Risk Management Strategies and Performance of National Government-Constituency Development Funded Infrastructural Projects in Nairobi City County, Kenya

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Abstract: **The National Government Constituency Development Fund (NG-CDF) plays a major role in fostering infrastructural development across various sectors in Kenya through utilization of allocated 5.7 percent of the country's GDP. To achieve this, project risk management strategies such as risk avoidance, risk transfer, risk reduction and risk sharing are increasingly accepted and used in infrastructural project management worldwide. However, infrastructural project performance surveys shows that overall non-performance is a major risk faced by NG-CDF funded projects in Kenya. The risks attributable to the determinants of this non-performance is therefore necessary for mitigation against the risk and for the safety and soundness of NG-CDF funded projects in Kenya. In particular, Nairobi City County is host to most NG-CDF funded infrastructural projects reporting varied and inconsistent performances. The study therefore sought to investigate the influence of risk management strategies on performance of NG-CDF funded infrastructural projects in Nairobi City County, Kenya. The study target population was 699 NG-CDF infrastructural projects based in the county and undertaken between 2017-2022. FYs. Stratified random sampling was applied which generated a sample of 254 respondents. A descriptive research design was employed and guided, among others, primary data collection using semi-structured questionnaires and both descriptive and inferential data analysis. From this analysis it was established that the identified risk management strategies had varying predictive powers for performance of NG-CDF funded infrastructural projects with risk reduction having the highest ($\beta = 1.076$, $p < 0.05$) and risk sharing having the least ($\beta = 0.279$, $p < 0.05$). The study therefore recommends that while risk is entirely not avoidable, reduction and sharing of it should be embraced.**

Keywords: **Risk management strategy, Risk Avoidance, Risk Transfer, Risk Reduction, Risk Sharing.**

1. INTRODUCTION

The National Government Constituency Development Fund (NG-CDF) has been paramount in bridging the infrastructural development disparities across various sectors in Kenya (Oketch, et al. 2022). For instance, the Fund has been instrumental in upgrading school infrastructures and financing school fees of students from low-income households thereby bringing about equity in education as an equalizer. Within this sector, financing of underprivileged students has been crucial in promoting literacy, enhancing enrollment and increasing skilled workforce that is essential in fostering economic growth and development (Kapiyo, et al. 2024). The implementation of NG-CDF projects is undertaken by local communities with the attendant effect of creating employment opportunities and promoting local consumption thus improving their livelihoods (Leariwala, & Kamau, 2021). The importance of NG-CDF cannot be underscored and examining its performance is essential in understanding more dynamics that may be of concern to policymakers and scholars.

Project performance is a critical process that is of concern to management, beneficiaries and stakeholders involved in the implementation. Project performance is largely determined by nature of appraisal employed by management when implementing projects (Kimani, & Kamaara, 2019). The main objective of any project is efficient and effective

implementation within a given period of time. Performance of projects are characterized by success level that entail realization of the project goals and objectives in an efficient, effective, sustainable and timely manner (Algremazy, et al. 2023). Therefore, projects which attain goals and objectives have value for money for the amount investment incurred (Mutuku, 2019). According to Otieno, and Mutiso, (2021) project performance is an essential parameter which shows how project adhere to timeline of deliverable, utilization of resources prudently and meeting satisfaction of all stakeholders.

The performance of any project requires improvement in every stage of implementation and thus it is important for all project stakeholders and management to develop strategies on how to enhance performance. According to Mhirat, (2017) improvement of project performance can be attained by managing all aspects and forms of risks in an effective manner. The performance of NG-CDF projects is influenced by array of factors such as adequate resources, leadership, management, monitoring and evaluation, institutional accountability, environmental and socio-economic factors. However, several literatures have pointed out that little attention has been put on the vital role played by risk management in enhancing performance of NG-CDF projects.

It is imperative for management concerning with project planning and implementation to develop risk management systems that will mitigate any possible loss occasioned by occurrence of a risk (Mohamed, 2022; Khisa & Mutuku, 2023). In addition, projects face diverse risks across all sectors in an economy. Risk management has remained to be a pertinent issue among scholars and policymakers. This is informed by the fact that during project implementation unpredictable actions occur both knowingly or unknowingly committed by stakeholders (Al & Masuri, 2022). Given the vital role of risk management in project planning and implementation efficiency of risk management is necessary and thus influence project performance.

Some studies have found out that proper risk management fosters project performance since it enhances productivity. The contemporary market is currently characterized by high level of dynamism and thus reliance on having project plan and instilling monitoring and evaluation systems is not enough to achieve adequate performance hence risk management is becoming inevitable in realizing desired performance (Igihozo, & Irechukwu, 2022). Therefore, project management has focused on various risk management strategies to enhance desired performance in project planning and implementation. According to Kinyua, Ogolla and Mburu (2015) risk management strategies entail avoiding risk, transfer of risk, reduction of risk and risk retention strategy are attributed to adequate performance of projects. Risk management strategies are supposed to be carried out in the entire project cycle in order to have consistency and predictability of project performance. Moreover, inappropriate risk management strategy or failure to adopt these strategies from conceptualization of a project till the end-of-life cycle is likely to impede project performance.

Risk management strategies are adopted in several ways, it includes averting risk from occurring, reducing risk, sharing risk and retaining risk. The strategy of risk avoidance is exhibited when needed and required decisions are implemented to tame any form of threats associated with risk hence minimizing possibilities of risk occurrences. On certain occasions some risks may bound to happen but as long as it does not significantly affect project performance then acceptability becomes necessary. On the other hand, high level risks cannot be allowed to happen since it may hamper project performance and thus utilization of resources to mitigate is paramount. In addition, risks can be shared among stakeholders in project planning and management on the form of benefits and adversities bound to occur. Risk sharing process has been considered as a strategic partnership which stakeholders identify opportunities for mutual engagements in order to realize objectives and goals of an organization hence desired performance is part and parcel of this outcome.

Several empirical investigations have been undertaken on the relationship between risk management and performance of projects both financed private and public sectors. Apaloo, and Bright, 2022: Kiarie, 2017: Chelsea, 2020: and Sitienei, Korir, and Koskei, 2023 pointed out there is a positive relationship between risk management practices and organizational performance. Mustapha, et al. (2023) noted that risk management practice's role of improving performance is fostered by innovation for financial firms and it negates for non-financial firms. Oehmen, et al. (2019) noted that some risk management strategies improved performance while some negated performance of organizations. Investigation by Adeyemo, and Adebayo, (2021) established that risk management strategies had no significant influence on organizational performance. Nyarangi, and Ngali, (2021) established that risk identification practices, risk analysis practices and risk monitoring practices have positive and significant effect on performance. Al-Nimer, Abbadi, Al-Omush, and Ahmad, (2021) found out that risk management practices had significant effect on organizational performance measured by non-financial parameters while lack significant effect on performance that uses environmental parameters as proxy of performance. This is evident that there is lack of consensus on the relationship between risk management and performance of projects based contextual, methodology and conceptualization of variables.

2. RESEARCH DESIGN

The study adopted descriptive research design. This was used to generate explanatory variables of NG-CDF funded infrastructural projects performance. From these identified variables, significant empirical relationship between independent and dependent variables was established.

2.1 Target Population, Sampling Design and Data Collection Technique

The target population for the study were all the 699 NG-CDF funded infrastructural projects in Nairobi County undertaken during 2017-2022 FYs. Stratified random sampling generated a sample of 254 respondents spread across the different strata of sampled projects. The entire data set were for the study were primary data collected using semi-structured questionnaires.

2.2 Empirical model

In this study, multiple linear regression model was used to establish predictive powers of the different continuous independent variables on performance of NG-CDF funded infrastructural projects.

2.2.1 Multiple Linear Regression Model

Multiple linear regression model is appropriate when it is required to establish how several predictor variables influence a dependent variable individually and collectively ceteris peribus.

2.2.2 Formulated Multiple Linear Regression Model

$Y = \beta_0 + \beta_1 X_1 + \beta_2 X_2 + \beta_3 X_3 + \beta_4 X_4 + \varepsilon$

Where:

X_1= *Composite Index of Risk avoidance strategy.*

X_2= *Composite Index of Risk Transfer Strategy.*

X_3= *Composite Index of Risk Reduction Strategy.*

X_4= *Composite Index of Risk Sharing Strategy.*

E= *Error term*

2.3 Data Analysis

Both descriptive and inferential data analysis were carried out. Descriptive analysis aimed to establish the level of agreement or disagreement about application or not of various aspects of risk management strategies on a 5-point likert scale. To draw inferences about the influence on performance of NG-CDF funded infrastructural projects by each risk management strategy, a multiple linear regression model was fitted and run in SPSS 26.0.

3. FINDINGS

3.1 Influence of Risk avoidance strategy on performance of NG-CDF infrastructural projects

Variable	Unstandardized β	σ	Standardize β	t-value	p-value
X_1	0.289	0.068	0.534	4.276	0.00

From the multiple regression fit, risk avoidance strategy, X1, had a statistically significant influence on performance of NG-CDF projects (β = 0.289, p < 0.05). this implies that risk avoidance strategy taken alone ceteris peribus has influence on performance of these category of projects.

3.2 Influence of Risk transfer strategy on performance of NG-CDF infrastructural projects

Variable	Unstandardized β	σ	Standardize β	t-value	p-value
X2	0.414	0.068	0.534	4.276	0.00

The inferential analysis results showed that risk transfer strategy, X2, had a statically significant influence on performance of NG-CDF projects ($\beta = 0.414$, $p < 0.05$). Compared with X1, this strategy had a higher predictive power for performance of NG-CDF ceteris peribus.

3.3 Influence of Risk reduction strategy on performance of NG-CDF infrastructural projects

Variable	Unstandardized β	σ	Standardize β	t-value	p-value
X3	1.076	0.068	0.534	4.276	0.00

The inferential analysis results showed risk reduction strategy, X3, to have had the highest influence ($\beta = 1.076$, $p < 0.05$) on performance of NG-CDF projects. Like with other discussed variables, individually, X3, significantly influence performance of the projects ceteris peribus.

3.4 Influence of Risk sharing strategy on performance of NG-CDF infrastructural projects

Variable	Unstandardized β	σ	Standardize β	t-value	p-value
X4	0.279	0.068	0.534	4.276	0.00

From the findings, risk sharing strategy had the least influence on performance of NG-CDF projects ($\beta = 1.076$, $p < 0.05$) ceteris peribus.

4. CONCLUSION

A number of risk management strategies influence performance of NG-CDF funded infrastructural projects. Among them, risk reduction strategy has the highest influence and is statistically significant in performance of NG-CDF projects. While risk avoidance, risk transfer and risk sharing also affect performance of NG-CDF projects their impacts are not as high as that of risk reduction. The research further concludes that while risk cannot entirely be avoided, risk reduction and risk sharing are critical in performance of NG-CDF projects.

5. FURTHER RESEARCH.

The current study used multiple linear regression model to investigate the influence of the identified risk management strategies on performance of NG-CDF projects, future studies could also explore use other statistical techniques such as multiple discriminant analysis model, linear probability models or the factor analysis model. The context of the study could also be changed from a pure urban Nairobi City County set up to an semi-urban or rural set up.

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