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Project Management Dynamics and Performance of Kenya Electricity Generating Company Projects

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Abstract:
Kenya continues to face challenges regarding the actualization and timely implementation of electricity generation projects aimed at increasing the electricity capacity required in the quest for attaining industrialization status by the year 2030. Out of the projected flagship electricity generation projects, less than 20 percent of the projects had been translated into the national grid by the end of the year 2022. Such trends call for an in-depth study of project dynamics that determine the performance of electricity generation projects. To research the problem, the focus was given to Kenya Electricity Generation Company (KenGen) Plc, which is a state-owned electricity generation company accounting for 60 percent of the electricity generation market share in Kenya. The purpose of the study was to determine the project management dynamics that determine the performance of electricity generation projects. Specifically, the study sought to evaluate the influence of project financing, project procurement, organization dynamics, individual dynamics and stakeholder management dynamics on the performance of electricity generation projects in KenGen. The study was anchored on system theory, constraints theory, and competence theory of project management. The earmarked population was 10 electricity generation projects implemented by sixty-eight employees who had formal project management appointments in the power plant construction projects that ranged from hydroelectric, geothermal, thermal and wind generation modes. A census survey method was used, targeting the sixty-eight respondents. Descriptive and inferential statistics were used to analyze the data. Multiple regression analysis was used to determine the relationship between the variables. The study established that all the independent variables had positive regression coefficients, indicating that a unit rise for each independent variable facilitated a consequent rise in the dependent variable. However, only finance dynamics revealed a statistically significant effect, indicating that project finance dynamics had a significant effect on the performance of electricity generation projects. The study recommended that priority should be given to finance dynamics while scoping the electricity projects above other project dynamics. Financial analysis of the project financier's capacity to ensure uninterrupted project milestones financing was identified as an aspect requiring consideration in project financing. This outcome will be helpful to stakeholders in the energy sector, academicians and electricity project financiers. Suggestions were made for further studies on other financial dynamics not accounted for in the study and non-financial dynamics that were not established to have a significant effect on generation projects.

Keywords: *Project management dynamics, performance of electricity generation projects, project financing dynamics, project procurement dynamics, organization dynamics, individual dynamics, stakeholder management dynamics*

1. Introduction

Electricity generation projects are capital-intensive projects that call for in-depth performance review owing to their capital complexity and capital-intensive nature. For instance, Republic of China has an elaborate project pipeline and utilizes state enterprises to construct Power Plants. Nevertheless, in an analysis of China's coal generation projects, the projects were observed to be lacking in efficient financial analysis when a comparison is made between short time gains and long-term sustainability as a result of carbon pricing (Clark, Benoit, & Walters, 2022). In the states of America, it was observed that renewable energy projects' long time maintenance declines when the wind generation projects exceed the tax credit period. This indicates a practice of aligning the project to profitability rather than plant efficiency by the government-contracted private enterprises (Hamilton, Millstein, Bolinger, Wiser & Jeong, 2020). In the African region, power projects' performance is influenced by factors such as government regulatory framework and project financing which has led to limited power availability for industrialization (The World Bank, 2021). The above illustrations provide a basis for an effort to understand the performance of electricity generation projects.

In Kenya, the pace of completion of power production plants continues to lag behind scheduled project completion time. A report by KenGen Plc observed that construction risks associated with energy generation projects

include delays in completion and commissioning. Cost overruns and project delays were also cited as likely to occur due to factors outside the control of the companies and contractors. (Kenya Electricity Generating Company PLC, 2022)

According to a report by Power Africa (2021), while acknowledging success in the power sector, the report also cited project management challenges relating to project dynamics such as project financing, procurement and project stakeholders. The report observed that the success of Kenya's Electricity generation project for the year under review was attributable to foreign direct investment private and Private Public Partnership financing approach. The Power Africa report gave indication and emphasis on the need to embrace non-conventional financing strategies for electricity generation projects.

Therefore, it can be established that there exists a need to study the electricity generation sector and determine project management dynamics that require to be optimally applied in power generation projects to address the country's electricity generation challenges. The project management dynamics are varied and include project financing, project procurement dynamics, organizational dynamics, individual dynamics and stakeholder management.

The theoretical framework of the study was based on three theories, i.e., system theory, theory of constraints and competency theory. Performance of electricity generation project was perceived in the research as an interactionist process that involves the interaction of many players from financiers, organization leadership, contractors and project implementation teams. The application of system theory is necessitated to explain the interaction of the various players. System theory is rooted in science, where there exists a need to focus on the interaction of different attributes to achieve a function. Organizational management systems are made up of a number of internal subsystems that must always be in sync. As a company grows, more sophisticated subsystems emerge that must communicate with one another to convert inputs into outputs (McShane & Glinow, 2003). The various human, business and environmental constraints involved called for the application of the theory of constraints in determining how the projects circumvent the various performance obstacles to attain optimal performance. The specialized and complex nature of the electricity generation projects also calls for the need to explore the competencies required to achieve successful projects. The theory of constraints that was initially postulated by Eliyahu Moshe Goldratt (March 31, 1947 – June 11, 2011) in a book titled 'the goal' (Goldratt, 1984) was established to be applicable in the study. The theory suggests a methodology applied in business and organizations to single out constraints or bottlenecks standing out as an obstacle to achieving organizational goals. In addition, the focus is given to improving the constraint to make it a reduced obstacle.

A study on the theory of constraints in project management (Dostatni & Trojanowska, 2017) explained that the initial step is to identify the system component that is interfering with its overall performance. The competence theory was developed by McClelland & McBer (Mclelland & McBer, 1980). The authors defined competency as an individual's critical innate aspect that translates to enhanced performance of a process within an organization. The work by the authors led to expanded competence models. For instance, in an extensive study that analyzed project management competencies, it was established that the project management competence profile had 81 competencies grouped into 11 dimensions: persuading, interaction, affective, situational, administration, mental abilities, expertise, knowledge, understanding and experience, project management knowledge, conceptualization and individual abilities and qualities (Rezende & Blackwell, 2019). Performance of a project relates to the establishment and closure of a project within time, set resources and standards (Project Management Institute, 2017). Similarly, successful project performance has been described as meeting project objectives within schedule, budget, desired performance, and technical level while employing the allotted resources effectively and efficiently to the customer's satisfaction (Kerzner H., 2017). In this study performance of the electricity generation energy project has been investigated in the context of timely attainment, implementation within budget and serving the intended electricity generation output to the satisfaction of stakeholders. A review of electricity generation projects globally has shown that projects may not meet all these elements of project performance. A project performance review of the largest electricity generation project in the world - Three Gorges hydroelectric power station in China, a 22,500 Mega Watts (Mw) plant, revealed that the project met its output of 22,500 Mw and was completed within the projected time in the year 2012 (Duduu, 2013). However, the project was faced with a myriad of project performance challenges ranging from complaints from some key stakeholders over ecological effects on farming and fishing due to siltation. Displacement of 1.4 million people during the project phase also raised human rights concerns. Project quality was affected by corruption allegations where some contractors won tenders through bribery and unethical savings and made through the supply of substandard machinery and materials (Hufstutter, 2020).

The efficiency of Kenya's electricity generation projects in meeting local electricity demand shows deficiency gaps in meeting the local demand. For instance, an analysis of Ethiopia- Kenya electricity grid connection revealed that Uganda and Ethiopia were net electricity exporters for Kenya in the entire year 2022. For instance, in December, imports from Ethiopia accounted for 1.79 Giga Watts hours while Uganda was a net exporter for Kenya in December with an export balance of 24.15 Giga Watts hours, according to data summed from Kenya Bureau of Statistics (Kenya National Bureau of Statistics, 2023, p. 31).

The Kenyan experience has shown that there are varied Project performance attributes at play in Kenya, according to Presidential Taskforce on Power Purchase Agreement (Presidential Taskforce on Power Purchase Agreement, 2021). The report observed that besides the high cost of putting up power plants passed through the electricity consumers in the form of electricity tariff, there are other project performance dynamics of concern relating to: extended duration in completing projects and their financial consequences on the tariff; constant breakdown of existing powerplants raising issues on power projects quality in addition to subjecting the country to use more diesel powerplants in place of cost-effective renewable energy plants and dissatisfied customer due to lack of reliable and cost-effective electric power.

Project management dynamics is considered a collection involving management processes, including laid systems a company utilizes to complete projects effectively. The dynamics range from financial to non-financial factors. Some of the non-financial project dynamics cited in the past in power projects include stakeholder management, project planning, monitoring and evaluation (Ocharo & Kimutai, 2018). Therefore, project management dynamics found to influence infrastructure projects in Kenya range from finance dynamics and varied management aspects not directly linked to finance. Research involving the categorization of project management dynamics identified various dynamics and prioritized the most critical factors project managers should focus on (Mavi & Standing, 2018). Using Fuzzy logic analysis, dynamics related to senior executive support, project financier support and stakeholder aspirations' focus on project beneficiaries' requirements were identified to be the weightier project factors that should be prioritized by project managers. The study further observed that understanding the most critical dynamics was essential in enabling project implementers to determine where to place more focus in project management to achieve successful outcomes. Project financing in the study was a major factor. However, it was not the only factor. The other non-financial project management dynamics were related to social dynamics, such as the cited senior executive support, project financier support, stakeholder aspirations and focus on project beneficiaries.

A county-based study was also conducted where project dynamics ranged from financing dynamics, management dynamics and social aspects of the study, which involved project dynamics and the performance of agricultural projects (Simiyu, Ngugi, & Minja, 2018). The results explained that all aspects relating to project scheduling, project execution, tracking & appraisal and project messaging impacted project targets. The link between project management methods and project performance was found to be influenced by environmental enablers as a moderating variable. An observation by the study was that to attain the envisaged outcome. A recommendation was made to the effect that a well-defined scheduling, execution, tracking & appraisal and messaging procedures need to be activated. The report also suggested that agricultural project management at the county level should include stakeholders such as farmers and local leaders rather than being limited to office planning. The study harnessed various project management dynamics that also include dimensions involving social factors according to the weight placed on stakeholder engagement recommendations. Energy project management dynamics are similar to aspects applied in the above infrastructure projects. Some of the aspects requiring to be subjected to the investigation include finance and non-finance dynamics such as project procurement, organizational, individual and project stakeholder management aspects. Analysis of global, regional and local projects has indicated that the above dynamics influence the project performance (The World Bank, 2021). This position was also affirmed in an energy sector study on project risks affecting electricity connectivity projects in Murang'a. It was established that political and socio-cultural dynamics greatly affected project implementation (Dhanjal, 2021).

Because of the scale of energy projects, especially the high cost and the long duration of the contract with the off-taker (KPLC), which takes approximately 25 years, attracting financing for the generation projects poses a challenge. A study by Power Africa indicated that KenGen's balance sheet status would not place the company in a position where it can attract loans to expand its project line-up. The report further indicated that the effort at the time to enhance the statement of financial position and working efficiency was far off the financial health target (Power Africa, 2016). While progressing successful outcome in project financing, non-balance sheet dependent financing approach was showcased in a coted Power Africa supported project in Kenya named Kipeto wind Power Project whose financing approach was Public Private Partnership (PPP). The approach led to timely project execution of making the project to be the second largest wind power project in Africa (Power Africa, 2021).

Related to project financing dynamics is project procurement dynamics. The lean finance funds for generation projects necessitate all efforts to be made for the funds to be optimally utilized and thus ensure that project duration is adhered to. Adhering to the project schedule has financial implications where contractual-oriented penalties are avoided. To utilize funds in KenGen, project procurement should adhere to Public Procurement and Assets Disposal Act of the year 2015 which at times might slow down procurement because of procedural rigor. A study on project implementation limitations for large projects in South Africa cited procurement law and processed rigor as significant factors affecting the timely and cost-effective implementation of large infrastructure projects. (Simushi & Wium, 2020). Dhanjal (2021) observed that timely procurement can alienate inflationary risks that come with an increase in prices due to a lack of advance procurement. Project procurement risks have been managed in diverse ways locally and internationally. For instance, during the construction of Three-Gorges Hydro Station project, the Chinese government engaged six suppliers to manage the project's supply risk of having one or few suppliers (Hufstutter, 2020). Project procurement innovation and knowledge about project procurement approaches in Kenya is, therefore, an area requiring in-depth study. Dhanjal (2021) observed that political and social-cultural dynamics were the greatest concerns in project risk in the electricity connectivity sector. Therefore, these studies inform the need to consider other project dynamics besides project financing and procurement. These aspects include individual dynamics, organizational dynamics and stakeholder management dynamics.

2. Results and Discussion

To ensure that the data were suitable to be regressed, tests were first done to establish whether the data were fit for assessment. The diagnostic tests that were conducted tested multicollinearity, heteroscedasticity and normality.

A test of collinearity was conducted to verify whether regressed variables were correlated. The use of tolerance and variance inflation factors (VIF) was employed to establish the possibility of multicollinearity. A conservative VIF of < 5 was used as the threshold of multicollinearity.

Coefficients[a]			
Model		Collinearity Statistics	
		Tolerance	VIF
1	Finance Dynamics	.448	2.232
	Procurement Dynamics	.280	3.577
	Organizational Dynamics	.149	6.691
	Individual Dynamics	.295	3.392
	Stakeholder Dynamics	.166	6.025
a. Regressed Variable: Project Performance			

Table 1: Multicollinearity Test Results

Three independent variables had a variance inflation factor (VIF) of below 5, which implied no collinearity involving the sets. However, two independent variables relating to organizational dynamics with 6.691 and stakeholder dynamics had a variance inflation value of 6.025. As a result, organizational dynamics, being the independent variable with the highest VIF, was dropped. The findings in this study differ from studies done on roads projects where organization culture was found to be an important determinant of project performance (Maendo, James, & Ngugi, 2018).

For data to fit linear regression analysis, it was necessary to ensure that continued increase in values does not have a trend of increase in variance. This situation is called homoscedasticity. Glejser test was employed at a significance level of p>0.05 to establish whether there was a violation of homoskedasticity which is a status called heteroskedasticity. The output coefficients are illustrated in table 2.

Coefficients[a]						
Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	.739	.187		3.957	<.001
	Finance Dynamics	-.024	.066	-.065	-.365	.716
	Procurement Dynamics	-.183	.084	-.484	-2.165	.035
	Individual Dynamics	.110	.070	.341	1.566	.123
	Stakeholder Dynamics	-.083	.083	-.291	-1.002	.321
	Organizational Dynamics	.053	.090	.180	.587	.560
a. Response Variable: AbsUT						

Table 2: Output Coefficient on Glejser Test

A review of the above table shows that the significance of the output coefficient is as follows:

- Project financing at 0.716,
- Project procurement at 0.035,
- Individual dynamics at 0.123,
- Stakeholder management dynamics at 0.321 and
- Organization dynamics at 0.560.

All the above values are greater than 0.05 at p>0.05 and therefore, there is no heteroskedasticity. In a separate road construction project, using a modified Wald test, two variables similar to variables in this project involving organizational aspects and finance factors/projects resourcing, heteroskedasticity significance of output coefficient was 0.43 at P- 0.05, citing that there was no heteroskedasticity problem with the variables within the study (Maendo et al., 2018). This is indicative of the current study variables showing a similar trend with past studies,

Pearson correlation analysis was used to establish the relationship between the dependent variable of Performance of electricity generation projects and the predictor variables of finance dynamics, Procurement dynamics, Individual dynamics and stakeholder management dynamics. The outcome is illustrated in table 3.

Correlations						
		Project Performance	Finance Dynamics	Procurement Dynamics	Individual Dynamics	Stakeholder Management Dynamics
Project Performance	Pearson Correlation	1	.795**	.782**	.709**	.737**
	Sig. (2-tailed)		<.001	<.001	<.001	<.001
	N	64	64	64	64	64
Finance Dynamics	Pearson Correlation	.795**	1	.723**	.603**	.615**
	Sig. (2-tailed)	<.001		<.001	<.001	<.001
	N	64	64	64	64	64
Procurement Dynamics	Pearson Correlation	.782**	.723**	1	.738**	.780**
	Sig. (2-tailed)	<.001	<.001		<.001	<.001
	N	64	64	64	64	64

Correlations						
		Project Performance	**Finance Dynamics**	**Procurement Dynamics**	**Individual Dynamics**	**Stakeholder Management Dynamics**
Individual Dynamics	Pearson Correlation	.709**	.603**	.738**	1	.795**
	Sig. (2-tailed)	<.001	<.001	<.001		<.001
	N	64	64	64	64	64
Stakeholder Management Dynamics	Pearson Correlation	.737**	.615**	.780**	.795**	1
	Sig. (2-tailed)	<.001	<.001	<.001	<.001	
	N	64	64	64	64	64
**. Correlation is significant at the 0.01 level (2-tailed).						

Table 3: Correlation Coefficient between Performance of Electricity Generation Projects and Project Dynamics

Pearson correlation coefficient (r) expresses where there is a positive or negative relationship between the variables. The *r* varies between +1 and -1, where +1 is a perfect positive correlation, and -1 is a perfect negative correlation. 0 means there is no linear correlation at all. Between +1 and -1, where +1 denotes a perfect positive correlation and -1 denotes a perfect negative correlation, is the range of Pearson's r. Zero denotes the absence of any linear correlation (Kothari & Garg, 2019)

Pearson correlation coefficient -r, therefore, determines the extent of association between variables, whether negative or positive association, that is, whether they are negatively or positively related. From the table, it was established that all the independent variables had a strong positive relationship with the dependent variable-Performance of electricity generation project, starting with project finance (r=0.795 p=<0.01), Project procurement dynamics (r=0.782 p=<0.01), stakeholder management dynamics (r=0.737 p=<0.01), and individual dynamics (r=0.709 p=<0.01).

The high rating on project finance dynamics was akin to findings from a study by Ondara et al. (2017) that established how resource uncertainty mitigation measures affected the accomplishment of infrastructure companies. From the study, the most significant perceived influence on firm performance was ensuring the ready availability of key implements which reduced implementation delays, as well as ensuring there were machinery and quality building materials which led to timely completion and standard of work.

Enhancement of procurement dynamics (r=0.782 p=<0.01) is indicative of contributing to the improvement of project performance. These findings are consistent with studies done on the performance of projects in Kenya Ports Authority that established that project procurement had a major impact on project performance (Akira & Simba, 2017).

Stakeholder management dynamics were established to have a positive influence on the performance of electricity generation projects (r=0.737 p=<0.01). The outcome is similar to the outcome of a study on building projects in Qatar that established that the participation of stakeholders in decisions and involvement throughout the project lifecycle enhanced the success of the building projects in Qatar (Mashali, 2022).

Individual dynamics were also rated significantly (r=0.709 p=<0.01). The findings are similar to findings in a study on the key dynamics that enhance cost and schedule performance in United States complex projects. The American study found that significant factors at play for the projects' success were individual traits linked to team building, alignment, partnering and change in management strategies.

3. Regression Analysis

Regression analysis conducted involved analysis of change of predictor variable on response variable, analysis of variance and determining the regression coefficient that led to deducting of regression coefficient model. During the analysis, a comparison of the study outcome and the outcome of other studies was made.

Model Summary									
Model	**R**	**R Square**	**Adjusted R Square**	**Std. Error of the Estimate**	**Change Statistics**				
					R Square Change	**F Change**	**df1**	**df2**	**Sig. F Change**
1	.873[a]	.761	.745	.30503	.761	47.037	4	59	<.001
a. Predictors: (Constant), Stakeholder Dynamics, Finance Dynamics, Individual Dynamics, Procurement Dynamics									

Table 4: Model Summary

In conducting regression analysis, observation is made to ensure that the observed scores for variables are close to the fitted values in a regression line. A coefficient of multiple determination for multiple regression/R-Squares is determined by evaluating the observed data and fitted values. A greater R-squared value denotes minimal differences between the scattered data and the fitted values (Kothari & Garg, 2019). This study established an adjusted R Square of 0.745, which implies that 74.5 percent change of the predictor variables of (project finance dynamics, project procurement dynamics, Individual dynamics and stakeholder management dynamics) influences the response variable of performance of electricity generation projects. This is indicative of a strong influence. The estimated error of variability is accounted for

by the adjusted R square is 74.5 percent which also denotes a high percentage. A review of change statistics indicated that the 'f' statistic for R square change is significant where <0.01 is less than 0.05, indicative of a good model of fit. Other dynamics not factored in the study account for the balance of 25.5 percent.

ANOVA[a]						
Model		**Sum of Squares**	**df**	**Mean Square**	**F**	**Sig.**
1	Regression	17.506	4	4.377	47.037	<.001[b]
	Residual	5.490	59	.093		
	Total	22.996	63			
a. Regressed Variable: Project Performance						
b. Regressors: (Factor), Stakeholder Dynamics, Finance Dynamics, Individual Dynamics, Procurement Dynamics						

Table 5: ANOVA

Kothari & Garg (2019) observed that in conducting an Analysis of Variance, with a high F Value, the null hypothesis is rejected. Conversely, when the F value is low, the null hypothesis is upheld. In this study, ANOVA results indicated that the F value was 47.037. The significant value between the performance of the electricity generation project and predictor variables was <.001. The impact level (P) was below 0.005 at p<0.05. This was indicative of the estimation pertaining to the regression model that project finance dynamics, project procurement dynamics, individual dynamics and stakeholder management dynamics significantly influence the performance of electricity generation projects.

Coefficients						
Model		**Unstandardized Coefficients**		**Standardized Coefficients**	**t**	**Sig.**
		B	**Strd. Error**	**Beta**		
1	(Constant)	.146	.328		-.444	.659
	Finance Dynamics	.532	.114	.443	4.685	<.001
	Procurement Dynamics	.261	.148	.214	1.759	.084
	Individual Dynamics	.136	.117	.130	1.161	.250
	Stakeholder Dynamics	.179	.112	.194	1.607	.113
a. Response Variable: Project Performance						

Table 6: Regression Coefficient

The regression model that was subjected to the investigation was:

$PEGP= \beta 0 + \beta 1X1+\beta 2\ X2 +\beta 4\ X4+\beta 5\ X5 +\mu$

Where:

- β0 is the intercept,
- β1, β2, β4, and β5 represent regression-coefficients,
- Y represents composite-index relating to Performance of Electricity-Generation projects performance,
- X1 represents composite-index on Project Financing dynamics,
- X2 represents composite-index on Project Procurement dynamics,
- X4 represents composite-index on Individual Dynamics and
- $\mathbf{X_5}$ represents composite-index on Stakeholder management Dynamics and
- **μ** represents error-term

From the analysis, the following model was computed:

$Y= 0.146 +0.532X1 +0.261X2 +0.136X4 + 0.179X5$

Analysis of the coefficient table indicated that the coefficient for finance dynamics attained at (p = -0.001, β1= 0.532). The p-value of -0.001 was below 0.05, establishing that project finance dynamics had a substantial implication on the performance of electricity generation projects. Regression coefficient was positive, implying that one unit increase in financial dynamics increased the performance of electricity generation projects by 0.532. The findings are similar to a study on road construction projects in Embu County which established that project financing factors affected the success of road construction projects (Irina & Kidomo, 2017).

Regarding procurement dynamics, at (p = 0.084, β1= 0.261), the regression coefficient was affirmative, thus indicating that enhancement of procurement dynamics, such as structured procurement plan and optimum procurement method, increased the performance of electricity generation projects by 0.261 units. However, with a P-value of 0.084, which is higher than 0.05, this led to the inference that procurement dynamics cannot be concluded to have a substantial impact on the performance of electricity generation projects. The results are not consistent with the results of a study that examined the bearing of procurement management competencies on project progress within Machakos County Roads

Project (Chepkemoi, 2020). In that study, the most influential variable in the performance of road construction projects was discovered to be procurement skills.

In the study, individual dynamics had a regression coefficient that was positive, thus indicating that individual dynamics influenced the performance of electricity generation projects ($p = 0.250$, $\beta 3 = 0.136$). This implied that employing aspects of individual dynamics such as teamwork, competent projects team and enhanced ethical standards increased the performance of electricity generation projects by 0.136 units. Nevertheless, with a P-value of 0.250 being above 0.05, this led to the inference that individual dynamics did not lead to a substantial impact on the performance of electricity generation projects. The conclusion is not consistent with findings on individual traits and project success (Safapour, 2022). In that study on crucial dynamics that enhance Phase-Based Cost and Schedule Performances in Complex Construction Projects, individual traits linked to the use of team building, alignment, partnering, and change management strategies in construction projects were recognized as having a substantial impact on the resolution of complexity-related issues.

Regarding stakeholder management dynamics, at ($p = 0.113$, $\beta 4 = 0.179$), the regression coefficient was positive, thus indicating that an increase in stakeholder management dynamics such as conducting a stakeholder mapping and engaging the stakeholders such as county government, energy sector agencies as well as local community influenced the performance of electricity generation projects by 0.179 units. However, with a P-value of 0.113, being more than 0.05, this led to the inference that stakeholder management dynamics did not substantially impact the performance of electricity generation projects. The results are not consistent with a research undertaken in Kilifi County that assessed the impact by communities and persons of interest and accomplishment of road construction projects. From that research, stakeholder participation in project identification, project planning, project implementation, and project monitoring was found to have a significant impact on the performance of road construction projects in Kenya's County of Kilifi (Omondi & Kinoti, 2020).

4. Conclusions

The conclusion was made based on the findings of the study that aimed at examining the project management dynamics and their influence on the performance of electricity generation projects. It was established that finance dynamics contributed to an increase in the performance of electricity generation projects. Finance dynamics were the sole dynamics among the other dynamics that were established to have a statistically significant relationship with the performance of electricity generation projects. The leading specific finance dynamics aspects that received the leading ratings were project financing through foreign direct investment followed by accurate project cost estimates in project resource planning. Project financing through Public Private partnership received the lowest rating among finance approaches preferred in electricity generation projects financing, indicating that it was the less preferred electricity generation projects financing mode.

Project procurement dynamics, individual dynamics and stakeholder management dynamics increased the performance of electricity generation projects. However, their regression coefficient was not statistically significant. This led to the inference that project procurement, individual dynamics and stakeholder management dynamics do not have a significant influence on the performance of Kenya Electricity Generation Company projects. There were aspects of project procurement, individual factors and stakeholder management items that attained a high rating, such as transparent tender evaluation, ethical standard of the project implementation team and engagement of financiers throughout the project life cycle.

5. Recommendations

The study results revealed that there were financing approaches that were not rated to have been optimized in financing Kenya Electricity generation projects, such as private public partnerships (PPP). Therefore, the government of Kenya should establish a workable framework for PPP and other varied financing approaches to make the PPP financing approach preferable in electricity generation project financing.

Kenya Electricity Generation Company should give priority focus on finance dynamics while scoping the electricity projects, above other project dynamics. On the other hand, the government, through the Ministry of Finance, should guarantee power projects based on the financiers with a history of undelayed cash outlays during project milestones.

In project finance plan, KenGen should place special emphasis on foreign direct investment in financing electricity generation projects. To ensure that projects do not stall along the implementation path, project management expertise in finance scheduling should be sought and approved to ensure the project is guided by accurate project cost estimates.

6. Suggestions for Further Research

In as much as finance dynamics were established to significantly influence the performance of Kenya's electricity generation project, there was a limit of significance. This calls for further studies on other finance dynamics, accounting for 24.5% that were not within the purview of the study.

Further studies are also required in relation to project management dynamics that were established not to have a significant effect on performance of electricity generation projects, namely project procurement dynamics, individual dynamics and stakeholder management dynamics.

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