

## **EFFECT OF PROJECT MANAGEMENT PRACTICES ON QUALITY CONTROL OF BUILDING CONSTRUCTION IN NAIROBI COUNTY**

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**Abstract:** *The Kenyan building construction industry has been facing a lot of challenges from collapsing buildings in major cities and the majority being in Nairobi that has resulted in many deaths and injuries. The increasing number of collapsing buildings has been linked to the existing quality control of the Kenyan building construction. This study investigates the effect of project management practices on quality control of building construction in Nairobi County. The results should assist all stakeholders in the building construction industry to ascertain whether project management practices affects quality control of building construction. The research was a descriptive case study and the targeted population was 136 management officers in Nairobi County Ministry of Lands, Housing and Urban Development. The researcher used closed-ended questionnaires with five-point Likert scale that was pilot tested and found valid and reliable. The researcher edited and coded collected questionnaires and carried out multiple regression analysis in SPSS software. The analysis results were presented in tables and the model was fit to predict quality control using project regulatory framework, project planning, project team competency and project cost management. From the findings of the study it can be concluded that project regulatory framework, project planning, project team competency and project cost management have positive correlation on quality control of building construction. It was recommended that project management players, corporate managers in public organizations and private sectors have the responsibility of formulating amicable policies and structures that provides basis for quality building construction.*

**Keywords:** *Project management, quality control, construction, descriptive, Nairobi*

### **1. INTRODUCTION**

In the global report on human settlements of 2011 by United Nations Habitat, the compounding population increase over decades has greatly put pressure on resources and need for more housing to sustain the growing population. Urban settlements have mostly been affected opposed to rural settlements where more people migrate to find jobs and a better life burdening the housing systems already at capacity. The situation in Kenya due to the challenges in the housing sector will not get any easier due to the high population growth rate and rapid urbanization seen when it was 28.7 million people with urban population being 5.4 million in 1999, and by 2009 this population had grown to 38.6 million and 12.5 million, respectively (KNBS, 2009). It has been projected by KNBS (2012) that by the year 2030, about 50% of the Kenyan population will be urban residents and this translates to a need for increase in the number of housing units in the urban areas. This drastic increment on housing demand has led building owners and developers flout the construction regulations to build more units regardless of quality to make more money whereas supply of land for housing needs remains static (Obuya, 2012). Efforts of implementation of quality control in the building construction sector to provide

quality buildings that are up to standard has been obstructed in several instances through poor coordination of government agencies (KIPPRA, 2015).

### **1.1 Statement of the Problem**

The collapse of buildings has seen a spike in incidences, with 1996-2011 experiencing 24 cases over the period, 2014 experiencing 13 cases and 2015 up to the month of July experiencing 13 cases (KIPPRA, 2016). There has been more than 10 incidences of collapsed buildings between 2016 and 2018, and a total of over 192 deaths and 468 injuries reported cases all over Kenya from 2009 and 2018 (Vidija, 2018; Makena, 2017; Agutu, 2017; Mutambo, 2016; Kenya Red Cross, 2016; BBC, 2009). The Huruma building tragedy in 2015 in which over 51 people died and 150 injured drew concerns in the existing project management practices on quality control of building construction and instigated the Government of Kenya through a Presidential directive to order an audit of all buildings in all the counties (Kenya Engineer, 2016). In 2017, the NBI concluded an audit of 4,879 buildings in high risk towns countrywide and a total of 826 buildings were found to be unsafe and susceptible to sudden collapse with more than 60 per cent located in Nairobi (AAK, 2018). This was attributed to lack of capacity to facilitate the implementation of project management practices on quality control in the building construction sector that has greatly led to the collapsing of buildings and many defective structures (Wawira, 2016).

Visioin 2030 has three pillars, political, economic and social. Social pillar that aims to improve the quality of life for all Kenyans. Housing and urbanization is a part of the social pillar in which Government aims to adequately and decently house the nation in a sustainable environment (GOK, 2007). One of the ways of doing this is by ensuring quality affordable housing achieved through proper project management in building construction ensuring quality control in every step of the building construction process. The survey of quality of construction by FIDIC, the International Association of Consulting Engineers confirmed that failure to achieve appropriate quality of building construction is a problem worldwide. Fernandez (2014) warned on the risk of building collapse in Kenya by construction of thousands of dangerously weak buildings and recommended that unless implementation of better building project management practices towards quality control, millions of people would likely be exposed to unnecessarily higher risks for generations. The Kenyan government and building construction industry stakeholders should give high priority to improving construction project management practices for safer and sustainable cities. This research seeks to identify the effect of project management practices on the quality control of building construction and to explain how they affect the industry, in terms of safe and quality housing that ensures both social and economic benefits to the country.

### **1.2 Research Objectives of the Study**

The general objective of the study was to identify the effect of project management practices on quality control of building construction in Nairobi County.

#### **1.2.1 Specific objectives**

The study was guided by the following specific objectives:-

- i. To investigate the effect of project regulatory framework on quality control of building construction in Nairobi County.
- ii. To establish the effect of project planning on quality control of building construction in Nairobi County.

- iii. To determine the effect of project team competency on the quality control of building construction in Nairobi County.
- iv. To evaluate the effect of project cost management on quality control of building construction in Nairobi County

### 1.3 Research Hypotheses

The study was guided by the following hypotheses:

**Ho1:** Project regulatory framework has no statistically significant relationship with quality control of building construction in Nairobi County

**Ho2:** Project planning has no statistically significant relationship with quality control of building construction in Nairobi County

**Ho3:** Project team competency has no statistically significant relationship with quality control of building construction in Nairobi County

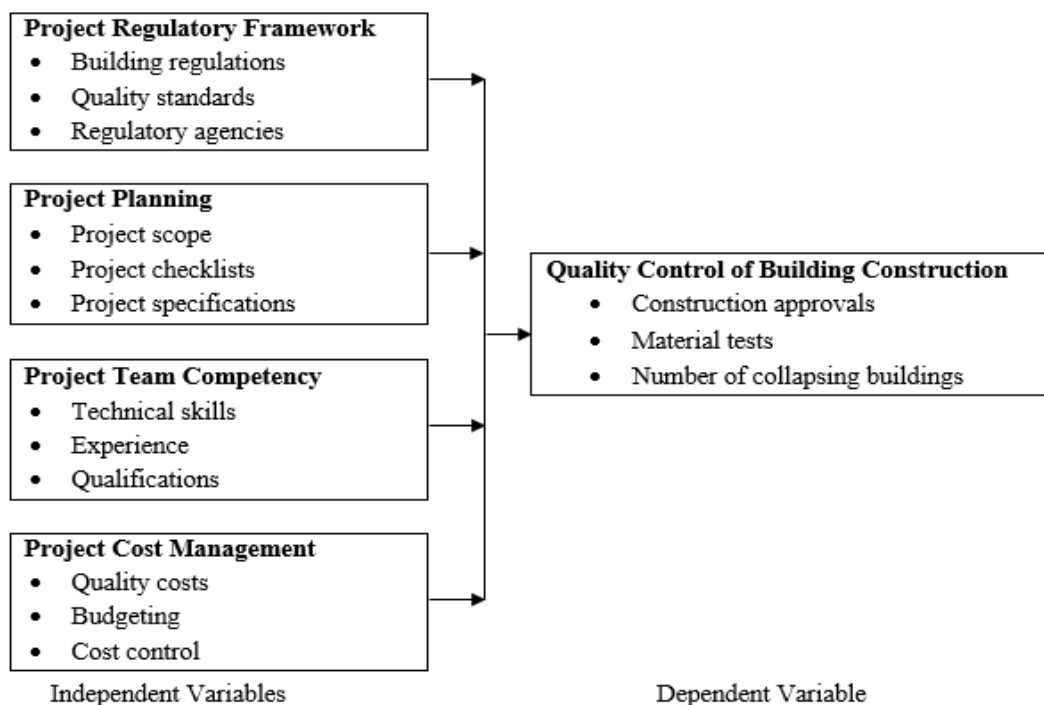
**Ho4:** Project cost management has no statistically significant relationship with quality control of building construction in Nairobi County

### LITERATURE REVIEW

This chapter aimed to identify and examine what other scholars and researchers had done in relation to the study.

### 2.1 Conceptual Framework

Figure 2.1 illustrated the conceptual framework showing the independent variables which were the project management practices and the dependent variable quality control of building construction.



**Figure 2.1: Conceptual Framework**

## **Review of Literature on Variables**

### **2.2.1 Project Regulatory Framework**

Project regulatory framework is the due process of regulation surrounding a single topic that entails all of the relevant legislative documents and describes the agency or body responsible for administering the framework (Ndumia, 2015). According to the Project Management Body of Knowledge Guide (2013), project regulatory framework is an enterprise environmental factor of project management that refers to conditions, not under the control of the project team, that influence, constrain, or direct the project but are inputs to most planning processes with either positive or negative influence on the outcome, and ideally consists of regulatory agency regulations, codes of conduct, product standards, quality standards, and workmanship standards which can influence the monitor and control of project work including quality. Several studies pertaining the regulatory framework in practice show the correlation with quality control of building construction in Kenya. Ndumia (2015) showed that quality improves with a comprehensive and effective regulatory framework in the construction industry. Study by Obuya (2012) showed that failure to approve building plans by County's greatly contributes to rise in incidences of collapsing buildings. Majority of respondents thought that the County Government failed to inspect buildings under construction which is their responsibility and as a result contractors and developers take that chance to change the approved plans to what they desire thus failing to ensure quality control. Fernandez (2014) study found out that County Governments are failing to accomplish their mandate due to corruption and negligence whereby they issue approvals and give ahead permits to site without a follow up to serve as quality control to ensure that same work on drawings is executed on sites.

### **2.2.2 Project Planning**

The Project Management Body of Knowledge Guide (2013) defines project planning as defining and refining project objectives and ensuring that the best course of action of attaining those objectives is selected. Project planning focuses on how the work will be done involving both how the deliverables are developed and how the project is managed through traditional areas of work tasks, resources, schedule, and costs. According to the US Army Corps of Engineers (2010), all applicable codes, regulations, standards, guidelines, and specifications will be applied during the design of a project. Scholars have attributed failure of proper project planning as a cause of poor quality that has resulted in collapse of structures. Several studies have shown correlation of project planning to project success and good quality. The CIDB (2011), rated on a 5-point scale perceptions of project managers and contractors on design related barriers which had significant influence on poor quality and highest ranked aspects of project planning comprising inadequate project information, inadequate construction details, poor constructability and inadequate specifications all which are prerequisites of project planning. Githenya and Ngugi (2014) using a regression model showed that there is a positive relationship between project planning and successful project implementation of Kenyan housing projects and only through establishment and control of a clearly defined scope can successful implementation be realized. Ede (2011) studied on the high incidences of structural failures in Nigeria and traced the causes to the conception-design stage planning in which many of the projects that failed were because of poor evaluation of technical and economical options. In turn, it contributed to poor design of architectural plan, misidentification of the loads, poor selection of materials, and improper proportioning of the member sections. To ensure successful project delivery, quality requirements should always be clear and verifiable, so that all parties concerned with the realization of the project can understand the requirements for conformance (Cao, 2010).

### **2.2.3 Project Team Competency**

Building construction projects involve a multidisciplinary participation of individuals who have diverse backgrounds such as architectural, civil, mechanical, electrical, structural, computer aided design and drafting, project control, non-technical people such as financial, purchasing, legal who are selected based on specific expertise needed for a particular project in which the project manager always wants the best and most qualified workers (Oberlender, 2014). Study of project success factors by Beleiu, Crisan, and Nistor (2013) showed that to achieve project success, the project manager and project team need to have necessary competencies and this also had a significant correlation with clearly defined goals and objectives. Tchamba and Bikoko (2015) found out in their case study of collapsed buildings in Cameroon that the major cause was failure during structural design during preliminary and detailed design stages and architect's not involving engineers at all stages of construction. During construction, the technical capacity of the contractor is a key factor to the project completion and the indicators include the education level and experience of the technical staff (Mue, 2015). Ede (2011) studied the high incidence of structural failures in Nigeria, which his findings attributed to unskilled artisans who have no technical idea of the works they do and if standardized training programs for the artisans in the building industry were present then would collapsing structures be avoided. Similar studies in Kenya highlight the importance of technical skills in construction projects. Muiruri and Were (2016) employed a regression model and dispersion of central tendency to hypothesize the area of expertise and its role in project management and they found out that the level of technical expertise in the construction industry helps to improve project quality. A study in causes of quality failure in Malaysia by Abdul-Rahman et al (2012) on a 5-point Likert scale showed that most frequent causes of quality failure was due to insufficient skill level among workers.

### **2.2.4 Project Cost Management**

Project cost management is concerned with costs of resources required to complete a project and how decisions affects recurring costs, maintaining and supporting the project result through processes of, planning, estimation, budgeting, funding, financing, managing, and control of costs (PMBOK, 2013). Construction projects are always expected to have a balance in place between cost, time and quality with possibility of having high quality and low cost project, but at the expense of time, and conversely having high quality and fast project, but at a cost (Mallawaarachchi & Senaratne, 2015). Study by Dokata (2017), showed that architects' actions or omissions to sound project planning and control had adverse effects on project cost which in turn would result on cost overruns that would frustrate the design construction process. Cost management is essential in quality control during the design stage as shown in the study by Muiruri and Were (2016) which found a positive correlation between project financing and effective project quality management whereby in factoring of early quality control in planning contributed to most effective utilisation of financial resources and identification of suitable quality materials for construction. Contractor's cost for the project should account for enough marginal profits which should not necessitate any decline of quality in the works by substituting of project defined materials with cheap low quality or defective components that lead to waste and costly rework (Ganesh, 2016).

### **2.3 Research gaps**

Many studies have been conducted on the quality of construction projects and some have been reviewed in the literature. Researchers in developing research problems on quality of construction projects strive to achieve the degree of excellence in the final construction product. This study, on the other hand has tapped into what should be realized so as to get the excellence of the finished product. Most of the quality studies generalize

findings, meaning that they do not engage on the actual management of quality. Management of quality comprises of quality assurance, quality planning and quality control. These are essential aspects that make the body of any research study on quality of construction projects. The findings thus generally found in studies such as by Dlamini (2017) on the factors affecting quality of construction in Swaziland and by Shobana and Ambika (2016) on factors that affect quality in construction projects, give relationships of variables which are part of quality management. A clear distinction in tackling research problems of building construction quality related studies is important to dig deeper into the three aspects that influence the course of construction projects that is quality planning, quality assurance and quality control. In light of this gap in quality studies of construction projects, effect of project management practices on the quality control of construction projects is being investigated. Controlling of quality is key in ensuring that the project runs its course with regard to achieving its objectives. The independent variables aim to show the relationship with the dependent variable quality control of building construction. Quality management is a knowledge area of project management and one cannot do without the other (PMI, 2013). The project management practices that affect the quality control of construction projects in Nairobi are under study, and the same applied in to determine project management practices of quality planning or quality assurance in other parts of Kenya, which can serve as other research area for future research to be undertaken.

**METHODOLOGY**

This study adopted a descriptive research design. The target population of was 136 management officers in Nairobi County’s Ministry of Lands, Housing and Urban Development. A sample size of 102 respondents was obtained using Yamane’s formulae and presented in Table 3.1, to whom the close ended questionnaires with Likert scales were administered to. The questionnaire was pilot tested on ten subjects who were not included in the study for validity using KMO and Bartlett’s Test of Sphericity, and reliability using Cronbach’s alpha coefficient (Cooper & Schindler, 2013). Completed questionnaires were collected edited and coded, for completeness and consistency then analyzed using multiple regression analysis in SPSS software version 25 to correlate data. The analysis results were presented as summary values and tabular representations. Hypotheses testing was also conducted based on the assumption that project management practices influence the quality control of building construction and the p-value calculated would determine rejection of the null hypotheses.

**Table 3.1: Sample Size**

<b>Sampling unit</b>	<b>Population(N)</b>	<b>Sample size(n)</b>	<b>Sample size %</b>
Senior officers	14	10	10
Mid-level officers	49	37	36
Junior officers	73	55	54
<b>Total</b>	<b>136</b>	<b>102</b>	<b>100</b>

**RESULTS AND DISCUSSIONS**

**4.1 Response Rate**

A total of 102 questionnaires were administered to officers in Nairobi County Ministry of Lands, Housing and Urban Development of which 82 of them were filled and retrieved as illustrated in Table 4.1. This represented a successful response rate of 80%. According to Kothari (2013) return rates of 50% are acceptable and fit to analyze and publish, 60% is good and 70% is very good.

**Table 4.1: Response Rate**

	Frequency	Percentages
Responses	82	80%
Non-responses	20	20%
<b>Total</b>	<b>102</b>	<b>100%</b>

## 4.2 Results of Pilot Testing

The pilot test was a mini-version of the full-scale study aimed at testing the questionnaire, which would be used in the larger study. The pilot study involved distributing 10 structured questionnaires.

### 4.2.1 Validity Test

To test the validity of the questionnaire Kaiser-Meyer-Olkin (KMO) measures of sampling adequacy and p-values for Bartlett’s Test of Sphericity were evaluated and the results showed that the variables had KMO measures of sampling adequacy way high above the threshold of 0.65. The p-value gotten was less than the significance level of 0.05 and meant that the questionnaire was valid.

### 4.2.2 Reliability Test

Cronbach’s alpha was used to determine the reliability of the questionnaire used in the study. Cronbach’s values range between 0 and 1.0; while 1.0 implicates perfect reliability, the value 0.70 is deemed to be the lower level of acceptability (Lohr, 2010). The findings indicated that the project regulatory framework had a coefficient of 0.797, project planning had a coefficient of 0.810, project team competency had a coefficient of 0.741, project cost management had a coefficient of 0.710 and quality control obtained a coefficient of 0.750. These results meant that the questionnaire had a high level of reliability and could be accepted for the study.

## 4.3 Correlation Analysis

The study conducted correlation analysis to determine the relationship between the independent variables and dependent variable whose findings were generated by a Person’s Correlation table. A value of 0 implies no relationship, +1 indicates that the two variables are perfectly correlated in a positive linear sense, while values of -1 correlation coefficient indicates that two variables are perfectly correlated in a negative linear sense (Kothari, 2013). From the findings presented in Table 4.2, Project regulatory framework had the strongest positive linear correlation with quality control of  $r=0.592$  at 0.01 level of significance than the other independent variables implying that project regulatory framework is vital and important in the quality control of building construction. These findings are supported by Meijer and Visscher (2017) that project regulatory framework is of great importance in controlling compliance to quality. Project planning was the second-best variable with a moderate positive linear correlation of  $r=0.515$  at 0.01 level of significance implying that project planning is essential to ensure quality control of building construction. This is supported by Abdul-Rahman et al (2015) whose investigation on quality failures on the Malaysian construction industry asserted that project planning is important in realizing quality control of construction projects. The third best was project team competency which had a weak positive linear correlation of  $r=0.329$  at 0.01 level of significance. This affirmed findings by Beleiu, Crisan, and Nistor (2013) that in order to achieve project success and quality requirement’s project team competencies are essential and positively correlated. There fourth and weakest was project cost management that had a positive linear correlation with quality control of  $r=0.250$  at 0.01 level of significance. The findings are supported by Muiruri and Were (2016) who found a positive correlation between cost management and effective project quality management whereby in factoring of early quality control in

planning contributed to most effective utilisation of financial resources and identification of suitable quality materials for construction.

**Table 4.2: Correlation Analysis Results**

		<b>PRF</b>	<b>PP</b>	<b>PTC</b>	<b>PCM</b>	<b>QCBC</b>
PRF	Pearson Correlation	1				
	Sig. (2-tailed)					
	N	82				
PP	Pearson Correlation	.560**	1			
	Sig. (2-tailed)	.000				
	N	82	82			
PTC	Pearson Correlation	-.546**	.519**	1		
	Sig. (2-tailed)	.000	.000			
	N	82	82	82		
PCM	Pearson Correlation	-.563**	.674**	.514**	1	
	Sig. (2-tailed)	.001	.001	.000		
	N	82	82	82	82	
QCBC	Pearson Correlation	.592**	.515**	.329**	.250**	1
	Sig. (2-tailed)	.000	.002	.003	.000	
	N	82	82	82	82	82

\*\* . Correlation is significant at the 0.01 level (2-tailed).

\* . Correlation is significant at the 0.05 level (2-tailed).

PRF=Project Regulatory Framework, PP= Project Planning, PTC= Project Team Competency, PCM=Project Cost Management, QCBC=Quality Control of Building Construction

### 4.3 Regression Analysis

#### 4.3.1 Model Summary

The model summary is shown in Table 4.3 and the results indicated that the four independent variables that were studied explained only 25.7% of the effects of the independent variables on quality control as represented by the R square which means that other factors not studied in this research contributed 74.3% of the effects of the independent variables on quality control of building construction.

**Table 4.3: Model Summary**

<b>Model</b>	<b>R</b>	<b>R Square</b>	<b>Adjusted R Square</b>	<b>Std. Error of the Estimate</b>
1	.507 <sup>a</sup>	.257	.218	3.38204

a. Predictors: (Constant), Project Cost Management, Project Regulatory Framework, Project Planning, Project Team Competency

#### 4.3.2 Analysis of Variance Model

Study findings presented in Table 4.4, indicated that the coefficient of determination was significant as evidence of F ratio of 6.644 with 0.000 level of significance that is less than 0.05 confidence level. Thus, the model was fit to predict quality control using project regulatory framework, project planning, project team competency and project cost management.



**Table 4.4: Analysis of Variance Model**

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	304.003	4	76.001	6.644	.000 <sup>b</sup>
	Residual	880.741	77	11.438		
	Total	1184.744	81			

a. Dependent Variable: Quality Control

b. Predictors: (Constant), Project Cost Management, Project Regulatory Framework, Project Planning, Project Team Competency

**4.3.2 Multiple Regression Coefficients**

From the analysis results presented in Table 4.5, the general regression model arrived at was  $Y = -33.296 + 0.555X_1 + 0.199X_2 + 0.852X_3 + 0.545X_4$ . The findings implied that a unit increase of  $X_1$ (project regulatory framework) results in 0.555 increase in quality control of building construction; a unit increase of  $X_2$  (project planning) results in 0.199 increase in quality control of building construction; a unit increase of  $X_3$  (project team competency) results to a 0.852 increase in quality control of building construction; and lastly a unit increase of  $X_4$  (Project cost management ) results to a 0.545 increase in quality control of building construction. From the results it also implicates that the project regulatory framework and project team competency have a greater positive significance on quality control of building construction.

**Table 4.5: Multiple Regression Coefficients**

Model		Unstandardized Coefficients		Standardized Coefficients		
		B	Std. Error	Beta	t	Sig.
1	(Constant)	33.296	12.687		2.624	.001
	PRF	.555	.174	.390	3.198	.002
	PP	.199	.251	.090	2.792	.001
	PTC	.852	.241	.454	3.544	.001
	PCM	.545	.257	.244	2.119	.003

a. Dependent Variable: Quality Control of Building Construction

PRF=Project Regulatory Framework PP= Project Planning PTC= Project Team Competency PCM=Project Cost Management

**4.3.2 Hypotheses Testing**

Multiple regression analysis was used to establish the linear statistical effect of independent variables on dependent variable of the research, the four null hypotheses were tested using multiple linear regression model and a summary of the decision rule arrived at on the hypotheses tested is presented in Table 4.6. From the findings, it was found that project regulatory framework has a strong significant influence on quality control of building construction; project planning has a strong significant influence on quality control of building construction; project team competency has a strong significant influence on quality control of building construction; and project cost management has a strong significant influence on quality control of building construction.

**Table 4.6: Hypotheses Testing Results**

Hypothesis Statement	P-value	Decision
<b>H01:</b> There is no significance between project regulatory framework and quality control of building construction	0.002	Reject <b>H01</b>
<b>H02:</b> There is no significance between project planning and quality control of building construction	0.001	Reject <b>H02</b>
<b>H03:</b> There is no significance between project team competency and quality control of building construction	0.001	Reject <b>H03</b>
<b>H04:</b> There is no significance between project cost management and quality control of building construction	0.003	Reject <b>H04</b>

## CONCLUSIONS AND RECOMMENDATIONS

### 5.1 Conclusions

The study aimed to evaluate the effect of project management practices on quality control of building construction in Nairobi County. The four independent variables that were studied, explained only a small percentage of the effects of the independent variables on quality control which means that other factors not studied in this research should be investigated. In view of the findings, the following conclusions were made:

#### 5.1.1 Effect of Project Regulatory Framework on Quality Control of Building Construction in Nairobi County

Project regulatory framework affects quality control of building construction and has a positive correlation. The findings imply that a unit change of project regulatory framework results to a positive change on quality control of building construction. Project regulatory framework encompasses regulation and standards in the building construction industry that are a guide to realization of quality buildings that are not defective and with a low incidence of collapsing.

#### 5.1.2 Effect of Project Planning on Quality Control of Building Construction in Nairobi County

Project planning affects quality control of building construction and has a positive correlation. The findings imply that a unit change of project planning, results to a positive change on quality control of building construction. Project planning is a powerful project management practice which is the epicenter of any building construction project.

#### 5.1.3 Effect of Project Team Competency on Quality Control of Building Construction in Nairobi County

Project team competency affects quality control of building construction and has a positive correlation. The findings imply that a unit change of project team competency results to a positive change on quality control of building construction. Project team having necessary competencies have greater chances of ensuring project success through implementing proper quality control and in the long run minimize or prevent defects and consequently collapse of buildings.

#### **5.1.4 Effect of Project Cost Management on Quality Control of Building Construction in Nairobi County**

Project team cost management affects quality control of building construction and has a positive correlation. The findings imply that a unit change of Project cost management results to a positive change on quality control of building construction. Project cost management deals with the financial needs of a project and is useful project management practice that helps maintain a balance of needs to realize project results.

### **5.2 Recommendations**

The study aimed to evaluate the effect of project management practices on quality control of building construction in Nairobi County. The four independent variables that were studied, explained only a small percentage of the effects of the independent variables on quality control which means that other factors not studied in this research should be investigated. In view of the findings, the following recommendations were made;

#### **5.2.1 Policy Recommendations**

Project management players, corporate managers in public organizations and private sectors have the responsibility of formulating amicable policies and structures that provides basis for quality control of building construction projects. The systematic quality management system should be applied. The quality of each process and project can be ensured through systematic planning, control and inspection. The waste of workforce, machinery, materials and other costs can be avoided, as well as the schedule delays. It has been found out that the scientific quality management system can ensure the rational allocation of project resources, and make the project run on the preconcert quality objectives, so as to achieve the effect of project quality control.

#### **5.2.2 Managerial Recommendations**

Staff need to be well equipped with the perquisite skills and qualifications that come with construction projects to negate the occurrence of a poorly quality controlled construction system that may increase building defects and collapses. As well, it is of essence for organizations to conduct stakeholder's analysis surveys on its resources before it plans. The well-executed project plan will contribute to both project outcomes and international standards of doing things. Construction companies should create the flexible and conducive organizational atmosphere which encourages the development of quality control practices in all aspect of the construction industry. Project managers should be encouraged to use quality control techniques in the execution of projects to mitigate the risks of collapsing buildings and defective structures.

#### **5.2.3 Areas for Further Research**

This study is critical for future research in quality field of building construction due to its findings, specifically in Kenya. The findings emphasize the importance of the component of project management practices on quality control through utilizing its integrated perspective on empirical threshold of transference within given organizations through project regulatory framework, project planning, project team competency and project cost management. Research into the effect of quality management practices in the Kenyan construction industry should be done. Future research into the framework for predicting the failure and success of quality management innovation in the Kenyan building construction industry should also be done.

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