

# **PROJECT CONSTRAINTS INFLUENCING THE CONSTRUCTION OF RESIDENTIAL HOUSING PROJECTS IN URBAN CENTERS IN KENYA: A STUDY OF NATIONAL HOUSING CORPORATION**

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## **ABSTRACT**

This project seeks to examine the constraints that affect the construction of residential housing projects in urban centers in Kenya with a focus on the National Housing Corporation. The project's interest is on project risks, project resources, project leadership and project stakeholders. A descriptive research design is settled on for the project. A study population comprising of 209 employees of the National Housing Corporation in Nairobi is used to reference information and statistics upon which the project's main interest areas are written on. Further, the study selected a sample of 63 respondents using simple random sampling and questionnaires to collect primary data. The data collection methods were self-administered to the sampled respondents. Techniques such as the inferential and descriptive statistical methods were substantially applied in analyzing the collected data. Descriptive statistics is applied in summarizing the data collected using standard deviation, mean, percentages, and frequencies. Inferential statistics involves the regression model, which was applied in determining the link between the dependent variables and the independent

variables. The findings of the study reveals that there is a negative and significant relationship between project risks and construction of residential housing projects in urban centers. The results however reveal that project resources have a negative and insignificant relationship with the construction of residential housing projects in urban centers. Further, the findings show that there is a negative relationship between project leadership and the construction of residential housing projects in urban centers. Finally, according to the results, the relationship between project stakeholders and the construction of residential housing projects in urban centers is positive and statistically significant. The study concludes that project risks, project leadership and project stakeholders significantly affect the construction of residential housing projects in urban centers. The study recommends that the management of construction of housing projects ought to come up with effective project management strategies to mitigate the various risks that negatively manifests in projects.

**Key Words:** *project constraints, construction, residential housing projects, urban centers, National Housing Corporation, Kenya*

## **INTRODUCTION**

Housing is globally recognized as the main important human necessity after food while it is viewed as a crucial asset of the economy in every country. Housing is vital to any national growth and socio cultural development in the human civilization (Jiboye, 2014). In that regard, governments ought to do more in enhancing housing accessing to all income demographics. Housing is technically more than the mere shelter including the amenities and facilities around humans that makes them live comfortable (Dabara et al., 2016). The housing sector is a strategic

business to the state economy in providence of shelter and infrastructure as a supplementary to other economic activities. The housing construction sector is a major segment of the state economy for nations globally, as by tradition it greatly impacts on the country's total employment and its major contribution to a country's revenue in general (Chigara & Moyo, 2014). Housing sector creates employment through construction activities.

Housing is an integral need for proper social and economic comfort. Housing is well known as an aspect for the valuation of societal civilization and human growth (Parmar, Bhavsar & Jayeshkumar, 2016). The housing sector development can have direct influence on the generation of employment, growth of GDP and the pattern of economic consumption (Singh, Kumar & Prasad, 2014). Not only does Housing contribute to the mental and physical growth of man, but also it contributes to the growth of human morals and culture (Warsame, 2016). Generally, housing deeply impacts on an extensive aspect of community and family life and welfare. Housing greatly influences national development (Jiboye, 2014). It does so by influencing economic factors such as mortgage rates.

The construction industry thus plays a significant role in socio-economic growth as it offers the center where the housing and other sectors can develop by building the physical facilities necessary for the manufacture and distribution of commodities/products (Kanda et al., 2016). The industry performance and its influence on the society's welfare as compared to other industries like the manufacturing industry has recently been on the limelight of numerous academic research publications and commissioned reports (Warsame, 2016). However, the building industry is always in change, complex and unique naturally. The divergent client necessities, differing views of designers, and various surroundings and sites on the top solution of design is transforming each building or facility nature to be dynamic (Adenuga, 2013). The differing necessities among clients inevitably contribute to varying costs of housing construction.

Houses require land upon which they rest on. Internationally, residential properties comprise of the biggest usage of land in the urban regions (Zhao, Mbachu & Domingo, 2017). The properties can be known as property comprising of either a multifamily or a single family structure, existing for dwelling purposes occupation but not for purposes of business (Cunningham, 2013). Residential houses are categorized to include flats, maisonnetes, bungalows and town houses (Parmar, Bhavsar & Jayeshkumar, 2016). The sector of residential real estate offers a lot to the development of capital markets, to employment and to the financial sector development (Cunningham, 2013). However, the housing demand is gradually being influenced by households and individuals provided high prosperity and income levels (Singh, Kumar & Prasad, 2014). That is the case because income and prosperity levels have a direct influence on house ownership outcomes.

Different parts of the world have made different levels of progress regarding housing availability and quality. Presently, the west has made major advancements in giving solution to its housing problems though; the setting up of appropriate housing becomes a major problem (Abdul-Kadir

et al., 2015). Housing shortage is a major problem turning into a lasting feature in several developing countries in Africa, Latin America and Asia. The challenge has been aggravated by immigration to urban regions with regard for greener pastures and high population growth rates (Adenuga, 2013). Aliyu, Kasim, and Martin (2011) posit that among the biggest challenges worldwide presently is that of housing provision. Housing must be always satisfactory for the population and also habitable.

Africa badly ranks on outcomes that influence housing availability. In Africa, further than affordability, shelter has constantly been an issue to debate about globally whereas it is regularly divided into the informal-built and the formal-built forms (Arvanitis, 2013). Several countries in Africa have faced a vast urban population increase in the last 5 decades (Kvarnström, 2014). As such, Yusuf and Odeyinka (2010) posit that seven of the ten project execution schemes surveyed in Nigeria suffered delays.

Housing construction projects seem not to proceed as they are planned. The failure of most housing construction projects has been cited as one of the major contributor of the severe widespread housing challenge that has raised both international and national concerns over the years (Auma, 2014). According to Akanni, Oke, and Akpomimie (2015) the performance problems of construction projects in emerging economies is categorized into three divisions as; problems of inadequacies or scarcity in industry infrastructure (majorly in resource supplies), consultants and clients' problems and contractor incompetence problems. In addition, competent project team, support communication, top level authority, top management, involvement of client, risk management, problem solving abilities, controlling/planning, sufficient resources, monitor performance and fast response. Further, common goal/project mission, and ownership of project are major factor affecting project completion in developing countries (Bakar et al., 2009). The factors need to be properly integrated to guarantee acceptable housing transaction rates.

Housing construction can be undertaken both by private and private sector. In Kenya, residential houses are given by the private sector, private public partnerships or by the government (Githenya & Ngugi, 2014). The Kenyan housing market is categorized by an enduring scarcity of formal housing and a vast demand. Since 2012, the population growth of Kenya is projected at 4.2% p.a. giving reference to the annual housing demand upsurge which is of 206 000 units per annum whereby 82 000 are in urban regions (Arvanitis, 2013). The housing supply and demand niche endures in Kenya. The housing demand estimation in urban regions is roughly 150,000 units annually whereas the existing supply is approximately 30,000 units (Githenya & Ngugi, 2014). Housing shortage is demonstrated by congestion and overfilling in squatter settlements and slums in urban regions and peri-urban regions (Matindi, 2009). Some parts of the population move to informal settings where housing units are cheap to avoid high property prices in some areas.

Housing seems to be underdeveloped in Kenya. Kenya has seen a noteworthy rise in the quantity of delayed projects because of futile leadership and unsuitable organization structures (Vuluku &

Gachanja, 2014). Statistics however indicate that the construction project performance in the country is deprived as cost and time project performance are to the degree of over 70% of the schemes (Matindi, 2009). Most of the initiated projects are expected to intensify progressively with time over a 50% and above magnitude and half of the projects are expected to cost intensify with a 20% and above magnitude (Auma, 2014). The construction industry in Kenya faces risk because of its complex status and advancements in technology. It also requires vast capital amounts, kept in track by volatility and large scale in projects, which is a challenge to many engineering firms in Kenya (Auma, 2014). Thus, the need to investigate the causes of construction of residential building projects in urban centers in Kenya.

## **STATEMENT OF THE PROBLEM**

The building industry is among the major activities in the economy that motivates the growth of an economy. The industry however has been branded unique in itself because of the rising technology qualms, processes of development, and budgets (Omran, Abdulbagei & Gebriil, 2012). Recently, construction schemes have become more integrated and complex in terms of management techniques and tools, which is challenge to most countries especially in developing nations. For instance, Al-Hejji and Assaf (2009) posit that only 30% of housing projects construction is finalized within the timed limit while the normal overrun in time is flanked by 10% -30% in Saudi Arabia. Housing is a basic need which is out of reach for many people. In Kenya, the sector of residential housing is key as it offers a basic need which is shelter (Kvarnström, 2014). However, cases of substandard constructed and uninspected houses, collapsing buildings, and unfinished constructions, incidences of cost overruns, schedule misappropriation, technical quality doubts and safety negligence have caused a major quality assurance challenge (Githenya & Ngugi, 2014). According to Auma, (2014) regardless of the high training quality and regulations of the construction industry in Kenya, construction schemes face a challenge in meeting their objectives and aims. The presence of the challenges maintain a status quo of housing being in an adequate supply in the country. Numerous studies have been carried out on the influencing aspects on building projects from numerous outlooks. The study by Vuluku and Gachanja (2014) for instance focused on the aspects of residential housing supply side for low cost clients while Kvarnström (2014) analyzed the factor affecting the building of affordable constructions in informal residential in Nairobi. As such, there are abundant studies on the factors influencing construction projects. However, the aspects that impact on the construction of residential housing schemes in urban areas are unique to the sectors and the factors advance by most studies may not be generalized to the sector. This creates an empirical literature gap, which this study intends to address by looking at the construction determinants of residential housing schemes in urban centers in Kenya.

## **GENERAL OBJECTIVE**

The general objective of this research is to investigate the effect of project constraints on the construction of residential housing projects in urban centers in the country with focus on the National Housing Corporation.

## **SPECIFIC OBJECTIVES**

1. To examine the effect of project risks on the construction of residential housing projects in urban centers in Kenya.
2. To investigate the effect of project resources on the construction of residential housing projects in urban centers in Kenya.
3. To explore the effect of project leadership on the construction of residential housing projects in urban centers in Kenya.
4. To determine the effect of project stakeholders on the construction of residential housing projects in urban centers in Kenya.

## **THEORETICAL LITERATURE REVIEW**

### **Urban Spatial Theory**

The urban spatial theory or the spatial entropy was developed by Batty (1974) to examine certain concepts regarding the population distribution and the density in urban areas (Esmer, 2015). The theory defines the urban space arrangement with regards to the relationships set coming from urban state and its core involvements, comprised of information, materials and freight, and people (Zhong et al., 2014). According to the theory, urban structures compositions are referred to as agents or actors, twined by behavioral processes interactions, which maintains the system equilibrium or keeps it moving (Nemeş, Petrea & Filimon, 2012).

The urban spatial theory hypothesizes that the new construction stream increased is likened to the population growth. Prices of land are centered on the housing stock contrary to the building activity level (Nemeş, Petrea & Filimon, 2012). Hence, a rise in prices at first produces enormous yields back but the output from the housing rises momentarily above the normal state. A rise in unit stock results to an increase in land prices as well and ultimately absorbs the extra yields leading to adjustment of construction downwards towards normal level (Vuluku & Gachanja, 2014). With regards to this study, the urban spatial theory explains that construction of residential housing projects is influenced by a number of factors and their involvements are supplemented with notions about their dynamics and networks. Urban spatial theory therefore holds a lot of significance to project resources as a variable.

## **Project Management Theory**

The project management theory as reviewed by Carden and Egan (2008) explains that there exist seven concepts of theory linked with project management in accordance to literature. They comprise of: queuing theory, action in project theory, neoinstitutional organization theory, transformational-transactional leadership, temporary organization, knowledge flow, and a resource-based view. The project management theory frameworks may be subject to upcoming project management theory building and research opportunities (Cockrell, McBurnett & Ellinger, 2012). In this regard, project management theory may guide a lot on the kind of resources that should go into a project and the outcomes that should be expected for each input that is invested. The theory clarifies why certain principles by which a project is manageable are existent.

The entities of the principles suggest means of project sufficiency. The principles propose, for instance, disintegrating the entire transformation hierarchically into lesser transformations, tasks and reducing the task cost self-sufficiently (Bonander & Ulriksson, 2016). The theory provides explanation of management using the following theories; the dispatching model, the thermostat model, and management-as-planning. In management-as-planning, establishment, amendment and execution of strategies are key operators in the level management while it also assesses a sturdy underlying link between the management actions and the organization results (Heravi, 2014). With regards to this research, the county construction project management undergoes transformation via a life cycle technique. Schemes are instigated, designed/planned and executed. Inputs that enable the county construction projects implementation are in the form of funding from their sponsors. Project management theory underpins the variables of project leadership and project stakeholders.

## **Project Management Competency Theory**

Projects' success are tied a lot to the kind of competence that runs them. Project Management Competency theory emanated from the scholar works of McClelland and McBer (1980). The authors of the theory referred competency as the inner feature of a person causally linked with superior performance in a job and/or criterion-referenced effective (Shibani & Sukumar, 2015). The theory explains that interest in project management competence takes place when individuals responsible for working on projects become competent leading to their good performance and successful projects/organizations. Competence is normally recognized, however, they are encompassing traits related to high performance in work place (Bonander & Ulriksson, 2016). Instilling competence in a project is important for it guarantees reasonable completion and resources allocation.

There are numerous ways with which competency can be instilled in a project. According to the theory, project management competence is achieved by combining training knowledge while applying necessary skills sufficiently (Heravi, 2014). The theory advocates for performance based on competency for managers where performance appraisal is carried out and PM

competency performance indicators are established to involve leadership, understanding and application, team building, honesty and integrity, maintenance of external relations communication, mutuality and approachability, self-efficacy, learning, and decision-making (Shibani & Sukumar, 2015). With relation to this study, the project management competency theory advocates that for construction projects to be effectively completed all factors influencing their construction should be taken into consideration.

## **EMPIRICAL LITERATURE REVIEW**

### **Project Risks and the Construction of Residential Housing Projects in Urban Centers**

In their study, Mwinzi and Moronge (2018) examine the determinants of completion of housing schemes in casual settlements in Nairobi. The study targeted 100 project managers and collected primary data using questionnaires. The study adopted a regression analysis to analyse data. The study establishes a positive link between the completion of housing projects and management of project risk. The study concludes that project risk management, resources availability variables as critical determinants of completion of housing projects in informal settlements. The study therefore answers the gap that successful project completion ought to be tightly tied to how resources and management are used.

Mwangi and Ngugi (2018) studied the effect of risk management applications on projects performance by the County Government Nairobi. The study used a descriptive research design and collected information from a model of 190 respondents using self-administered survey questionnaire. Using the regression model, the study reveal that construction risk, contract risk management and legal risk management inversely linked with the performance of the construction project whereas design risk management had a positive effect. The study identifies the risks to projects and fills the gap of how the risks ought to be lessened.

A study by Fore (2015) examines the aspects affecting the house hold building projects quality as per the building period. The study used questionnaires to collect data from managers of project, household, building inspectors, and contractors. The study reveal some of the most quality affecting factors in construction schemes as the contractors' and project managers' experience and skills, risk management and projects risks, equipment used, site lay-outs, lead time in decision making, materials, and Mediterranean weather conditions. However, the study ought to have done more on risks can be reduced so that project effectiveness with regards to time and resources utilization is maximized.

Bonander and Ulriksson (2016) analyzed risk management with a building industry. The study focused on the developer perspective and the constructor outlook; in addition to their distinct and combined procedures enabling risk management. The results revealed personal knowledge and worker experience influences risk management. The study also revealed that risk management was regarded as a crucial fragment in the overall process of management.



## **Project Resources and the Construction of Residential Housing Projects in Urban Centers**

A study by Owolabi et al (2014) examined the delay causes and effects on the delivery period of building project. The research sampled 93 respondents and applied a structured questionnaire to assemble data. It established that the key factor that cause delay on construction projects include insufficient finances for completing the work, alterations in drawings, ineffective communication by parties, variations, insolvency on the part of contractors and slow decision making process, inadequate consultants information etc. The study also revealed that the other factors included discrepancies and mistake in the document of contract, availability of equipment and failure, construction process mistakes; building materials price fluctuation, bad weather, unsuitable general structure of the organization linking to the stipulated project and labor.

Gudah, Omboto and Tubey (2017) studied the factors inducing the commercial Housing projects implementation in the County of Kisumu, Kenya. The study adopted a descriptive survey and collected data from a sample of 193 contractors using questionnaires. The study revealed that contractor selection criteria, budgeting and project scheduling significantly affected the implementation of commercial housing projects in Kisumu County. The study recommended that there is need for build-up of effective coordination and communication during project implementation. However, the study does not well suggest how the limitations it identifies can be bridged to enhance projects' success.

Mose and Moronge (2016) examined the factor causes of government construction projects completion in the country. It sampled 162 respondents and applied a structured individual questionnaire to gather data. The results revealed that the phase of project initiation obtained the sturdiest positive effect on government projects completion. The study also found that project resources availability was positively correlated to completion of government projects. Project resources is not the only variable upon which a project's success is tied on. In that regard, the study ought to have delivered more on other factors that affect project completion time.

Abdul et al (2013) studied the link between construction resource aspects impacting on the cost of project. The research used planned questionnaire survey to assemble information from 20 respondents. The results revealed that materials prices fluctuation, financial challenges faced by contractor stand cash flow and materials insufficiency. The study also revealed that lack of adequate equipment numbers, management relationship and absenteeism from workforce affect completion of projects. The study well exhausts the factors that influence project completion and thereby becomes reliable for reference.

## **Project Leadership and the Construction of Residential Housing Projects in Urban Centers**

In their study, Shibani and Sukumar (2015) examined the project manager role in constructing projects in India. The study adopted a quantitative approach and collected data using questionnaires from 20 individuals managing building projects in India. The study revealed that

whereas the Indian building industry well recognizes the importance of managers of a project, their mandate is consigned to monitoring, supervision tasks and administrative. The study also revealed that managers of project took place in all the project phases and took ownership of a range of technical, managerial, interpersonal and human skills; there existed significant variations with regard to cost, time, quality, and satisfaction of customers in the projects run by them. The study most focuses on leadership as a project variable and does little in discussing how other factors such as time and resources also impact project success.

Enshassi, Mohamed and Abushaban (2009) examined the aspects influencing the local construction schemes performance. The study sampled 120 respondents and collected data using questionnaires. The results revealed that the major factors influencing performance of projects were delays caused by closure of roads borders resulting to shortage of materials; resource unavailability; poor skills of leadership; price escalation; inadequate competent personnel; and low quality equipment as well as raw materials. The study's gap is that it does not suggest exhaustive ways in which the problems it identifies can be solved.

Githenya and Ngugi (2014) evaluated the determining factors of implementation of construction projects in the country. He engaged the descriptive study method and collected information by use of questionnaires for various scheme managers. Regression models were applied to analyze information and established that project management competency, motivated project team, project control and project planning obtained a large effect on housing schemes execution in the country. It recommended that they should thoroughly administer the projects paying adequate attention in their implementation process.

In Ghana, Ahadzie and Amoa-Mensah (2010) examined the practices involved with management in the Ghanaian house building industry. The study evaluates the performance appraisal of project managers to determine their influence on the cost and completion dates. The study revealed that in order to avoid major managerial challenges professionalism in management services providence should be put into great consideration. According to this professionalism services ought to be embraced and embodied into a framework which suits the present practices while it can be improved through sufficient delivery/distribution of future housing projects.

### **Project Stakeholders Engagement and the Construction of Residential Housing Projects in Urban Centers**

Forsman (2017) carried out a research on the procedures for handling stakeholders of building project and the key factors for success of stakeholder management in the Stockholm Region. He examined the main challenges that the construction industry face and their resolution. Various case studies were undertaken in 3 construction firms that involved project stakeholders' management. The outcomes revealed that proper engagement with stakeholders, good relations, formulating clear statement along with proper communication was evident.

Eriksson, Glad and Johansson (2015) examined user contribution in Swedish residential projects. The study used focus group discussions to examine handling of communication, how user data is managed, and opportunities and challenges in user involvement. The findings established that user participation was a constant procedure encompassing from initiation of project to finished project evaluation with regard to upcoming projects. The study also revealed that misperception about the constitution of users in certain situations but not regarding the experience level, participants of focus group came in agreement of the user involvement significance and potential and the importance of acquiring useful input using specific methods. The study's gap is that it does not explicitly explain how user engagement does individual variables such as time, resources and leadership.

A study by Heravi (2014) examined the effectiveness of stakeholder involvement during the project life cycle. This research has adopted a mix-methods approach and used questionnaires to collect data. The study found that the degree to which quality issues can be improved, if extended, contribution of key parties can be facilitated was examined in depth; and, the practices and approaches that can be applied to enhance the effectiveness and efficiency of stakeholder involvement. Time, resources and leadership constraints do a lot of damage to projects' completion. The study therefore does well in identifying problems and suggesting on how they can be solved.

## **RESEARCH METHODOLOGY**

### **Research Design**

A research design is the rational sequence that links the experimental data collected to the primary research questions and eventually to its conclusions (Sekaran & Bougie, 2010). To examine the influencing factors of the construction of residential housing schemes in urban centers in Kenya this research adopted a descriptive research model. A descriptive design depicts a precise profile identification of events, persons, or circumstances. The model collects vast data amounts in an extremely economical procedure from a good population size (Sekaran & Bougie, 2010). A descriptive design allowed this study to gather data, which was evaluated quantitatively by use of the research models.

### **Target Population**

The research centers on a real-life problem therefore it is proper to target a population that is affected or does have some control over the elements of a project. A target population is referred to as the comprehensive set of personal objects or cases with some joint features that the researcher applies to take a broad view the study results (Sekaran & Bougie, 2010). The study population comprised of the 209 staffs of the National Housing Corporation in Nairobi as indicated in their human resource records.

## **Sample Design**

The research picked 63 respondents as sample population. The sample was 30% of the population of target as endorsed by Gay, Mills and Airasian (2011) that for a sample to be sufficiently demonstrative, the size of sample should be no less than 30% of the population of target to attain usual distribution level. The sample was obtained using the simple random techniques and covered the senior management staff, the middle and bottom level managers and all the other employees of the organization. Simple random gave each respondent same opportunity of being involved in undertaking the sample.

## **Data Collection Instruments**

This research used questionnaires to gather data. The questionnaire were semi structured in nature and comprised of both structured questions, which required a specific response, and unstructured questions with no defined response. In addition, it was divided into two sections where the first section obtained data on the organization background data while the second section obtained data on the study variables. A questionnaire was selected since was a suitable technique in research particularly in the existence of a large of sample size because it facilitates fast and easy information derivation or responses delivery in a short period of time.

## **Data Collection Procedure**

Questionnaires were used to collect primary data at individual based level to the sampled respondents. Self-administration method is believed to be suitable as any questions are rectified at the ground and ensured they have been given response.

## **Data Analysis and Presentation**

The data collected was scrutinized to check whether it was consistent and comprehensive. It was then coded and assessed through the SPSS software. Inferential and descriptive statistical methods are applied in analyzing the collected data. Inferential statistics involved the regression model used to establish the link between the dependent variables and the independent variable. Descriptive statistics is applied in summarizing data by use of frequencies, percentages, standard deviation and mean. Charts and tables were used to present the collected data. The regression model was formulated as follows;

$$Y = \beta_0 + \beta_1 X_1 + \beta_2 X_2 + \beta_3 X_3 + \beta_4 X_4 + \beta_5 X_5 + \varepsilon$$

Where: Y = Construction of residential houses;  $X_1$  = Project risks;  $X_3$  = Project resources;  $X_4$  = Project leadership;  $X_5$  = Project stakeholders;  $\beta_0$  = Constant;  $\beta_1 - \beta_5$  = Regression Coefficients;  $\varepsilon$  = Error term

## **RESEARCH RESULTS**

The results reveal that project risk assessment, evaluation was an essential requirement for construction projects, and effective project risk monitoring enhance the control of possible future events affecting construction costs. The findings also establish that robust risk mitigation strategies support the project objectives realization and that project risks management ensures future benefits are achieved in the most sustainable and economically efficient manner respectively. The study results also find a weak and positive correlation between project risks and the construction of residential housing projects. Regression results reveal that there is a negative and significant relationship between project risks and the construction of residential housing projects in urban centers.

The findings establish that availability of work force affects the quality of construction projects and that financing challenges greatly affects the successful execution of a project and achievement of the stated project goals. The results also establish that effective resource management delivers the utmost level of optimization and efficiency in construction projects and that projects success is dependent on sufficient availability and efficient resource management. The findings also find that the correlation between project resources and the construction of residential housing projects is weak and negative. The findings of the regression model reveal that project resources have a negative and insignificant relationship with the construction of residential housing projects in urban centers.

The study results reveal that effective leadership styles enhanced quick decision making in construction projects and that poor planning by project managers lead to the delivery of projects, which are of poor quality. The findings also find that project managers should influence construction project team members to ensure accomplishment of the project goals and that effective leadership enhances transparency levels in projects management respectively. The results also reveal that project leadership had a weak and positive correlation with the construction of residential housing projects. The regression results find that there was a negative and significant relationship between project leadership and the construction of residential housing projects in urban centers.

The study finds that user involvement in planning and designing of the construction projects unsure successful implementation of the projects and that negative actions of stakeholders usually result in construction project delays and costs overruns respectively. The findings also reveal that stakeholder involvement permits the leaders of projects to create factors that lead to the effective participation of stakeholders and that the involvement of the community could help in obtaining resources and using their influence respectively. The results further reveal that project stakeholders had a weak and positive correlation with the construction of residential housing projects. The regression results come to a finding that the relationship between project stakeholders and the construction of residential housing projects in urban centers was positive and statistically significant.

## INFERENCE STATISTICS

The regression results entail the model summary, the analysis of variance (ANOVA) and regression coefficients.

**Table 1: Model Summary**

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.620 <sup>a</sup>	.384	.336	2.82406

a. Predictors: (Constant), Project stakeholders, Project resources, Project risks, Project leadership

The model summary results on table 1 shows that the R square is 0.384, which indicates that 38.4% of the variation in the dependent variable is explained by the independent variables (project stakeholders, project resources, project risks, project leadership). The other 61.6% of the variation is explained by other factors, which the study did not consider and the error term.

**Table 2: ANOVA**

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	253.840	4	63.460	7.957	.000 <sup>b</sup>
	Residual	406.741	51	7.975		
	Total	660.581	55			

a. Dependent Variable: Construction of Residential Housing Projects

b. Predictors: (Constant), Project stakeholders, Project resources, Project risks, Project leadership

The ANOVA results on table 2 shows that the F statistics value of 7.957 was statistically significant as indicated by the P values of  $0.000 < 0.05$ . This indicates that the regression model is good and a good predictor of the relationship between the variables of the study.

**Table 3: Coefficients**

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	15.833	3.876		4.085	.000
	Project risks	-.067	.031	-.242	-2.172	.035
	Project resources	-1.921	1.011	-.212	-1.900	.063
	Project leadership	-.434	.116	-.442	-3.742	.000
	Project stakeholders	.440	.117	.432	3.746	.000

a. Dependent Variable: Construction of Residential Housing Projects

The results of the regression coefficients in table 3 shows that there was a negative ( $B = -0.067$ ) and significant ( $P \text{ value} = 0.035 < 0.05$ ) relationship between project risks and the construction of

residential housing projects in urban centers. In similarity, Mwinzi and Moronge (2018) find a significant negative relationship between completion of housing projects and management of project risk. Mwangi and Ngugi (2018) revealed that construction risk, contract risk management and legal risk management inversely linked with the performance of the construction project. The results however revealed that project resources had a negative ( $B = -1.921$ ) and insignificant ( $P \text{ value} = 0.000 > 0.063$ ) relationship with the construction of residential housing projects in urban centers. However, Gudah, Omboto and Tubey (2017) reveal that contractor selection criteria, budgeting and project scheduling significantly affected the implementation of commercial housing projects in Kisumu County. Mose and Moronge (2016) also found that project resources availability was positively correlated to completion of government projects.

Further, the findings shows that there is a negative ( $B = -0.434$ ) and significant ( $P \text{ value} = 0.000 < 0.000$ ) relationship between project leadership and the construction of residential housing projects in urban centers. This finding is supported by Githenya and Ngugi (2014) who establishes that project management competency, motivated project team, project control and project planning significantly affects housing schemes execution in Kenya. Finally, according to the results, the relationship between project stakeholders and the construction of residential housing projects in urban centers was positive ( $B = 0.440$ ) and statistically significant ( $P \text{ value} = 0.000 < 0.000$ ) respectively. In support of the finding, Eriksson, Glad and Johansson (2015) establish that user participation was a constant procedure encompassing from initiation of project to finished project evaluation with regard to upcoming projects.

## **CONCLUSIONS**

The study results reveal a negative and significant relationship between project risks and the construction of residential housing projects in urban centers. The study based on this finding concludes that project risks significantly influences construction of residential housing projects in urban centers. The findings of the study further reveal that revealed that project resources had a negative and insignificant relationship with the construction of residential housing projects in urban centers. According to this finding, the study concludes that project resources do not have significant influence on the construction of residential housing projects in urban centers.

In addition, the study finds a negative and significant relationship between project leadership and the construction of residential housing projects in urban centers. As per this observation, the study concludes that project leadership significantly influences the construction of residential housing projects in urban centers. Finally, the research concludes that the relationship between project stakeholders and the construction of residential housing projects in urban centers was positive and statistically significant. Based on this finding, the study therefore concludes that project stakeholders significantly influence the construction of residential housing projects in urban centers.

## **RECOMMENDATIONS**

The study concluded that project risks significantly influences construction of residential housing projects in urban centers. The study therefore recommends that the management of National Housing Corporation and other construction firms should come up with effective project risk management strategies to mitigate the various risk influencing the construction of residential housing projects in urban centers.

The study also makes the conclusion that project resources do not have significant influence on the construction of residential housing projects in urban centers. Further, the study recommends that the management of National Housing Corporation and other construction firms should allocate adequate resources towards the construction of residential housing projects in urban centers to ensure smooth construction of the housing projects.

The study concludes that project leadership significantly influences the construction of residential housing projects in urban centers. The study thus recommends that the management of National Housing Corporation and other institutions charged with management of projects should ensure that only effective and competent leaders are tasked with the management and construction of residential housing projects to enhance the completion of the various construction projects.

Finally, the study concludes that project stakeholders significantly influence the construction of residential housing projects in urban centers. The study therefore recommends that all stakeholders among the community, prospective tenants, contractors and legal authorities should be involved in the construction of residential housing projects to incorporate their views.

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