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PROJECT RESOURCE MANAGEMENT AND PERFORMANCE OF URBAN FOOD SECURITY PROJECTS IN NAIROBI CITY COUNTY, KENYA

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ABSTRACT

Project resource management is one of the most critical factors in project management because project budget is one of the key metrics of project performance. Food security is a critical concern in Kenya hence the need to develop projects that will enhance food security in the country. Nairobi County has implemented several initiatives to enhance urban food security but objective of the food security initiatives is yet to be fully realized. The general objective of the study was to establish the effect of project resource management on performance of urban food security projects in Nairobi City County, Kenya. The specific objectives were to establish the effect of resource utilization and resource forecasting on performance of urban food security projects in Nairobi City County, Kenya. The study was guided by theory of constraints, and management competency theory. The study adopted descriptive research. The unit of observation was 10 urban food security projects in Nairobi County. The unit of observation was 10 project managers, 10 project supervisors, and 100 project implementation team members. The study used census hence all the 120 targeted respondents were sampled. The study used questionnaires for data collection. The pilot study was conducted with 10% of the sampled respondents (12 respondents). This study used construct and content validity. The Cronbach Alpha coefficient was used to measure reliability. Data was analyzed using SPSS version 28. Findings were presented in tables. The content of the questionnaire was approved by the research supervisors. Key findings showed that resource utilization and resource forecasting positively and significantly affect project performance, with resource utilization emerging as the strongest predictor. The study concludes that effective planning, efficient use of available inputs, proactive forecasting, and balanced workload distribution are essential for achieving timely, reliable, and impactful food security outcomes. Based on these findings, the study recommends improving utilization through better prioritization and reduced wastage, enhancing forecasting capacity using structured tools and contingency planning, these measures are expected to enhance efficiency, ensure consistent food availability, and support the successful implementation of urban food security initiatives in Nairobi City County.

Key Words: Project Resource Management, Performance of Urban Food Security Projects, Resource Utilization, Resource Forecasting, Nairobi City County, Kenya

Background of the Study

According to Project Management Body of Knowledge (PMBOK) 6th Edition of Project Management Institute, project resource management included resource management planning, estimating activity resources, acquiring resources, developing team, managing team, and controlling resources (Manzoor, 2019). Landau (2024) asserted that resource management is the process of estimating what resources will be needed to complete a project, acquiring them, making a schedule for their allocation and monitoring their utilization during the execution of a project, program or portfolio of projects. According to Sepulveda, Godue, Padilla, and Vidaurre (2019), it is important to properly manage a project's resources to ensure its success. Everything ends up affecting the effectiveness of project implementation if resources are not managed effectively. As a result, any increase or decrease in resources directly impacts the project's budget as well as its timeline. Shukla (2020) noted that project's success relies on how well it achieves key performance indicator and manages its resources.

Resource management involves making sure that tasks are assigned to specific and capable persons in charge, and that everyone has the tools, time, and information they need to achieve progress without going over the intended budget. Project resource management is one of the most critical factors in project management. This is because project budget is one of the key metrics of project performance. Equipment and labor should be used as efficiently as possible to adhere to the set project budget (Zhao, Ren, & Chen, 2023).

Statement of the Problem

Food security is a critical concern in Kenya hence the need to develop projects that will enhance food security in the country. Food, Agriculture and Natural Resources Subsector is working towards designing a tool aimed at building resilient food systems that can withstand shocks and stresses, thus enhancing sustainability of food security in Nairobi County. Nairobi County has implemented several initiatives to enhance urban food security, focusing on increasing local food production, improving distribution efficiency, and ensuring food safety. In June 2022, the county launched the Nairobi City County Food System Strategy, aiming to achieve consistent food security while supporting the commercial interests of food industry entrepreneurs. The strategy seeks to address this by promoting domestic food production and improving distribution and marketing efficiency.

However, the objective of the food security initiatives is yet to be fully realized. Nairobi has almost 40% of its population living in slums where there is high food insecurity whereby 40% of the slum dwellers have no access to safe drinking water, while sanitation coverage is less than 40%. In addition, close to 50% of overall household income is allocated to food purchases, a clear indication of heightened vulnerability due to volatility in food prices, amidst unstable labor opportunities (Owuor, 2024). A large proportion of urban dwellers are unable to meet food needs on a sustained basis over an extended period, adopting instead detrimental coping strategies such as increased child labor, skipping meals and foregoing nonfood expenditures, so as to bridge significant deficit. Prices of staple foods such as maize, wheat and milk among others have been rising progressively diminishing access to food for the poorer sections of the population leading to food insecurity in many households (Chege, et al, 2021).

Research by APHRC (2021) shows that 80% of slum residents are food insecure which partly explains the high malnutrition rates of close to 50% among children. To survive, slum residents resort to different coping strategies: purchasing cheap, low-quality foods such as stale fruits and vegetables, scavenging for food in dumpsites, and dependence on street foods, often prepared in unhygienic conditions. About 70% of residents in Nairobi reported dire food insecurity situations, including being unable to eat preferred kinds of food, eating a limited variety of foods, consuming smaller portions than they felt they needed, and eating fewer meals in a day. Most projects in Nairobi which are aimed at ensuring food security have been

mentioned to have short lifespan, others have stalled, and others have not impacted significantly to the community intended. In addition, some projects have collapse even before they celebrate their fifth birthday (Ruheni, & Wambugu, 2022).

Various researchers have focused on resources management practices; Makori (2021) study on effects of resource management practices on the performance of commercial housing projects in Nairobi City County, Kenya found that resource management has great influence on commercial housing projects' performance in Nairobi City County, Kenya. Aradukunda and Sikubwabo (2024) study on the impact of resource management on project performance indicated that there is a significance relationship between resources management and project performance. Irakoze and Wabala (2024) study on assessment of how the allocation of resources influences the performance of Kigali Infrastructure. There is study limitation on effect of project resource management on performance of urban food security projects in Nairobi City County, Kenya.. This study sought to fill the research gap by examining the effect of project resource management on performance of urban food security projects in Nairobi City County, Kenya

Objectives of the Study

General Objective

To establish the effect of project resource management on performance of urban food security projects in Nairobi City County, Kenya.

Specific Objectives of the Study

i. To examine the effect of resource utilization on performance of urban food security projects in Nairobi City County, Kenya.
ii. To assess the effect of resource forecasting on performance of urban food security projects in Nairobi City County, Kenya.

LITERATURE REVIEW

Theoretical Literature Review

Resource-Based View

Resource-Based View (RBV) theory was developed by Barney's (1991). The theory originated from strategic management research on how firms create value and specifically how they can obtain a competitive advantage in the market. Barney (1991) suggested that a firm's competitive advantage is its value-creating strategy, one that is significantly distinct from the current or future strategy of the competitors. Therefore, in this view, the firm's resources are its source of sustained competitive advantage. That is, the resources that a firm has are their primary source of competitive advantage, and the resources can either be strength or a weakness, including both the intangible and tangible resources available to the company. Barney (1991) notes that the two critical assumptions of the RBV theory are that the resources must be heterogeneous and immobile. The heterogeneity assumption holds that companies possess different skills, capabilities, resources, and structure, which makes the company inherently different. The immobility assumption holds that a certain company's resources have to be immobile, that is, they cannot be moved from one company to the other. Therefore, a firm can get a sustained competitive advantage if the resources are ―valuable, rare, imperfectly imitable, and not substitutable (VRIN) (Barney, 1991).

The project managers should identify whether the available resources meet the VRIN criteria, which will lead to better management and utilization of resources to obtain a competitive advantage. Almarri and Gardiner (2014) argue that the RBV theory is equally important for project managers as it allows them to spread the available resource to align with strategy,

identify the value of the resources, and identify the required capabilities for the success of the firm. This theory is an exploration of the desire for the right form of planning and implementation of projects based on availability of resources. Based on this, management makes use of the readily obtainable resources and utilize them for maximum success of projects in place. This theory is thus fundamental as it stresses on the correct form of utilizing project resources to ensure that they are successful.

Behavioral Finance Theory

Behavioral finance theory was developed by Kahneman and Tversky in 1979. Kumar (2017) argues that the theory is a modern area of study in finance which aims at combining behavioural and cognitive psychological theory with conventional economics and finance, to provide explanations for the reasons why people make irrational financial decisions. Jureviciene and Ivanova (2013) postulate that the theory investigates emotional characteristics to explain subjective factors and irrational anomalies in financial markets. Hammond (2015) provides the reason why behavioral finance exists by stating that, since not every person can possibly have and invest upon the same amount of information, this leads to what every person will view the things they see differently. According to Barberis and Thaler (2003) behavioral finance theory is subdivided into two building blocks. The first is cognitive psychology, which documents patterns regarding how people behave. Some of these patterns are overconfidence and conservatism. The second part deals with limits to arbitrage, which argues that when market is inefficient, it can be difficult for rational traders to undo the dislocations caused by less rational traders. . The theory relates to the objective on resource forecasting as it guides program managers on the possibility of changes in project budget which needs to be planned for accordingly.

Conceptual Framework

A conceptual framework is a diagrammatic illustration that explains the relationship between the variables relevant to the study (Oso & Onen, 201). The theory presents the independent and dependent variable.

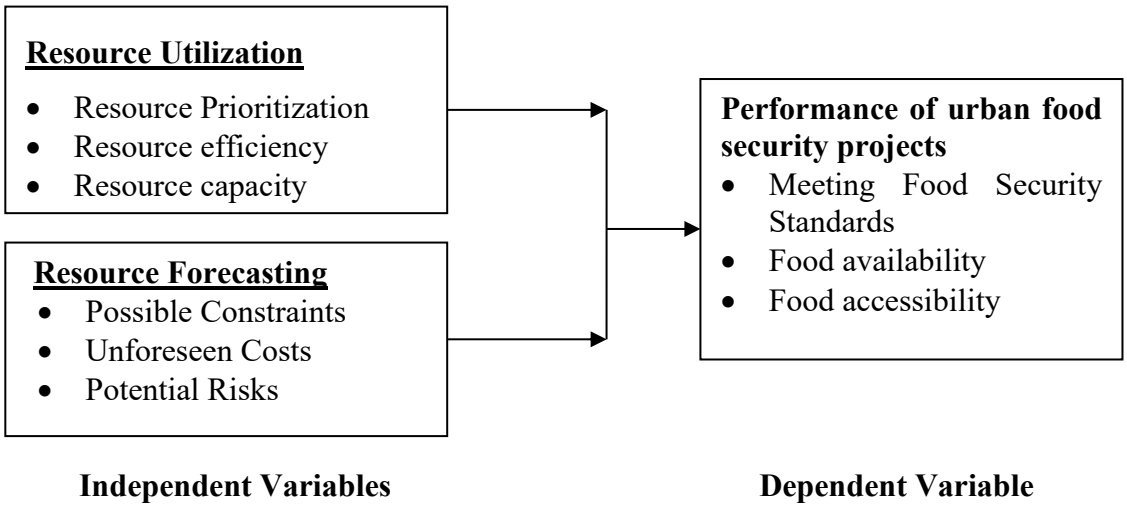

Figure 2. 1: Conceptual Framework

Resource Utilization

Resource utilization refers to the amount of time or effort that a resource, such as people, equipment, or materials, is being used to complete work on a project. It is a measure of how effectively and efficiently resources are being utilized in a project to achieve specific goals. High resource utilization means that resources are being used to their maximum capacity, while low resource utilization indicates that resources may be underutilized or that there is room for

improvement in resource allocation. Effective resource utilization is critical to project success, as it can help to minimize costs, reduce delays, and improve overall project performance (Salameh & Taamneh, 2022).

Proper resource utilization is key to optimizing efficiency, controlling costs, and ensuring projects stay on schedule. To maximize resource utilization, project managers need to balance workloads, monitor capacity, and regularly reassess how resources are being deployed throughout the project lifecycle. Using tools like Birdview PSA can help track and optimize resource allocation, leading to more successful project outcome (Dibrova, 2020). When resources are effectively utilised, many activities become smoother and the organisation flourishes in the best way possible. All company investments are dependent on the utilisation of financial resources. When resources are not adequately managed, it increases the complexity of the task and makes it difficult for the organization's personnel to operate in a rich environment (Xiang & Worthington, 2020).

Resource Forecasting

Project resource forecasting is the process of predicting the resources such as labor, equipment, materials, and finances required to complete a project successfully. Effective forecasting ensures resource availability, minimizes overallocation, and prevents cost overruns (Salama, Salah & Moselhi, 2021). Resource forecasting helps project managers and team leaders to determine whether or not project activities can be completed based on the amount of resources available and the time frame in which they will be needed (Chika, 2020). Resource forecasting is essential for successful project execution. Leveraging technology and data analytics helps organizations minimize risks and optimize efficiency. With growing project complexities, companies investing in advanced forecasting methods are more likely to achieve project success within scope, time, and budget constraints. (Liu & Hao, 2021).

Resource forecasting helps organizations optimize resource utilization. By accurately predicting future resource needs. Organizations can avoid underutilization or overutilization of resources, which can lead to wasted time, money, and effort. Organizations can more efficiently deploy resources and stick within budgetary restrictions with the aid of accurate forecasting. Organizations may allocate resources among various projects and initiatives more effectively when they have accurate resource forecasting. This eventually leads to increased productivity and cost effectiveness by preventing both resource overload and underutilization. Organizations may make well-informed decisions regarding outsourcing, hiring, and training when they have a clear picture of their future resource needs. This leads to improved project execution and resource use (Zarghami, 2022).

Empirical Review

Resource Utilization and Project Performance

Chaudhari (2019) studied effect of resource utilization for performance of construction projects. The results of this study showed that material waste in construction contributes to an increase in project costs. The study also revealed that the project resources were not utilized efficiently which led to delay in project delivery. Ugboko and Ehugbo (2021) studied effect of resource utilization on performance of projects in Nigerian telecommunication firms. The study employed a survey research design. Data was collected using questionnaires. The results showed that there is a significant and positive relationship between resource planning and project performance. According to the findings, resource utilisation is a technique for effectively organizing and assigning workers as well as equipment for various projects or services while avoiding idle resources.

Nzarulinda and Mulyungi (2020) studied the effect of physical resource control on performance of Sustainable Growers Rwanda as coffee project. The study adopted descriptive research design. The target population was 30 employees of Sustainable Growers Rwanda on which a census was done. Questionnaires were applied to collect data. The research findings showed that project machines' control, project tools' control and project equipment's control influenced coffee project performance and were positively correlated and significant to the coffee project performance in Sustainable Growers Rwanda.

Lamka and Masu (2018) evaluated the extent to which resource utilization affected performance of construction companies in the county of Nairobi. A mixed methods design was used. It was established that faults in resource utilization resulted in project teams allocating utilities to wrong places at incorrect timing. It was also found that when resource utilization was undertaken, it was easier for project managers to reorganize project tasks and resources in order to attain the prime quality, time and cost objectives within a constrained budget and under insufficiency of resources.

Resource Forecasting and Project Performance

Algremazy, et al., (2023) investigated the role of risk management in project management in the construction industry in Libya. The study involved more than three hundred construction companies located in Tripoli and Benghazi. Questionnaires was used to collect data from a sample of 250 respondents. The study found that risk management practices had substantial and favourable effects on the success of the project's execution. Further the awareness of quality management in terms of risks was most encouraging. The study showed that risk management practices improves the project performance.

Masoetsa, et al., . (2022) assessed the constraint factors affecting project performance in the South African construction industry. The study adopted a quantitative research design. Data was collected using questionnaires. The target population was construction professionals within the South African construction industry. The sample was 180 respondents. The results of the study showed that stakeholders' inappropriate project scheduling and coordination factors, organisation and government policies factors, and organisation and government policies factors were the leading constraints affecting construction project performance in the South African construction industry.

Kirui and Chege (2024) studied effect of resource planning on performance of road projects funded by Bomet county government, Kenya. The study employed a descriptive research methodology. The target population consisted of 203 employees. A total of 52 projects were utilized to randomly select 112 respondents who included the project managers, project management committee members, and county officials from the Department of Roads, Public Works, and Transportation. Primary data was collected using questionnaires. The results showed that a primary benefit of resource planning is its role in enabling county governments and organizations to effectively assess the resources necessary for road construction. This planning process facilitated the mobilization of resources essential for the successful completion of road projects, taking into account the availability and capacity of those resources. The findings revealed a positive and statistically significant correlation between resource planning and the successful execution of road construction initiatives. Furthermore, the study concluded that resource planning had a beneficial and significant effect on the performance of road projects

Otieno and Mutiso (2021) examined the influence of project risk management on performance of agricultural projects in Nakuru County. The study adopted a descriptive research design. The sample size composed of 116 agricultural projects drawn from the 11 sub-counties in Nakuru County. This study used questionnaires to collect data. Results showed that most of the project risk management indicators have positive impact on performance of the agricultural

projects. The study findings also showed that project risk management had a significant influence on performance of the agricultural projects.

Njoroge and Muchelule (2020) examined how project triple constraints management influences the performance of the Indoor network coverage enhancement project in Safaricom, Kenya. The study adopted descriptive research design. The sample was 185 individuals from a target of 430 employees. Questionnaires were used to collect data. Results revealed that all the project triple constraints had a significant and positive association with the performance of indoor network coverage enhancement projects by Safaricom. However, the magnitude of the influence was different for the specific project triple constraints with time management having the largest effect followed by cost management then scope management and finally community participation.

RESEARCH METHODOLOGY

The investigation employed a descriptive research design to capture how project stakeholders experienced and perceived issues surrounding urban food security initiatives. This design was selected for its ability to profile existing conditions and generate structured responses to core questions concerning the nature, context, and operational dynamics of the projects, while enhancing objectivity through standardized procedures and random engagement of respondents (Cooper & Schindler, 2014). The study focused on urban food security projects implemented in Nairobi City County over a ten-year period. The units of analysis were the projects themselves, while data were sourced from project managers, supervisors, and implementation team members, constituting a total population of 120 individuals. Given the relatively small size, a census approach was adopted, incorporating all eligible participants as recommended for populations below 200 to enhance representativeness and reduce sampling error (Kothari & Garg, 2014).

Data collection relied on structured questionnaires aligned with the research objectives and organized into thematic sections addressing demographic characteristics, resource utilization, forecasting, and project performance. Responses were measured using a five-point Likert scale to enable quantification and facilitate statistical analysis (Trochim, 2016). Data collection followed strict ethical procedures, including institutional authorization and adherence to confidentiality, anonymity, and voluntary participation principles. A pilot test covering 10% of the sample (n = 12) was conducted to assess instrument adequacy. Validity was ensured through expert evaluation and factor analysis, with constructs deemed acceptable at factor loadings of 0.5 and above (Hair et al., 2010). Reliability was established using Cronbach's Alpha, with coefficients of 0.7 or higher indicating satisfactory internal consistency (Vaske et al., 2016).

Data were analyzed using SPSS version 28, incorporating both descriptive statistics (means, frequencies, percentages, standard deviations) and inferential techniques including correlation and multiple regression analysis. Project performance served as the dependent variable, while resource utilization, and forecasting, functioned as predictors, modeled through a standard linear regression equation.

RESEARCH FINDINGS AND DISCUSSIONS

After excluding the 12 respondents who participated in the pilot test, the effective sample size for the main study was 108 respondents. Out of these, 94 questionnaires were correctly completed and returned, representing a response rate of 87.0%**.** According to Mugenda and Mugenda (2003), a response rate above 70% is considered adequate for analysis in social science research. The high response rate in this study indicates satisfactory engagement from the respondents and provides a strong basis for credible statistical analysis.

Descriptive Analysis

Resource Utilization

This subsection presents respondents' perceptions of resource utilization practices in urban food security projects. The analysis is based on eight statements rated on a five-point Likert scale. According to the interpretation scale, mean values ≥ 3.500 indicate agreement.

Table 1: **Descriptive Statistics for Resource Utilization**

Statement	Mean	SD
The project team have the capacity to implement the food projects.	3.809	0.742
The project managers effectively manage project resources.	3.723	0.816
Project resources are classified to ensure that urgent needs are catered for.	3.702	0.831
Managers have ensured optimum staffing in the projects.	3.468	0.902
Project managers take measures to prevent resource wastage.	3.830	0.755
Resource availability is considered throughout project implementation.	3.766	0.798
Resource calendars are used when implementing food projects.	3.660	0.841
There has been suitable prioritization of resources to meet demands.	3.702	0.812
Aggregate Mean Score	**3.708**	**0.825**

Source: Field Data (2025)

Respondents agreed that project teams have the capacity to implement food projects (Mean = 3.809, SD = 0.742), indicating strong confidence in the technical competence and skills of personnel involved. Agreement was also observed regarding effective management of project resources by project managers (Mean = 3.723, SD = 0.816), showing adequate oversight and coordination during implementation. The classification of resources to cater to urgent needs recorded a mean of 3.702 (SD = 0.831), suggesting moderate agreement that prioritization is practiced to prevent delays and bottlenecks. Respondents were more neutral regarding optimum staffing (Mean = 3.468, SD = 0.902), implying that while some projects are well-staffed, others continue to experience shortages or skill mismatches.

The statement that managers take measures to prevent resource wastage scored strongly (Mean = 3.830, SD = 0.755), showing proactive efforts to reduce inefficiencies and protect project inputs. The item on consideration of resource availability throughout implementation also received high agreement (Mean = 3.766, SD = 0.798), indicating that resource status is routinely monitored and integrated into decision-making. The use of resource calendars scored a mean of 3.660 (SD = 0.841), suggesting that time-phased resource planning tools are moderately used to guide operational sequencing. Finally, respondents moderately agreed that resource prioritization is suitable to meet resource demands (Mean = 3.702, SD = 0.812), reflecting continuous but imperfect efforts to match resources with project needs.

The aggregate mean of 3.708 (SD = 0.825) shows that respondents generally agree that resource utilization practices in Nairobi's urban food security projects are effective. This implies that project teams exhibit sufficient capacity, managers prevent wastage, and resources are monitored and prioritized in line with project needs. However, areas such as staffing adequacy require improvement. These findings align strongly with Ugboko and Ehugbo (2021), who found that effective resource utilization, especially proper classification and allocation of materials, enhances project performance by reducing idle resources and improving workflow efficiency. Similarly, Lamka and Masu (2018) observed that poor utilization leads to misallocation, delays, and increased project complexity, while effective utilization allows project teams to reorganize tasks and maintain performance within time and budget constraints. The agreement reflected in this study reinforces the argument that resource utilization is a critical driver of project success, supporting previous empirical evidence that

emphasizes the importance of minimizing wastage, optimizing capacity, and aligning resources with operational demands.

Resource Forecasting

This subsection presents descriptive statistics on resource forecasting, which assesses the extent to which project teams anticipate constraints, unforeseen costs, and potential risks during the implementation of urban food security projects. Using the Likert interpretation scale, a mean score of 3.5 and above indicates agreement.

Table 2: Descriptive Statistics for Resource Forecasting

Statement	Mean	SD
The project manager accurately estimates the project resources.	3.681	0.864
The unforeseen costs in the projects are put into consideration.	3.723	0.821
The project team analyzes the possible project challenges.	3.766	0.798
The board has the ability to assess the financial and actual situation of the project.	3.638	0.887
The best risk management practices are employed in implementation of food projects.	3.766	0.812
Projects are tracked through status reports in unstructured text documents and spreadsheets.	3.606	0.902
Suitable measures exist to counter the project constraints.	3.638	0.859
There are miscellaneous funds set aside to cater for unforeseen costs.	3.745	0.812
Aggregate Mean Score	**3.696**	**0.844**

Source: Field Data (2025)

Respondents agreed that project managers accurately estimate project resources (Mean = 3.681, SD = 0.864), indicating a generally strong capacity in forecasting resource needs before implementation begins. The statement on consideration of unforeseen project costs received a mean score of 3.723 (SD = 0.821), showing that respondents perceive budgetary buffers and contingency planning as commonly practiced. Results further show that respondents agreed that the project team analyzes possible project challenges (Mean = 3.766, SD = 0.798), reflecting proactive identification of operational, financial, and logistical risks. Respondents moderately agreed that the board can assess the financial and actual situation of projects (Mean = 3.638, SD = 0.887), though the higher SD suggests varying experiences across projects.

Use of best risk management practices yielded agreement (Mean = 3.766, SD = 0.812), indicating an emphasis on structured risk mitigation. Tracking of projects using status reports in text documents and spreadsheets received a moderate agreement (Mean = 3.606, SD = 0.902), implying that although tracking mechanisms exist, modern digitalized project management tools may not be fully deployed. Respondents also agreed that suitable measures exist to counter project constraints (Mean = 3.638, SD = 0.859), demonstrating active efforts in mitigating disruptions. Finally, the availability of miscellaneous funds for unforeseen costs was positively rated (Mean = 3.745, SD = 0.812), indicating prudent financial preparation to absorb unexpected shocks.

The aggregate mean of 3.696 (SD = 0.844) demonstrates that respondents generally agree that resource forecasting practices are effectively applied in urban food security projects. This suggests that project teams are proactive in estimating resource needs, analyzing risks, planning for unforeseen costs, and instituting measures to mitigate disruptions, practices that are critical for successful project delivery. These findings are consistent with Salama, Salah, and Moselhi (2021), who emphasized that accurate forecasting minimizes overallocation, prevents cost overruns, and enhances planning efficiency, mirroring the positive ratings in resource

estimation and contingency planning in this study. Similarly, Otieno and Mutiso (2021) found that integrating risk management practices significantly improves project performance in agricultural projects, reinforcing the current study's results where respondents agreed that risk identification, analysis, and mitigation practices form a core part of resource forecasting.

Additionally, Kirui and Chege (2024) underscored that forecasting resource needs enables effective mobilization and utilization of financial and material resources, aligning with the high agreement scores for analyzing constraints and setting aside miscellaneous funds. The convergence between this study's findings and empirical literature demonstrates that resource forecasting remains a critical predictor of project performance, especially in environments characterized by financial uncertainty and operational risks such as urban food security projects.

Project Performance

This subsection presents respondents' perceptions of the performance of urban food security projects in Nairobi City County. Project performance was assessed using four indicators: meeting food security standards, food availability, timely access by beneficiaries, and achievement of intended objectives. A mean score of 3.5 and above denotes agreement.

Table 3: Descriptive Statistics for Project Performance

Statement	Mean	SD
The food projects meet the recommended food security standards.	3.638	0.846
The food is always available to the target beneficiaries.	3.532	0.879
Beneficiaries access foodstuffs on time.	3.468	0.902
The projects meet intended objectives.	3.830	0.798
Aggregate Mean Score	**3.617**	**0.856**

Source: Field Data (2025)

Respondents moderately agreed that food projects meet recommended food security standards (Mean = 3.638, SD = 0.846). This suggests that projects generally align with established guidelines, though variability exists across project sites. The statement that food is always available to target beneficiaries scored a mean of 3.532 (SD = 0.879), indicating slight agreement. While availability is generally consistent, fluctuations in supply chains or resource allocation may account for differing perceptions. Respondents were more neutral regarding whether beneficiaries access foodstuffs on time (Mean = 3.468, SD = 0.902). The SD indicates a wide range of experiences, implying that delays in procurement, distribution, or last-mile delivery remain recurring challenges. The highest-rated item was projects meet intended objectives (Mean = 3.830, SD = 0.798), showing strong agreement that most food security projects achieve their stated goals. This reflects effective planning, implementation, and monitoring in many cases.

The aggregate mean score of 3.617 (SD = 0.856) indicates that respondents generally agree that urban food security projects in Nairobi City County perform well across key dimensions, standards compliance, food availability, timeliness, and achievement of objectives. However, moderate scores in areas such as timely access suggest operational bottlenecks that occasionally hinder full effectiveness. These findings align with Ruheni and Wambugu (2022), who concluded that resource utilization planning significantly enhances resilience and performance in food security projects. The strong agreement on meeting objectives in this study echoes their argument that well-managed resources contribute to positive outcomes in food-focused interventions.

Similarly, Chege et al. (2021) highlighted persistent challenges in ensuring food availability and equitable access among urban populations, an issue mirrored in this study's moderate

scores for availability and timely beneficiary access. These parallels suggest that while projects perform reasonably well, systemic issues in distribution logistics, market fluctuations, and resource variability continue to influence performance outcomes. Furthermore, the results support insights by Owuor (2024), who reported that urban food security efforts face supply chain instability and financial constraints, factors that likely explain the variability observed in timely food access in this study.

Overall, the descriptive statistics reveal that while the performance of urban food security projects is generally positive, improvements in distribution efficiency and consistency of food supply could further strengthen impact and sustainability.

Correlation Analysis

This section presents the Pearson correlation analysis between project resource management practices (resource utilization, resource forecasting,) and the performance of urban food security projects in Nairobi City County, Kenya. The analysis was conducted at a 95% confidence level, with $p \leq 0.05$ taken as the threshold for statistical significance. The strength of association was interpreted using the following scale: $|r| = 0.00–0.29 \rightarrow$ Weak relationship; $|r| = 0.30–0.49 \rightarrow$ Moderate relationship; $|r| = 0.50–1.00 \rightarrow$ Strong relationship. The results are summarized in Table 4.

Table 4: Correlation Matrix

		Performance	Resource utilization	Resource forecasting
Performance of urban food security projects	Pearson Correlation	1		
	Sig. (2-tailed)			
	N	94		
Resource utilization	Pearson Correlation	.703**	1	
	Sig. (2-tailed)	.000		
	N	94	94	
Resource forecasting	Pearson Correlation	.655**	.017	1
	Sig. (2-tailed)	.000	.241	
	N	94	94	94

Resource utilization showed the strongest correlation with project performance ($r = 0.703$, $p = 0.000$). This reflects that how resources are used, rather than merely being available, has the greatest direct impact on outcomes. Proper classification, capacity alignment, minimizing wastage, and strategic monitoring collectively elevate performance. This aligns with Kinyua and Muiruri (2021), who found that efficient resource utilization significantly enhances operational effectiveness in public health programs. Similarly, Agu and Nweze (2020) concluded that proper utilization of material and human resources drives performance outcomes in community-based food programs in Nigeria. The present study reinforces this: resources poorly used are as damaging as inadequate resources.

There was also a strong and significant relationship between resource forecasting and performance ($r = 0.655$, $p = 0.000$). This suggests that anticipating constraints, analyzing risks, estimating future needs, and preparing for unforeseen costs strongly contributes to project success. Forecasting prevents cost overruns, delays, and operational disruptions. These findings agree with Mutai and Bett (2023), who observed that forecasting budgetary and

operational needs significantly boosts project outcomes in agricultural value-chain projects. Likewise, Mwangi and Wanyoike (2022) found that forecasting practices especially risk anticipation, enhance performance in county-level development initiatives. This study confirms that good forecasting protects projects from failure before failure begins.

Regression Analysis

This subsection presents the contribution of each independent variable to the dependent variable, controlling for the effects of other variables in the model.

Table 5: Regression Coefficients

Predictor	Unstandardized B	Std. Error	Standardized Beta (β)	t-value	Sig. (p-value)
Constant	0.601	0.196	–	3.067	0.003
Resource Utilization	0.372	0.077	0.389	4.831	0.000
Resource Forecasting	0.326	0.073	0.344	4.460	0.000

Source: Field Data (2025)

Resource Utilization (β = 0.389, p = 0.000). Resource utilization emerges as the strongest predictor of project performance. A one-unit increase in utilization results in a 0.389-unit rise in project performance, indicating that the efficiency with which resources are used carries the greatest explanatory weight. Effective utilization, through prioritizing urgent needs, minimizing wastage, and aligning resources with specific tasks, significantly amplifies project outcomes. This aligns with Muchiri and Ombui (2020), who found that efficient use of financial and material resources greatly improved performance in public sector ICT projects. Similarly, Matheka and Musyoka (2023) demonstrated that optimal use of human and material resources enhances the timeliness, sustainability, and impact of community-based programs. Taken together, these findings confirm that even in resource-constrained environments, disciplined and strategic utilization is a powerful driver of performance.

Resource Forecasting (β = 0.344, p = 0.000). Resource forecasting is the second strongest determinant of project performance. A one-unit improvement in forecasting increases performance by 0.344 units, underscoring the importance of anticipating constraints, identifying risks, estimating future resource needs, and planning for unforeseen costs. Projects with sound forecasting frameworks are better positioned to avoid cost overruns, supply shortages, and implementation delays. This is consistent with Kamau and Muthoni (2021), who found that forecasting accuracy significantly improved the performance of nutrition and food-related donor projects in Kenya by minimizing unplanned expenditures and operational disruptions. Mwangi and Ngugi (2019) similarly reported that forecasting of financial and logistical needs enhanced performance in humanitarian feeding programs, especially in urban informal settlements. These studies affirm that proactive planning safeguards projects from shocks that could otherwise derail progress.

$$\textit{Performance of urban food security projects} = 0.601 + 0.372(\textit{Resource Utilization}) + 0.326(\textit{Resource Forecasting})$$

Conclusion

The study finds that resource utilization is the strongest driver of project performance, demonstrating that efficient use of available resources yields substantial gains even in a

resource-constrained environment. Effective prioritization, wastage prevention, and alignment of inputs with tasks enable smoother implementation, although staffing gaps sometimes hinder optimal utilization. In conclusion, strengthening utilization practices significantly enhances project efficiency, timeliness, and achievement of objectives.

The study concludes that strong forecasting practices, such as anticipating challenges, planning for unforeseen costs, and analyzing risks, play a crucial role in stabilizing project operations and preventing disruptions. While forecasting mechanisms are generally practiced, their effectiveness varies depending on the tools and processes used. Overall, the study affirms that proactive forecasting enhances project preparedness and continuity, leading to better implementation outcomes.

Recommendations

Recommendations on Resource Utilization

The study recommends a deliberate focus on optimizing resource utilization, given its critical influence on project performance. Project managers should adopt structured utilization plans that prioritize essential activities, reduce wastage, and ensure that resources are aligned with actual implementation demands. Training should be provided to project teams to strengthen skills in resource management, especially in task prioritization, cost control, and workflow efficiency. Addressing staffing gaps is equally essential, as inadequate human resources undermine effective utilization of financial and material inputs. The County should consider redistributing staff, hiring specialized personnel where needed, and strengthening supervisory capacity to ensure that resources are used efficiently across all project phases. Improved utilization practices will ensure that scarce resources have the highest possible impact and will significantly boost overall project performance.

Recommendations on Resource Forecasting

The study recommends enhancing forecasting practices to reduce uncertainty and strengthen project preparedness. Project teams should adopt more structured forecasting methods that include comprehensive resource estimation, systematic risk identification, and formal contingency planning. The County should institutionalize regular forecasting reviews, ensuring that project managers continuously update their projections based on emerging information and evolving project conditions. Adoption of digital tools, for tracking consumption, monitoring risks, and analyzing resource trends, would improve accuracy and reduce reliance on manual documentation. The County should also strengthen the practice of setting aside contingency funds and developing standardized risk mitigation plans to cushion projects against unforeseen costs or disruptions. Enhanced forecasting capacity will enable projects to anticipate problems earlier, plan more effectively, and maintain higher levels of operational stability throughout implementation.

Areas for Further Research

Future research should therefore explore additional determinants such as governance structures, stakeholder engagement, procurement efficiency, and monitoring and evaluation systems, which may also influence the success of urban food security projects. Further studies could also examine the role of political dynamics, community participation, and technological innovation in shaping project outcomes. Expanding the scope to include comparative analyses across different counties or examining long-term project sustainability would provide deeper insights into the broader factors that drive effective food security interventions in urban areas.

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