Effect of Project Planning Practice on Performance of Roads in Kisii County, Kenya

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Abstract- ***Performance of roads is about quality that fulfillment of stakeholders needs and organization objectives are met in project completion in its scope. Performance includes the final phases of a project: product acceptance, a final analysis, experience assurance and the final project resolution. Road constructions project are usually the infrastructural projects that take a long period of time to be completed and commanding significant project implementers. The purpose of this study was to assess effect of project planning practice on performance of roads in Kisii County, Kenya. The study will be based on general system theory. The study used descriptive design. The target population of 318 respondents were taken under this study. A random stratified selection approach was used to select a sample size of 177 respondents using a formula from the individuals involved in road construction in Kisii County. A questionnaire was utilized to gather data for the research. Pilot study was carried in the neighboring Nyamira County because these two counties share the same geographical location. Descriptive analysis was carried out to analyze the data. Multiple regression analysis models will be used to examine the strength of the relationship between dependent, independent, and moderating variables. The results of the study were presented using tables, graphs and charts. The study would be significant to project management managers and future researchers as it would add new knowledge. The study established that project planning practice has an insignificant negative effect on performance of road project in Kisii County. Project planning practices are not significantly related to project performance in the study area. The study recommends that the road construction companies should establish policies at the company level which should make project planning practices a key component of project management practices.***

I. INTRODUCTION

Performance of roads constructions project are usually the major projects management-oriented aspect of any economy that take a long period of time to be completed and commanding significant project implementers. Moreover, according to Osman (2019) success factors are required for better understanding of project completion due to their direct and indirect contribution towards economic development. As such, it is quite unfortunate where such investments are not implemented successfully. This problem is even significant in developing countries whose road network is poor.

There are a number of factors that inhibit successful implementation of road construction in developing countries. Implementers in this sector require being certain about project time and cost and thereby delays could cause the contractor attain financial accountability (Zhang, 2013). The question of success factors of road construction projects is thereby a universal concern that affects a number of parties in construction project completions. It is therefore in the best interest of the project completion project to address the critical factors that influence completion of road construction projects.

In Ethiopia, Ayehu (2017) found that project success was conceived as a function of efficiency and effectiveness in a study on the drivers of project success in an international non-governmental organization. It was calculated using a composite index that included cost and schedule performance indices, as well as the project's performance versus key metrics. According to the findings, two-thirds of Pacts projects were completed effectively, while 22 percent and 11 percent were moderately successful and difficult initiatives, respectively. When it comes to project success, the comprehensiveness of the work

plan, implementation, project team development, and monitoring and evaluation (Zakayo, 2017).

In other cases, the delay is due to unforeseen project term extensions. On the other hand, timely project completion refers to a project's expected completion date as stated in the contract (Kariungi, 2014). According to Langat (2015), a project life cycle has five phases: initiation is the process of formally authorizing a new project, planning processes define and refine objectives, and selecting the best of the alternative courses of action to achieve the objectives that the project was undertaken to address, and executing processes that involve coordination of people and other resources (which can be seen as project leadership and resource allocation functions), such as equating.

II. LITERATURE REVIEW

Planning involves a series of steps that help determine which resources an organization needs for project completion and the extent of its budget. Planning is a formalized activity that entails a set of predetermined and coordinated actions and processes for identifying, preparing, approving, and implementing projects (Dvir et al., 2003). Five processes in the project life cycle are identified by The processes are: initiation, which formally authorizes a new project; planning, which defines and refines objectives and selects the best course of action to achieve project objectives; execution, which coordinates people and other resources to carry out the plan; monitoring and controlling, which ensures high-quality achievement of the project plan; and closing, which formalizes acceptance of the project by customers and other stakeholders and brings the project to a close.

Construction project planning and management success necessitates meticulous planning, scheduling, and coordination of a wide range of interconnected activities (Sowden, 2016). These activities are represented by networks that show various activities in their correct order of execution and thus provide a clear picture of the relationships between them. The networks also show how the system's behavior will be influenced by the timetable. One of the major techniques for dealing with project scheduling, according to Sowden (2016), is the Critical Path Method (CPM).

The sequence and interrelationships of project activities are represented using schematic diagrams in CPM. Each activity's completion time can be examined to see how it affects the overall project's completion time and cost. This data can be used to make the best time and cost allocations possible. The CPM assumes that activity times and costs are deterministic, that is, that they can be predicted with reasonable accuracy. According to Harris et al. (2018), the Program Evaluation and Review Technique (PERT) is a better method for project planning under uncertainty than the CPM because PERT uses probabilistic time estimates, which necessitate three time estimates of the duration of each activity from people who are most familiar with the activity (Sowden, 2016).

According to the Project Management Institute (2010), crashing the network can reduce the optimal critical path time, which means one or more activities can be completed in less time but at a higher cost (also known as fast tracking). The additional cost can be calculated and used to determine whether or not to crash a project. The critical planning process is one of the most important factors that contributes to project success. Definition of activities to be performed, schedule development, organizational planning, staff acquisition, communications, and development of a project plan are six planning processes identified by Harris et al. (2018) as highly contributing to project success.

According to Meredith et al. (2017), the fast-tracking delivery method has gotten a lot of attention in the last decade, and its timesaving ability has made it a viable alternative to the traditional, sequential method. Fast tracking, however, has a greater potential to influence the project development process than the traditional method, in addition to its advantages. This is typically attributed to a higher level of uncertainty, and fast-tracking research has primarily focused on reducing uncertainty. The feedback processes involved in fast tracking must be identified, and the dynamic behavior of construction resulting from those feedback processes must be dealt with in a systematic manner,

according to a closer examination of the project development process.

III. MATERIALS AND METHODS

The study used descriptive design. The target population of 318 respondents were taken under this study. A random stratified selection approach was used to select a sample size of 177 respondents using a formula from the individuals involved in road construction in Kisii County. A questionnaire was utilized to gather data for the research. Pilot study was carried in the neighboring Nyamira County because these two counties share the same geographical location. Descriptive analysis was carried out to analyze the data. Multiple regression analysis models will be used to examine the strength of the relationship between dependent, independent, and moderating variables. The results of the study were presented using tables, graphs and charts. The study would be significant to project management managers and future researchers as it would add new knowledge. The study established that project planning practice has an insignificant negative effect on performance of road project in Kisii County. Implementation practices are not significantly related to project performance.

IV. FINDINGS AND DISCUSSIONS

- Project Planning Practice and Performance of Roads Construction

The study sought to analyze the influence of Road project planning practice on performance of roads in Kisii County. The respondents were required to give their reactions based of a 5-point scale with 5 as the highest agreement level of the scale. The responses were recorded as in Table 4.6.

Table 1: Project planning practice and performance of roads construction

	N	Min	Max	Mean	Std. Dev
Strategies are employed to adapt the road's design and construction methods to accommodate the site's unique topographical features	169	1	5	4.07	1.158
The project teams monitor and manage team performance to ensure that manpower planning remains effective throughout the project's execution.	169	1	5	4.09	.938
The use of financial leverage impacts the project's overall funding structure and potential return on investment.	169	1	5	4.14	.934
Technical assessments are conducted to determine the feasibility of the road construction projects in terms of terrain, soil conditions, and environmental impact.	169	1	5	4.51	.860

From Table 4.6 the study revealed that majority of the respondents with a mean of 4.07(SD=1.158) were in strong agreement that strategies are employed to adapt the road's design and construction methods to accommodate the site's unique topographical features. The study also revealed that majority of the respondents with a mean of 4.09(SD=.938) were in strong agreement that project teams monitor and manage team performance to ensure that manpower planning remains effective throughout the project's execution. The study also revealed that majority of the respondents with a mean of 4.14(SD=.934) were in strong agreement that the use of financial leverage impacts the project's overall funding structure and potential return on investment. Further, the study also revealed that majority of the respondents with a mean of 4.51(SD=.860) were in strong agreement that technical assessments are conducted to determine the feasibility of the road construction projects in terms of terrain, soil conditions, and environmental impact.

- Regression Statistics

It is always vital to have the data set checked for normality to help the researcher make decisions on the type of data beforehand for analysis. Therefore, Table 1 represents the normality tests and decisions made on the type of analysis to be computed.

Table 1: Tests of Normality

	Kolmogorov-Smirnov[a]			Shapiro-Wilk		
	Statistic	df	Sig.	Statistic	df	Sig.
PP	.265	169	.000	.742	169	.000
PoR	.215	169	.000	.852	169	.000
a. Lilliefors Significance Correction						

Findings from Table 1 indicated that data sets were non-parametric since the Kolmogorov-Smirnov probability value is statistically significant whereas it was expected to be not statically significant for it to be said not be parametric data. Hence, the normality tests confirmed that the data set is non- parametric and to be analyzed as ordinal regression with spearman Rho coefficients.

Findings from Table 2 observed that the data set fitted well into the model by fact that the p-value <0.05 was statistically significant.

Table 2 Model Fitting Information for overall model

Model	-2 Log Likelihood	Chi-Square	df	Sig.
Intercept Only	706.542			
Final	.000	706.542	4	.000
Link function: Logit.				

Table 3 Goodness-of-Fit for the overall model

	Chi-Square	df	Sig.
Pearson	30.041	568	1.000
Deviance	46.897	568	1.000
Link function: Logit.			

Table 3 revealed that the model met its goodness of fit by meeting the test of Pearson and deviance were both non-significant with a p-value >0.05 implying that the model meets test of goodness-of-fit.

Table 4: Pseudo R-Square for the overall model

Cox and Snell	.985
Nagelkerke	.997
McFadden	.957
Link function: Logit.	

Table 4 revealed a Nagelkerke value was .997implying that 99.7% of the changes in the dependent variable, performance of road construction is as a result of project management practices as measured in terms of project planning practice, implementation practice, project monitoring practice, stakeholder participation practice

Table 5: Test of Parallel Lines the overall model

Model	-2 Log Likelihood	Chi-Square	df	Sig.
Null Hypothesis	.000			
General	.000[b]	.000	40	1.000
The null hypothesis states that the location parameters (slope coefficients) are the same across response categories.				
a. Link function: Logit.				
b. The log-likelihood value is practically zero. There may be a complete separation in the data. The maximum likelihood estimates do not exist.				
General	.000[b]	.000	33	1.000

Table 5 reveals that the model was found to have not violated the test of parallel lines. The rule of the thumb states that for a model to meet the test of parallel lines, the p-values should not be statistically significant. Therefore, since the p-value was found to be not statistically significant 1.000, the model met the test of parallel lines since the p-value is >0.05. Hence, the study proceeded to interpret the parameter estimates in the Table 4.16.

Table 6 Parameter Estimates for the overall model

	Estimate	Std. Error	Wald	df	Sig.	95% Confidence Interval	
						Lower Bound	Upper Bound
[PoR = 1.00]	22.839	8.804	6.730	1	.009	5.584	40.094

[PoR = 1.33]	25.239	8.860	8.115	1	.004	7.874	42.605
[PoR = 1.67]	28.535	8.900	10.279	1	.001	11.091	45.980
Project Planning Practice	-.440	2.490	.031	1	.860	-5.320	4.441

Table 6 revealed that the project planning practice estimate was -0.440 showing that a unit increase in project planning practice on the average, decreases project performance -0.440 units indicating a negative relationship. Further the study established that the calculated probability value for the relationship between Project Planning practice and project performance is given as -0.440. Since the p-value was >0.05 at 5% level of significance, the study established that project planning practice has an insignificant negative effect on performance of road project in Kisii County, hence, an insignificant predictor of performance road project. The findings differ significantly with studies by Sowden (2016) who found that construction project planning and management success necessitates meticulous planning, scheduling, and coordination of a wide range of interconnected activities. Given that the study regression results revealed a negative association between planning practices and performance of road projects in Kisii County. The study further disagrees with studies by Harris et al. (2018) who found that the Program Evaluation and Review Technique (PERT) is a better method for project planning under uncertainty than the CPM because PERT. In spite of the evaluation procedures employed in the road projects in Kisii County, performance is wanting going by the study findings. Further the studies are indifferent from studies by Meredith et al. (2017), who found that the fast-tracking delivery method has gotten a lot of attention in the last decade, and its timesaving ability has made it a viable alternative to the traditional, sequential method. Fast tracking, however, has a greater potential to influence the project development process than the traditional method, in addition to its advantages.

CONCLUSION

The study also concludes that project planning practice has an insignificant negative effect on performance of project roads in Kisii County, hence, an insignificant predictor of performance road project.

RECOMMENDATION

The study observed that project planning practice has an insignificant negative effect on performance of road project in Kisii County, hence, an insignificant predictor of performance road project. Therefore, the study recommends that the road construction companies should establish policies at the company level which should make project planning practices a key component of project management practices if it has to have some significant effect on project performance. The study also recommends that the company should enhance road construction companies to adapt the road's design and construction methods, project teams monitor and manage team performance to ensure that manpower planning remains effective and technical assessments are conducted to determine the feasibility of the road construction projects in terms of terrain, soil conditions, and environmental impact.

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