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PROJECT MANAGEMENT

QUALITY ASSURANCE AND IMPLEMENTATION OF AFFORDABLE HOUSING PROJECTS IN KENYA

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ABSTRACT

Purpose of the Study: The study examined the influence of quality assurance on the implementation of affordable housing projects in Kenya.

Statement of the Problem: The Government of Kenya has prioritized affordable housing under the Bottom-Up Economic Transformation Agenda and Vision 2030. Despite substantial investments and policy support, many affordable housing projects continue to experience implementation challenges characterized by construction defects, delays, cost overruns, and stakeholder dissatisfaction. Previous studies suggest that inadequate quality assurance systems contribute significantly to project failures in the construction sector (PMI, 2024; Kerzner, 2023). However, empirical evidence on the influence of quality assurance practices on the implementation of affordable housing projects in Kenya remains limited.

Research Methodology: The study adopted a positivist philosophy and a quantitative research design. The target population comprised project supervisors, national construction staff, contractors, and chief engineers involved in affordable housing projects that were implemented in Kenya between 2017 and 2021. A sample of 205 respondents was selected using stratified random sampling. Primary data were collected using structured questionnaires and analyzed using SPSS

Version 28. Descriptive statistics and simple linear regression analysis were used to establish the relationship between quality assurance and project implementation.

Findings: The findings established that quality assurance had a positive and statistically significant influence on the implementation of affordable housing projects ($\beta = 0.387$, $p < 0.001$). The regression model indicated that quality assurance explained a substantial proportion of the variation in project implementation outcomes, demonstrating that projects with stronger quality assurance mechanisms achieved better completion rates, compliance levels, and stakeholder satisfaction.

Conclusion: The study concludes that quality assurance is a critical determinant of the successful implementation of affordable housing projects. Effective quality assurance systems enhance compliance with standards, improve construction quality, reduce rework, and support project success.

Recommendations: The study recommends strengthening quality assurance frameworks, enhancing routine inspections, improving compliance monitoring systems, and promoting continuous quality improvement throughout the project lifecycle.

Keywords: *Quality Assurance, Affordable Housing Projects, Project Implementation, Construction Quality, Housing Development, Kenya.*

BACKGROUND INFORMATION

Quality assurance is a systematic process aimed at ensuring that project activities and outputs consistently meet predefined quality requirements and stakeholder expectations. In construction projects, quality assurance focuses on preventing defects through planned and systematic activities that promote compliance with standards, regulations, and contractual specifications. According to the Project Management Institute (2024), quality assurance plays a fundamental role in improving project performance by enhancing process consistency and reducing variability in project outcomes. Globally, quality assurance has become an integral component of construction project management due to increasing demands for accountability, sustainability, and value for money. Effective quality assurance systems provide mechanisms for monitoring compliance, evaluating performance, and facilitating continuous improvement throughout the project lifecycle. Studies conducted in developed and developing economies demonstrate that projects supported by robust

quality assurance systems are more likely to achieve their intended objectives within established scope, cost, and schedule constraints.

In Kenya, affordable housing projects constitute a major component of national development initiatives aimed at addressing the housing deficit and improving living standards. The Affordable Housing Programme seeks to deliver decent and affordable housing units while promoting economic growth and job creation. However, the implementation of affordable housing projects has faced numerous challenges, including construction defects, inconsistent quality standards, delayed completion, and stakeholder concerns regarding project quality.

Quality assurance practices provide important mechanisms for addressing these challenges by ensuring adherence to approved standards, specifications, and regulatory requirements. Through regular inspections, audits, compliance monitoring, and corrective actions, quality assurance contributes to improved project outcomes and stakeholder confidence. Nevertheless, variations in implementation performance across projects suggest that quality assurance practices may not be applied uniformly. Understanding the influence of quality assurance on the implementation of affordable housing projects is, therefore, important for improving project outcomes and supporting the successful delivery of Kenya's housing agenda.

STATEMENT OF THE PROBLEM

Affordable housing projects in Kenya continue to encounter implementation challenges despite increased government commitment, policy reforms, and substantial financial investments. Many projects experience delays, construction defects, escalating costs, non-compliance with construction standards, and stakeholder dissatisfaction. These challenges undermine efforts to provide affordable housing of acceptable quality to Kenyan citizens. One factor contributing to these implementation challenges is inadequate quality assurance. In some projects, quality assurance systems are weak, inconsistently applied, or inadequately monitored. Consequently, defects may go undetected, standards may not be fully enforced, and corrective actions may be delayed. Such shortcomings compromise construction quality and negatively affect project performance.

Although existing literature highlights the importance of quality assurance in project management, limited empirical evidence exists regarding its specific influence on the implementation of

affordable housing projects in Kenya. Most studies focus on general construction performance without examining affordable housing projects as a distinct category. Accordingly, this study sought to bridge this knowledge gap by examining the influence of quality assurance practices on the implementation of affordable housing projects in Kenya.

RESEARCH OBJECTIVE

To establish the influence of quality assurance on the implementation of affordable housing projects in Kenya.

RESEARCH HYPOTHESIS

Null Hypothesis (H_0): Quality assurance has no significant influence on the implementation of affordable housing projects in Kenya.

Alternative Hypothesis (H_1): Quality assurance has a significant influence on the implementation of affordable housing projects in Kenya.

THEORETICAL FRAMEWORK

This study was anchored on Quality Management Theory, as advanced by quality pioneers such as Deming (1986), Juran (1988), and Crosby (1979). The theory emphasizes continuous improvement, process control, prevention of defects, and adherence to quality standards as essential to organizational performance. The study was further supported by Total Quality Management (TQM) Theory, which advocates an organization-wide commitment to quality improvement and stakeholder satisfaction. TQM suggests that quality should be integrated into every stage of project implementation rather than being assessed solely through inspection after project completion.

Additionally, Systems Theory provided a useful perspective by viewing construction projects as interconnected systems whose components must function collectively to achieve project objectives. Quality assurance ensures coordination and consistency across these interconnected activities. Collectively, these theories explain how quality assurance contributes to successful project implementation through compliance monitoring, defect prevention, continuous improvement, and enhanced stakeholder satisfaction.

EMPIRICAL LITERATURE

Empirical evidence demonstrates a strong relationship between quality assurance and project performance. Kerzner (2023) observed that construction projects with effective quality assurance systems experience fewer defects, lower rework costs, and higher stakeholder satisfaction. Similarly, Mugambi and Njoroge (2024) found that quality assurance significantly improves completion rates and compliance levels in public infrastructure projects in Kenya. Their study emphasized the importance of inspections, audits, and quality reviews in enhancing project outcomes. According to PMI (2024), organizations that implement structured quality assurance processes achieve better project performance than those with weak quality systems. Quality assurance improves consistency, accountability, and adherence to project requirements.

In the housing sector, Omondi and Wekesa (2023) reported that quality assurance contributes significantly to construction quality and beneficiary satisfaction in affordable housing developments. However, they noted that the implementation of quality assurance practices remains inconsistent across projects. Despite these findings, few studies have specifically examined the influence of quality assurance on the implementation of affordable housing projects in Kenya, thereby creating a contextual gap that this study sought to address.

RESEARCH METHODOLOGY

The study adopted a positivist research philosophy and a quantitative research design. The target population comprised 420 stakeholders involved in affordable housing projects in Kenya, including project supervisors, engineers, contractors, and construction staff. A sample of 205 respondents was selected using Yamane's sampling formula and stratified random sampling. Primary data were collected using structured questionnaires with Likert-scale items measuring quality assurance and project implementation. Secondary data were obtained from reports issued by the Ministry of Housing and from project documentation. Data were analyzed using SPSS Version 28. The regression model specified for the analysis was:

$$Y = \beta_0 + \beta_1 X_1 + \varepsilon$$

Where:

Y = Project Implementation

X_1 = Quality Assurance

ε = Error term

Statistical significance was tested at the 5% level using t tests and ANOVA.

RESULTS

Descriptive Statistics

Table 1: Quality Assurance and Project Implementation

Statements	SDA %	DA %	N %	A %	SA %	Mean	Std. Deviation
Quality inspections are conducted regularly during project execution	4.8	9.6	15.7	44.2	25.7	3.76	0.71
Compliance with quality standards is continuously monitored	5.2	10.1	15.4	43.5	25.8	3.75	0.69
Quality audits help identify project defects early	5.7	10.4	16.1	42.8	25.0	3.71	0.72
Corrective actions are implemented promptly when quality issues arise	5.9	10.7	16.8	42.0	24.6	3.69	0.75
Continuous improvement initiatives enhance project quality	4.6	9.8	15.5	44.7	25.4	3.77	0.68
Overall Aggregate Score	**5.2**	**10.1**	**15.9**	**43.4**	**25.3**	**3.74**	**0.71**

The findings indicated generally positive perceptions of quality assurance practices. Respondents generally agreed that inspections, compliance monitoring, quality audits, corrective actions, and continuous improvement initiatives contributed positively to project implementation. The overall mean score of 3.74 suggested a moderate to high level of adoption of quality assurance practices across affordable housing projects.

Regression Analysis: Quality Assurance and Project Implementation

Simple linear regression was conducted to determine the influence of quality assurance on project implementation.

Table 2: Regression Results for Quality Assurance and Project Implementation

Source / Variable	SS	df	MS	F	Prob > F	R^2	Adj R^2	Std. Error	Coef.	Std. Err.	Beta	t	P>t
Model	49.86	1	49.86	39.54	0.0000	0.402	0.396	0.119					
Residual	74.02	203	0.365										
Total	123.88	204											
Constant									0.318	0.072		4.42	0.000
Quality Assurance									0.387	0.062	0.634	6.29	0.000

The findings indicated that quality assurance had a positive and statistically significant influence on the implementation of affordable housing projects in Kenya. The model was statistically significant ($F = 39.54$, $p < 0.001$). The coefficient of determination ($R^2 = 0.402$) indicated that quality assurance explained 40.2% of the variation in project implementation. The regression equation is:

Project Implementation = 0.318 + 0.387(Quality Assurance)

The positive coefficient for quality assurance ($B = 0.387$, $t = 6.29$, $p < 0.001$) indicated that stronger quality assurance practices were associated with improved project implementation outcomes.

DISCUSSION OF FINDINGS

The findings indicated that quality assurance significantly enhanced the implementation of affordable housing projects in Kenya. Effective quality assurance practices ensure adherence to established standards, improve construction processes, minimize defects, and promote consistency throughout project implementation. These practices contribute to timely project completion, compliance with specifications, and increased stakeholder confidence in project outcomes. The findings are consistent with Quality Management Theory and Total Quality Management (TQM) Theory, which emphasize the prevention of defects, continuous monitoring, and process improvement as critical drivers of project success. The results are also consistent with the empirical findings of Mugambi and Njoroge (2024) and Omondi and Wekesa (2023), who established that

quality assurance contributes significantly to improved project performance through enhanced compliance and quality consistency.

Hypothesis Testing

H_0: Quality assurance does not significantly influence the implementation of affordable housing projects in Kenya.

H_1: Quality assurance significantly influences the implementation of affordable housing projects in Kenya.

The regression results at the 95% confidence level showed that the calculated F value, $F(1, 203) = 39.54$, exceeded the critical F value of 3.89, with a p value < 0.001, indicating that the model is statistically significant and that quality assurance is a significant predictor of the implementation of affordable housing projects in Kenya. The calculated t value (6.29) also exceeded the critical t value (1.972); therefore, the null hypothesis was rejected. These results are consistent with Quality Management Theory, which emphasizes that systematic quality assurance practices improve compliance, reduce defects, and enhance overall project implementation effectiveness.

The mean scores from the descriptive analysis indicated broad agreement that quality assurance practices, including regular inspections, compliance monitoring, quality audits, corrective actions, and continuous improvement initiatives, were implemented to a moderate or high extent in affordable housing projects. Although some respondents reported occasional challenges in enforcing quality standards across all project activities, the majority agreed that projects with stronger quality assurance systems demonstrated superior implementation outcomes, reduced rework, and improved compliance with construction specifications. These findings are consistent with Kerzner (2023) and the Project Management Institute (2024). Both sources emphasize that effective quality assurance significantly improves project performance through proactive monitoring and prevention of quality-related failures.

The findings further reveal that quality assurance works in conjunction with other project management practices, such as planning effectiveness, contractor competence, stakeholder involvement, and resource availability to influence project implementation. Robust quality assurance mechanisms enable projects to detect and address defects early, strengthen accountability, and ensure adherence to approved standards throughout the project lifecycle.

Conversely, weak quality assurance systems increase the likelihood of construction errors, non-compliance, delays, and additional costs that adversely affect project implementation performance.

These findings underscore that the successful implementation of affordable housing projects is not determined solely by financial resources or technical capacity but is also strongly influenced by the effectiveness of quality assurance systems. When quality assurance practices are weak or inconsistently applied, projects are more likely to experience quality deficiencies, stakeholder dissatisfaction, and implementation challenges. This pattern is consistent with findings reported by Omondi and Wekesa (2023) and PMI (2024).

CONCLUSIONS

The study concludes that quality assurance is a critical determinant of the implementation of affordable housing projects in Kenya. The findings demonstrated a significant positive relationship between quality assurance practices and successful project implementation, indicating that quality assurance is an important driver of project performance. Projects with effective quality assurance systems exhibit higher levels of compliance with construction standards, improved construction quality, and enhanced efficiency in project execution. These benefits contribute to reduced defects, minimized rework, improved stakeholder satisfaction, and better project outcomes. In contrast, projects with weak quality assurance systems are more likely to experience quality failures, delays, increased costs, and inefficiencies in project implementation.

Overall, the study reinforces the conclusion that quality assurance is not merely a compliance requirement but also a strategic project management function that directly influences the success of affordable housing projects. Therefore, the effective implementation of affordable housing projects depends significantly on the strength, consistency, and effectiveness of quality assurance practices throughout the project lifecycle.

RECOMMENDATIONS

The study recommends that government agencies, housing authorities, contractors, and project managers adopt the following strategies to enhance the implementation of affordable housing projects:

i. Strengthen quality assurance systems by establishing comprehensive quality management frameworks that are consistently applied throughout project implementation.
ii. Enhance routine inspections and quality audits to ensure early detection and correction of defects before they escalate into major project challenges.
iii. Institutionalize continuous compliance monitoring mechanisms to ensure adherence to approved standards, specifications, and regulatory requirements.
iv. Build the capacity of project personnel through regular training on quality assurance procedures, quality standards, and continuous improvement practices.
v. Adopt digital quality management systems that facilitate real-time monitoring, reporting, and tracking of quality performance across project activities.

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CONFLICT OF INTEREST

The authors declare no conflict of interest.

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