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PROJECT QUALITY PRACTICES AND PERFORMANCE OF LOW COST HOUSING PROJECTS IN NAIROBI CITY COUNTY, KENYA

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ABSTRACT

The skewed market dynamics of the housing industry in Kenya stands at an annual deficit of 120,000 units despite the sectoral growth of around 5% six years ago. In addition, cost overruns still plague a about of 57% private housing developments resulting in developers cutting corners with detrimental impacts to structural safety leading to loss of both life and money. This study sought to establish the influence of project quality practices and performance of low cost housing projects in Nairobi city county, Kenya. Specifically, the study explored the influence of project scope management, and project cost management on the performance of low cost housing projects in Nairobi city county, Kenya. This study used a descriptive survey research design. In this study, the target population comprised of project teams working with low cost housing projects in Nairobi City County. This comprised of project contractors, supervisors, project teams and other collaborative teams who were involved in project management. The study targeted a total of 250 respondents. This study used 50% of the target population as the sample size. This implies that the sample size consisted of 125 respondents who were selected using stratified random sampling technique. A self-administered questionnaire was used as the data collection instrument. The data obtained was checked and verified for inconsistencies and thereafter analyzed using SPSS version 23. The study data was analyzed through descriptive statistics in the form of frequencies, percentages, mean and standard deviation. The study also conducted multiple regression analysis to test the relationship between the study variables. Study findings were presented in tables. The study concludes that project scope management has a significant effect on performance of low cost housing projects in Nairobi city county, Kenya. Further, the study concludes that project cost management has a significant effect on performance of low cost housing projects in Nairobi city county, Kenya. This study therefore recommends that the managers of low cost housing projects should ensure effective project scope planning, scope definition and scope verification. In addition, the managers of low cost housing projects should ensure proper time management of project activities to enhance performance of low cost housing projects.

Background of the Study

From ancient to modern times, projects have been and are used in all economic and non-economic fields as means of organizing activity with the aim of achieving certain desired objectives (Heldman, 2018). According to ISO 10006:1997 - guidelines to quality in project management, a project is a unique process consisting of a set of coordinated and controlled activities with start and finish dates, undertaken to achieve an objective conforming to specific requirements, including constraints of time, cost and resources (Pheng, 2018). This is affirmed by Basu (2017) who point that a project is a temporary endeavor undertaken to create a unique product or service, temporary meaning that a project has a definite ending point, and unique meaning that the project outcome (either a product or service) differs in some distinguishing way from all similar products or services. Project management, according to the Project Management Institute (PMI), refers to the application of knowledge, skills, tools and techniques to project activities to meet project requirements. This is accomplished through the application and integration of the project management processes which include initiation, planning, execution, monitoring and controlling, and closing (Hasler, 2016).

One of the critical elements of project management is project quality. Quality is defined as the degree to which a set of inherent characteristics fulfill requirements. Project quality, therefore, refers to the degree to which a project satisfies the needs for which it was undertaken. Project quality management thus includes all activities that seek to safeguard realization of a project's quality objectives (Jose & Ambili, 2017). According to Stolzer and Goglia (2016), the project quality management process entails three major elements which include quality planning, quality assurance and quality control. Quality planning entails identifying which quality standards are relevant to the project and determining how to satisfy them; quality assurance involves evaluating overall project performance on a regular basis to provide confidence that the project will satisfy the relevant quality standards and quality control entails monitoring specific project results to determine if they comply with relevant quality standards and identifying ways to eliminate causes of unsatisfactory performance. Hence, project quality lays emphasis on ensuring that all project activities necessary to design, plan and implement a project are effective and efficient with respect to meeting set project quality standards and objectives (Kerzner, 2018).

According to survey study done in the USA, project quality is regarded as the totality of project characteristics that bear on its ability to satisfy stated or implied needs or desires. The survey study also pointed that project quality could also be regarded as a project's conformance to requirements or its fitness for use, which means that the project's deliverables must meet the intended objectives (Bansal, 2019). Globally, the central focus of project quality management is meeting or exceeding stakeholder's expectations and conforming to the project design and specifications. It is normally held that the ultimate judge for project quality is the client and that project quality represents how close the project outputs and deliverables come to meeting the client's requirements and expectations (Baker, 2018). A study carried out in UK noted that management of project quality must address both the management of the project and the product of the project. Failure to meet quality requirements in either dimension can have serious negative consequences for any or all of the project stakeholders. For instance, meeting project schedule objectives by rushing planned quality inspections may produce negative consequences when errors go undetected (Lindhard & Larsen, 2016).

In India, project quality management is regarded as the process for ensuring that all project activities are designed, planned and implemented in a manner that the project outputs/outcomes meet the project objectives and satisfy the client's expectations (Jha & Iyer, 2016). This view is also upheld in Malaysia where the focus of project quality is on improving stakeholder's sat

isfaction through continuous and incremental improvements to project processes, including re moving unnecessary activities. In Malaysia, project quality management is thus seen as the co ntinuous monitoring and application of quality processes in all aspects of the project (Chong, 2018). According to Mishra, Sinha and Thirumalai (2017), the main principle of project qualit y management is to ensure that the project will meet or exceed stakeholder's needs and expect ations. As such, project quality is not limited to only meeting the written requirements for the main project's outputs but also entails meeting all or much of the stakeholder needs and expec tations for the project. Project quality thus reflects efforts at completing the project as intende d; getting it done most efficiently by minimizing time and cost and achieving project goals rel ated to customer needs (Radujković & Sjekavica, 2017).

In Pakistan, project quality is one of the important aspects of construction projects' manageme nt. There is consensus that the level of success of various construction projects in the country greatly depends on the project quality performance. The country's construction sector faces va rious quality related issues, which lead to ineffective and inefficient projects in terms o f cost of overrun, delays and excessive rework. Various studies done in the country sugge st that project quality is adversely affected by project scope changes, deficiencies in schedulin g, errors in project time and cost estimations and insufficient budgets. However, the significan ce of these factors was found to depend on type of projects, working environment and local c ulture (Abas et al., 2015; Haq et al., 2016). At the global level, the general concurrence is that in the realm of project management, project quality is one of the leading areas of concern. As such identifying the factors that affect project quality is critical as this would allow firms to d evise strategies of capitalizing on these factors for the realization of their project quality goals (Jose & Ambili, 2017).

Statement of the Problem

Poor performance management in construction projects is major concern in developing nations (Prachi & Gangadhar, 2020). The skewed market dynamics of the housing industry in Kenya stands at an annual deficit of 120,000 units (HASS, 2013) despite the sectoral growth of aroun d 5% six years ago. In addition, cost overruns still plague a about of 57% private housing dev elopments resulting in developers cutting corners with detrimental impacts to structural safety leading to loss of both life and money (Mwandali, 2009, Omondi, 2017; Karimi, 2011, & Mus a, 2010). These losses could have been mitigated if there were adequate and comprehensive M &E frameworks on project performance management both within the structures of developer's firms and oversight agencies (Mambo, 2013).The persisting challenge of poor project quality has led many project management professionals to attempt to identify the issued that determin e the project quality. These Project Management Constraints on project quality need to be stud ied and issues arising in them tackled head-
on to ensure successful project outcome (Mortensen, 2013).

Various studies have been conducted on project quality practices and project performance. For instance; Wanjiku (2019) examined determinants of project quality practices in non-
governmental organizations within Nairobi County, Kenya. Njuma (2015) investigated determi nants of effectiveness of project quality practices for projects: a case of Amref kenya wash pr ogramme while Okello and Mugambi assessed the determinants of Effective Monitoring and E valuation System of Public Health Programs. Nevertheless, none of these studies assessed the effects of project quality practices on performance of low cost housing projects in Nairobi city county, Kenya. To fill the highlighted gaps, the current study seeks to establish the effects of project quality practices on performance of low cost housing projects in Nairobi city county, Kenya.

General Objective

The general objective of the study was to establish the effect of project quality practices on pe rformance of low cost housing projects in Nairobi city county, Kenya.

Specific Objectives

i. To examine the influence of project scope management on performance of low cost ho using projects in Nairobi city county, Kenya.

ii. To establish how project cost management influences the performance of low cost hou sing projects in Nairobi city county, Kenya.

Theoretical Review

Resource Based Theory

The resource-
based theory was developed by Barney in 1991 through his article on 'Firm Resources and Su stained Competitive Advantage'. The theory's central proposition is that if a firm is to achieve a state of sustained competitive advantage, it must acquire and control valuable, rare, inimita ble and non-
substitutable resources and capabilities (Kerzner, 2018). The theory lays emphasis on the impo rtance of firm resources and its implications to a firm's competitive position (Lindhard & Lars en, 2016). The theory argues that organizations should not try to achieve strategic fit with the external environment but aim to maximize their internal resources to create and dominate futu re opportunities (Saqib & Rashid, 2013). This theory stems from the principle that the source of firms' competitive advantage lies in their internal resources, as opposed to their positioning in the external environment. That is rather than simply evaluating environmental opportunitie s and threats in conducting business, competitive advantage depends on the unique resources a nd capabilities that a firm possesses (Pheng, 2018). The theory, therefore, maintains that in or der to generate sustainable competitive advantage, a resource must provide economic value an d must be presently scarce, difficult to imitate, non-
substitutable and not readily obtainable from markets (Peteraf & Barney, 2012).

Thus, the aim of a resource-
based approach in firm competitiveness is to improve firm's resource capability through achie ving a strategic fit between resources and opportunities and obtaining added value from the ef fective deployment of resources (Lockett, Thompson & Morgenstern, 2017). Critiques of this t heory argue that the effectiveness of the resource-
based approach is inextricably linked to the external context of the firm and that the resource based approach provides more value when the external environment is less predictable. Other critiques have argued that the theory implies infinite regress; the theory's applicability is too li mited; the value of a resource is too indeterminate to provide for useful theory; the definition of resource in the theory is unworkable and that the theory's valuable, rare, inimitable, and no n-
substitutable proposition is neither necessary nor sufficient for a firm's sustained competitive a dvantage (Jose & Ambili, 2017; Usman & Zin, 2017; Pheng, 2018).

This theory was relevant to the current study given the fact that a firm's internal resources, ca pabilities and competencies are a central pillar in project delivery. There is no doubt that proje ct success relies on deployment of necessary resources and the abilities of the project executer s. The theory alludes to the fact that adequacy of resources is integral in efforts to achieve pro ject success. Similarly, it can be argued that delivery of high-
quality projects is hugely dependent on availability of and prudent deployment of requisite pro

ject resources. As pointed by Baker (2018), resource-based theory is actually a strategic management theory that has been extensively applied by project managers in project management. It is used to examine how project resources can be optimally applied to increase the probability of successfully delivering project deliverables that meet desired customer requirements.

Contingency Theory

Contingency theory was developed by Woodward in 1958. The theory is a class of behavioral theory that states that there is no best way to organize a corporation, to lead a company or to make decisions. There is no exact science to organizational behavior. Instead, the optimal course of action is contingent (dependent) upon the internal and external situations (Radujković & Sjekavica, 2017). Contingency theory states that complex organizations use performance measurement to reduce uncertainty and for legitimacy. Historically, contingency theory has sought to formulate broad generalizations about the formal structures that are typically associated with or best fit the use of different technologies (Shobana & Ambika, 2016). The perspective originated with the work of Joan Woodward in 1958 who argued that technologies directly determine differences in such organizational attributes as span of control, centralization of authority, and the formalization of rules and procedures. Proponents of this theory argue that the best way to organize depends on the nature of the environment to which the organization must relate (Stolzer & Goglia, 2016).

The theory thus supports the view that organizations are open systems that need careful management to satisfy and balance their internal needs in light of prevailing environmental circumstances (Heldman, 2018). The theory espouses the notion that there is no one best way of managing an entity. The appropriate way depends on the kind of environment the firm is operating in. Management must therefore be concerned, above all else, with achieving appropriate alignments and good fit with the entity's operating environment (Bansal, 2019). Under contingency theory, in every project the company must identify the fit between the various project components and contingencies that may impact the project performance. In this case, the contingencies could be the critical elements or critical success factors that are highly critical to a project success that should be taken into consideration during the decision-making stage by project owners or managers (Hasler, 2016). Thus, this theory was relevant to the current study as it provided a rationale for analyzing the influence of project risk management on performance of low cost housing projects.

Conceptual Framework

The conceptual framework is a diagrammatic representation of the relationship between the study variables. The conceptual framework presents a visual overview of the study's independent variable(s) and the dependent variable and thus helps to provide a quick glimpse of the study's key variables (Mugenda & Mugenda, 2009). The conceptual framework in relation to the present study was as illustrated in Figure 2.1.

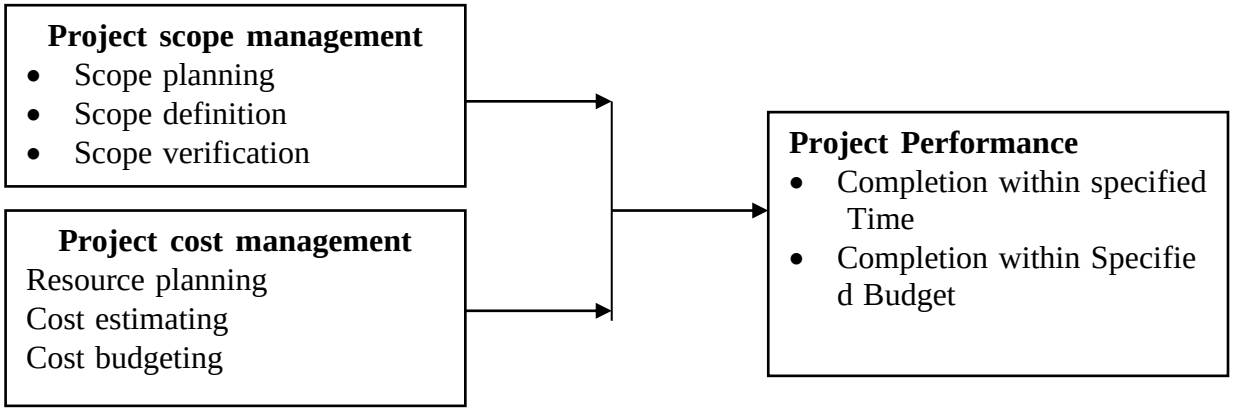

Figure 2. 1: conceptual framework

Project Scope Management

Project scope management is the function of controlling a project in terms of its goals and obj ectives through the processes of conceptual development, full definition, execution, and termin ation. The scope of a project is the clear identification of the work that is required to complet e or deliver a project successfully. As such it includes the processes required to ensure that th e project includes all the work required, and only the work required, to successfully complete the project. It provides the foundation upon which all project work is based and is, therefore, t he culmination of project predevelopment planning (Stolzer & Goglia, 2016). In simple terms, project scope management reflects what work will be accomplished on the project. It consists of several distinct activities, which according to the PMBOK Guide include initiation, scope planning, scope definition, scope verification and scope change control, all of which aim at cl early defining the limits of the upcoming project (Heldman, 2018). Project scope management concerns the project and includes all the work that is required to complete the project success fully. It defines exactly what is and what is not included in the project scope e.g. key outputs and deliverables expected by the customer (Bassi, 2016).

Project Cost Management

Project cost management relates to the project budget and costing which means having good c ost estimating tools to make sure that project funds cover the extent of the project and are bei ng monitored regularly to ensure their effective utilization (Jha & Iyer, 2016). According to T hamhain (2014), managers might feel pressured to provide optimistic cost estimates to influen ce project approval. However, inaccurate cost estimates will eventually lead to unrealistic proj ect plans that cannot be executed within the established constraints. They are running the risk of feasibility reassessment, re-
planning, or, worse, cancellation with dire consequences to all parties involved. According to PMBOK, project cost management is one of the core knowledge areas of project management. However, it acknowledges that regardless of the level of cost estimation method chosen, the process of project cost management cannot be performed without a clear project definition (P MI, 2017). The activities in the Project Cost Management knowledge area establish estimates for costs and resources and keep watch over those costs to ensure that the project stays within the approved budget (Basu, 2017).

Empirical Review

Project Scope Management and Project Performance

In a study carried out in India on critical factors influencing quality performance in constructi on projects, it was established that project scope management was an integral element of the

management of construction projects in the country and which impacted on the quality of the country's construction projects. In the study, statistical analysis of questionnaire responses clea rly identified project scope ambiguities as a leading contributor to project failure attributes. Us ing chi square test, the study established that there was a significant association between the d egree of project scope management and quality performance of the surveyed construction proj ects. The study thus concluded that the quality of construction projects in India could be enha nced through effective project scope definition, verification and control (Jose & Ambili, 2017) .

A descriptive survey study done in Egypt aimed at identifying the factors that may affect the quality of highway infrastructure projects in the country and determining their effectiveness de gree through the application of fuzzy triangular approach. The target population of the study was contracting companies specialized in the construction of highway projects in Egypt. A rep resentative sample of 67 construction companies in Egypt was surveyed. Study data was colle cted using a designed questionnaire administered on project engineers. The analysis of the coll ected questionnaires as perceived by the contracting engineers using the fuzzy approach reveal ed that effective project scope management as evidenced by effective scope planning, adequat e gathering of stakeholder requirements, clear scope definition, effective scope validation and effective scope control was a major causal factor that affected the quality of the highway cons truction projects in Egypt (Akal & El-Maaty, 2016).

A study carried out in Pakistan scrutinized the factors that had an adverse effect on the quality of construction projects. A questionnaire was developed based on identified project managem ent knowledge areas to take opinion of construction experts. After their feedback, a statistical analysis tool such as chi-
square and weighted mean method were used to rank the significance level of these factors. Fr om the findings, project scope management attributes emerged as leading factors that had a m ajor effect on the quality of construction projects in Pakistan. The relevance of project scope management to the quality of the construction projects was based on the fact that it was the fu nction that ensured that a project's activities and processes were accurately defined and mappe d. The study observed that project scope management ensured that project managers and super visors allocated the right amount of work necessary to successfully complete a given project. The study closed by noting that without a comprehensive project scope management plan, ther e was a good chance that the project team would engage in unnecessary project activities (Ab as et al., 2015).

On their part, Oke, Aigbavboa and Dlamini (2017) evaluated the factors affecting quality of c onstruction projects in Swaziland. In the study, various factors affecting performance quality o f construction projects were examined with a view to suggesting improvement measures. Usin g various variables from relevant literature as the basis, data were obtained through the use of questionnaire administered on contractors, architects, engineers, quantity surveyors as well as project and construction managers. The results revealed that project scope was a major factor t hat affected the performance quality of construction projects in the study area. The respondent s were in agreement that poor project scope definition as well as lack of project scope verifica tion and project scope control impacted negatively on the quality of construction projects in th e country. To minimize the negative impact of these project scope management attributes and improve performance quality of construction projects, the study called for adherence to project scope processes as outlined within the PMBOK guidelines.

In another study, Berssaneti and Carvalho (2015) sought to identify variables that impacted on project success in Brazilian companies. The study utilized questionnaires and interview sched ules to gather the opinions of project managers and supervisors regarding the factors that impa

cted project success in the country's companies. The findings showed that project scope mana gement was an integral element of project management that had a significant impact on projec t success. The study observed that effective project scope management required clear commun ication, to ensure that stakeholders and team members alike understood the scope of the proje ct while agreeing on how the project goals would be met. According to the study, project scop e management helped avoid the challenges that a project might face with bloating scope and a n unruly requirement list. The study also noted that project scope management helped establis h control mechanisms to address factors that may result in changes during the project lifecycle . The study concluded that without defining the project scope, the project time and cost cannot be reasonably estimated which may occasion losses.

Project Cost Management and Project Performance

A research study carried out in Palestine sought to determine the underlying factors that affect ed the quality of building construction projects in Gaza Strip. The Nominal Group Technique (NGT) was used to identify these factors and to assist in developing a questionnaire to identif y and rank these factors and the associated sub-
factors. The NGT yielded 8 main factors and 16 sub-factors. Sixty-
five contracting companies and 24 consulting offices participated in responding to the question naire. The sub-
factors that influence the quality of building construction projects and their relative importance were identified and used in identifying the main factors using the weighted average sum meth od. Pareto analysis showed that project cost management related factors contributed 74% of th e weight of all the factors. Among the most significant project cost factors identified were: res ource planning, project cost estimation and budgeting, sourcing of project funds and project co st control (Tayeh et al., 2018).

In an investigative review carried out in Malaysia, Yong and Mustaffa (2017) focused on criti cal success factors for Malaysian construction projects. Specifically, the study explored how p roject cost management affected the firms' successful completion of their projects as well as h ow project cost management influenced the quality of the projects. Study data was collected u sing questionnaires and was analyzed both quantitatively and qualitatively using SPSS v. 20. The study established that resource allocation and adequacy was a major critical success factor in project implementation among construction firms in Malaysian. The study observed that ac curate project cost estimations and adequate budgetary allocations to projects were instrumenta l in achieving effective delivery of construction projects in the country. The study concluded t hat desired project quality standards and objectives could only be achieved if sufficient firm fi nancial resources were availed.

In a similar study conducted in Maldives, the researchers analyzed the critical success factors for international development projects in the country. One of the objectives of the study was t o examine the influence of project costs on the international development projects quality in t he country. The study adopted a descriptive cross-
sectional research design. Respondents were sampled from diverse international development organizations operating in Maldives. The main study instrument was a self-
administered questionnaire which was complimented with qualitative data gathered using inter view schedules. The collected data was analyzed using Statistical Package for Social Sciences Version 23. The study data was analyzed in the form of percentages, means and standard devi ations. According to the study findings, improvements in the quality of projects undertaken by the surveyed international development corporations were characterized by a significant depe ndence on monetary allocations to the respective projects (Yamin & Sim, 2016).

In Nigeria, an empirical study was conducted with the aim of establishing critical factors affec ting quality in public construction projects in Borno State. As part of the research objectives, t he study evaluated the effect of project cost management on the quality of construction project s undertaken in Borno State. The study adopted a descriptive research design. The study respo ndents were construction project team members working in selected construction firms in the s aid study area. Stratified random sampling technique was used in selection of the respondents. The study results suggested that availability of adequate financial resources was key for succe ssful implementation of construction projects in Nigeria. Project cost estimations and allocated funds did also have a direct impact on the quality of public construction projects implemente d in the study area. The study concluded by noting that successful mobilization of needed reso urces was essential, not only to successful project delivery in Nigeria but also to ensuring that delivered projects met the set quality thresholds (Usman & Zin, 2017).

In South Africa, Sibiya et al. (2016) did a study which assessed the performance of constructi on projects in the country. The study analyzed the effect of various project management proce sses on the performance of selected construction projects in the country. Data was collected fr om employees of select construction firms through convenient sampling. The employees had t o be engaged in the implementation of the construction projects for them to be included as res pondents. Data was obtained via questionnaires and was analyzed both descriptively and infer entially. The study suggested that the success or failure of project quality was contingent on p roject cost allocations and management. The study noted that resource allocation and adequac y was a recurring theme among the surveyed firms in respect to project implementation and at tainment of project quality requirements. The study concluded that project cost management w as an essential element of project quality in among construction firms in the country.

A study by Sinesilassie et al. (2018) analyzed the critical factors affecting quality performance of Ethiopian public construction projects. The study analyzed the historical quality performan ce of public construction projects in the country and assessed the influence of various project management processes on the projects' quality performance. It was established that high levels of independent regulation of the construction industry in the country were credited for reduce d direct political interference which was often blamed for diminished productivity and general poor performance of state owned enterprises in many other developing countries. Further, a si gnificant association was established between project cost management and quality performanc e in the country's public construction projects. The study concluded that project cost manage ment was an integral component of project management that had a significant influence on the quality performance of public construction projects in Ethiopia.

In Kenya, a study was conducted on factors affecting the performance of construction projects in the Coastal Region of Kenya. The study sought to establish whether project cost managem ent as a project management practice affected the performance of construction projects in the Coastal Region of Kenya. The study adopted the descriptive research design. Study data was c ollected from employees of selected construction firms operating in the Coastal Region of Ken ya using questionnaires. Both descriptive and inferential statistics were applied in data analysi s. From the study findings, it was revealed that project resource planning, project resource mo bilization, project resource allocation and project resource control were the project cost manag ement aspects that affected the performance of construction projects in the Coastal Region of Kenya to a great extent. A significant association between the degree of project cost managem ent and performance of construction projects in the study area was also established. The study further noted that efficient budgetary allocation was instrumental to the performance of the co nstruction projects. As such, the study concluded that successful performance of construction

projects in the Coastal Region of Kenya was dependent on project cost allocations and their m anagement (Nyangwara & Datche, 2015).

RESEARCH METHODOLOGY

Research Design

This study used descriptive survey research design. The research design enabled the researcher to obtain both internal and external insights into the study and also helped the researcher to g et more information that aided in the interpretation of the data. A descriptive study describes or defines a subject, often by creating a profile of a group of problems, people, or events, thro ugh the collection of data and tabulation of the frequencies on research variables or their inter action (Cooper & Schindler, 2011).

The object of descriptive research is to generate an accurate understanding of behaviours, eve nts or situations (Kothari, 2004). Mugenda and Mugenda (2009) state that descriptive research design is a method which enables the researcher to summarize and organize data in an effecti ve and meaningful way. The design was considered appropriate for this study as it helped the researcher to describe the research subject, as it currently existed without manipulation of vari ables.

Target Population

Hungler and Polit (2009) refer to the population as an aggregate or totality of all the objects, s ubjects or the members that conform to a set of specifications and that are being investigated. In this study, the target population comprised of project teams working with low cost housing projects in Nairobi City County. This comprised of project contractors, supervisors, project tea ms and other collaborative teams who were involved in project management. The study target ed a total of 250 respondents.

Sample Size and Sampling Technique

Sample refers to a part of or fraction of population that is being investigated upon. It can also be defined as a group of individuals who are engaged or participating in a study. Wilson (20 10) defined it as selected elements such as objects, subjects or people that participate in a part icular study. Samples are used to reflect the entire attributes of a given population under inves tigation such that the study's findings can be generalized to the entire population. A good sam ple size should be enough to adequately represent the characteristic of the population being st udied. Sahu (2017) notes that the best sample should give enough data on the population and t his data should be adequate and capable of being analyzed easily. This study used 50% of the target population as the sample size. This implies that 125 respondents were used as the sam ple size.

Data Collection Instruments

The study utilized primary data which was collected using a self-
administered questionnaire. The questionnaire contained close ended questions based on the st udy objectives. According to Mugenda and Mugenda (2009), a questionnaire is appropriate for data collection from a large number of respondents as it helps to save on time spent in data c ollection. The questionnaire was sub-
divided into six sections where Section A was on the demographics of the study respondents, Section B contained questions on project scope management, section c contained questions on project time management, section d contained questions on project cost management, section e contained questions on project risk management while section f contained questions on proje

ct performance. The reason for choosing the questionnaire as the data collection instrument fo r this study was primarily due to its practicability, applicability to the research problem and th e size of the population. It was also cost effective (Denscombe, 2014).

Pilot Testing

Prior to the actual data collection, the researcher conducted a pilot study involving 10% of the sample size in order to ensure that the questions were well constructed, understood and to eli minate ambiguity hence refining the research tool. Mugenda and Mugenda (2009) asserted tha t 10% of the sample size was adequate for purposes of pilot testing of the research tool. The p ilot study sample did not form part of the main study. Where necessary, adjustments were ma de to improve on the research instrument.

Data Analysis and Presentation

Data collected was coded and classified into different components to facilitate a better and effi cient analysis. The quantitative data gathered through close ended questions was analyzed thro ugh descriptive statistics using the Statistical Package for Social Science (SPSS version 23.0) and presented through percentages, frequencies, mean and standard deviation. Tables and figur es were used to present the study findings.

For the purpose of analyzing the relationship between the study variables, the study applied m ultiple regression analysis. Regression analysis was useful to the study as it helped the researc her analyze the existing relationships between the study's independent variables and the depen dent variable. The key benefit of using regression analysis lied in its ability to indicate the ext ent to which changes in the independent variables affected the dependent variable. It was also able to indicate the relative strength of the different independent variables' effects on the stud y's dependent variable.

The multiple regression model used was as follows;

$$Y = \beta_0 + \beta_1 PSM + \beta_2 PCM + \varepsilon$$

Where;

Y = Project Performance (which was the dependent variable)

PSM = Project scope management

PCM = Project cost management

β_0 = Constant

$\beta_1 - \beta_4$ = Beta coefficients of independent variables

ε = Error term

To test the significance of the overall regression model, F-statistic was used. The regression estimators were tested for significance using t-test statistic at 5% level of significance.

PRESENTATION, ANALYSIS AND INTERPRETATION OF DATA

Descriptive Statistics Analysis

Descriptive statistics are brief descriptive coefficients that summarize a given data set, which can be either a representation of the entire or a sample of a population. Descriptive statistics a re broken down into measures of central tendency (mean), measures of dispersion (standard de

viation), frequencies and percentage (Baggio & Klobas., 2017). This study used descriptive sta tistics with the help of Statistical Package for Social Sciences to analyze the study variables.

Project Scope Management and Project Performance

The first specific objective of the study was to examine the influence of project scope manage ment on performance of low cost housing projects in Nairobi city county, Kenya. The respond ents were requested to indicate their level of agreement on statements relating to project scope management and performance of low cost housing projects in Nairobi city county, Kenya. 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 4.2.

From the results, the respondents agreed that project scope management helps to distinguish b etween what is and what is not needed to successfully accomplish a project. This is supported by a mean of 3.943 (std. dv = 0.986). In addition, as shown by a mean of 3.926 (std. dv = 0. 840), the respondents agreed that project scope management provides an overview of a project 's final deliverable(s) and clearly defines the project's success criteria, dependencies, limitatio ns and assumptions. Further, the respondents agreed that project scope management ensures a common understanding of the project among key project stakeholders. This is shown by a me an of 3.831 (std. dv = 0.904).

The respondents also agreed that a clear project scope statement helps the project manager to better manage the expectations of stakeholders and to avoid common problems seen in project s. This is shown by a mean of 3.796 (std. dv = 0.937). With a mean of 3.789 (std. dv = 0.876), the respondents agreed that project scope management helps establish factors or elements th at might lead to changes in a project's lifecycle.

Table 4. 1: Project Scope Management and Project Performance

	Mea n	**Std. Devia tion**
Project scope management helps to distinguish between what is and what is not needed to successfully accomplish a project	3.943	0.986
Project scope management provides an overview of a project's final deliverable (s) and clearly defines the project's success criteria, dependencies, limitations a nd assumptions	3.926	0.840
Project scope management ensures a common understanding of the project amo ng key project stakeholders	3.831	0.904
A clear project scope statement helps the project manager to better manage the expectations of stakeholders and to avoid common problems seen in projects	3.796	0.937
Project scope management helps establish factors or elements that might lead to changes in a project's lifecycle	3.789	0.876
Aggregate	**3.808**	**0.873**

Project Cost Management and Project Performance

The third specific objective of the study was to establish how project cost management influen ces the performance of low cost housing projects in Nairobi city county, Kenya. The responde nts were requested to indicate their level of agreement on various statements relating to projec t cost management and the performance of low cost housing projects in Nairobi city county, Kenya. A 5 point Likert scale was used where 1 symbolized strongly disagree, 2 symbolized d

isagree, 3 symbolized neutral, 4 symbolized agree and 5 symbolized strongly agree. The result s were as presented in Table 4.4.

From the results, the respondents agreed that project cost management is instrumental in deter mination of resource requirements needed to perform project activities. This is supported by a mean of 3.936 (std. dv = 0.708). In addition, as shown by a mean of 3.928 (std. dv = 0.925), t he respondents agreed that it is through project cost management that project team members a re able to develop cost estimates of the resources needed to complete identified project activiti es. Further, the respondents agreed that project cost management allows project managers to al locate overall cost estimate to individual work activities. This is shown by a mean of 3.842 (st d. dv = 0.821). The respondents also agreed that project cost management allows project mana gers to effectively control changes to the project budget. This is shown by a mean of 3.838 (st d. dv = 0.809). With a mean of 4.810 (std. dv = 0.981), the respondents agreed that project co st management is instrumental in ensuring that a project is accomplished within the approved budget.

Table 4. 2: Project Cost Management and Project Performance

	Mean	**Std. D eviatio n**
Project cost management is instrumental in determination of resource requirem ents needed to perform project activities	3.936	0.708
It is through project cost management that project team members are able to d evelop cost estimates of the resources needed to complete identified project act ivities	3.928	0.925
Project cost management allows project managers to allocate overall cost estim ate to individual work activities	3.842	0.821
Project cost management allows project managers to effectively control change s to the project budget	3.838	0.809
Project cost management is instrumental in ensuring that a project is accomplis hed within the approved budget	4.810	0.981
Aggregate	**3.842**	**0.865**

Inferential Statistics

Inferential statistics in the current study focused on correlation and regression analysis. Correl ation analysis was used to determine the strength of the relationship while regression analysis was used to determine the relationship between dependent variable (performance of low cost h ousing projects in Nairobi city county, Kenya) and independent variables (project scope mana gement, project cost management a).

Correlation Analysis

The present study used Pearson correlation analysis to determine the strength of association be tween independent variables (project scope management
and project cost management) and the dependent variable (performance of low cost housing pr ojects in Nairobi city county, Kenya) dependent variable. Pearson correlation coefficient range between zero and one, where by the strength of association increase with increase in the valu e of the correlation coefficients. The current study employed Taylor (2018) correlation coeffici ent ratings where by 0.80 to 1.00 depicts a very strong relationship, 0.60 to 0.79 depicts stron g, 0.40 to 0.59 depicts moderate, 0.20 to 0.39 depicts weak.

Table 4. 4: Correlation Coefficients

		Project Performance	Project Scope Management	Project Cost Management
Project Performance	Pearson Correlation	1		
	Sig. (2-tailed)			
	N	121		
Project Scope Management	Pearson Correlation	.849**	1	
	Sig. (2-tailed)	.002		
	N	121	121	
Project Cost Management	Pearson Correlation	.899**	.172	1
	Sig. (2-tailed)	.000	.079	
	N	121	121	121

From the results, there was a very strong relationship between project scope management and performance of low cost housing projects in Nairobi city county, Kenya (r = 0.849, p value = 0.002). The relationship was significant since the p value 0.002 was less than 0.05 (significant level). The findings are in line with the findings of Simiyu, Sakwa, and Namusonge, (2017) who indicated that there is a very strong relationship between project scope management and project performance.

Further, the results revealed that there is a very strong relationship between project cost management and performance of low cost housing projects in Nairobi city county, Kenya (r = 0.899, p value =0.000). The relationship was significant since the p value 0.000 was less than 0.05 (significant level).The findings are in line with the findings of Bulut, (2013) that there is a very strong relationship between project cost management and project performance.

Regression Analysis

Multivariate regression analysis was used to assess the relationship between independent variables (project scope management, project cost management) and the dependent variable (performance of low cost housing projects in Nairobi city county, Kenya)

Table 4.5: Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.928	.861	.862	.10582

a. Predictors: (Constant), project scope management, project cost management

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 0.861. This implied that 86.1% of the variation in the dependent variable (performance of low cost housing projects in Nairobi city county, Kenya) could be explained by independent variables (project scope management, project cost management).

Table 4.6: Analysis of Variance

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	172.027	2	86.014	754.51	.000[b]
	Residual	6.568	118	.057		
	Total	178.595	120			

a. Dependent Variable: performance of low cost housing projects

b. Predictors: (Constant), Project Scope Management, Project Time Management, Project Cos t Management and Project Risk Management

The ANOVA was used to determine whether the model was a good fit for the data. F calculat ed was 754.51 while the F critical was 2.449. 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 t he data. Therefore, the model can be used to predict the influence of project scope manageme nt,
project cost management on performance of low cost housing projects in Nairobi city county, Kenya.

Table 4. : Regression Coefficients

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	0.134	0.039		0.872	0.001
	Project Scope Management	0.387	0.112	0.384	3.545	0.000
	Project Cost Management	0.379	0.104	0.380	3.663	0.002

a Dependent Variable: Performance of Low Cost Housing Projects

The regression model was as follows:

$Y = 0.134 + 0.387X_1 + 0.379X_2 + \varepsilon$

According to the results, project scope management has a significant effect on performance of low cost housing projects in Nairobi city county, Kenya β_1=0.387, p value= 0.000). The relati onship was considered significant since the p value 0.000 was less than the significant level of 0.05. The findings are in line with the findings of Simiyu, Sakwa, and Namusonge, (2017) w ho indicated that there is a very strong relationship between project scope management and pe rformance of low cost housing projects.

Furthermore, the results revealed that project cost management has significant effect on perfor mance of low cost housing projects in Nairobi city county, Kenya β1=0.379, p value= 0.002). The relationship was considered significant since the p value 0.002 was less than the significa nt level of 0.05. The findings are in line with the findings of Bulut, (2013) that there is a very strong relationship between project cost management and project performance.

Conclusions

The study concludes that project scope management has a significant effect on performance of low cost housing projects in Nairobi city county, Kenya. Findings revealed that scope plannin g, scope definition and scope verification influence performance of low cost housing projects i n Nairobi city county, Kenya

Further, the study concludes that project cost management has a significant effect on performa nce of low cost housing projects in Nairobi city county, Kenya. Findings revealed that resourc e planning, cost estimating and cost budgeting influence performance of low cost housing proj ects in Nairobi city county, Kenya

Recommendations

The study found that project scope management has a significant effect on performance of lo w cost housing projects in Nairobi city county, Kenya. This study therefore recommends that t he managers of low cost housing projects should ensure effective project scope planning, scop e definition and scope verification.

In addition, the study found that project cost management has a significant effect on performa nce of low cost housing projects in Nairobi city county, Kenya. This study therefore recomme nds that the managers of low cost housing projects should ensure proper monitoring and evalu ation framework to minimize wastage of resources.

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