination value of .700. This shows that project management practices accounts for up to 70% of the variations in implementation of renewable energy projects. The implication is that there are other factors that also account for the implementation of renewable energy projects in the tune of 30%.

Table 5: Analysis of Variance (Model significance)

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	122.367	2	61.184	220.881	.000[b]
	Residual	9.422	34	.277		
	Total	131.789	36			

a. Dependent Variable: Performance

b. Predictors: (Constant), contract administration and relationship management

The results of the study in table 6 showed that the overall regression model linking contract administration and relationship management and implementation of renewable energy projects in Kenya was significant as indicated by a significant F (2, 34) = 220.881) statistic as indicated by (0.000) significance level which was less than 0.05 at 5% level of significance indicating that the predictors collectively explain a substantial amount of variance in implementation.

Table 6 Regression Coefficients

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	.236	.246		0.959	.001
	Contract administration	.359	.107	.307	3.355	.000
	Relationship management	.322	.105	.316	3.067	.000

a. Dependent Variable: Implementation

The coefficients were used to fit regression model. From the findings in Table 4.6, the following regression model was fitted.

$$\mathbf{Y = 0.236 + 0.359\ X_1 + 0\ .322\ X_2}$$

The findings of the study also showed that contract administration had a significant effect on implementation of renewable energy projects in Kenya (β = .359, Sig = 0.000). This implies that utilization of effective contract administration techniques can lead to improved implementation of renewable energy projects in Kenya. The findings agree with the findings of a study by Nsanzimana and Mulyungi's (2020) which concluded that utilization of effective project implementation tools to enhance planning, availability of key resources, financial capacity and effective execution of contracts improve project implementation.

The findings of the study also revealed that relationship management had a positive and significant effect on implementation of renewable energy projects in Kenya (β = .322, Sig = 0.000). This implies that improving contract relationship management leads to significant improvement in implementation of renewable energy projects in Kenya. The findings are consistent with the findings of a study by Ibrahim and Mutuku (2022) which concluded that utilization of good practices such as supplier relationships and information sharing to enhance project performance.

CONCLUSION AND RECOMMENDATIONS

Conclusion

The study concluded that contract administration has the most positive significant influence on implementation of renewable energy projects in Kenya. This shows that when project implementation utilize contract monitoring, effective resource management and capacity building, there is significant improvement in project implementation.

The study also concluded that relationship management has a positive and significant influence on implementation of renewable energy projects in Kenya. This shows that there is need for effective communication, stakeholder management and conflict management to improve project implementation.

Recommendations

Since contract administration has the most significant effect on implementation of renewable energy projects in Kenya, the study recommends that project managers and stakeholders

involved in implementing renewable energy projects should ensure frequent contract monitoring, provide adequate resources for project implementation and ensure availability of capacity building to improve project implementation.

The study recommends development and management of relationships with key stakeholders involved in project implementation. There is need for effective communication among stakeholders to ensure effective information flow and execution of projects in the desired manner. In addition, the study recommends establishment of clear conflict management guidelines to prevent any hindrances to project implementation success.

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