

# **Moderating Role of Project Regulatory Framework on the Relationship between Project Scope Planning and Performance of Housing Projects in Kenya**

<sup>1\*</sup>Charles Muiruri Wanjau, <sup>2</sup>Prof. Gregory Namusonge <sup>2</sup>Dr. Benard Lango  
<sup>1, 2, 3</sup>Jomo Kenyatta University of Agriculture and Technology  
\*Corresponding Author

---

**Abstract:** This study sought to determine the moderating role of project regulatory framework on the relationship between project scope planning and performance of housing projects in Kenya. This study adopted a descriptive research design. The target population was 675 building construction stakeholders; Project Managers, Engineers, Architects, contractors, and site supervisors drawn from 135 housing projects within Nairobi Metropolitan. The study made use of primary and secondary data. Quantitative and qualitative data were collected through the use of a structured questionnaire and Interviews. Pilot testing was done to test the validity and reliability of the research instrument. The Data was analyzed using the Statistical Package for Social Sciences (SPSS); descriptive statistics mainly percentages, frequencies, means & standard deviations and inferential statistics mainly the regression analysis. The descriptive results showed that project scope planning influenced the performance of housing projects in Kenya. The study found that 45.8% of the variance in the performance of housing projects was explained by project scope planning. The study also found that project regulatory framework moderates the relationship between project Scope planning and Performance of housing projects in Kenya. The moderation by project regulatory framework explains 74% of the variations in performance of housing projects in Kenya. Based on the study findings, it was established that project scope planning and project regulatory framework jointly explain significant variation in performance of housing projects in Kenya

The study suggests that in order to plan the project scope effectively, it is important to establish a concise and well-defined project scope. The study recommends the government to promote the establishment of comprehensive project teams that include experts in various domains such as architecture, engineering, finance, and project management. Moreover, conducting a comprehensive review of existing regulations related to housing projects in Kenya is recommended as well as identifying and addressing regulatory bottlenecks and inconsistencies that may hinder project performance may be pit into consideration.

**Keywords:** Scope planning, Framework, Housing projects, performance

---

## **1. Introduction**

Construction of housing projects in Kenya is crucial for addressing the growing housing needs of the population. Housing and urban development are addressed in the social pillar of Vision 2030, which focuses on social equity, human development, and social inclusion. Improving effectiveness and efficiency in all levels of planning, contracting and implementation of the housing and infrastructural projects is one of the goals of vision 2030 (Vision 2030, 2007). Housing contributed approximately 5.2 percent of gross domestic product (GDP) in the third quarter of 2022 (Kenya National Bureau of Statistics, 2022). However, despite their significance, there is a pressing issue regarding the planning and performance of these projects (Tuyishime & Nyambane, 2021).

Housing Construction Projects in many parts of Kenya are faced with several challenges due to delays, cost overrun, poor quality, and the rampant collapsing of structures as witnessed in the recent past (Mwangi & Ngugi, 2020). Housing projects in the Nairobi metropolis are constructed through the use of improper time-frames, poor materials, as well as inadequate planning affecting the overall quality of the projects (Momanyi & Sang, 2019) Successful execution of projects and keeping them on time and within budget as well as quality depends on effective planning and scheduling right from the beginning (Achar, Chebii, & Nugo, 2021). The performance of the housing construction projects in Kenya is poor as a result of inadequate planning as most projects experience time delays and cost overrun as well as quality issues (Ronoh, 2020) Project scope planning practices are critical for the success of housing projects in Kenya. The challenges faced in project execution, such as poor quality, schedule, and cost management, can be addressed by embracing the modern project planning techniques and capacity building of project teams in these projects. It is against this background that this study aimed at examining the role of project planning practices on performance of housing projects in Kenya. A number of studies have shown the significant impact of project regulatory framework on the performance of housing projects in Kenya. (Gichamba & Kithinji, (2019) opines that about 70

percent Compliance with environmental regulations and bureaucracies involved influence the time and cost of completing projects.

Odhiambo, Cheruiyot, & Winja, (2022) in their study concluded that regulatory frameworks where regulators compel construction firms to undertake constructive engagement effectively facilitated compliance before the emergence of any serious problem. The Government finds it necessary to identify the factors that promote and determine the future regulation process of the building and regulation process and associated standards and guidance for sustainable construction issues (Mwelu, Davis, Yongjian, & Watundu, 2018). This study therefore sought to establish the influence of project scope planning and the moderating relationship of project regulatory framework on the performance of housing projects in Kenya.

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

Project Planning is crucial for the successful execution of infrastructural projects in any organization (Tuyishime & Nyambane, 2021), and there exists a positive correlation between project planning and performance (Muute, 2019). However, despite the adoption of recommended project management practices by Kenyan contractors, the construction industry in Kenya continues to face significant challenges in project performance (Mwanza, Namusonge, & Makokha, 2020). In particular, housing projects have not contributed significantly to the country's economic growth due to delays and cost overruns (Giti, K'Akumu, & Ondieki, 2020). A report by Kieti, (2020) reveals that out of eleven housing project sites, only two have been fully delivered, two have been partially delivered, and seven have not been delivered at all. Furthermore, the report indicates that only 1,051 housing units were delivered by 2019, accounting for a mere 0.7% of the intended 143,203 units. This underscores the urgent need for project contractors to devise effective project planning strategies to ensure timely completion within budget, scope, and quality, which are essential measures of project performance.

Efforts to enhance the performance of housing projects in Kenya necessitate adequate planning to avoid time delays, cost overruns, and as per the quality standards (Gardner et al., 2019; Kinuthia & Muchelule, 2021). The housing construction sector faces a crisis characterized by excessive material consumption, increased complaints from owners, collapsing structures, escalated cost and time overruns, as well as a growing number of housing projects earmarked for demolition by NEMA and NCA (Momanyi & Kamau, 2020). Previous studies on project management practices (Makokha, 2020; Momanyi & Kamau, 2020) have not specifically examined the influence of project planning. Furthermore, there is a lack of empirical research on the effects of project planning on the performance of housing projects in Kenya. To address this research gap, this empirical study aims to investigate the influence of project planning on the performance of housing projects in Kenya and provide recommendations for its adoption.

### **1.2 Research Objectives**

1. To analyze the influence of project scope planning on the performance of housing Projects in Kenya
2. To establish the moderating role of Project regulatory framework on the performance of housing Projects in Kenya

### **Research Hypothesis**

1. **H<sub>01</sub>** Project scope planning has no influence the performance of housing Projects in Kenya
2. **H<sub>02</sub>** Project regulatory framework has no influence the performance of housing projects in housing Projects in Kenya

## **2. Theoretical Review**

### **2.1 The theory of project management**

The theory of project management (PM) can be described as per the PMBOK guide as a set of models and techniques for the planning and control of complex undertakings (PMI, 2017). The theory of project management is prescriptive discloses how actions lead to the achievement of goals set to those actions (Dilly, Klochan, & Bosslet, 2021). Project Management is the art of directing and coordinating human and material resources throughout the life of a project by using modern management techniques to accomplish predetermined objectives of scope, cost, time, quality, and participant satisfaction (Gary & Jackson, 2018). Lauri & Gregory (2009) asserts that the theory of project is deliberated to be made of the following components; theory of Project planning, theory of execution, and theory of control.

The main part of the theory of project is scope planning and management whose purpose is to ascertain that an adequate or sufficient amount of work is done and also the work that is done delivers the stated business purpose (Gurhan & Nyang'au, 2020). The scope is defined through the work breakdown structure (PMI, 2019). The planning processes are structured into core processes and facilitating processes. There are ten core

processes: scope planning, scope definition, activity definition, resource planning, activity sequencing, activity duration estimating, cost estimating, and schedule development, cost budgeting, and project plan development.

The Execution of the plan indicates the process involved in the project implementation phase. The underlying theory of execution provides the interface between plan and work while the theory of control indicates the core process of controlling two sub-processes: performance reporting and overall change control (Lauri & Gregory, 2009). The assumption of this theory that tasks are discrete and bounded limits the use of this theory in project scope planning. The project tasks outlined in WBS are joined and connected. To give a clear understanding of project management, scope definition; tasks breakdown, and roles & responsibilities must be looked at inclusively (PMI, 2019)

**2.2 Public interest theory**

The Public Interest Theory of regulation by Pigou (1932) explains how regulations seek to protect and benefit the public at large. The theory states that regulations are prepared in the public interest when they are demanded by the public for correcting inefficient practices. Regulations are understood to do good to the whole society rather than any individual’s interest. The regulatory body is to serve the interest of society as a whole rather than making laws in favor of the regulators. Stigler's (1972) public choice theory is contrasted with Pigou's (1932) public interest theory. Stigler said regulations are prepared when the public demands the efficient allocation of resources. He said regulations are not socially efficient and used by private players to prohibit the entry of competitors into the market.

The public interest theory explains how government regulations like NEMA, NCA, and County government policies influence the performance of housing projects (Gichamba & Kithinji, 2019). However, the theory has two limitations in that, first, different theories are arising in regards to how much regulation is optimal, and secondly, it is difficult for the legislature to ensure the regulator is acting in the public's best interest and not its own. This theory therefore supports the moderating variable project regulatory framework and its influence on the performance of housing projects in Kenya

**2.3 Conceptual Framework**

The conceptual framework offers a logical structure of connected concepts that help provide a picture or visual display of how ideas in a study relate to one another within the theoretical framework (Osanloo & Grant, 2016)

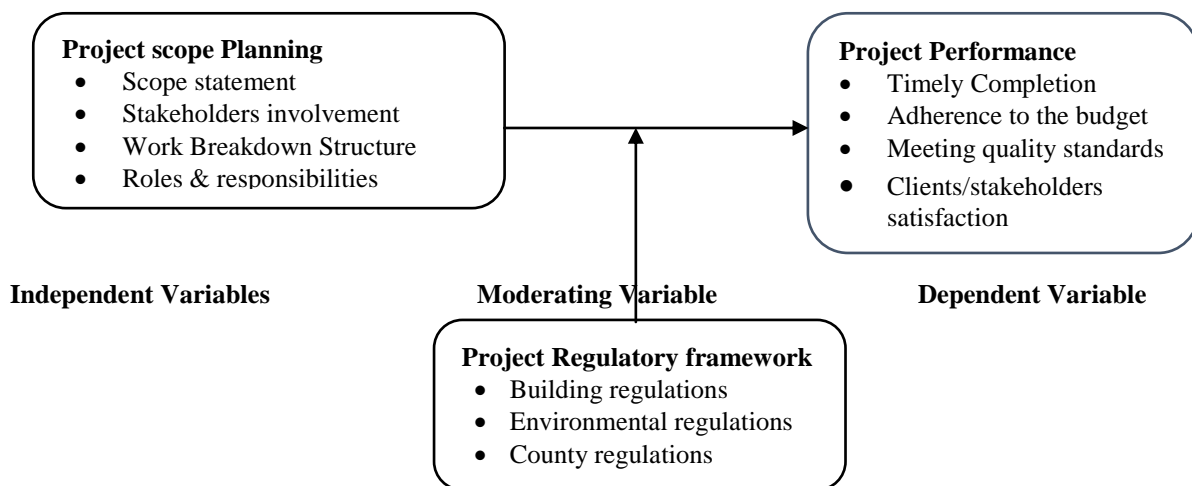


Figure 2. 1 Conceptual framework

**Project scope Planning**

Project scope planning is a collaborative process between all the project stakeholders; the project sponsor, the project, the government, and any other key stakeholders who can help shape the work which must be completed to achieve the project goal (Gurhan & Nyang’au, 2020). Implementation of a housing project is subject to complex necessities needed to deliver the anticipated and planned quality results within the outlined scope of work (Achar, Chebii, & Nugo, 2021). Project scope is founded on three basic dimensions; quality, schedule, and cost (Ngala, 2019). Project scope planning entails the description of all the activities and works needed to attain the project objectives successfully (PMI, 2017). Project scope planning entails the description of all the activities and works needed to attain the project objectives successfully (Kerzner, 2019). In mega

projects like housing, the practice of scope planning is key in management practices for planning and delivering projects successfully (Omeno & Sang, 2018). Banda & Pretorius, (2016) also agrees that well-defined projects tend to exhibit good project performance indicators, while those that were poorly defined tend to exhibit poor project performance indicators. The PMBOK guide outlines the following five steps used in scope management; collect requirements, define scope, create work breakdown structure, verify scope, and control scope (PMI, 2017).

One of the major sub-processes of the scope project planning is the development of the scope statement which is a written narrative of the goals, work, and outcomes of a project and it involves scope definition which is the process by which projects are defined and prepared for execution (Ngala, 2019; Reijndorp, 2019). Stakeholders' involvement in scope planning is a key aspect of project management and hence a need to organize workshops and interviews with the stakeholders to ensure thorough stakeholder involvement, and improve the collection of scope requirements and specifications (Orre, Ramadhani, & Yusuf, 2020 ). Project managers and decision-makers need to develop a well-defined project in a manner that reflects stakeholders' expectations, and accrues the benefits of their contributions, without compromising the purpose of the project (Matu, Kyalo, Mbugua, & Mulwa, 2020). These authors added that to ensure no project element that has been left out, all the stakeholders should be given enough time to come up with a proper and adequate project scope statements and definition. Well-defined projects tended to exhibit good project performance indicators, while those that were poorly defined tended to exhibit poor project performance indicators (Banda & Pretorius, 2016).

Once the project scope has been defined, the project activities are then decomposed into a small workable task which is termed as work breakdown structure-WBS. Scope management could be improved by connecting the WBS to roles and responsibilities in the project team and each work package contains the activities that must be executed along with the requirements, information, and identified risks (Ondiek, 2020). The main purpose of WBS in construction projects is decomposing the project into a hierarchical structure of construction activities and to determine the needed construction resources including labour, materials, equipment, and administration to deliver the project and determine each activity's and eventually the whole project's time, cost, and quality (Sutrisna, Ramanayaka, & Goulding, 2018). The WBS is an essential tool for project resource estimates; performance measurement and control; project responsibility assignments; schedule development & identification of project risks and stakeholder buy-in (Njau & Ogolla, 2017). The main aim of making WBS is to enable the planning and controlling costs, schedule and technical aspect of the project. Therefore WBS is done during the initial phase of project development. WBS-oriented deliverables ensure that the project benefits from the following; better communication between sponsors, stakeholders, and team members; More accurate estimates for jobs, risks, timelines, and costs; Increase confidence that the project has been 100% identified, and as the foundation for project control (PMI, 2013). The goal of creating a WBS is to create work packages that decrease the complexity of a project. These smaller work packages are easier to manage and execute (PMI, 2017).

### **Project Regulatory framework**

Project regulatory framework acts as an initiative of an external factor of project management whose conditions when are not under the control of the project team, influences constrain or directs the project's processes with either positive or negative influence on the outcome (PMI, 2017). Building regulation involves the registration of contractors, projects, skilled construction workers, construction site supervisors, training institutions, and provisions relating to the collection and payment of the construction levy (Chileshe, Njau, Kibichii, Macharia, & Kavishe, 2020). Building regulations approval is required for most building work in any given country (Pedo, Kabare, & Makori, 2017). The regulation does influence the implementation and performance of the project (Jebitok & Nzulwa, 2019).

The Government finds it necessary to identify the factors that promote and determine the future regulation process of the building and regulation process and associated standards and guidance for sustainable construction issues (Mwelu, Davis, Yongjian, & Watundu, 2018). Regulation of building construction in Kenya is done through a statutory authority known as the National Construction Authority (NCA), whose function is to establish and oversee the construction industry and coordinate its development. The NCA is mandated to encourage the standardization and improvement of construction techniques and materials, provide, promote, review and coordinate training programs (NCA, 2021). The National Environment Management Authority (NEMA) exercises general supervision and coordination over all matters relating to the environment and to be the principal instrument of Government in the implementation of all policies relating to the environment (Environmental Management and Coordination Act, 1999). NEMA has the primary responsibility of implementing environmental safeguards, although many actors have responsibilities including civil society, private consulting firms, development banks that finance infrastructure, and other government actors including local government and the court system (Onkangi, Nyakondo, Mwangi, Ondari, & Wachira, 2018). The role and

effectiveness of the EIA process is a growing subject of scholarly research (Gichamba & Kithinji, 2019). As a result, governments all over the world have developed environmental regulations to protect the environment (Musyoka & Field, 2018). As such, environmental challenges resulting from real estate projects include loss of biodiversity, depletion of natural resources like flora and fauna, improper waste management, and many more (Joseph, 2020)

Kimeria, Kising'u, & Oyoo, (2019) found that project regulatory framework, project planning, project team competency, and project cost management have a positive correlation with quality control of building construction in Kenya. They recommended that the project management team, corporate managers in public organizations, and private sectors have the responsibility of formulating amicable policies and structures that provides the basis for quality building construction. A similar study by Ogogo & Omwenga, (2019) found a significant and positive relationship between the moderating effects of government regulations on the performance of government construction projects in Kenya. The study concluded that Government regulations had a statistically significant moderation effect on the performance of government construction projects in Kenya.

### **Performance of Housing Projects**

The housing project performance can be assessed using numerous performance indicators that could be related to the following proportions: cost, time, client satisfaction, quality, health, and safety (Muute, 2019; Njogu, Namusonge, & Oluoch, 2018). The major performance measures applied by developers to examine the performance of housing projects including quality, cost, and time ( Momanyi & Kamau, 2020; Yang, Yu, & Zhu, 2020). Performance is the accomplishment of a given task or a project measured against preset known standards of accuracy, completeness, cost, and speed (Omondi, 2017). Project performance majorly measured by time, cost, and quality are influenced by success variables such as project team performance Project characteristics, procurement system, contractor characteristics, client characteristics, contractor characteristics, design team characteristics, and external condition (Lukale, 2018). Mwangi & Ngugi, (2020) argues that to determine the performance of the public project in Kenya, focus on; completion of the project on time, Project being completed on budgeted cost, the general satisfaction on the project performance, and if the Project scope was fully achieved.

The performance of the housing project is the major concern of the stakeholders and hence adequate planning is considered as the major aspect in achieving it (Yang, Yu, & Zhu 2020). The performance of the housing construction projects in Kenya is poor as a result of inadequate planning as most projects experience time delays and cost overrun as well as quality issues (Kinuthia & Muchelule, 2021). Key performance challenges facing housing projects include but not limited to; project taking more materials than the planned for, increased complaints by owners to contractors, escalating cases of houses collapsing, increased cost and time overruns as well as increased numbers of housing projects earmarked by NEMA and NCA for demolition (Gichamba & Kithinji, 2019).

### **2.4 Empirical Review**

David, Amuhaya, & Wanjala, (2020) confirmed that project scope management, project time project cost management, and project quality management are positively and significantly correlated to project performance. Akhwaba, et al., (2020) agree that project scope has a positive and significant influence on the performance of infrastructural projects. Ngala, (2019) in his study affirmed that scope changes affect completion time among road construction projects The study further revealed that a clear project scope enables the project team to realize the actual size of the work and generates an understanding of the achievements that are required in the project. Woldie, (2016) argues that scope planning is the major project management area that determines the success of any given project. Reijndorp, (2019) found that scope planning could be improved by connecting the work breakdown structure (WBS) to roles and responsibilities in the project team. Studies by Njau&Ogolla, (2017); Sutrisna, Ramanayaka, & Goulding, (2018) WBS is an essential tool for project resource estimates, performance measurement, project responsibility assignment, and schedule development. Further, Mwinzi& Moronge, (2018) study affirmed that project scope management, project time project cost management, project quality management does influence performance.

Amuyunzu & Kisimbii, (2020) in their study found out that financial regulations, construction standards, and codes, and competence of the project team had a significant positive influence on the implementation of public infrastructure projects whereas environmental regulations and county government licensing exhibited a negative influence on the implementation of public infrastructure projects. Gichamba & Kithinji (2019) affirms that water regulations, waste management regulations, noise and vibrations regulations, and physical planning influences the performance of construction projects. Ogogo, Omwenga, & Nyangau, (2019) in their study agrees that Government Regulations have Moderating Effect on the Performance of Government Construction Projects

in Kenya. The study further concluded that Government regulations had a statistically significant moderation effect on the performance of government construction projects in Kenya.

### 3. Research Methodology

The study was guided by positivistic research philosophy which holds the view that reality is stable and can be observed and explained from an objective point of view (Flick, 2018). The study used a descriptive research design to help the study gather both quantitative and qualitative data on planning activities currently employed by project team members in the Nairobi metropolitan area and the performance rate of housing projects (Creswell, 2014). The target population of interest of this study were the staff working with the housing construction firms within Nairobi Metropolitan. This consisted of strategic partners registered to undertake projects for the housing program year 2018-2022 cycle totaling 135 projects (GOK 2020). The project team members as listed by GoK (2020) 2018-2022 project cycle are the project managers; engineers; architects; contractors; and the site supervisors. These project team members formed the study's target population picked from the 135 projects totaling 675. Using Yamane sample size determination (Yamane, 1967, p. 886) the sample size obtained was 251. To collect both quantitative and qualitative data for the study, the researcher used structured questionnaires. The association between study constructs was determined by computing inferential statistics. Inferential analysis helps a study to determine the relationships that exist between variables, the type of associations, as well as the level of significance of the associations. This study calculated Pearson Moment Correlation, multiple regression analysis, ANOVA and Beta Coefficients.

### 4. Results analysis and Discussions

The paper examined the influence of project scope planning and the moderation influence of project regulatory framework on performance of housing projects in Kenya. The results analysis and discussions are as shown below.

#### 4.1 Descriptive Project Scope planning on performance of housing Projects

Descriptive statistics on the influence of project regulatory framework on the performance of housing projects are as displayed in Table 1. Likert scale, mean and standard deviation were employed to measure levels of agreement.

Table 1: Project Scope Planning on performance of housing Projects

Statements	SD	D	NAD	A	SA	Mean	StD
Definition of project scope helps in identifying major project work components, deliverables, and requirements	8.1%	4.3%	6.3%	54.8%	26.5%	4.43	1.033
The practice of project scope planning is key in management practices for planning and delivering project successfully	7.4%	10.0%	11.7%	47.8%	23.0%	4.19	.956
Creating a document that describes all of the work the team does enhance performance	4.0%	8.1%	9.6%	42.2%	36.1%	4.39	1.063
Involving all the stakeholders in scope definition enhances the performance of projects	6.5%	10.9%	7.0%	43.5%	32.2%	3.73	.987
Decomposing work into smaller tasks allows accurate estimation of time, cost, and resource requirements	10.0%	6.1%	13.0%	50.9%	20.0%	3.95	1.084
Scope verification helps to defines how project work will be confirmed and ultimately accepted by the client	3.0%	3.9%	3.1.0%	47.8%	42.2%	4.64	.869
Work packages make it be easy to assign task to one person or a team of people, with clear accountability and responsibility for completion of the assignment	10.0%	47.4%	13.0%	19.6%	10.0%	3.26	1.053
Estimating a mechanism for controlling project scope is critical to project success	9.1%	6.5%	10.9%	47.4%	26.1%	4.35	1.197

From the findings, majority 81.3 % of the respondents agreed that definition of project scope helps in identifying major project work components, deliverables, and requirements. 12.4% disagreed while 6.3% neither agree nor disagree with the statement (M=4.43; Std.D=1.033). Majority 70.8 % of the respondents agreed that the practice of project scope planning is key in management practices for planning and delivering project successfully, 17.4 % and 11.7% couldn't give a clear opinion (M=4.19; StD=0.956). On creating a document that describes all of the work the team does enhances performance, majority of the respondents 78.3% agreed, 12.1 % disagreed, while 9.6% were indecisive (M=4.39; StD=1.063). To stakeholders' involvement, most 47 % of the respondents agreed that involving all the stakeholders in scope definition enhances the performance of projects, 32.2 % strongly agreed, 10.9 % disagreed, 6.5 % strongly disagreed, while 7 % neither nor agreed with the statement. On the work decomposition, majority 50.9 % of the respondent agreed that the decomposing work into smaller tasks allows accurate estimation of time, cost, and resource requirements, 10 % strongly agreed, 6.1 % disagreed, 10 % strongly disagreed, while 23 % neither nor agreed with the statement(M=3.73; StD=0.987). On the statement: work packages make it be easy to assign task to one person or a team of people, with clear accountability and responsibility for completion of the assignment, majority, 57.4% disagreed, 29.6% agreed while 13% neither agreed nor disagreed(M=3.26; StD=1.053). To Scope verification, majority of the respondent 90 % were in agreement that conducting scope verification helps to defines how project work was confirmed and ultimately accepted by the client, the number that disagreed was relatively small 10%(M=4.64; StD=0.869). On whether estimating a mechanism for controlling project scope is critical to project success, majority of the respondents 73.3% were in agreement, 14.6% were on centrally opinion while 10.9% were not decided(M=4.35; StD=1.197).

From the findings it is clear that scope definition, practice, stakeholder's involvement and work decomposition are the main aspects of Project scope planning that influence performance of housing projects in Kenya. The finding concurs with that of Achar, Chebii, & Nugo(2021) that outlining the scope of work necessitates delivery of housing projects within the budget and schedule.

#### 4.2 Descriptive statistics of Project Regulatory Framework and performance of housing Projects

Descriptive statistics on the influence of project regulatory framework on the performance of housing projects are as displayed in Table 2.

Table 2: Project Regulatory framework and performance of Housing Projects

Statement	SD	D	NAD	A	SA	Mean	Std. D
National Construction Authority regularly publishes and enforces the code of conduct for the building contractors in Kenya	1.5%	6.5%	0.2%	36.5%	55.2%	4.07	1.048
National Construction Authority coordinates the construction industry players	13.5%	9.6%	5.2%	29.1%	42.6%	3.87	1.117
NEMA proposes and enforces effective mitigation measures for significant negative impacts of building construction projects	5.2%	7.4%	12.6%	45.2%	29.6%	3.73	.983
NEMA effectively implements environmental policies	11.7%	13.5%	21.3%	44.3%	9.1%	3.66	1.163
County Government building and licensing department issues construction and occupation permits on time	6.1%	7.0%	8.7%	51.3%	27.0%	4.50	.966
County Government has the adequate institutional capacity to enforce the building construction regulations	9.1%	9.1%	7.0 %	25.7%	49.1%	4.36	1.051

From the findings, majority 55.2 % of the respondents strongly agreed that National Construction Authority (NCA) regularly publishes and enforces the code of conduct for the building contractors in Kenya, 36.5 % agreed, 6.5% disagreed, 1.5% strongly disagreed with the rest did not agree nor disagree with the statement (M=4.07; StD=1.048). On NCA coordination, majority 42.6 % of the respondents strongly agreed that NCA coordinates the construction industry players and hence influences the quality of housing projects, 29.1 % agreed, and 13.5 % strongly disagreed, 9.6 % disagreed, while 5.2 % were neither agreed nor disagreed with the statement(M=3.87; StD=1.117). On mitigation measures, majority 45.2 % of the respondents agreed that NEMA proposes and enforces effective mitigation measures for significant negative impacts of building construction projects, 29.6 % strongly agreed, 7.4 % disagreed, 5.2 % strongly disagreed, while 12.6 % neither nor agreed with the statement(M=3.73; StD=0.987). On implements environmental policies, majority 44.3 % of the

respondents agreed that NEMA effectively implements environmental policies, 9.1 % strongly agreed, 13.5 % disagreed, 11.7 % strongly disagreed, while 21.3 % neither nor agreed with the statement(M=3.66; StD=1.163). On licenses and permits, majority 51.3 % agreed that County Government building and licensing department issues construction and occupation permits on time, 6.1 % strongly agreed, 8.7 % neither agree nor disagree, 7.0 % disagreed and 9.6 % strongly disagreed with the statement(M=4.50; StD=0.966). On the institutional capacity, majority 49.1% strongly agreed that County Government has the adequate institutional capacity to enforce the building construction regulations, 25.7 % agreed, 7.0 % neither agree nor disagree, 7.0 % disagreed and 9.1 % strongly disagreed with the statement(M=4.36; St.D=1.051).

From the findings it is clear that National Construction Authority (NCA) regulations and coordination, NEMA licenses and permit as well as county government regulations are the main aspects of Project regulatory framework that influence performance of housing projects in Kenya. The study results are supported by Ogogo, Omwenga, & Nyangau, (2019) who found a significant and positive relationship between the moderating effects of government regulations on the performance of government construction projects in Kenya. The study concluded that Government regulations had a statistically significant moderation effect on the performance of government construction projects in Kenya

#### 4.3 Descriptive statistics of Project Performance of Affordable housing projects

The Table 3 summarizes the respondents' level of agreement on whether project planning influences the performance of affordable housing projects. The data was represented using frequency and percentage. From the findings, majority 47.6 % of the respondents agreed that ensuring the project is completed within the stipulated budget is key for success of a project, 36.7 % strongly agreed, 10.5 % disagreed, 6.4 % strongly disagreed and 6.8 % neither agreed nor disagreed with the statement(M=4.39; SD=1.079). On budget, 47.6 % of the respondents agreed that ensuring the project is completed within the stipulated budget is key for success of a project, 36.7 % strongly agreed, 10.5 disagreed, 2.4 % strongly disagreed and 2.8 % neither agreed nor disagreed with the statement (M=4.36; SD=0.982).

Table 3: Project Performance

Statement	SD	D	NAD	A	SA	Mean	Std. D
Ensuring the project is completed within the stipulated timeline is key for success of a project	6.4%	10.5%	6.8%	43.6%	32.7%	4.39	1.079
Ensuring the project is completed within the stipulated budget is key for success of a project	2.4%	10.5%	2.8%	47.6%	36.7%	4.36	.982
Projects are delivered ensuring the right quality as agreed by stake holders.	10.0 %	6.4%	5.0%	28.2%	50.5%	4.35	1.091
We ensure project meets the clients satisfaction coupled with pleasant aesthetic value.	6.8%	12.3%	17.3%	52.7%	10.9%	4.37	.933

From the findings, majority 45.2 % of the respondents strongly disagreed that Projects are delivered ensuring the right quality as agreed by stakeholders, 37.0 % disagreed, 10.4 disagreed, and 1.3 % neither agreed nor disagreed, 6.5 % agreed while 10 % strongly disagreed with the statement (M=4.35; SD=1.091). On quality, majority of the respondents 50.5 % strongly agreed that projects are delivered ensuring the right quality as agreed by stake holders. 28.2 % agreed, 5.0 % neither agree nor disagreed, 6.4 % disagreed and 10.0 % strongly disagreed with the statement (M=4.39; SD=1.079). The findings also showed that a majority of respondents 52.7 % agreed that they ensured that project meets the clients satisfaction coupled with pleasant aesthetic value, 10.9 % agreed, 12.3 % disagreed, and 17.3 % neither nor agreed with the statement (M=4.37;

SD=0.933). From the findings it is clearly agreed with a Mean above 4 that project timeline, budget planning, quality management and stakeholder’s satisfaction the main aspects of Project performance indicators that influence performance of affordable housing projects in Kenya.

**4.4 Correlation Analysis**

The research established interconnectivity of the variables, under study namely: Project Team planning, Project scope planning, Project regulatory framework against Project performance. To compute the correlation (strength) between the study variables and their findings the researcher used the Karl Pearson’s coefficient of correlation (r) as shown in table 4.

Table 4: Correlation analysis

Variables		Project Performance	Scope planning	Regulatory framework
Project performance	Pearson Correlation	1		
	Sig. (2-tailed)	0.000		
	N	220		
Project Scope planning	Pearson Correlation	.402**	1	
	Sig. (2-tailed)	0.000		
	N	220	220	
Project Regulatory Framework	Pearson Correlation	0.561	.146**	1
	Sig. (2-tailed)	0.000	0.000	
	N	220	220	220

From the findings in Table 4, the study also established that project Scope planning has a moderate positive significant relationship with performance of housing projects in Kenya (r=0.402, p=0.000). The relationship between these two variables was significant as indicated by p-value (0.000) which was less than the selected level of significance (0.05). The study agrees with the findings of Woldie, (2016) who argues that scope planning is the major project management area that determines the success of any given project. Further, regulatory framework was also seen to have a positive and significant relationship with housing projects (r=0.561, p=0.000). The relationship was considered significant since the p-value obtained (0.000) was less than the selected level of significance (0.05). This study agree the findings of Ogogo, Omwenga, & Nyangau, (2019) that Government Regulations have Moderating Effect on the Performance of Government Construction Projects in Kenya.

**4.5 Regression between project scope planning and Performance**

Linear regression was used to test the relationship between of project scope planning and performance of housing Projects. The results from the Table 5 below shows that the R<sup>2</sup> for the regression model between project scope planning and performance of housing Projects was 0.458 meaning that project scope planning explained 45.8% variation in the project performance while the remaining variation is explained by the error term

Table 5 Model Summary for project scope planning and performance of housing Projects.

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.402a	.458	.443	.70428

a. Predictors: (Constant), Project Scope Planning\*Project Regulatory Framework.

To determine whether the model is significant and shows the good fit for the data, the study used analysis of variance. The significance of the model was tested at 5% level of significance. The results in Table 6 indicate that the model was significant since the p-value (0.000) was less than 0.05.

Table 6: ANOVA for project Scope planning and performance of housing Projects

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	20.808	1	20.808	41.951	.000 <sup>p</sup>
	Residual	108.129	218	.496		
	Total	128.937	219			

a. Dependent Variable: Project Performance

b. Predictors: (Constant), Project Scope Planning

Therefore, the model was statistically significant in determining the influence of Project Scope planning on Project performance on housing projects in Kenya. Further, the regression model was a good fit as indicated by a significant F-statistic ( $F=41.951, p<0.05$ ). The regression model obtained from the output was; **Project**

**Performance = 1.996 + 0.415 project scope planning + error.**

The standardized regression coefficient for project scope planning and performance of housing Projects was 0.402 as shown in Table 7. This indicates that a unit increase in the project scope planning would result in 40.2 % increase in the performance of housing Projects. The t-statistic for the regression coefficient for project scope planning was significant at 5% level of significance ( $T=6.477, p<0.05$ ) implying rejection of null hypothesis. On the basis of these statistics, the study concludes that there is significant positive relationship between project scope planning and performance of housing Projects

Table 7: Beta Coefficients for project scope planning and performance of housing Projects

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
		1	(Constant)	1.996		
	Project Scope Planning	.407	.063	.402	6.477	.000

a. Dependent Variable: Project Performance

From the findings in the table 6:  $Y = 1.996 + 0.407X_1$

Where: Y is the dependent variable, performance of housing projects in Kenya

$X_1$  = Project Scope Planning

#### 4.6 Moderating role of Project Regulatory Framework

The second objective of the study was to establish the moderating role of project regulatory framework on the relationship between project scope planning and performance of housing projects in Kenya. The independent variable was interacted by project regulatory framework to give composite variables which were regressed against project performance. The results in the table 8 on the summary of moderated model shows that the R squared after moderation was 0.740. This implies that project regulatory framework moderates the relationship between project scope planning and performance of housing projects in Kenya and explains 74% of the variations in performance.

Table 8: Model Summary of moderating role of Project Regulatory framework

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.764a	.740	.738	.27717

a. Predictors: (Constant), Project Scope Planning\*Project Regulatory Framework.

The results of ANOVA on moderation of project regulatory framework as shown in table indicates p-values were less than the selected level of significance (0.05) implying that the model was significant and could be used to predict performance of housing projects in Kenya. The findings also show that the F-calculated value (188.769) is greater than the F-critical value (2.62) supporting the significance of the model concluding that there was goodness of fit

Table 8: Moderated ANOVA

Model	Sum of Squares	df	Mean Square	F	Sig.
Regression	118.220	5	23.644	188.769	.000 <sup>c</sup>
Residual	26.804	214	.125		
Total	145.024	219			

a. Dependent Variable: Housing Performance

b. Predictors: (Constant), , Project scope planning\* Regulatory framework,

### Moderated Coefficient

The results in Table 9 indicates the regression coefficients after moderation. The findings showed that Project scope planning\*Regulatory framework (M), had significant influence on Housing Performance in Kenya ( $\beta=.778$ ,  $p=0.000$ ).The influence was significant since the p-value was less than selected level of significance (0.05). The study therefore shows that that Project Regulatory framework have a significant moderating effect on the relationship between Project scope planning and Housing project Performance in Kenya.

Table 9: Moderated Coefficient

Model	Unstandardized Coefficients		Standardized Coefficients	t	Sig.
	B	Std. Error			
(Constant)	1.234	.138		.143	.002
Project Scope Planning*M	.778	.071	.703	10.978	.000

a. Dependent Variable: Performance of Housing projects

### The moderated model:

$$Y = 1.234 + 0.778X_1 * M$$

Where: Y is the dependent variable, performance of housing projects in Kenya

$X_1$  =Project Scope Planning

M=Project Regulation framework

## 5. Conclusions and Recommendations

### 5.1 Conclusion

The study concluded that Project scope planning is crucial for the successful performance of housing projects in Kenya. Project scope planning provides clarity, enables efficient resource allocation, helps manage costs and time, and enhances stakeholder satisfaction. By establishing a well-defined scope, construction projects can be executed more effectively, minimizing risks and maximizing the chances of success. Further the study concluded that project regulatory framework guiding the construction projects in Kenya greatly influence the implementation and performance of the projects. By operating within the regulatory framework, housing projects can achieve higher standards of safety, quality, and sustainability, leading to improved overall performance.

### 5.2 Recommendation

The study suggests that in order to plan the project scope effectively, it is important to establish a concise and well-defined project scope. This clarity enables the project organization to accurately comprehend the scale of the work involved and develop a clear understanding of the project's objectives. The study also recommends engagement of relevant stakeholders in project scope planning. Collaboration and communication with stakeholders ensures that their needs are considered in defining the project scope. The study recommends adherence to project regulatory framework not only for legal and statutory requirements but also for quality and sustainability of projects.

### Reference

- [1]. Achar, M., Chebii, P., & Nugo, J. (2021). The Role of Communication Channels on Implementation of Housing Construction Projects in Nairobi County, Kenya. *African Journal of Education, Science and Technology*, 6(3).

- [2]. Akhwaba, J. K., & Keiyoro, P. (2020). Project Scope and Execution of Fibre Optic Infrastructure. *International Journal of Construction Project Management*, 12(1), 3-16.
- [3]. Alias, Z., Zawawi, E. M., Yusof, K., & Aris, N. M. (2014). Determining critical success Factors of project management practice: A conceptual framework. *Procedia-Social and Behavioral Sciences*, 153, 61-69.
- [4]. Banda, R. K., & Pretorius, L. (2016). The effect of scope definition on infrastructure projects: A Case in Malawi's public and private implementing agencies. *South African Journal of Industrial Engineering*, , 27(4), 203-214.
- [5]. Chileshe, N., Njau, C. W., Kibichii, B. K., Macharia, L. N., & Kavishe, N. (2020). Critical success factors for Public-Private Partnership (PPP) infrastructure and housing projects in Kenya. *International Journal of Construction Management*, 1-12.
- [6]. Creswell, J. W. (2014). *Research Design: Qualitative, Quantitative and Mixed Methods Approaches (4th ed.)*. Thousand Oaks, CA: Sage.
- [7]. Das, D., & Ngacho, C. (2017). Critical success factors influencing the performance of development projects: An empirical study of Constituency Development Fund projects in Kenya. *IIMB management review*, 29(4), 276-293.
- [8]. David, M. O., Amuhaya, I. M., & Wanjala, M. Y. (2020). Moderating Role of Community Participation on Performance of Affordable Housing Program in Kenya. *Global Journal of Management and Business Research*.
- [9]. Dokata, R. (2017). Factors influencing building construction projects costs management in Commercial real estate in Nairobi County, Kenya . *Doctoral dissertation*. University of Nairobi.
- [10]. Gardner, David; Lockwood, Keith ;Piennar, Jacus; Maina, Miriam. (2019). *Assessing Kenya's Affordable Housing*. Johannesburg: Centre For Affordable Housing Finance In Africa.
- [11]. Gichamba, S., & Kithinji, C. (2019). Influence of environmental regulations in the performance of construction projects in Nairobi County, Kenya. *International Academic Journal of Information Sciences and Project Management*, 3(4), 184-209.
- [12]. Giti, D. M., K'Akumu, O. A., & Ondieki, E. O. (2020). Enhanced role of private sector through public private partnerships in low income urban housing in Kenya. *Journal of Financial Management of Property and Construction*.
- [13]. GOK. (2018). *Sector Plan for Population, Urbanization and Housing; Miedium Term Plan III, 2018-2022*. Nairobi: Government Press.
- [14]. GOK. (2020). *How to Register and Apply for Affordable Housing*. Retrieved from State Department Of Housing and Urban Development: [www.Bomanyangu.go.ke](http://www.Bomanyangu.go.ke)
- [15]. Gurhan, I. M., & Nyang'au, P. (2020). Effect of Project Management Constraints On Implementation of Public Housing Projects in Isiolo County, Kenya. *Journal of social. Science. Management & entrepreneurship*, 4(1), 247-267.
- [16]. Jebitok, N., & Nzulwa, D. J. (2019). Critical Factors Influencing Implementation of Road Projects. *Journal of Entrepreneurship and Project Management*, 4(2), 1-22.
- [17]. Kerzner, H. (2019). *Using the project management maturity model: strategic planning for project Management*. John Wiley & Sons.
- [18]. Kieti, R. (2020). Affordable Housing in Kenya. *African Habitat Review*, 14(1), 1677-1687.
- [19]. Kimeria, N. W., Kising'u, T. M., & Oyoo, J. J. (2019). Effect of project management practices on Quality control of building construction in Nairobi County. *International Journal of Social Sciences and Information Technology*, 6(11), 33-46.
- [20]. Kinuthia, K. K., & Muchelule, D. Y. (2021). Influence of Internal Management Competencies on Performance of Commercial Housing Projects in Kiambu County,. *Journal of Entrepreneurship and Project Management*, 6(1), 1-23.
- [21]. Makokha, E. (2020). Influence of Project Planning Practices on Performance of Projects in Kenya. *International Journal of Social Sciences and Information Technnology*, V(V).
- [22]. Matu, J., Kyalo, D. N., Mbugua, J., & Mulwa, A. S. (2020). Stakeholder participation in project initiation: a foundation to completion of Urban road transport infrastructure projects, Kenya. *Journal of Civil, Construction and Environmental Engineering*, 5(1), 11.
- [23]. Momanyi, M., & Sang, P. (2019). Project constraints influencing the construction of residential housing projects in urban centers in Kenya: A study of National Housing Corporation. *International Academic Journal of Information Sciences and Project Management*, 3(5), 165-183.
- [24]. Momanyi, T. N., & Kamau, L. N. (2020). Influence of Contractors Management Practices on Performance of Housing Construction Projects in Kisii County, Kenya.

- [25]. Musyoka, D., & Field, R. M. (2018). Review of the environmental oversight framework in Kenya, in light of a nuclear power programme. *Progress in Nuclear Energy*, 108, 89-98.
- [26]. Muute, N. (2019). Project Planning Practices and Performance of Construction Projects in Nairobi City County. *Doctoral Dissertation*. Kenyatta University.
- [27]. Mwangi, M. P., & Ngugi, L. (2020). Project Management Practices And Performance Of The Public Projects In Mombasa County, Kenya. *International Journal of Advanced Research and Review*, 5(11), 24-42.
- [28]. Mwanza, P., Namusonge, G. S., & Makokha, E. N. (2020). Influence of Project Planning of Construction Projects in Kenya. *International Journal of Social Sciences and Informaton Technology* .
- [29]. Mwelu, N., Davis, P. R., Yongjian, K., & Watundu, S. (2018). Compliance within a regulatory framework in implementing public road construction projects. *Construction Economics and Building*, 18(4), 1-23.
- [30]. NCA. (2021). *Report of registered contractors*. Nairobi. Retrieved May 30, 2021, from [www.nca.go.ke/index.php/contractors](http://www.nca.go.ke/index.php/contractors)
- [31]. Ngala, G. K. (2019). Effect of scope changes on project completion among road construction Projects in Nairobi County: a case of Lang'ata Sub County . *Doctoral dissertation*. Africa Nazarene University.
- [32]. Njang'iru, A. M., Muhoho, J., & Abayo, R. (2020). Influence of quality management on cost Performance of construction projects: A case of lifts and escalator companies, Kenya. *International Academic Journal of Information Sciences and Project Management*, 3(6), 84-99.
- [33]. Njau, D., & Ogolla, P. (2017). Factors influencing Project scope performance; A case of Kenya National Youth Service Projects in Kenya. *Strategic Journal of Business and Change Management*, 4(2), 207-220.
- [34]. Njogu, C., Namusonge, G., & Oluoch, O. (2018). Influence of Project Planning on the Performance of Community Based HIV Projects in Kiambu, Kenya. *Journal of Developing Country Schedules*, 3(1), 77-95.
- [35]. Odhiambo, O. W., Cheruiyot, D. C., & Winja, M. M. (2022). Impact of Regulatory Framework on Performance of Building Construction Processes In Kenya. A Case Study of Murang'a County. *International Journal Of Engineering Research & Technology (IJERT)*, 11(09).
- [36]. Ogogo, D., & Omwenga, J. N. (2019). Influence of the Moderating Effect of Government Regulations on Performance of Government Construction Projects in Kenya. *The international journal of humanities & social studies issn* , 2321 - 9203.
- [37]. Omondi, E. F. (2017). Influence of Triple Constraint Management on Completion of Non-Governmental Organizations Water Sanitation and Hygiene (Wash) Projects in Nakuru County, Kenya. University of Nairobi.
- [38]. Ondiek, F. B. (2020). Influence Of Project Planning On Road Construction Projects Performance In Uasin Gishu County, Kenya. *Doctoral Dissertation*. JKUA-COHRED}.
- [39]. Onkangi, N. R., Nyakondo, N. S., Mwangi, P., Ondari, L., & Wachira, B. (2018). Environmental Management systems in construction projects in Kenya: Barriers, drivers, adoption levels. Rwanda. *Journal of Engineering, Science, Technology and Environment*, 1(1).
- [40]. Orre, F., Ramadhani, A. C., & Yusuf, M. (2020 ). Role Of Stakeholders On Project Performance Of Kenya Power And Lighting Company Last Mile Connectivity Project In Embu County, Kenya. *Masters Dissertation*. Jomo Kenyatta University of Agriculture and Technology.
- [41]. Osanloo, A., & Grant, C. (2016). Understanding, selecting, and integrating a theoretical framework in dissertation research: Creating the blueprint for your "house". *Administrative issues journal: connecting education, practice, and research*, 4(2), 7.
- [42]. Pedo, M. O., Kabare, K., & Makori, M. (2017). Effect of Regulatory Frameworks on the Performance of Public Private Partnerships Road Projects in Kenya. *The Strategic Journal of Business & Change Management*, 5(2), 850 – 868.
- [43]. PMI. (2017). *A Guide to the project Management Body of Knowledge(PMBOK) 6th ed*. Newtown Square : PA.
- [44]. PMI. (2019). *A Guide to the Project Management Body of Knowledge (PMBOK(R) Guide-Sixth Edition / Agile Practice Guide Bundle*. Project Management Institute.
- [45]. Ronoh, D. K. (2020). Project Management Practices And Performance Of Residential Construction Projects In Nairobi City County, Kenya. *Thesis*. Kenyatta University.
- [46]. Sutrisna, M., Ramanayaka, C. D., & Goulding, J. S. (2018). Developing work breakdown Structure matrix for managing offsite construction projects. *Architectural engineering and design management*, 14(5), 381-397.

- [47]. Tuyishime, A. 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.
- [48]. Yamane, T. (1967). *Statistics: An Introductory Analysis. 2nd Edition*. New York: Harper and Row.
- [49]. Yang, X., Yu, M., & Zhu, F. (2020). Impact of Project Planning on Knowledge Integration in Knowledge Construction. *Journal of Construction Engineering and Managemnt*, 147(7), 40-66.