Effectiveness of Risk Management in NG-CDF Construction Projects in Nairobi County

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Abstract: *Globally, performance of a construction project is primarily judged by cost, time, and quality. Performance of any project is measured by the extent of meeting the standards laid down at the start of the project. Risk management has been conceptualized as having a great bearing on the outcome of projects. The purpose of this study was to investigate risk management in relation to performance of National Government Constituency Development Funded construction projects in Nairobi County. The objectives of the study included; to assessing the influence of resource risk management, to investigate the role of risk management procedures, to analyze the influence of risk management policies and finally to develop a framework for enhancing proper risk management in the CDF projects in Kenya. A survey research design was used. The study employed a probabilistic sampling technique of simple random sampling in data collection. The study found a positive correlation between NG-CDF construction projects performance and all its explanatory variables investigated in the study. The study established that Construction risk management is extremely critical for every company. Not knowing where there might be risks on a project leave companies vulnerable and ill-prepared. CDF risk management committee should therefore develop a risk management policy that is consistent with the risk management strategy and Explain the purpose, role and benefits of embedding risk management policy and procedures into firms' policies and procedures.*

Key Words: Risk Management, NG-CDF Projects

I. INTRODUCTION

Globally, performance of a construction project is primarily judged by cost, time, and quality. However, the construction industry is generally being viewed as having a bad reputation for its work. Evidence by Mousa and Enshassi (2005) in Palestine shows that, the industry has a reputation for time and cost overruns. Aimable (2015) reveals that, many construction projects in Rwanda suffer overrun in cost, delayed schedule, failure and even abandonment. Research by

Gwaya (2015) informs that, over 50% of construction projects in Kenya were failing by not meeting the cost projections, time schedules, quality demands or safety targets. As a rule, failure of projects in meeting the set objectives may occur due to inefficient management of project risks (Musyoka, 2012). Risk management is one of the knowledge areas identified by the Project Management Institute (2013). Ngundo (2014) defines risk as an unforeseen event or activity that can impact on the project's progress, result, or outcome in a positive or negative way. According to Dhlamini et al (2009), risk management is the application of appropriate tools and procedures to contain risk within acceptable limits by identifying, addressing, and eliminating potential problems before they damage a project. In Kenya, Musyoka (2012) investigated project risk management practices on capital projects. The author sought to establish the extent of application of project risk management practices such as risk identification, risk analysis and ranking, risk response and monitoring and use of risk management tools on Kenya Airports Authority capital projects. Njogu (2015) assessed the effects of construction risks on project delivery among contractors and he determined the likelihood of occurrence of construction risks and their impact on project objectives namely cost, time, quality, environment and health and safety. Ngundo (2014) gave insight on factors affecting effectiveness of risk management in public housing construction projects. The study established that, low level of top management support, incompetent project team members, lack of funding and lack of project risk planning were the critical factors that affected risk management effectiveness in the public housing sector. This research investigates risk management in the National Government Constituency Development Funded construction projects. Several projects have been implemented in various constituencies to transform the living standards of people in those areas. Despite having ambitious project proposals initiated after approval, the completion of most of them has remained unacceptable while others have stalled such as the construction of Njiru Maternity Hospital. (Nyawira, 2017). It can be deduced that, this NG-CDF projects fail because the stakeholders assume that all the projects would succeed and therefore they become reluctant in identifying, analyzing and providing mitigation or contingencies for the risk elements involved in the project. The need for improved performance of NG-CDF projects is increasingly becoming important and project risk management must be given the priority. The current risk management practices need a more systematic management technique to gauge and improve performance of projects. Grilo & Jardim-Goncalves (2010);

Zhang,& Hu (2011); Mitchell (2012).and Zou et al (2015) views use of BIM as an effective way of upgrading the risk management process.

II. OBJECTIVES OF THE STUDY

The main objective of this study was to investigate the level of effective risk management in the National Government Constituency Development Funded construction projects in Nairobi County. The specific objectives of this study include.
o To describe the level of effective risk management and its explanatory variables.
o To establish the relationship between effective risk management and its explanatory variables.
o To formulate a framework for effective risk management.

III. THEORITICAL FRAMEWORK

The contingency theory was found to be most suitable in this study. According to Ghahramanzadeh (2013), the contingency theory rejects the idea that there is one best way to manage because of the varying management situations. However, the scholar further notes that, even though contingency thinking rejects the existence of "one best way" for managing risks, it proposes "one most appropriate" approach for each specific situation. Njogu (2015) acknowledge that, contingency thinking recognizes the uniqueness and complexities of construction projects and attempts to identify practices that best fit with the unique demands of different situations.

IV. RESEARCH METHODOLOGY

A survey research design was used. The study was conducted in Nairobi County where it targeted two on-going CDF projects in each ward. The study employed a probabilistic sampling technique of simple random sampling in data collection. The respondents in this study were the project managers in the various CDF projects in Kenya. The data was collected using questionnaires and structured interview schedules that were administered to the respondents. The study adopted both qualitative and quantitative data analysis methods. Descriptive and inferential statistics were both involved in the data analysis for this study. The data was analyzed using SPSS and presented in form of tables, charts, and graphs. The following multiple regression model was used in the study.

$Y = f \{X_1, X_2, X_3\}$
$Y = \beta_0 + \beta_1 X_1 + \beta_2 X_2 + \beta_3 X_3 + €$
Where.
Y-Effectiveness of Risk management
X1-Risk Management Techniques Procedures
X2-Risk Management Policies
X3-Risk management Resources
€= Error term

Descriptive Statistics

	N	Range	Mean	Std. Deviation	Variance
Effectiveness of Risk Management	95	4.1	5.6621	0.6611	0.437
Risks Management Techniques and Procedures	95	1.1	2.0853	0.35729	0.128
Risk management Policies	95	1.8	2.2284	0.38055	0.145
Risk Management Resources	95	1.6	2.1316	0.37367	0.14
Valid N (listwise)	95				

V. RESEARCH FINDINGS

A. Response Rate

The study targeted a sample size of 118 respondents in collecting data out of which 95 filled in and returned the questionnaires making a response rate of 80.51% as shown in table 4.1. Mugenda and Mugenda (2003) assert that response rate of 50% is adequate for analysis and reporting; a rate of 60% is good and a response rate of 70% and over is excellent. Based on the assertion, the response rate was considered to excellent.

B. Working Experience of the Respondents

Results show that most of the respondents(32.6%) had saved as project managers for a period of 10-15 years, 25.3% of the respondents had saved for a period of 5-10 years, 23.2% of the respondents had saved for over 15 years while 18.9% of the respondents had saved for not more than 5 years. This implies that respondents could give reliable information based on their vast experience.

C. Academic Qualifications of Respondents

Individual's level of education is perceived to ability to understand and interpret subjects, in view of analysing respondent's ability to respond to the study topic, respondents were required to indicate their highest level of educational qualifications. The findings of this revealed that most of the respondents as shown by 48.4% of the respondents held bachelor's degrees, 33.7% of the respondents were holders of master's degree, while 17.9% the respondents were holder's college diploma certificate. This implies that, respondents were well educated which means that they were able to respond to research questions with ease.

D. Descriptive Statistics

Risk management in CDF projects is moderately effective as indicated by the mean score of 5.6621. However, the big range indicates that the risk management process in some projects is so wanting and therefore should be investigated by the authorities. The risk management techniques and procedures applied in CDF projects are so wanting as indicated with a mean score of 2.136.

The risk management policies had a low mean score of 2.2284 which means that the policies government risk management in CDF projects are either lacking or have not been implemented fully by the authorities and therefore should be investigated. The results in the table below also shows that the leadership of the CDF projects have not allocated adequate resources for risk management.

E. Correlation Analysis

From the finding in the table above, the study found that there was strong positive correlation between NG-CDF construction projects performance and resource risk management as shown by correlation factor of 0.659, this strong relationship was found to be statistically significant as the significant value was 0.000 which is less than 0.005, the study also found strong positive correlation between risk management procedures and NG-CDF construction projects performance as shown by correlation coefficient of 0.544, this too found to be significant at 0.00 level of confidence. The study further found strong positive correlation between risk

		Y	X1	X2	X3
Y	Pearson Correlation	1	.659**	.554**	.364*
	Sig. (2-tailed)		.000	.000	.000
	N	95	95	95	95
X1	Pearson Correlation	.659**	1	.348**	.150
	Sig. (2-tailed)	.000		.001	.146
	N	95	95	95	95
X2	Pearson Correlation	.554**	.348**	1	.327*
	Sig. (2-tailed)	.000	.001		.001
	N	95	95	95	95
X3	Pearson Correlation	.364**	.150	.327**	1
	Sig. (2-tailed)	.000	.146	.001	
	N	95	95	95	95
**. Correlation is significant at the 0.01 level (2-tailed).					

management policies and NG-CDF construction projects performance shown by correlation coefficient of 0.364 at 0.000 levels of confidence the findings are in line with the research by Ambrosini, (2003) who found a strong positive correlation risk management policies and project performance.

Where.
Y-Effectiveness of Risk management
X1-Risk Management Techniques Procedures
X2-Risk Management Policies
X3-Risk management Resources

F. Regression Analysis

In this study, a multiple regression analysis was conducted to test the influence among predictor variables. The research used statistical package for social sciences (SPSS V 21.0) to code, enter and compute the measurements of the multiple regressions. The study used coefficient of determination to evaluate the model fit. The adjusted R^2, also called the coefficient of multiple determinations, is the percent of the variance in the dependent explained uniquely or jointly by the independent variables. The model had an average adjusted coefficient of determination (R^2) of 0.571 and which implied that 57.1% of the variations NG-CDF construction projects

performance in Nairobi County are explained by the independent variables understudy (resource risk management, risk management procedures and risk management policies). $Y= f\{X_1, X_2, X_3,\}$

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.764a	.584	.571	.43321

$Y=\beta_0 +\beta_1X_1+\beta_2X_2+\beta_3X_3 +\epsilon$
Where.
Y-Effectiveness of Risk management
X1-Risk Management Techniques Procedures
X2-Risk Management Policies
X3-Risk management Resources
ϵ= Error term

G. Anova Table Results

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	24.005	3	8.002	42.663	.000b
	Residual	17.078	91	.188		
	Total	41.084	94			

From the ANOVA statics, the study established the regression model had a significance level of 0.000% which is an indication that the data was ideal for making a conclusion on the population parameters as the value of significance (p-value) was less than 5%. The calculated value was greater than the critical value (42.637.> 5.628) an indication that resource risk management, risk management procedures and risk management policies all have a significant effect on NG-CDF construction projects performance in Nairobi County. The significance value was less than 0.05 indicating that the model was significant.

Coefficients^a

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	1.744	.364		4.788	.000
	X1	.968	.134	.523	7.251	.000
	X2	.541	.131	.311	4.122	.000
	X3	.326	.127	.184	2.571	.012

a. Dependent Variable: Effectiveness of Risk Management

As per the SPSS generated output as presented in table above, the equation ($Y = \beta_0 + \beta_1 X_1 + \beta_2 X_2 + \beta_3 X_3 + \varepsilon$) becomes:

$$Y = 1.744 + 0.968 X_1 + 0.541 X_2 + 0.326 X_3$$

From the regression model obtained above, a unit change in resource risk management while holding other factors constant would positively change NG-CDF construction projects performance in Nairobi County by a factor of 0.968; a unit change in risk management procedures while holding the other factors constant would positively change NG-CDF construction projects performance in Nairobi County by a factor of 0.541 and a unit change in risk management policies by school principals while holding the other factors constant would positively change NG-CDF construction projects performance in Nairobi County by a factor of 0.326 These findings are in support of the study findings by Ambrosini, (2003) who found a strong positive correlation Risk management and project performance.

H. Discussion of the Findings

The study found a positive correlation between NG-CDF construction projects performance and Resource risk management (correlation factor = 0.659, significant value = 0.000) test correlation results also show that a unit change in resource risk management while holding other factors constant would positively change NG-CDF construction projects performance in Nairobi County by a factor of 0.968; These findings are in support of the study findings by Kerzner (2016), instituting resource risk management in construction projects is to increase value-added along the construction value chain, ensuring compliance with best practice construction approaches, thus minimizing waste and inefficiencies.

The study found a positive correlation between NG-CDF construction projects performance and risk management procedures (correlation factor = 0.659 significant value = 0.000) test correlation results also show that a unit change in risk management procedures while holding other factors constant would positively change NG-CDF construction projects performance in Nairobi County by a factor of 0.541; These findings are in support of the study findings by Mandere (2016) who found out having a risk management plan can aid to capture the negative and positive impacts to the project and what actions that ca be used to deal with them. The study found a positive correlation between NG-CDF construction projects performance and risk management policies (correlation factor = 0.364 significant value = 0.000) test correlation results also show that a unit change in risk management policies while holding other factors constant would positively change NG-CDF construction projects performance in Nairobi County by a factor of 0.326; These findings are in support of the study findings by Musyoka (2012) Strong risk management policies offers the chance to gain a clear understanding of the goals, duties and contents of the service and the feasibility of the project.

VI. CONCLUSIONS

The study concludes that resource risk management had a positive significant influence on NG-CDF construction projects in Nairobi County, to promoted resource risk management the management committee ensured that ensured proper utilization of the resources allocated all processes, measures had be put in place to ensure that current and future material risk exposures of the project are identified, assessed, quantified, appropriately mitigated and managed and that deliveries were made on time, the CDF risk committee salon assessed the duration and timing to special skill requirements prior before the beginning the projects.

In line with the second objective the study revealed that risk management procedures play a positive instrumental role on performance of NG-CDF construction projects in Nairobi County. to enhance the process, CDF management have positive attitude towards risk management process, CDF risk management committee benchmarks its operations with other established organizations and that the risk management team used an approved project management software for accountability and efficiency enhancement.

The study concludes that strong risk management policies have a positive impact of on performance of NG-CDF construction projects in Nairobi County, the constituency has well laid policy guiding the risk management process, Policy frame work provide clear and strong basis for informed decision making at all levels of the organization and that the available policy guarantee compliance with appropriate regulations, wherever applicable, through the adoption of best practices

J. Recommendations

Construction risk management is extremely critical for every company. Not knowing where there might be risks on a roject leave companies vulnerable and ill-prepared.

CDF risk management committee should therefore develop a risk management policy that is consistent with the risk management strategy and Explain the purpose, role and benefits of embedding risk management policy and procedures into firms' policies and procedures.

It is also important to establish effective education and training environments through continued professional development to gain sufficient attentions and attitude from the industry on all key issues about PRM

K. Recommendation for Further Study

Further investigation could be carried out in contractual risk management (CRM) in conjunction with the project procurement route (PPR). This could include further case studies of construction projects and investigation into special contract

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