



PROJECT QUALITY ON THE PERFORMANCE OF BANK FINANCED HOUSING PROGRAMS IN NAIROBI METROPOLITAN AREA

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ABSTRACT

Project Quality Management has been strongly emphasized all over the world especially due to its importance in enhancing project performance and increasing customer satisfaction. Quality being a universal phenomenon has seen a universal shift in the mindset of many constructors and product manufacturers. The general objective is to examine effect of project quality on performance of Bank financed housing programs in Nairobi Metropolitan Area. The specific objectives were to examine the effect of quality planning, assurance, on performance of Bank financed housing programs in Nairobi Metropolitan Area. The study was guided by the Prospect theory, Crosby theory. This study employs a descriptive research design. The target population was 91 housing project team members (project managers, project engineers, quantity surveyor, architect, electrical engineer, structural engineer, and procurement officers) from 13 Bank financed housing projects in Nairobi Metropolitan Area. Census sampling technique was employed to selected 91 respondents. Data will be collected using questionnaires. A pilot is conducted with 10% of the sample size hence nine respondents who did not take part in the actual data collection. The validity is ascertained using content and convergent validity. Reliability was measured using Cronbach's alpha co-efficient. Data was analyzed using descriptive and inferential statistics and then tabulated. The study concludes that quality planning has a positive and significant effect on performance of Bank financed housing programs in Nairobi Metropolitan Area. In addition, the study concludes that quality assurance has a positive and significant effect on performance of Bank financed housing programs in Nairobi Metropolitan Area. Based on the results, the study recommends that the management of Commercial Banks should continue ensuring quality planning of Bank financed housing programs to enhance project performance. In addition, the management of Commercial Banks should formulate and implement effective roadmap to continue ensuring quality assurance of Bank financed housing programs to enhance project performance.

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INTRODUCTION

PMI (2013) defined a project as a temporary endeavor which undertakes a series of activities to produce a unique product, service or result. ISO 9000 (2015) defines the quality of an organization's products and services determined by the ability to satisfy customers and the intended and unintended on relevant interested parties. The quality to be sustained in a project is decided by the stakeholders, owners, and clients of the project. Quality standards are mostly defined based on organizational values and standards (Chandana, 2017). Project quality management process includes three main components which are quality planning, quality assurance and quality control. Quality must be integrated into the design process by giving attention to early stages of the construction life cycle, thus eliminating the need for bulk inspections which leads to operational cost reduction when shifting from a reactive to a proactive mode of quality management (Fajrah, Putri & Amrina, 2019).

According to study by Mane (2015), for the implementation of quality management in project management, the concepts of quality planning, quality assurance and quality control in the quality management processes are important. The quality control procedure in projects is based on tender documents which must be properly maintained. Quality Assurance (QA) is a program covering activities necessary to provide quality in the work to meet the project requirements. According to Orji, Obodoh, and Onoh (2016), quality management practice needs to be given maximum focus in any project and it requires a great effort to achieve and improve the required standard for a project which is well planned and organized, so as to obtain customer's satisfaction and meet their expectation, so that it provides value for money, and fit for purpose.

Project Quality Management has been strongly emphasized all over the world especially due to its importance in enhancing project performance and increasing customer satisfaction. Quality being a universal phenomenon has seen a universal shift in the mindset of many constructors and product manufacturers. They seriously focus towards ensuring that their products outcome meet and exceed their customer's expectations. The emphasis on quality management has increased especially with the current high competition in the market and globalization (Rumane, 2021). A study by KPMG (2013) in India showed that 25% of ongoing Indian programmes were delayed due to poor planning and lack of utilization of modern technology. Additionally, staff incompetency and lack of construction facilities caused delays in road projects. Quality management in the United States home-building industry is limited and immature. Many organizations are emphasizing on the inspection processes rather than quality approaches that are more structured and advanced. Managers fail to see the

value of quality and they keep side-lining it (Leonard & McAdam, 2022),

Quality is one of the most important parameters for measuring successful and sustainable construction projects. For successful construction projects, it is essential that the projects are delivered according to the quality standards and in line with the customer desire. Soderland (2012) pointed out that despite fair performance in road infrastructure projects in South Africa, foreign construction companies have carried out most of the main road projects. This is due to project delays and budget overruns associated with local firms. El-Maaty et al. (2016) noted that only 20% of road projects in Egypt achieve the desired level of quality. Willar, Coffey and Trigunarsyah (2015) observed that compromise in quality in the building industry in Egypt has devastating effects and as such project managers need to take specific actions to ensure quality. Among the actions they suggested to improve project quality included, coming up with appropriate goals and objectives, setting up a good administrative structure, establishing public relations practices, obtaining professional and technical staff, ensuring a pleasant working atmosphere and adequate technological resources and encouraging workers to advance their careers.

In Kenya, there have been reports of poor-quality housing programs and commercial buildings, a superfluous surge in project usage, and exorbitant project management (Arrow & McGrath, 2019). Project manager defines and codifies the standards & policies a successful project requires and how those standards will be achieved and confirmed (Munyoki, 2015). Maingi and Marsh (2020) opined that there are major factors which influence the quality of public housing projects, these include; inadequate labor capabilities, lack of skilled labour, availability of construction materials, and project management.

Statement of the Problem

The demand of housing in Nairobi metropolitan is high and the sector continues to be a key driver of economic growth. Housing contributed approximately 5.3 percent of gross domestic product (GDP) in the third quarter of 2020 (Kenya National Bureau of Statistics, 2020). The government has been forging partnerships with the private sector and development partners under the Big Four Agenda to deliver approximately 500 000 housing units to resolve the existing housing deficit an estimated 2 million units growing by 200000 units a year. However, the housing programmes have been facing several challenges in quality assurance from collapsing of buildings, and lack of capacity to facilitate the implementation of quality control.

According to Transparency International (2020), contractors and owners of the buildings bribe the inspection units to bypass the inspection process

contributing to quality compromise. In December 2021, an audit of the construction sector in Kenya showed that 4,879 buildings in town centres are at risk of collapsing and out these, 860 buildings in Nairobi Metropolitan (Architectural Association of Kenya, 2021). This was blamed on inability to facilitate implementation of project management practices on quality control in the building construction sector. Omulo (2022) noted that there are a lot of quack architects and rogue developers in Nairobi Metropolitan taking advantage of the deficit in housing to establish structures that are dangerous to tenants. There is also shortage of inspectorate officers who are only 15 in Nairobi County responsible for supervising more than 600 construction sites.

Several scholars have conducted studies on project quality. Kimeria, Kising'u and Oyoo (2019) on effect of project management practices on quality control of building construction in Nairobi County concluded that project regulatory framework, project planning, project team competency and project cost management have positive correlation on quality control of building construction. Kibe and Wanjau (2014) study on impact of quality management systems on performance of Food Processing Firms in Kenya found that quality management practices have a strong positive correlation with an organizations' competitive performance. Melaku (2017) study on causes of cost overrun on public housing programs showed that housing construction cost management had been constrained by different variables among them inadequate planning, scheduling, material cost inflation, poor site management and supervision, and excess quantity during construction. There is however study limitation on project quality and performance of bank housing programs in Nairobi Metropolitan Area which this study sought to investigate.

Research Objectives

- i. To determine effect of quality planning on performance of Bank financed housing programs in Nairobi Metropolitan Area.
- ii. To establish effect of quality assurance on performance of Bank financed housing programs in Nairobi Metropolitan Area.

LITERATURE REVIEW

Theoretical Review

Prospect Theory

Prospect theory was posited by Tversky and Kahneman (1979). The theory helps in making choices in uncertain situations (Pachur, Schulte-Mecklenbeck, Murphy & Hertwig, 2018). Prospect theory emphasizes the importance of information frames is that "losses and disadvantages have greater impact on preferences than gains and advantages (Tversky & Kahneman, 2000). The theory investigates how people act in practice when making choices, asking, for example, how they use intuition when making choices

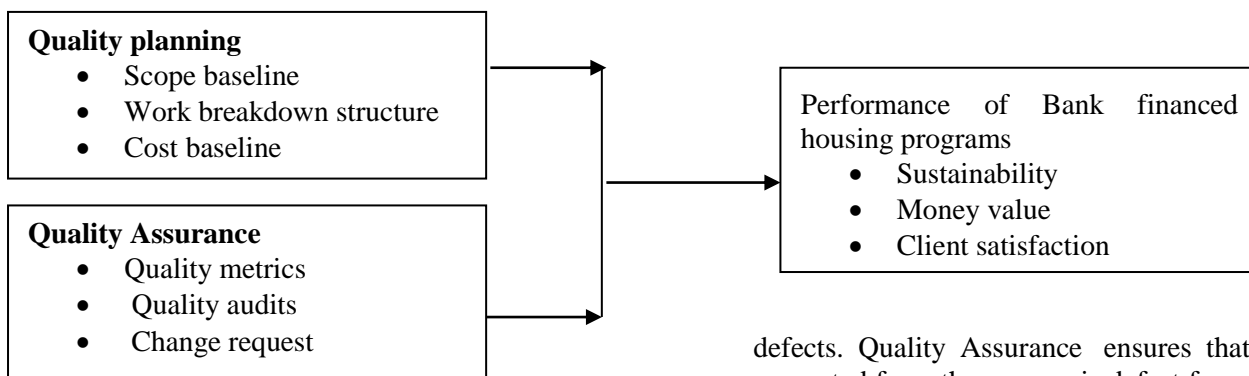
in uncertain situations. When faced with a choice between an uncertain change that may offer future opportunities and a current status quo situation, people often act based on the proverb "A bird in the hand is worth two in the bush". If management discovers who the optimists are and assigns them to the change project, then, the probability is great that the change project will succeed.

If management frames information concerning project is representing a large gain for everyone, then, the employees will probably consider the project changes positively. Prospect theory provides a possible explanation for the choices project managers make in projects; it is possible that the project managers are risk-averse to failure instead of being focused on achieving success. Kahneman and Tversky (1979) found that people are not always rational decision makers and as such project managers may not always approach the task of achieving the best outcome during a project in a rational manner. Project leaders are required to quickly make many day-to-day decisions on their construction projects. When aggregated, those decisions can have a significant influence on cost and schedule performance. Many of those decisions are made under financial risk. Quality planning involves identifying which quality standards are relevant to the project and determining how to satisfy them.

Crosby Theory

The theory was developed in 1984. Crosby defined quality as full and perfect conformance to the customers' requirements. The essence of his philosophy is expressed in what he called the absolutes of quality management and the basic elements of improvement. Crosby based his argument on 14 steps for improving quality which included; management commitment, quality improvement team, quality measurement, cost of quality evaluation, quality awareness, corrective action, zero defects planning, supervisor training, zero defects day, goal setting, error cause removal, recognition, and do all again (Costin, 1994). According Crosby, project policies must be set in accordance with what customer need and desire. In his principles quality is a basic requirement not goodness, the system for quality management is an obligation not an appraisal and quality are the price of non-conformance. Crosby advocated that quality management is an integral part of an organization. Top management must be serious about quality improvement and the "Absolutes" should be understood by everyone (Mosadeghrad, 2021). Quality assurance is not a quick fix to address management problems. It is not a program, but a transformation. As part of this effort, top managers must recognize the need for assessment, strategic planning, and the development of a long-term, integrated organizational-wide approach to quality assurance assessment to enhance program sustainability.

Conceptual Framework



Quality Planning

Planning effectively is a vital process that ensures performance of projects in any institutions are achieved within scheduled time, scope and the cost (Othman et al., 2018). Project Quality Plan (PQP) is proposed to ensure the success of quality program at project level as it is originated from ISO 9000 standards and a project based QMS document. Therefore, the concept of PQP needs to be understood and valued as a system rather than a segment of a system. Quality planning involves identifying which quality standards are relevant to the project and determining how to satisfy them. It is one of the key facilitating processes during project planning and should be performed regularly and in parallel with the other project planning processes. Prior to development of the ISO 9000 Series, quality planning activities were widely discussed as part of quality assurance (Bumb & Ghaitidak, 2016).

According to Huq (2011), quality planning should be performed in parallel with other planning efforts such as cost, schedule, procurement and risk. Changes in quality planning may affect cost, schedule and risk. Additionally, the purpose of project planning is to develop a guideline for the project with enough detail to inform the project team about the necessary work packages that must be executed and when the work has to be done. A program plan also helps to keep track of the overall progress of the project and maintaining the record of the project for future use. Program planning also ensures that the stakeholders involved understand all the activities and aspects of the project with sufficient details, along with the time, quality, and cost constraints (AlNasseri & Aulin, 2015).

Quality Assurance

Quality assurance is all the planned and systematic activities implemented within the quality system to provide confidence that the project will satisfy the relevant quality standards (Napiah, 2012). ISO (9001:2000) also defined quality assurance as a part of quality management focused on providing confidence that quality requirement is fulfilled. Quality Assurance (QA) focuses on the processes utilized in the project efficiently to generate quality project deliverables. It includes meeting standards and eliminating project

defects. Quality Assurance ensures that the product generated from the process is defect free and conforms to all stated customer requirements. Due to the risk involved in any project, quality assurance is significant in the construction industry and engineering. Quality assurance is achieved by a continuous and repetitive monitoring and appraisal of various facets of the project. Its purpose is to make sure that projects are implemented with at least the minimum acceptable levels of quality. A quality assurance program may include; an arranged periodical training for its worker, a good safety programme, a sound procurement system to get best quality material and suppliers and a reward scheme for innovative work and competitive career progress scheme. It is the responsibility of the contractor to take charge of Quality Assurance of the project under his contractual obligations.

Empirical Review

Ifiran and Khan (2021) assessed the role of project planning on project success in the public sector. The study adopted a survey research design. The sample was 260 project engineers. Data was collected using questionnaires. Findings showed that planning has a significant positive impact on the success of public sector projects. Zainal (2016) investigated factors contributing to effectiveness of quality planning for construction projects in Malaysia. Data was collected using semi-structured interviews and questionnaires. Findings revealed that quality planning benefits both company and clients, where by it increases profitability, minimizes avoidable cost, increases effectiveness and competitiveness, completion on time, cost within budget and performance guaranteed.

Hassina (2016) found that issues regarding project planning in Ethiopia were lack of stakeholder participating in project planning, poor definition of scope, poor resources allocation, and delay in material supply. Tuyishime and Nyambane (2021) studied contribution of planning to the project performance in public institutions in Rwanda. The study employed a causal research design. The target population was 145 respondents from Rwanda Utilities Regulatory Authority.

Yamane formula was used in sampling 106 respondents. Questionnaires were used to collect data. Findings showed that setting objectives, targets and

key performance indicators, coordination of activities and mobilization of resources influenced projects performance. There was a positive significant linear relationship between planning and project performance.

Kaluai (2020) aimed at determining effect of project planning on performance of women and girl's economic empowerment programs in Kiambu and Nairobi City Counties, Kenya. The study a descriptive research design. Questionnaires were used to collect data. Findings revealed that effective planning and designing of the project enhances project performance. Effective project monitoring plans, tools, and processes were statistically significant in explaining project performance changes. Nzioka (2017) examined effect of project management planning on performance of Kenya Power Infrastructure Development Projects. The study adopted a census survey in sampling the project managers. Findings showed that project-planning roles determines the success of a program.

Olumide (2013) examined factors hindering effective quality assurance practices of public housing in Lagos, Nigeria. The study adopted a cross-sectional survey design. Data were collected using questionnaires. The sample size was 73 respondents drawn from professionals in the construction sector. Data was collected using questionnaires. Findings showed that the aims and objectives of quality assurance are easily compromised and frequently lost since it relies heavily upon the individual contributions to implementation from each designer, contractor, supplier and sub-contractor. The clients demand proof of contractors' credentials for quality assurance capability before compiling their tender lists. Seyoum (2018) study on challenges of low-cost housing in Ethiopia revealed that more than half of the occupants complained about the level of product quality. The inhabitants were not satisfied with the quality of the houses they were living and were forced to refurbish the houses often due to frequent leaking and breakage of the housing parts such as door handles door locks and sanitary materials.

Muiruri and Were (2016) investigated factors affecting project quality management in the construction industry Nairobi County. The study sample was 75 respondents. The study adopted a census survey design. Data was collected using questionnaires. Findings showed that construction materials influence project quality management in the construction industry. The study found out that cheaper construction materials compromised the sustainability of projects. The study also revealed that a good material management system should be put in place to assess the material's quality.

Waswa (2018) assessed level of compliance to professional construction management process by four

construction parties Busia County. The study adopted a correlational study design. Data was collected using questionnaires, interviews and observation check lists. Findings revealed that lack of quality management, professionalism and legal framework were the major contributing agents of poor-quality projects. Further, inadequate stakeholder participation, compliance to specifications and standards and legal framework in the construction process influenced public building projects by devolved unit in Busia County.

RESEARCH METHODOLOGY

This study employed a descriptive research design. The target population was 13 bank housing projects in Nairobi Metropolitan Area. From every housing project the study targeted the project managers, project engineers, quantity surveyor, architect, electrical engineer, structural engineer, and procurement officers as the unit of observation. The target therefore comprised of 91 housing project team members. To select the study respondents, census sampling technique was employed. Data was collected using questionnaires. Data collected using questionnaires was coded, keyed into SPSS version 28, cleaned and analyzed. Descriptive statistics specifically frequencies, percentage, mean and standard deviation was used for analysis. The inferential statistics included correlation and regression. The data was presented in tables.

PRESENTATION, ANALYSIS AND INTERPRETATION OF DATA

Descriptive Statistics Analysis

Quality Planning and Performance of Bank Financed Housing Programs

The first specific objective of the study was to determine the effect of quality planning on performance of Bank financed housing programs in Nairobi Metropolitan Area. The respondents were requested to indicate their level of agreement on statements relating to quality planning and performance of Bank financed housing programs in Nairobi Metropolitan Area. A 5 point Likert scale was used where 1 symbolized strongly disagree, 2 symbolized disagree, 3 symbolized neutral, 4 symbolized agree and 5 symbolized strongly agree. The results were as presented in Table 1.

From the results, the respondents agreed that quality plans are prepared before starting the housing programs. This is supported by a mean of 3.973 (std. dv = 0.981). In addition, as shown by a mean of 3.966 (std. dv = 0.850), the respondents agreed that quality Plan is communicated to all project team members. Further, the respondents agreed that management ensure that every department involved in the housing program scope is linked to the overall quality plan. This is shown by a mean of 3.931 (std. dv = 0.914).

The respondents also agreed that the management ensure that there is availability of materials on all housing programs. This is shown by a mean of 3.896 (std. dv = 0.947). With a mean of 3.889 (std. dv = 0.856), the respondents agreed that their staff are involved in the quality planning and program resources planning. The respondents agreed that there is timely

decision by project owners and engineer on the project scope for quality planning. This is shown by a mean of 3.786 (std. dv = 0.876). With a mean of 3.698 (std. dv = 0.897), the respondents agreed that top management supports plans for quality control and identify critical activities in the project scope.

Table 1: Quality Planning and Performance of Bank Financed Housing Programs

	Mean	Std. Deviation
Quality Plans are prepared before starting the housing programs	3.973	0.981
Quality Plan is communicated to all project team members	3.966	0.850
Management ensure that every department involved in the housing program scope is linked to the overall quality plan	3.931	0.914
Management ensure that there is availability of materials on all housing programs	3.896	0.947
The staff are involved in the quality planning and program resources planning	3.889	0.856
There is timely decision by project owners and engineer on the project scope for quality planning	3.786	0.876
Top management supports plans for quality control and identify critical activities in the project scope	3.698	0.897
Aggregate	3.868	0.873

Quality Assurance and Performance of Bank Financed Housing Programs

The second specific objective of the study was to establish effect of quality assurance on performance of Bank financed housing programs in Nairobi Metropolitan Area. The respondents were requested to indicate their level of agreement on quality assurance and performance of Bank financed housing programs in Nairobi Metropolitan Area. The results were as shown in Table 2

quality system requirements in tender and contract is clearly specified. Further, the respondents agreed that subcontractors are evaluated and selected based on their ability to satisfy specified requirements. This is shown by a mean of 3.798 (std. dv = 0.611).

From the results, the respondents agreed that the bank selects the appropriate quality system requirements for each program. This is supported by a mean of 3.996 (std. dv = 0.865). In addition, as shown by a mean of 3.819 (std. dv = 0.945), the respondents agreed that the

The respondents also agreed that housing programs are frequently monitored. This is shown by a mean of 3.731 (std. dv = 0.908). With a mean of 3.711 (std. dv = 0.776), the respondents agreed that housing program team collect, reviews and control the quality record. The respondents agreed that quality assurance helps to avoid housing projects defects. This is shown by a mean of 3.675 (std. dv = 0.897). With a mean of 3.613 (std. dv = 0.786), the respondents agreed that the housing programs comply with the proper laws and regulations.

Table 2: Quality Assurance and Performance of Bank Financed Housing Programs

	Mean	Std. Deviation
The bank selects the appropriate quality system requirements for each program	3.996	0.865
The quality system requirements in tender and contract is clearly specified	3.819	0.945
Subcontractors are evaluated and selected based on their ability to satisfy specified requirements	3.798	0.611
Housing programs are frequently monitored	3.731	0.908
Housing program team collect, reviews and control the quality record	3.711	0.776
Quality assurance helps to avoid housing projects defects	3.675	0.897
The housing programs comply with the proper laws and regulations	3.613	0.786
Aggregate	3.732	0.841

Performance of Bank Financed Housing Programs

The respondents were requested to indicate their level of agreement on various statements relating to performance of Bank financed housing programs in Nairobi Metropolitan Area. A 5 point Likert scale was used where 1 symbolized strongly disagree, 2 symbolized disagree, 3 symbolized neutral, 4

symbolized agree and 5 symbolized strongly agree. The results were as presented in Table 3.

From the results, the respondents agreed that the bank housing financing programs are sustainable. This is supported by a mean of 4.084 (std. dv = 0.997). In addition, as shown by a mean of 3.917 (std. dv = 0.831), the respondents agreed that the housing

programs meets users requirements. Further, the respondents agreed that the costs of building materials coincide with the initial budget. This is shown by a mean of 3.858 (std. dv = 0.563). The respondents also

Table 3: Performance of Bank Financed Housing Programs

	Mean	Std. Deviation
The bank housing financing programs are sustainable	4.084	0.997
The housing programs meets users' requirements	3.917	0.831
The costs of building materials coincide with the initial budget	3.858	0.563
We receive minimal complaints from clients occupying the houses financed by the bank	3.831	0.851
Aggregate	3.836	0.818

Inferential Statistics

Inferential statistics in the current study focused on correlation and regression analysis. Correlation analysis was used to determine the strength of the relationship while regression analysis was used to

Table 4: Correlation Coefficients

		Project Performance	Planning	Assurance
Project Performance	Pearson Correlation	1		
	Sig. (2-tailed)			
	N	86		
Quality Planning	Pearson Correlation	.856**	1	
	Sig. (2-tailed)	.002		
	N	86	86	
Quality Assurance	Pearson Correlation	.858**	.289	1
	Sig. (2-tailed)	.001	.061	
	N	86	86	86

From the results, there was a very strong relationship between quality planning and the performance of Bank financed housing programs in Nairobi Metropolitan Area ($r = 0.856, p \text{ value} = 0.002$). The relationship was significant since the $p \text{ value} 0.002$ was less than 0.05 (significant level). The findings are in line with the findings of Ifran and Khan (2021) who indicated that there is a very strong relationship between quality planning and project performance.

Moreover, the results revealed that there is a very strong relationship between quality assurance and performance of Bank financed housing programs in Nairobi Metropolitan Area ($r = 0.858, p \text{ value} = 0.001$). The relationship was significant since the $p \text{ value} 0.001$ was less than 0.05 (significant level). The findings conform to the findings of Muiruri and Were (2016) that there is a very strong relationship between quality assurance and project performance.

agreed that they receive minimal complaints from clients occupying the houses financed by the bank. This is shown by a mean of 3.831 (std. dv = 0.851).

determine the relationship between dependent variable (performance of Bank financed housing programs in Nairobi Metropolitan Area) and independent variables (quality planning, quality assurance, quality control and technical team capabilities).

Correlation Analysis

The present study used Pearson correlation analysis to determine the strength of association between independent variables (quality planning, quality assurance, quality control and technical team capabilities) and the dependent variable (performance of Bank financed housing programs in Nairobi Metropolitan Area) dependent variable. Pearson correlation coefficient range between zero and one, whereby the strength of association increase with increase in the value of the correlation coefficients. The current study employed Taylor (2018) correlation coefficient ratings where by 0.80 to 1.00 depicts a very strong relationship, 0.60 to 0.79 depicts strong, 0.40 to 0.59 depicts moderate, 0.20 to 0.39 depicts weak.

Regression Analysis

Multivariate regression analysis was used to assess the relationship between independent variables (quality planning, quality assurance, quality control and technical team capabilities) and the dependent variable (performance of Bank financed housing programs in Nairobi Metropolitan Area)

Table 5: Model Summary

Mo del	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.925	.848	.849	.10120

The model summary was used to explain the variation in the dependent variable that could be explained by the independent variables. The r -squared for the relationship between the independent variables and the dependent variable was 0.856. This implied that 85.6% of the variation in the dependent variable (performance of Bank financed housing programs in Nairobi

Metropolitan Area) could be explained by independent variables (quality planning, quality assurance, quality control and technical team capabilities).

Table 6: Analysis of Variance

Model	Sum of Squares	df	Mean Square	F	Sig.
Regression	12.027	4	3.018	37.26	.000 ^b
1 Residual	6.568	81	.081		
Total	18.595	85			

The ANOVA was used to determine whether the model was a good fit for the data. F calculated was 37.26 while the F critical was 2.484. The p value was 0.000. Since the F-calculated was greater than the F-critical and the p value 0.000 was less than 0.05, the model was considered as a good fit for the data. Therefore, the model can be used to predict the influence of quality planning, quality assurance, quality control and technical team capabilities on the performance of Bank financed housing programs in Nairobi Metropolitan Area.

Table 7: Regression Coefficients

Model	Unstandardized Coefficients		Standardized Coefficients Beta	t	Sig.
	B	Std. Error			
1 (Constant)	0.311	0.071		4.380	0.000
quality planning	0.369	0.099	0.367	3.727	0.003
quality assurance	0.486	0.107	0.487	4.542	0.000

a Dependent Variable: Project Performance

The regression model was as follows:

$$Y = 0.311 + 0.369X_1 + 0.486X_2 + \varepsilon$$

According to the results, quality planning has a significant effect on performance of Bank financed housing programs in Nairobi Metropolitan Area ($\beta_1=0.369$, p value= 0.003). The relationship was considered significant since the p value 0.003 was less than the significant level of 0.05. The findings are in line with the findings of Ifran and Khan (2021) who indicated that there is a very strong relationship between quality planning and project performance

The results also revealed that quality assurance has significant effect on performance of Bank financed housing programs in Nairobi Metropolitan Area, ($\beta_1=0.486$, p value= 0.000). The relationship was considered significant since the p value 0.000 was less than the significant level of 0.05. The findings conform

to the findings of Muiruri and Were (2016) that there is a very strong relationship between quality assurance and project performance.

Conclusions

The study concludes that quality planning has a positive and significant effect on performance of Bank financed housing programs in Nairobi Metropolitan Area. The study revealed that scope baseline, work breakdown structure and cost baseline influence performance of Bank financed housing programs in Nairobi Metropolitan Area

In addition, the study concludes that quality assurance has a positive and significant effect on performance of Bank financed housing programs in Nairobi Metropolitan Area. The study revealed that quality metrics, quality audits and change request influence performance of Bank financed housing programs in Nairobi Metropolitan Area

Recommendations

The study found that quality planning has a positive and significant effect on performance of Bank financed housing programs in Nairobi Metropolitan Area. This study therefore recommends that the management of commercial banks should continue ensuring quality planning of bank financed housing programs to enhance project performance.

In addition, the study found that quality assurance has a positive and significant effect on performance of Bank financed housing programs in Nairobi Metropolitan Area. This study therefore recommends that the management of commercial banks should formulate and implement effective roadmap to continue ensuring quality assurance of bank financed housing programs to enhance project performance.

Suggestions for Further Studies

This study focused on examining the effect of project quality on performance of bank financed housing programs in Nairobi Metropolitan Area. Having been limited to bank financed housing programs in Nairobi Metropolitan Area, the findings of this study cannot be generalized to performance of other projects. The study therefore suggests further studies on to examine effect of project quality on performance of the other projects in Kenya.

Further, the study found that the independent variables (quality planning, quality assurance, quality control and technical team capabilities) could only explain 85.6% of the performance of Bank financed housing programs in Nairobi Metropolitan Area. This study therefore suggests research on other factors affecting the performance of Bank financed housing programs in Nairobi Metropolitan Area

REFERENCES

- AlNasseri, H. & Aulin, R. (2015). Assessing understanding of planning and scheduling theory and practice on construction projects. *EMJ Engineering Management Journal*, 27, 58–72.
- Arrow, N. & McGrath, P. (2019). Effects of negative social interactions on the implementation of infrastructure projects. *Journal of Operation Management*, 25, 732- 749.
- Chandana. (2017). Quality Management in Project Management. Conference: Proceedings of the 2005 Information Resources Management Association International Conference
- El-Maaty, E., Akal, A., & El-Hamrawy, S. (2016). Management of highway projects in Egypt through identifying factors influencing quality performance. *Journal of Construction Engineering*, Article ID 4823630, 8 pages
- Fajrah, N., Putri N. & Amrina. E. (2019). Analysis of the application of quality management systems in the rubber industry based on ISO 9001:2015. IOP Conference Series: Materials Science and Engineering, (602)
- Hassina, O. (2016). *Analysing the Planning and Scheduling of 40/60 Saving Houses Development Enterprise*. Unpublished Master's Thesis, Addis Ababa University.
- Ifran, M. & Khan, Z. (2021). Role of Project Planning and Project Manager Competencies on Public Sector Project Success. *Sustainability* 13(3), 1421
- Kaluai, K. (2020). *Project Management Practices and Performance of Projects Under the Women and Girls Economic Empowerment Program in Kiambu and Nairobi City Counties, Kenya*. Unpublished Masters' Thesis, Kenyatta University
- Kibe, N. & Wanjau, K. (2014). The Effect of Quality Management Systems on the Performance of Food Processing Firms in Kenya. *Journal of Business and Management*, 1(5)
- Kimeria, W., Kising'u, M. & Oyoo, J. (2019). Effect of Project Management Practices on Quality Control of Building Construction in Nairobi County. *International Journal of Social Sciences and Information Technology*, 4(11)33-46
- Maingi. J. & Marsh. S (2020). Quantifying hydrologic impacts following dam construction. *Journal of arid environment*, 50, 53-79
- Mane, J. (2015). Quality Management System at Construction Project. *International Journal of Engineering Research and Applications*, 5(3) 126-130
- Melaku, A. (2017). *The Main Causes of Cost Overrun on Public Housing Programs In The Case Of Addis Ababa City Administration*. Unpublished Master's Thesis, Addis Ababa: Saint Mary's University
- Muiruri, N. & Were, S. (2016). Drivers of Effective Project Quality Management in the Construction Industry in Nairobi County, Kenya: A Case of EPCO Builders Limited. *International Journal of Innovative Development & Policy Studies*, 4(4)1-19
- Nzioka, C. (2017). Role of Project Management Planning on Project Success in Kenya: A Case of Kenya Power Infrastructure Development Projects. *International Journal of Novel Research in Engineering and Science*, 4(1), 36-43.
- Olumide, A. (2013). Factors Affecting Quality in the Delivery of Public Housing Projects in Lagos State, Nigeria. *International Journal of Engineering and Technology*, 3(3)332-334
- Orji, S., Obodoh, D. & Onoh, F. (2016). Quality Management Practices in Construction; a Key to Successful Building Project Delivery. *Imperial Journal of Interdisciplinary Research*, 2(9)531-538.
- Pachur, T., Schulte-Mecklenbeck, M., Murphy, R. O. & Hertwig, R. (2018). Prospect theory reflects selective allocation of attention. *Journal of Experimental Psychology: General*, 147(2), 147.
- Rumane, A. R. (2021). Quality management in construction projects. New York: CRC Press, Taylor & Francis Group.
- Seyoum, M. (2018). *Quality Challenges of Low-Cost Housing: The Case of Addis Ababa 20/80 Condominium Housing*. Unpublished Master's Thesis, Addis Ababa: Saint Mary's University.
- Soderland, J. (2012). Developing project competence: Empirical Regularities in Competitive Project Operations. *International journal of innovation Management*, 9(4), 451-480.
- Tuyishime, C. & Nyambane, D. (2021). Planning and Project Performance in Public Institutions in Rwanda. A Case of Establishment of a Frequency Spectrum Management and Monitoring System Project in Rwanda. *The Strategic Journal of Business & Change Management*, 8 (1), 780 – 790.
- Tversky, A. & Kahneman, D. (1979). Prospect Theory: An analysis of Decision under Risk . *Econometrica*, 47(2), 263-291.
- Waswa, M. (2018). *Impact of Devolved Construction Management Process on Quality of Public Building Projects in Kenya; A Case of Busia County, Kenya*. Unpublished Masters' Thesis, University of Eldoret.