ROLE OF PROJECT MANAGEMENT KNOWLEDGE AREAS ON INFRASTRUCTURAL PROJECTS IMPLEMENTATION IN NAIROBI CITY COUNTY

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Abstract: **Various construction firms have used project management skills and techniques as a means of bridging the gap between failure and success in implementation of infrastructural projects. Despite this increased awareness of project management skills, infrastructural projects still fail. The objective of this study was to investigate the role of project management knowledge areas on infrastructural projects implementation in Nairobi City County. The study adopted descriptive research methods; its target population comprises of 150 professionals majorly engineers, construction managers and project managers in the Kenyan Construction Industry within Nairobi City County. Questionnaires were used as the primary data collection instruments, and a pilot study will be taken to pre-test the questionnaires for validity and reliability. The gathered data was analyzed using descriptive statistics aided by Statistical Package for Social Scientists (SPSS), and findings will be presented on tables and charts. Multiple regression was done to establish the relationship between the dependent variable and independent variable. Analysis of variance was performed to develop the fitness of the model in predicting the implementation of an infrastructure project in Nairobi City County. From the study, it was found that project human resource management and project cost management to be significant in influencing the implementation of infrastructure projects in Nairobi City County. The study recommended establishing of clear and elaborate human resource plans and project cost management plans so as there is effective implementation of infrastructural projects in Nairobi City County to increase the likelihood of project success.**

Keywords: **Project Management, Project Human Resource Management, Project Time management, Project Cost Management, Project Risk Management.**

1. INTRODUCTION

Delivering projects on time and budget is a minimum requirement to do business for most organizations, and in many industries, it is critical to long-term success. Companies that adhere to strong project management methods, including a detailed evaluation of scope and budget, ongoing risk management and measurement of project results, are consistently more successful than those that do not. Following a structured project management method enables companies to predict and mitigate risks, better manage costs and deliver quality results that satisfy clients. In the most mature project management organizations, these project goals are directly linked to strategic business objectives, giving these organizations a powerful competitive advantage. Few companies consistently meet their project goals or measure project success. This inconsistency stems largely from a failure to implement and follow well-defined project management practices, despite ongoing efforts to improve processes with the goal of delivering better, faster, cheaper results [1]. Project management is the application and integration of modern management and project management knowledge, skills, tools and techniques to the overall planning, directing , coordinating ,monitoring and control of all dimensions of a project

from its inception to completion ,and the motivation of all those involved to produce the product ,service or result of the project on time, within authorized cost, and to the required quality and requirement, and to the satisfaction of participants. Generally, "Managing a project includes Identifying requirements, establishing clear and achievable objectives, Balancing the competing demands for quality, scope, time and cost; Adapting specifications, plans, and approach to the different concerns and expectations of the various stakeholders" [7].

2. EMPIRICAL REVIEW

Project implementation involves leading and managing the application of the project implementation plan. This task can be relatively simple or can become extremely complex, depending on the nature of the project. The fact that Human Resource Management Practices are related to organizational performance has been well documented. Previous studies have found significant positive evidence for the relationship between Human Resource Management Practices and improved organizational performance. Because an organization's people are key to its success, researchers who are interested in managing human capital have focused on Human Resource practices as the guides through which organizations might build the human capital that makes up resources and capabilities

Different researchers have developed models from time to time which has helped the Human Resource practitioner to effectively manage the Human resources. [3] conducted a study on Human Resource Management practices and found that they contribute to enhanced employee performance. The result indicated that Human Resource Management practices like training, employee participation in decision making was found significantly related to performance. Further, [6] found that the effectiveness of implementing Human Resource practices in an organization does indeed have a major impact on its performance.
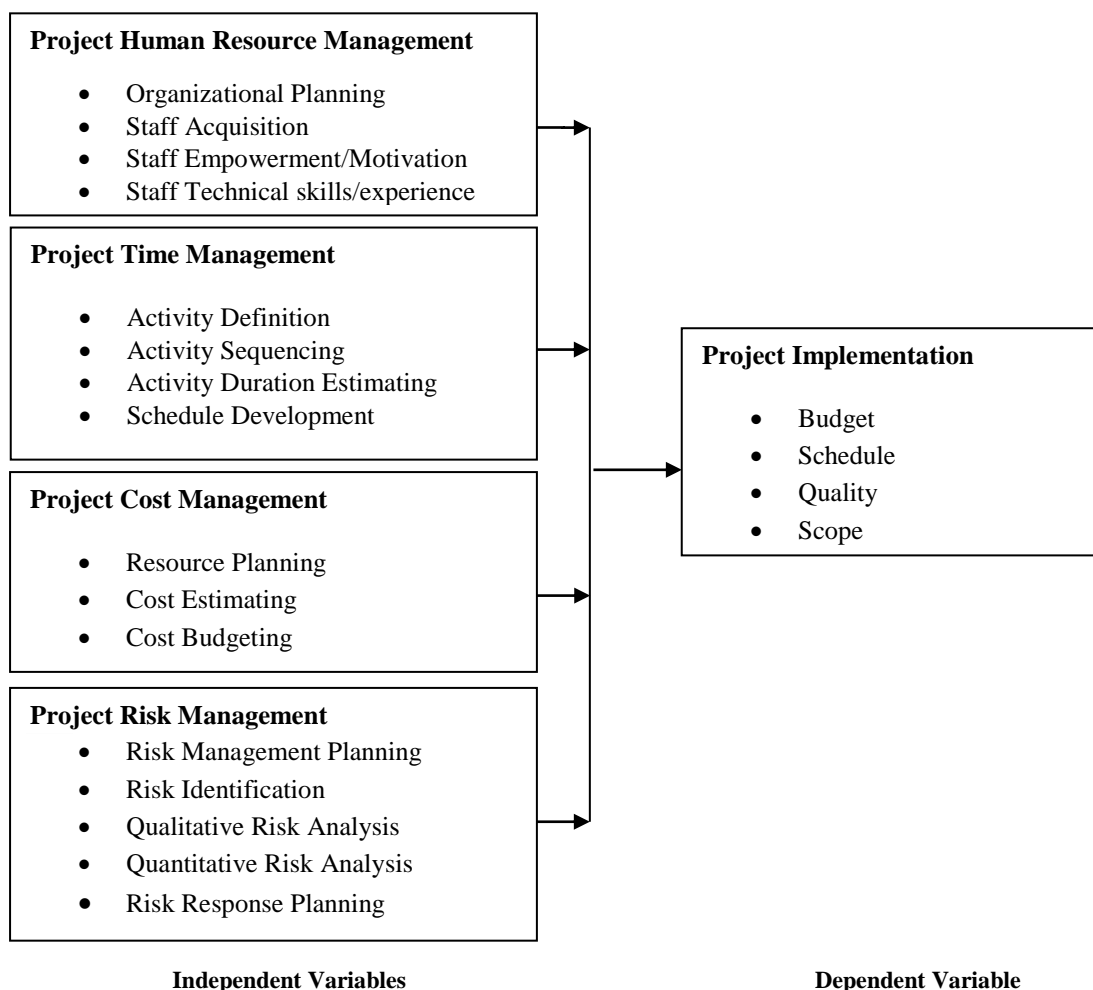
3. CONCEPTUAL FRAMEWORK

Figure 3.1: Conceptual Framework

4. SUMMARY AND CRITIQUE OF EXISTING LITERATURE

A review of the literature indicated that many studies on the implementation of construction projects had been done. These include [4]. Just a few studies concentrated on county construction projects in Kenya. Instead, they focused on projects such as KeNHA projects, small housing, and ICT application projects. Literature review indicates that the studies focused on identifying the factors that affect the project teams implementing projects like project managers, architects, and employees. The studies do not show which factors determine the effective implementation of county construction projects and how the factors can be mitigated to close the projects within the triple constraints. The studies do not show the influence of the project stakeholders on the effective implementation of county construction projects and how the various factors interact to help the implementation of county construction projects succeed through inferential statistics such as regression modeling. This study attempted to seal the gaps in the above studies with statistical rigor and greater focus in investigating the determinants of effective implementation of county construction projects in Nairobi City County.

The literature review covered the theoretical background of the study which covered theories of cost management, time management, human resource management, and risk management. The theories provided information on the relationship between the project mentioned above management knowledge areas and project implementation. A critique of the available literature on infrastructure projects revealed the need to investigate the role of project management knowledge areas on infrastructural projects implementation in Nairobi City County.

5. RESEARCH METHODOLOGY

The study adopted a descriptive survey design. The study target population was 150 respondents who constituted of engineers, construction managers and project managers working on infrastructure projects in Nairobi City County. For this study, the sample frame consisted of engineers, construction managers and project working on infrastructure projects Nairobi City County. The study applied simple random sampling where it gave respondents an equal chance of being selected. The questionnaire was used for data collection. The questionnaire was close-ended, and it is anchored on five Likert scales with items measuring each variable as they were easy to construct, were reliable and objective than any other opinion scales [2]. In this research, the primary data was collected through self-administered questionnaires. The questionnaire items were simplified and structured in a manner to the void of any ambiguity. The questionnaires were distributed in persons and through emails for those who are regularly in the field and person to those employees easily accessible. 15 questionnaires were used for the pre-test for this study which represents 10% of the target population. Data was coded in SPSS version 23 and analyzed using descriptive and inferential statistics. In the descriptive analysis, the study used charts, tables, and bar graphs to present general respondent information.

Multiple regression models were used to find out the relationship between the independent variables and the dependent variable. Multiple regression was also used to determine the strength of association between the predictors (independent) and project performance among its dimensions. The test for significance of the coefficient of correlation was determined by the use of f-test. The following multiple linear regression was used:

$Y = \beta o + \beta 1 X1 + \beta 2 X2 + \beta 3 X3 + \beta 4 X4 + e0$

Where:

Bo = Y-intercept (constant) whose influence on the model is insignificant

X1 = project human resource management

X2 = project time management

X3 = project cost management

X4 = project risk management

$\beta 1, \beta 2, \beta 3, \beta 4$ = Model coefficients which are significantly large to have a significant influence on the model.

Is the error term.

6. RESULTS AND DISCUSSION

Response Rate:

A total of 108 questionnaires were administered for data collection. The following Table 1 represents the respond rate.

Table 1: Response Rate

Response	Target Population	Response	Rate
Engineers	72	58	80.6%
Construction Managers	25	20	80%
Project Managers	11	8	72.7%
Total	**108**	**86**	**79.6%**

Implementation of Infrastructural projects:

The findings revealed that 74.4% of the respondents affirmed that project beneficiaries were pleased with the time it took to implement the project. The majority respondents (60.4%) believe that there was satisfaction from the public on how their complaints were handled. Stakeholders were also satisfied with the general outcome of the projects as affirmed by 68.6% of the respondents. There was also evidence of the influence of project human resources on infrastructural projects implementation as proven by 60.5% of the respondents. Project time management influence on infrastructural projects was evident with 55.8% of the responses. There was also evidence of project cost management influence on the infrastructural project as supported by 68.6% of the responses from the study. And finally, 58.2% of the respondents acknowledge that project risk management influenced infrastructural project implementation. In Conclusion, statistics have proven that project cost management, project human resource management, project time management, project risk management influence infrastructural projects implementation. However, the rate of influence the variables have is not clear thus the results of inferential statistics will be useful in explaining that.

Role of Project Human Resource Management:

From the analysis, the majority (34.9%) of the respondents believe there is an awareness of the importance of project quality in their organization. This is also evident from a combined statistics 61.6% indicate that majority affirm that the importance of project quality management in the organization. There is also evidence of efforts in managing quality inn projects with a combined statistics of 72.1%. Quality management policies are also evident from the study with evidence of 54.6%. There was also evidence of the level of planning in the organization supported by 74.4% of the statistics. However, there is no significant evidence to quality assurance is implemented in the organizations. Quality audits are done frequently evidently supported by 63.9% and so is TQM implemented supported by statistics of 64%. A majority of 66.3% also implemented quality control. However, compliance audits were not done frequently as 53.5% of the respondents believed there are not done frequently. Generally, there was significant evidence that proved that human resource management played a critical role in the implementation of projects.

Role of Project Time Management:

project time management is an important element in the organizations form a majority (62.7%) of the respondents who believed there is an awareness of the importance of project time quality in their organization. There is also evidence of efforts in managing time in projects proven by statistics of 68.6%. Schedule of projects were also prepared as shown by statistics of 60.5% of the respondents. Start and finish of projects were fixed and approved according to 62.8% of the respondents. There was no evidence of application of network scheduling tools as reported by 59.3% of the respondents. However, computer tools were used in the organizations form 70.95 of the responses from the study. Project activities were monitored and controlled. It was not evident whether project schedules were updated frequently as supported by 53.5% of responses from the study. Generally, there was significant evidence that project time management was seen to be critical in the organizations implementing the infrastructure projects.

Role of Project Cost Management:

The findings of the study there is evidence of the importance of project cost managed awareness in the organizations of the respondents supported by 68.6% of the statistics. There are efforts of managing cost as well as cost estimate level of labor machinery and material. WBS is used for preparing cost estimates as well the use of cost estimating software. There

is also the allocation of cost for each activity as well to work packages and resources. Budget is frequently updated, as well as monitoring controlling the project cost is done. However, project cost tracking against the budget is rarely done evidently from the acknowledgment of 53.5% of the respondents. However, there is evidence of separate tracking of cost labor, material, and machinery as shown 67.4% of the responses.

Role of Project Risk Management:

The findings revealed that project risk management awareness is present in many organizations, as well as efforts made in managing risks problems. There is evidence of risk identification and documentation where RBS is used for the identification of risks as shown from the statistics. Various tools like SWOT analysis, risk prioritization based factors, and quantitative methods of risk assessment are used. There is also evidence of frequent risk audits as well as frequent monitoring and control of the risks as evidently from the study statistics. Generally, there is evidence of management application in the organization.

Correlation Analysis:

A correlation test was carried out to determine the existence of a significant relationship between the dependent variable and the independent variable. If the relationship is significant then it is viable to estimate the model. According to Anglim (2007) detection of simple linear relationship and multi-collinearity act as a building block for multiple regression model. Pearson's product method at 0.05 significance level was used to determine the relationship. The following Table 2 shows the results obtained.

Table 2: Summary of Pearson's Correlations

Correlations

		Implementation of Infrastructure Projects	Project Mgt	HR Project Mgt	Time Project Mgt	Cost Project Risk Mgt
Implementation of Infrastructure Projects	Pearson Correlation	1	$-.660^*$	.058	$-.520^*$	-.063
	Sig. (2-tailed)		.016	.597	.018	.565
	N		86	86	86	86
Project HR Mgt	Pearson Correlation		1	.025	.107	-.115
	Sig. (2-tailed)			.820	.325	.293
	N			86	86	86
Project Time Mgt	Pearson Correlation			1	.063	.053
	Sig. (2-tailed)				.566	.626
	N				86	86
Project Cost Mgt	Pearson Correlation				1	$.325^{**}$
	Sig. (2-tailed)					.006
	N					86
Project Risk Mgt	Pearson Correlation					1
	Sig. (2-tailed)					
	N					

*. Correlation is significant at the 0.05 level (2-tailed).

Project human resource management is highly negative correlated to the implementation of infrastructure projects (r = -.660 > 0.5) and significant since p=0.16< 0.05 the p-value is less than the alpha value of significance. An increase in human resource management decreases the implementation of infrastructure projects. Project cost management is slightly negatively correlated to the implementation of an infrastructure project (r =-.520 >0.5) though significant since p = 0.018 < 0.05 which is below our alpha threshold. When project cost management increases implementation of infrastructure project decreases.

However, project time management is positively correlated to the implementation of an infrastructure project (r = 0.058) though a weak correlation and insignificant since p-value = .597 > 0.05 the alpha threshold. The positive correlation means an increase in project time management increases project implementation and vice versa. Project risk management is negatively correlated to the implementation of an infrastructure project (r = - 0.063) however the correlation is weak and also insignificant since the p-value = 0.565 >0.05.

Since project cost management and project human resource management were significantly correlated to the implementation of infrastructure projects, we conclude that the two variable could be fitted in the model.

Regression Analysis:

Multiple regression was performed to determine the nature of the relationship of the model for predicting the dependent variable regarding the independent variables; the following linear regression model was used for the analysis:

$Y = \beta o + \beta 1 X1 + \beta 2 X2 + \beta 3 X3 + \beta 4 X4 + e0$ ………………………………………………………..(ii)

Where:

Y = Project implementation

Bo = Y-intercept (constant) whose influence on the model is insignificant

X1 = project human resource management

X2 = project time management

X3 = project cost management

Model Summary

Model	R	R Square	Adjusted R Square	Std. The error of the Estimate
1	.642[a]	.412	.363	.88060

Based on the regression results the model could be summarized as in Table 3. The coefficient of determination (R square) was .412 or 41.2%. Project human resource management and project cost management could be used to explain 41.2% of implementation of infrastructure projects.

7. CONCLUSION

The study aimed to establish the influence of project human resource management, project risk management, project cost management, and project time management on infrastructural project implementation. Project human resource management was found significant in explaining the implementation of infrastructure projects in Nairobi City County. However, it had an inverse relationship. On the other hand project, cost management was also found to be significant in explaining the implementation of infrastructure projects in Nairobi City County. It was found to have a direct relationship. both project human resource management and project cost management were useful in explaining 41.2% of the change in the implementation of infrastructure projects in Nairobi City County

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