FACTORS AFFECTING PUBLIC HOUSING DEVELOPMENT PROJECTS IN NAIROBI COUNTY

BY

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A DISSERTATION SUBMITTED IN PARTIAL FULFILLMENT OF THE REQUIREMENTS FOR THE AWARD OF THE MASTER OF SCIENCE IN DEVELOPMENT FINANCE IN THE SCHOOL OF BUSINESS AND PUBLIC MANAGEMENT AT KCA UNIVERSITY

NOVEMBER, 2021

DECLARATION

I declare that this proposal is my original work and has not been previously published or submitted anywhere for the reward of a degree. I also declare that this research contains no material written or published by other people except where due reference is made, and author duly acknowledged.

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ABSTRACT

Public housing is a critical aspect of any urban living space that is undergoing rapid development. Nairobi City County is the capital of Kenya, largest metropolitan area and the most populated city in East Africa. Housing remains a critical element in the psychosocial wellness of human beings. Increasing rural to urban migration, population explosion in urban areas has seen increased pressure on the housing system in urban region. The fundamental purpose of this research study is to establish and evaluate the factors affecting the development of public housing projects in Nairobi County. The specific objectives of the study aim to evaluate the impact of resource availability, corruption, planning processes and the influence of capacity building on the on development of Public housing projects in Nairobi County. The study is anchored on four theoretical models; Resource Dependency Theory, Theory of Constraints, Critical Chain Project Management (CCPM) Theory and Facilitation Theory. The study used descriptive research design. Target population of the study encompasses critical stakeholders in government and corporate sector who form the ecosystem of Public housing development projects implementation. The study shall leverage on structured questionnaire as the tool for data collection. Data analysis will employ both descriptive and inferential statistics using SPSS. A multivariate linear regression model shall be employed in the inferential analysis. Data diagnostics of the field survey results will be performed utilizing tests of multi-collinearity, heteroscedasticity, and autocorrelation. After a thorough analysis of the data obtained, it was established that resources are most critical item in determining the outcome of housing projects thus they wield an overwhelming effect in the success or failure of housing projects. Corruption, planning and capacity building also have a significant effect and their prevalence or inadequacy may cause negative outcomes for housing development projects. In conclusion, availing the required resources, eliminating corruption, enhancing capacity building, and ensuring there is proper planning would augment the success of public housing projects in Nairobi County.

Key words; Housing Projects, Project Planning, Project Implementation,

ACKNOWLEGEMENT

My gratitude goes to the almighty God for His continued support as well as all those who have continually given me advice and corrections to see this work succeed, I sincerely acknowledge with gratitude my supervisor, Dr. Shadrack Jirma who rendered his noble guidance, knowledge, time and wisdom to enable the successful completion of this research proposal.

I would also like to acknowledge the support from my family which has been a great source of encouragement. I am also grateful to KCA University for making the course available and creating a conducive learning environment.

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DEDICATION

I dedicate this research proposal to my family for their moral and financial support all through.

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ACRONYMS AND ABBREVIATIONS

ANOVA	Analysis of variance
CCPM	Critical Chain Project Management
GDP	Gross Domestic Product
ICT	Information Communication Technology
IMF	International Monetary Fund
IVRDP	Inland Valleys Rice Development Project
KENHA	Kenya National Highways Authority
KENSUP	Kenya Slum Upgrading Program
KIP	Kpong Irrigation Project
KISIP	Kenya Informal Settlement Improvement Project
NACOSTI	National Commission for Science, Technology and Innovation
RDT	Resource Dependency Theory
SPSS	Statistical Packages for Social Scientists
TOC	Theory of Constraints
VIF	Variation inflation factors

DEFINITION OF TERMS

Corruption: This refers to dishonest and fraudulent activities orchestrated by the individuals who are responsible for the successful implementation of development projects (Damoah, *et al*., 2018).

Development Projects: A project that sets up organizations, networks and tools that have an impact in terms of synergy and development for the community (Agheneza, 2019).

Resources: Refers finances necessary for successful completion of a project (Palash, 2017).

Capacity: Refers to having skills, ability or competence needed for the completion of the projects (Laird, 2016).

Planning: schedule that the team members are supposed to follow as they work on the projects (AlNasseri, 2015).

CHAPTER ONE

INTRODUCTION

1.1 Background of the Study

The study seeks to establish the factors affecting the development of Public Housing Projects in Nairobi County in understanding the factors that impact upon the success of projects helps predict the sustainability of projects, diagnose problems, and prioritize resource allocation (Agheneza, 2019). Therefore, it is necessary to understand what the critical success factors are in order to systematically and quantitatively assess these factors and anticipate possible effects (Al-Kaabi, 2019). Project success reflects the extent to which project goals have been realized. The Project success is typically evaluated and judged by certain principles and standards termed as a criteria.

Projects are unique due to the fundamental differences that exist among them, and therefore most projects are not similar to each other (Nakano & Muniz, 2018). The causes of these differences are also unique to certain industries and the performing countries' systems, geographical location, and socio-cultural settings. However, research findings indicates that there are common issues as evidenced by the existing project management literature. These include: expertise, knowledge, financing, formulation, planning, resources, communication, scope change, and socio-cultural factors (Fabian & Amir, 2015). A significant proportion of project research findings points at the fact that scope change is a major contributing factor for project failure (Kaliba *et al*., 2017; Liu *et al*., 2016).

For a considerable number of projects, requirements are either altered before the commencement of work or altered half-way through the projects' life-cycle but rarely are these changes effected by the time of completion (AlNasseri, 2015). Proper planning and payment of the contractors are the basic measures that can be put in place to avoid project delay. Mamon *et al.,* (2014) in their investigation on how to improve time performance in construction of projects in Malaysia through a quantitative research targeting contractors identified, proper work planning, committed leadership and management, close monitoring sending clear and complete messages to workers and hiring skilled workers as the main improvement methods.

1.1.1 Overview of Development Projects in Global Perspective

Globally, numerous governments and private sector companies have reported project failures over the years (Havila *et al*., 2015). The project failure has cost these companies and governments enormous amounts of money. In Malaysia, a study carried out by Mamon *et al*., (2014) on ways of improving the time performance of projects, revealed that the major approaches of time performance improvement include placement of skillful workers, planning work properly, supervision and management and leadership commitment, ensuring complete and clear messages are sent to workers and close monitoring.

In most of the Developed Countries such as the United States, UK, Spain, Germany, France and China, the failure of development projects occurs mainly due to lack of implementation capability occasioned by lack of project ownership (Laird, 2016).

Project ownership refers to the degree to which project beneficiaries accept a project. Al-Kaabi (2019) notes that even when the ability to implement a project is there, the successful implementation of the project is hindered by lack of ownership of the project. Mcrael (2018) asserts that a project lacks project ownership when those responsible for planning fail to involve the potential beneficiaries of the project in the planning and preparation of the said projects. In such a scenario, the project beneficiary rejects the project as they perceive it as an imposition on them and thus lacks its relevance to them.

Other countries such as India have also witnessed project failure in the recent past. The failure of development projects in India is attributed to failure of the regulatory bodies to clear the projects, which has led to large number of pending projects (Al-Kaabi, 2019). The project delays result to escalation of the projects' costs sometimes up to more than 75% of the initial cost. This leads to failure and abandonment of the projects and subsequently the government incurs huge losses.

1.1.2 Overview of Development Projects in Regional Perspective

A significant proportion of projects in Africa that are funded by the World Bank, have either partially failed, or totally failed. The pipeline project (Chad-Cameroon) funded by the World Bank is a good example. Fabian and Amir (2017) indicate that in 2008, the project was abandoned before completion and it had already used up $4.2 billion. Pinto (2014) noted that a classic example of project failure, which is deviations in project management in organizations, has become a usual occurrence. In the African countries, governments initiate projects which include; building of telecommunication,

pipes, theatres, roads, ICT, dams, e-government services, plants, industries and many others. As Ahonen and Savolianen (2016) note, these projects that are mostly financed by IMF, World Bank and tax-payers, encounter numerous challenges such as dissatisfaction of stakeholders, deviation of scope, deviation of cost, deviation of schedule as well as abandonment despite being financed.

In North Western Province of Cameroon, specifically in Ngie, Agheneza (2019) reported that several projects failed, which could have positively impacted its beneficiaries. Barclay (2018) also reported that in Sudan, there was a recommendation for the termination of the Abyei Development Project, which was later executed after the project failed to meet both its original as well as amended objectives. Another perfect example is in Ghana where the Kpong Irrigation Project (KIP), upon overrunning for over 90 months, was terminated in the year 2004. A more recent example in Ghana is the Inland Valleys Rice Development Project (IVRDP) which was terminated upon having many civil works that were uncompleted.

In Nigeria, Saunders found that projects failed mainly due to ineffective planning. There are quite several inherent challenges that hinder the process of project planning and implementation, which range from abstract differences concerning the projects, and feasibility studies that are prepared hurriedly lacking proper economic as well as technical foundations. Others include inadequate basic information as Crawford and Bryce (2015) puts it, which is obtained from surveys, and investigations that are not sufficient, as well as insufficient project monitoring and inadequacy of in depth

evaluation studies that are almost not existent. Consequently, the projects keep experiencing weak linkages between divisional planning and identification of projects, between the identification of projects and preparation and between the preparation of the project and its implementation.

In East Africa, where most of the projects are funded by same international organizations, political leadership in the individual nations has been cited as a key cause of failure of development projects (Gitau, 2017). For such projects that are funded by international organizations, Aladwani (2016) postulates that their accomplishment requires braving numerous challenges and often getting into difficult situation because the implementation of projects in different countries which have unique political as well as legal settings, economic factors, issues of security as well as limitations and requirements of infrastructure, escalates the complexity much more than that of normal projects.

Odoyo (2018) indicates that by virtue of their nature, the uncertainty as well as complexity is inherent in these projects. The risks are further aggravated by the imposition of projects that are exploitative and unwanted, by international organizations on governments, and the use of management techniques that are not culturally compatible with the foreign specialists. Several of the reasons why projects fail seem to be the depicted by the prevalence of two root causes namely, the intrinsically present complexity in a project, as well as insufficient resources which include lack of adequate project's skilled management personnel.

In Uganda, especially in Northern Uganda, several development projects have experienced unachieved management objectives, budget overruns, overrun of time, unattained needs and desires of the clients and unachieved specifications of outcomes. Scott-Young and Samson (2014) attribute the high failure rate in the development projects to poor manager competencies, lack of community involvement and poor coordination of the various activities.

1.1.3 Public Housing Construction projects in Kenya

The Jubilee Government promised to construct at least 500,000 housing units affordable per year in 2013 (Shiundu, 2020). Previous efforts in Public Housing construction projects notably Kenya Slum Upgrading Program (KENSUP) in the year 2004 and the Kenya Informal Settlement Improvement Project (KISIP) in 2011 failed to materialize as was envisioned. According to Mwaniki *et al*., (2015) population trends drawn in by the rural-to-urban movement have inserted pressure on the housing sector, thus contributing to expanding informal settlement and failing of housing projects in Kenya. Poor strategies towards housing project planning have emerged as a critical factor that has derailed progress towards tackling housing crisis in Kenya (ibid).

Housing remains an important area of national interest in Kenya considering the fact that cumulative deficit for housing has topped 2 million units and projected trends show that it's poised to increase (World Bank, 2017). In addition, increasing urban population in Kenya has impacted negatively on housing with 61% of the entire urban population estimated to reside in informal settlements (Nzau & Trillo, 2020). Housing

projects to settle the millions living in informal settlements will have significant positive impact on the social welfare of the Kenyan society and the economy at large due to opportunities for job creation in housing projects (World Bank, 2017).

1.1.4 Public Housing Development Projects in Nairobi County

Public housing remains a far cry in Nairobi City County with many low income citizens forming the bigger residents of informal settlements. According to Mutinda (2021), under the Vision 2030 manifesto it lays down for the Nairobi Integrated Urban Development Master Plan (NIUPLAN) 2014-2030, which seeks to eliminate slums in Nairobi with decent housing. However, under the 500,000 affordable homes government housing program only 1300 housing units have been developed by the end of 2020(Nanjala, 2020). This represents a marginal 0.0026% of the annual affordable housing target. More evidence shows that construction projects in Nairobi are lagging way behind in all aspects with only 15,000 housing planning applications for a government target of 150,000 housing units annually (World Bank, 2017).

Public private partnerships in housing projects have become the government preferred strategy to cover the housing gap and equally tackle the problem of inequality. Nzau and Trillo(2020) opined that Nairobi's humongous housing nightmare can be progressively solved by integrating efficient public private partnerships, which has recorded success in other jurisdictions such as Sao Paulo in Brazil and Johannesburg in South Africa. The completion of the phase 1, affordable housing project for Nairobi County, is an indicator of the underlying prospect for success in public private

partnerships. However, litany of underlying factors including; land prices, planning, financial resources sourcing & effective utilization continue to bedevil the public housing construction projects in Nairobi County. Access sufficient financial resources and effective utilization of same resources towards public housing projects remains a critical factor in gaining progress in tackling informal settlements in Kenya (UN-Habitat, 2019).

1.2 Statement of the Problem

In Kenya, a great deal of the project decision-making processes is without the necessary consultation with the beneficiaries leading to lack of support and general project failure. Additionally, most projects in Kenya have been over timed (Odoyo, 2018). This has made the project managers, contractors and other project team members to relax only to be caught up with time in the process. This makes most projects to be rushed and to be poorly done as the time elapses. Navon (2015) states that in a similar way, the few projects that run to completion suffer from delayed timelines, cost overruns, creeping scope as well as poorly done work. As a result, the conception of largely inoperable development projects, results in the loss of a significant chunk of the public resources, loss of business opportunities, and disappointment, as well as the retardation of the whole project (Gitau, 2017). Omieno (2017) also states that because most projects in Kenya are started by the political formations, who fail to critically analyze the projects, do a feasibility study or even take a good time in the planning. Such projects are manipulated by the politicians for their political gain instead of allowing for proper planning and initiation procedures thereby undermining their quality.

Aladwani (2016) asserts that research has revealed that because of project complexity and the volatility of their delivery mechanisms, numerous projects' initial plan of success remains a mirage. Past experiences in the industry show that the rate of failure due to complexity is higher on medium as well as large projects because the complexity of projects fluctuates with the increase in the size of the project. In worst-case scenarios, these projects end up in unwanted litigations, and the consequences are often time consuming and costly. Lim and Alum (2017) note that there is a higher rate of low performance of projects in developing as compared to the developed countries. There are many contractors of development projects in Kenya whose performance record is poor. The reasons why numerous development projects in the past poorly performed include alteration of drawing and designs, inadequate raw materials, added works, clients' impediments, variation orders and amendments in Bills of Quantity (Wambugu, 2016).

Locally studies in the subject include, Kimemia (2016) who conducted a study on the contributing factors to the delays in project implementation in the construction industry most specifically in the KENHA's road projects in the coastal region of Kenya. This study was conducted on only one organization and was focused on projects in only one region of Kenya, and therefore lacks comprehensive view to projects in the entire country. Nyamwaro (2017) conducted a study on analyzing the challenges that the ministry of roads faced during implementation of its project. The study inferred that the major challenges that implementation of projects in the ministry faced were poor communication as well as lack of awareness on PPDA which the ministry's projects used in their implementation.

Aforementioned Studies, locally through global analysis highlight the scholarly interest in the subject of development projects implementation and many failures experienced. However, from the many past studies, the subject of public housing is least examined. Locally, academic inquiry into the challenges leading to failures of housing development projects is still at formative thus highlighting the need for more research in the area. This highlights the underlying academic gap in regard to understanding the scope of influence for Challenges hampering the effective delivery of public housing construction projects in Nairobi County. Therefore underscoring the need for this study, that will seek to examine the factors affecting development of public housing projects in Nairobi County.

1.3 Research Objectives

The study will have one general objective and will be guided by four specific objectives. These objectives represent a summary of what the researcher intends to achieve as well as the direction the study will take.

1.3.1 General Objective

The main objective of the study is to establish the factors affecting development of public housing project in Nairobi County.

1.3.2 Specific Objectives

The specific objectives guiding this study will be as follows: -

i) To evaluate the impact of resource availability on development of Public housing projects in Nairobi County.

ii) To examine the influence of corruption on the development of Public housing projects in Nairobi County.

iii) To determine the impact of planning processes on development of Public housing projects in Nairobi County.

iv) To assess the influence of capacity building on development of Public housing projects in Nairobi County.

1.4 Research Hypothesis

H_1: Resource availability has no significant effect on development of public housing projects in Nairobi County

H_2: Corruption has no significant effect on development of public housing projects in Nairobi County

H_3: Planning has no significant effect on development of public housing projects in Nairobi county

H_4: Capacity building has no significant effect on development of public housing projects in Nairobi county

1.5 Justification of the Study

As Brabham (2017) postulates, a project is deemed to have failed when it does not meet three criteria for success namely if; it is not delivered on time, it is not over or under budget and the project works as required. As mentioned above, only a few projects achieve all these three success criteria. Most delivered projects fail in one or more of

these criteria, and a substantial number are cancelled having flopped in their entirety. Additionally, as Fabian and Amir (2015) postulates, there is no agreement among scholars and practitioners as to the nature of the causes of delays and failure in development projects. There is also a lack of consensus as to the principle causes of failure. For instance, Aibinu and Jagboro, (2018) argue that the main cause of failure is lack of planning. Johansson *et al* (2017) argue that lack of experience and intellectual ability among contractors is the main reason. Other causes that have been highlighted include; poor organizational culture, poor government policy guidance and resource scarcity. This study will seek to establish the influence of planning, corruption, resource availability and capacity building on development of public housing projects in Nairobi County.

1.6 Significance of this Study

Upon successful completion of this study numerous stakeholders shall benefit from its findings. These stakeholders include; Government agencies tasked on Housing projects, Practitioners in Real Estate Development, Researchers and Scholars in housing projects planning and implementation.

1.6.1 Government Agencies Tasked with Housing Projects Implementation

State department on housing and urban development under the ministry of roads and infrastructure is responsible for overseeing government housing programs. Similarly, Ministries of Lands and that of Finance equally play a starring role towards the implementation of Public housing projects in Nairobi County. The findings that will be

made in this study shall lay down action plans based on global best practices that can overcome setbacks limiting the effective implementation of housing projects. This shall present these government agencies with rich operational framework that can boost government services and programs focused on delivering quality housing projects for all cadres of citizens across different economic clusters.

1.6.2 Practitioners in Real Estates Development

Private players in property development including, developers, contractors, real estate agents play a critical part in success of housing sector. Existing global evidence shows that public private partnerships in housing projects has wielded positive results across different jurisdictions across the globe. This study shall seek to identify opportunities that can result in win-win strategy for government and private developers in the housing sector. This shall form the blueprint that will inform cooperation under public private partnerships for overcoming challenges hampering the successful implementation of public housing projects in the country.

1.7 Researchers and Academicians

The findings of this study shall enrich the existing literature in the subject of public housing projects and the dynamics, challenges, solutions and opportunities for the future. This will provide future researcher in public housing sector with literature material to reference their studies. In addition, the scope of this study will offer insight on potential areas for further research in the role of operational challenges that affect public housing derail success of projects.

1.8 Scope of the Study

The purpose of this study is to evaluate the role of four operational dimensions that include Resource availability, corruption, planning and insufficient capacity building and how they contribute towards the successful completion of public housing projects in Nairobi County. The study shall seek to determine the cumulative impact of the four variables in affecting public housing projects in Nairobi County. The area of study is thus Nairobi County. In the present administrative dispensation, Nairobi though under guidance of county government, significant administrative functions including; public housing and infrastructure, health are preserve of the National central government. Therefore the focus of the study shall seek to examine government housing programs across the entirety of Nairobi. Numerous past governments have attempted to tackle the informal settlement housing nightmare in vain. Slum upgrading projects recorded minimal success with majority of the programs failing. All public projects including slum upgrading, affordable housing program and the public private partnerships (PPP) in commercial housing finance schemes. Participants of the study shall be stakeholder in the public housing projects who include Government ministries of Lands & Physical Planning, ministry of Finance, State department of Housing & Urban construction and private developers & contractors. The study shall take a period of two months, July through September 2021.

CHAPTER TWO

LITERATURE REVIEW

2.1 Introduction

Existing literature on the study topic will be reviewed. Precisely, the researcher will seek to review what other scholars have found on Resource availability, corruption, planning and capacity building and their effects of public housing projects in Nairobi County . The intent of the said review will be to highlight the gaps that are in existence and which will be afterwards filled by the current study. Gaps in methodology as well as context will also be identified. The actions taken by other nations to enhance successful implementation of development projects will also be highlighted.

2.2 Theoretical Framework

2.2.1 Resource Dependency Theory

Pfeffer and Salancik are credited with propounding the theory in 1978. Pfeffer and Salancik (1978) through the theory claim that the behavior of organizations is affected by external resources and thus the environmental forces that are external to the organization influences its activities. The RDT theory's anchorage is on the assumptions that: resources that organizations depend on, are sourced from external sources (Hillman *et al*., 2009); the external sources are comprised of other organizations which means that the resources needed by the organizations are always with other organizations and therefore organizations are dependent on one another. Consequently, organizations with resources have power and this implies that power is significantly based on the possession

of resources. Therefore, there is a direct linkage between power and resources that include capital, labor, raw materials, among others.

The implementation of projects is highly dependent on resources without which studies such as (Klein, Biesenthal, & Dehlin, 2015; Pinto, 2013; Teigland & Lindqvist, 2017) indicate that projects are destined to fail. It therefore means that the performance of projects is critically dependent on the ability of the project managers to acquire the right resources. Fabian and Amir (2011) note that for developmental projects, there is overreliance of external resources in developing countries especially external funding. As such, the World Bank (2012) suggests that for project management to gain the support of external donors, it is crucially important for the performing organizations, governments as well as government agencies to develop the necessary skills.

The relevance of the theory for the study emanates from its ability to clarify on the variable of Resources availability. According to IMF (2015), many governments in the developing countries rely greatly on donor agencies, the international governments, and organizations as well as NGOs for project implementation's resources. Depending on the laid down agreement, these organizations directly or indirectly control these projects. This they do through formation of regulations and rules guiding the project implementation. In some cases, they formulate very strict rules that have negative implications even on the country's citizens. Failure to comply with the set conditions forces the donors or foreign partners to withdraw their resources.

2.2.2 Theory of Constraints (TOC)

Theory of Constraints which was hypothesized by Goldratt (1984) is a philosophy of project management and it states that the weakest link in a chain, which could be a system or a process, determines its strength. Goldratt (1984) argues that TOC provides a channel of gaining better control of the organizations initiatives thus assisting them to achieve their goals. TOC is a systemic approach of identifying limitations hindering the success of a system and to execute the necessary changes for removing them.

TOC is comprised of distinct, but interconnected conceptions which include processes of logical thinking, processes of performance measurement as well as logistics. Goldratt (1984) postulates that TOC's process of logical thinking provides a chain of phases that are a combination of experience, intuition to gain knowledge and cause-effect. In this case therefore, the theory discusses the dependent variable, the performance of projects. There is need to reduce the limitations to the performance of a project so as not to compromise on the quantity and quality of the delivered products or services.

Goldratt (1984) postulates that there are very few constraints facing any organization. He therefore argues that because the focus of the oraginzation should be on the constraints its facing, eradicating the constraints should be an easy task and should not take up much of the organization's resources. Goldratt (1984) recommended five steps for the maagement of market and resource constraints. The first step is the identification of the constraints. To stregthen the weak link in a system one must first identify it, which could either be a policy or a physical weak link. Secondly, the project

management should be able to exploit the identified constraint. This involves making quick improvements using minimal existing resources and without the need for any major upgrades (Goldratt, 1997). The third stage involves surbodinating everything else to the exploitation of the constraint as stated above. This is done by ensuring that all the other activities in the system are in line with the resolution of the identified constraint. Alleviating the constraint is the fourth step of the management of the constraints. The management here takes all the necessary actions for eliminating the contraint. This is only done if the management was not successful in the second and third steps. Finally, in the fifth step, the management starts the process all over again. This is because according to Goldratt (1984), eliminating constraints is a cycle that begins but doesn't end because another constraint will always arise after eliminating the last one.

The relevance of this theory to this study is in clarifying the corruption variable as one of the constraints hindering project development. The typical limitations stem from ineffective management practices such as bloated costs emanating from corruption and budgeting poorly. The theory highlights the need for the project managers to detect the limitations that hinder the project's performance and offer direct mechanisms for solving these limitations.

2.2.3 Critical Chain Project Management (CCPM) Theory

The study will also be anchored on the theory of critical chain project management. The CCPM theory which was an advancement of the Theory of Constraints (TOC) was advanced and made known by Goldratt (1997) and is an innovative

mechanism for the management of projects. In the community of operations management, Goldratt (1997) is known well as the one who invented the TOC. According to the TOC, performance of a system can only be enhanced through the enhancement of the resource that is constraining after acknowledging that TOC is an instrument for the management of a production system that is repetitive on the basis that of the belief that there is a constraint in every system.

The CCPM main objective is to increase the speed of the project completion, increase the predictability as well as the productivity. As such, the CCPM operates under three core principles (Goldratt, 1997). The first one is the relative global urgency which apportions urgency to both the individual tasks in the project and the entire portfolio. Each task is given less time in the project. The second principle of the CCPM is having clear and stable priorities that allow the organization to focus only on the important tasks and thus avoid bad multi-tasking. Here, if an individual has more than one task in the project, they must finish with one before moving on to the next (Raz, Barnes, & Dvir, 2003). The third principle is the establishment of a relay race culture in the project execution. This enables management to move from thinking in terms of deadlines, to thinking in terms of being in a relay race where the focus is on passing on a task or physical item to the next course in the chain speedily and on time. The focus here, therefore, is on finishing one task at a time as quickly as possible.

As an advancement of the TOC, CCPM was intended specifically for the environment of projects. The first stage in the CCPM is to use the critical path technique

to identify the activities of the critical chain. The subsequent stage is recalculating the schedule of the project based on reduced estimates of task duration for the critical activities (Raz, Barnes, & Dvir, 2003). The variance existing between the newly estimated project duration and the originally projected duration is known as the project buffer. A similar procedure is used to calculate the less critical activities where a buffer known as feeding buffer is created. According to Goldratt (1997) this buffer is positioned in the path from where it re-establishes into the critical chain path. As the CCPM provides, a buffer re-establishing itself is a representation of the degree to which the critical chain is protected from the uncertainty.

The resource buffer is the third buffer type that CCPM uses and which is a task that is virtual, slotted in before the critical chain tasks requiring critical resources. Its main use is signaling the critical resources that a task that has been assigned to them and that is critical is about to start. This buffer neither adds cost nor time to the project nor does is it use any resources. Raz, Barnes and Dvir (2003) indicates that the schedule of CCPM is recalculated simultaneously as reports on progress is made where the project's final due date is kept constant through the adjustment of the sizes of buffers. This means that in a CCPM, the entire project is kept on schedule by the flexibility in the resources' start time as well as the capacity to swiftly switch between the activities and activities chains. The relevance of the theory for this study will thus be in illuminating the variable of planning.

2.2.4 Facilitation Theory

Rogers is credited with developing this theory in 1983. One of the fundamental tenents of the theory is that it is in the nature of human beings to be eager to learn and that, they take charge of the process of learning which they are responsible for, which makes learning possible. As such, Rogers (1983) postulates that the fact that people who have been enrolled for learning are self-driven and that they are enthusiastic to learn despite being located far from the institutions of learning is the only reason that capacity building is possible. Therefore, the capacity builder remains just a facilitator and unless the learner is predisposed to learn and has the desire to do so, there is no amount of pressure that a facilitator can exert on the learner to force learning to take place.

The above assertion means that there cannot be a transfer of knowledge from one person to another, which means that the facilitator cannot purport to directly teach the learners in the institution (Rogers, 1983). Therefore, as a facilitator of capacity building, the facilitator needs to cultivate positive relationships between himself and the learners to effectively facilitate the learning process. The facilitation process is dependent upon three fundamental conditions. The first one is the realness of the facilitator which means that the facilitator must be himself, aware of his feelings and being able to effectively communicate them. This does not mean that the facilitator expresses all his anger and frustrations to the learners or pretends to be all knowing. He should be able to do all he can to enhance the learning process in the organization (Rogers, 1983). The second principle is acceptance and trust which means that the facilitator should show care to the learners and should and also understand their feelings. The third principle relates to

empathy of the facilitator towards the leaners. This refers to the facilitator's ability to understand the perspective of the learners in the learning process and walking in their shoes. It means that the facilitator should be able to understand the actions of the learners and avoid judging them.

Rodger's Facilitation theory's bears the notion that the change of an individual's self-concept is what it takes for learning to take place. Discerning an individual's weaknesses or strengths might be involved in such changes. For them to acquire the knowledge, learners involved in the capacity building set up must have the perception of probability that the system of learning is valuable. As Rogers (1983) avers, a self-concept that is newly perceived has a merging impact on knowledge acquisition, because through it, a learner can confidently attack a targeted skill or approach it differently.

An assumption that trivializes the role played by transmission of information and also underrates the important role of teaching, is that learners can acquire the information on their own and the capacity builders are only there to facilitate the process. Rogers (1983) asserts that such a model of teaching is merely a fantasy which is not practically possible. The relevance of the theory for this study will be in describing the capacity building variable.

2.3 Empirical Literature

In this section, the researcher seeks to review what other authors have found on the study's independent variables (resources availability, corruption, planning, and capacity building) and their effect on public housing projects in Nairobi county .

Empirical literature summarizes and discusses previous publications on the topic herein and explores past research, including its strengths and weaknesses (Nakano & Muniz, 2018). Empirical literature authors examine the main concepts, ideas and relationships of an issue presented by the available literature, provide a critique, and in several cases, offer research propositions or a framework for future analysis (Nakano & Muniz, 2018).

2.3.1 Resources and Public Housing Projects

Ali and Raswol (2017) conducted a study seeking to analyze the efficacy of planning for affordable housing in Duhok City in Kurdistan. The study employed mixed methods including questionnaire survey, content analysis of secondary data on housing, in-depth interviews with key stakeholders and case study which focused on the housing projects in Duhok City. The findings indicate that inefficiency in housing policies made in areas of land acquisition, construction materials mobilization made cumulative value of public housing unreachable for the poor and the low income groups. Government use of incentives such as providing housing developers with land to set-up affordable housing projects, the result was disappointing in that the objectives of affordability were never met. This evidence indicates that partial incentives not backed by financial resources has less prospects of success as PPP arrangements in commercial terms ended in housing projects that were priced at market rates. This results echo submissions of Kavishe and Chileshe(2018) in Tanzania, who identified the downsides of PPPs where ineffective participation of government in resources allocation increases likelihood of housing project failure.

A study by Fisher (2020) sought to examine the framework for enhancement of government housing policy on construction resources towards sustainable housing delivery in the Western Cape, South Africa. The study employed mixed method utilizing survey approach, with construction professionals in Western Cape, participating in the study. These included; semi-structured interviews for qualitative survey and structured closed ended questionnaire for gathering quantitative data. Findings indicate that even with existence of robust programs for public housing construction projects for low income groups, solving housing crisis remains a significant challenge. The results of the study show that existing housing policies have failed to control the critical input resources necessary for the implementation of the housing projects. Fisher, posits that critical housing resources notably; labor, materials, plants and equipment should be integrated in any public housing policy for it to be sustainable and beneficial to larger masses. Suggestions by Fisher (2020) coincide with conclusions of Lin (2011) on the importance of government housing policy covering the input resources for enhanced prospects of public housing projects success.

A study by Bakhtyar *et al*. (2013) examines the strategies employed in efforts to provide low-cost housing for the poor and low income groups in Malaysia. The study employed case study methodology with focus centered on Pangsapuri Belimbing Height (PBH) process of public housing construction. The study established that a combination of factors notably; scarcity of land, increase in cost for labor in construction sector, fluctuating costs of construction materials have exerted pressure in public housing plans thus limiting prospects of success of the low cost housing. These findings agree with

conclusions by Fisher (2020) who linked the role of critical housing resources such as labor, materials and equipment wielding overwhelming influence on the outcome of public housing projects. Bakhtyar *et al*. (2013) postulates that a myriad of socio-economic dynamics wield significant influence in moderating the implementation of public housing projects which thus invites the need for stronger government participation through policy and regulatory interventions.

Nyein and Hadikusumo(2021) sought to investigate the factors that influenced the adoption of public-private partnerships in low-cost housing development in Myanmar. The investigation utilized survey methodology with in-depth interviews forming the central focus of 51 stakeholders directly involved in the implementation of public housing projects in Myanmar under the PPP platform. The results posited that the success of PPP mechanism should be complemented by government willingness to extend incentives aligned to boost timely delivery of housing projects. This finding is supported in studies by both Lin (2011) and Fisher (2020) who highlighted the critical role of government commitment in policy towards the success of public housing projects. Nyein and Hadikusumo(2021) results also support for starring role in moderating implementation of public housing projects under the PPP mechanism. The study by Kavishe and Chileshe(2018) showed that lack of government commitment in facilitating operations towards implementation of PPP designed public housing projects wielded a negative effect towards delivery of such projects.

2.3.2 Corruption and Public Housing Projects

A study by Adeagbo, Abdulkadir and Mohammed (2020) examined the strategies adopted in the application of PPP programs centering on house construction projects within Gombe State, Nigeria. The assessment utilized descriptive survey design with the respondents of the study being local construction professional within the region. The study found that PPP wield potential in delivery of public construction projects such as; hospital, houses and roads. However it was noted that, under the PPP arrangements, there was record of increased exposure to vulnerabilities such as abuse and corruption in the course of project implementation due to weak institutional set-up. This finding supports submissions by Agyemang and Morrison, posited that weak capacity formed an enabling factor for infractions such as fraudulent processes, uncoordinated levels of standards enforcement and general corruption during the implementation of public housing projects.Additionally, Adeagbo *et al*.(2020) found existence of public disinterest in regard to oversight of project implementation through the PPP mechanism.

A study by Alteneiji, Alkass and Dabous (2019) sought to determine critical success factors underpinning PPS for development of affordable housing schemes in the United Arab Emirates. The study adopted survey design with theme factored questionnaire as the tool for data collection where lists of critical success factors for PPP projects in public housing were determined. The results showed that critical success of PPPs was anchored on factors such as good governance, government guarantees, commitment and responsibility of the public and private sectors, favorable and efficient legal frameworks, political support and stability including a comprehensive framework

detailing debt-paying capacity in post-project phase. In comparison, studies by Opoko and Oluwatayo(2014) in Nigeria and Kavishe and Chileshe(2018) in Tanzania highlight the disparities in successful implementation of PPPs due to breakdown in stakeholder coordination and mediocrity in public procurement which enables massive corruption. The findings by Alteneiji *et al.* (2019) confer prospects of overcoming corruption and facilitating success in project governance in the course of executing public housing projects.

Latiff, Jaapar and Isa(2020) conducted a study investigating project governance practices in urban public housing projects with focus being Malaysia. The study employed case study technique that utilized deep informant interviews of critical stakeholders in Malaysia housing sector. The results showed that public housing project governance was subject to factors such as coordination, the levels of interdependency amongst stakeholders, stakeholder theory in regard to contribution of every member of the implementation team. The results also highlighted that poor coordination exposed implementation of public housing projects to fraudulent processes such as; ignorance of quality standards, inflation of costs for project materials, time overruns. These findings were in alignment with submissions by Opoko and Oluwatayo(2014) who found that poor operational coordination of public housing projects exposed it corruption and subsequent failure. Evidence by Latiff *et al*. (2020) indicates that optimizing on areas of projects governance eliminates loopholes for infractions such as corruption.

A study by Takuva (2017) investigated the obstacles encountered in parallel development of public housing projects. The examination adopted qualitative design which utilized semi--structured interviews. The inquisition focused on Victoria Ranch public housing project in Zimbabwe. The study interrogated whether implementation of public housing schemes can be aligned in parallel with other programs aimed at advancing services within the project execution context. The study found political corruption to be the leading factor that contributed to a failed project, which was made up of housing structures missed critical sanitation services and infrastructure. Notably, other factors such as lack of transparency, poor operational framework, inadequate system of monitoring and evaluating operations of the contractors were direct outcomes of political interference. The findings are consistent with Opoko and Oluwatayo(2014) on project interference and lack of accountability as tantamount to public projects failure. In contrast, Lin (2011) highlighted the prospects of public housing success when anchored on government goodwill and sufficient support which prevents opportunistic infractions that can hamper successful outcome.

2.3.3 Planning and Public Housing Projects

Agyemang and Morrison (2018) performed and analysis on the barriers that contributed significantly towards curtailing the effective implementation of affordable housing projects in Ghana. The study adopted survey technique with broad framework of stakeholders in public housing forming the population of study. Land use and planning aspect towards the successful implementation formed critical areas of inquiry. Findings showed that a combination of red-tapes, customary land regulations, weak capacity for

enforcing regulations in approvals, land use, building and general construction played a key role in undermining implementation of public housing projects in Ghana. These findings echoed submissions of Takuva(2017) who opined that institutional failures in operational standards contributes to poor planning in public housing leading to mismanagement and complicated procedures. Agyemang and Morrison (2018) linked irregular and long lasting land issues in regard to planning on settlements, culturally identified land and transfer of ownership between the government and the community as a limiting factor in house projects implementation.

A study by Lin (2011) takes stock into the development of affordable public housing system for populous urban centers. The study adopted survey methodology with the area of study being Guangzhou Public Housing Development in China. Lin, found that government driven housing development has more prospects of success if aspects of settlements are aligned with social welfare factors. In this case, housing projects are designed to carter for a certain group like the low income in which housing projects is implemented hand in hand with employment and empowerment programs. Submissions by Nyein and Hadikusumo (2021) postulate that, government sponsored housing development and community empowerment require significant public investment. This is consistent with reporting by Lin (2011), who argued that sufficient investment in public resources forms the core factor for driving success of housing settlement projects alongside the implementation of empowerment programs to uplift the poor and low income groups. In addition, Lin (ibid) reports that integrating centralized planning system

that enjoys sufficient support amongst all the key stakeholders boosts the prospects of settlement projects success.

Opoko and Oluwatayo (2014) carried out an analysis on the trends in urbanization with emphasis of implications of planning for the delivery of low income housing delivery in Nigeria. The study utilized secondary data by employing Literature thematic analysis of published reports and documents centered on urbanization in Lagos and the challenges it poses in housing and other critical social infrastructure. Opoko and Oluwatayo, found existence of mismatch between public housing project planning and the rapidly shifting trends in human population. Public housing plans are designed in regard to a set of select population of interest, which fails to capture trends in urbanization and increasing migration from rural areas. In comparison to evidence by Lin (2011), Chinese approach to public housing is anchored in posterity, with aspects such as population trends, urbanization and economic empowerment serving as critical factors of consideration during planning. Findings by Opoko and Oluwatayo(2014) points to structural failure in planning, exacerbated by the lack of future orientation in public housing projects, and inability to solve urbanization factor of increasing population with diminishing economic opportunities.

Kavishe and Chileshe(2018) carried out a study focusing on the aspect of project management and the role of public-private partnerships (PPP) principles within the framework for the development of public housing projects. The study employed survey design, with semi-structured interviews used in the data collection process. Three areas

were identified as the main operational factors that influenced the direction and outcome of PPP projects implementation in Tanzania including; official & unofficial site visitation, documentation of inspections and site meetings. The findings by Kavishe and Chileshe, pointed to a breakdown in operational execution of administrative roles in public housing projects with private partnerships. This also exposes coordination failure which stems from poor operational planning. According to Latiff, Jaapar and Isa (2020) lack of structured coordination amongst internal stakeholders in housing projects implementation contributes significantly in project stalling and failure. Kavishe and Chileshe(2018) study affirmed that achieving higher success in delivery of housing projects is subject to the planning and project management execution strategy.

2.3.4 Capacity building and Public housing Projects

Capacity factor extends across all cadres of stakeholders who are directly involved in the implementation of public housing development projects. A study by Adenuga(2013) examined the factors that impacted on quality in the course of delivery of housing projects in Nigeria. The study employed survey methodology with the study population being professionals in built environment operating within Lagos region. The fundamental point of inquiry was to evaluate the scope of quality assurance towards the implementation of public housing projects. The findings points to existence of huge gap in quality assurance capacity due to a structural model of operational coordination between all actors in the implementation of public housing projects.

Adenuga, indicated that three phase coordination involving designers (architects engineers, quantity surveyors, government building enforcement), contractors (construction firms) and sub-contractors (builders, first-line labor units) was hugely must all work in unison to effectively enforce and guarantee quality assurance in public housing projects. The lack of enforcement capacity from government standards agencies and inadequate communication to project implementation team is responsible for creating gap in quality assurance which in-turn compromises the delivery of public housing projects. This submission is consistent with views of Kavishe and Chileshe(2018) who acknowledged the negative effect on work quality in public housing due to ineffective levels of coordination.

Abas *et al*. (2015) conducted a study that sought to determine the factors that influenced the quality of construction projects in Pakistan. The study employed Survey methodology with a structured thematic analysis encompassing list of identification quality. Abas *et al*., were interested in understanding operational aspects that contributed to quality shortfalls in housing projects resulting in cost overruns, time delays and excessive reworks. The results showed that, operational coordination was critical in guaranteeing quality which in-turn impacted on project success. Areas of coordination include; continuous improvement, joint working, effective communication, contractor procurement efficiency and availability of technical personnel. These findings are consistent with findings of Adenuga (2013) in regard to the role of technical capacity in enforcing housing projects quality across all phases of project implementation. Abas *et al*. (2015) posits that all stakeholders involved in the housing project implementation

food chain should be aligned with all operational standards set for the projects in order to optimize quality which is central in project's success.

Chikomwe (2014) performed an analysis on the strategy of Public-Private Partnerships in housing sector within Zimbabwe. The study employed Survey design utilizing in-depth interviews in data collection. A government driven housing program, known as National Housing Delivery Program in Masvigo City formed the unit of observation and area of study. The study established that legal and strategic framework guiding the PPP was shallow and weak hence effectively abused and housing project subsequently ending up into the formal property market. When public housing project ends up priced in parallel to the market rate it becomes beyond the reach of the low-income earners who formed the main target. Meager resources extended by government meant the contractors equally contributed own resources towards the execution of the housing projects in the end the suppliers.

Chikomwe, affirms that technical capacity necessary for delivery of public housing is critical resource that government of Zimbabwe was unable to provide. This is in agreement with Kavishe and Chileshe(2018) on that absence of technical capacity at policy and regulatory level, creates opportunity for private partners to deploy own technical capacity which surmounts to cost overruns. Ultimately, the contractors and developers are forced to go into the private market to compensate the costs incurred in project implementation from the formal property market.

A study by Ojebode(2016) examined the utilization of PPP model in the provision of affordable housing in Nigeria. The study employed mixed methods utilizing both primary and secondary techniques notably; in-depth interviews and thematic literature analysis of construction projects in Nigeria. The study found that, PPP strategy for public housing was bedeviled with numerous infractions notably; poor financial projections, poor feasibility, poor communication and inadequate finances. These were largely found to be the downsides of unstructured PPP strategy which lacked standards of coordination and mechanism for enforcing compliance on quality. These findings echo conclusions by Latiff *et al*. (2020), Takuva(2017) and, Opoko and Oluwatayo(2014) in regard to housing projects failures exacerbated by poor coordination between critical stakeholders. In addition, the study by Kavishe and Chileshe(2018) pointed to the role of technical capacity in the composition of housing projects implementation team, postulating that implementation effectiveness was subject the level of efficacy in technical alignment to operational coordination.

2.4 Conceptual Framework

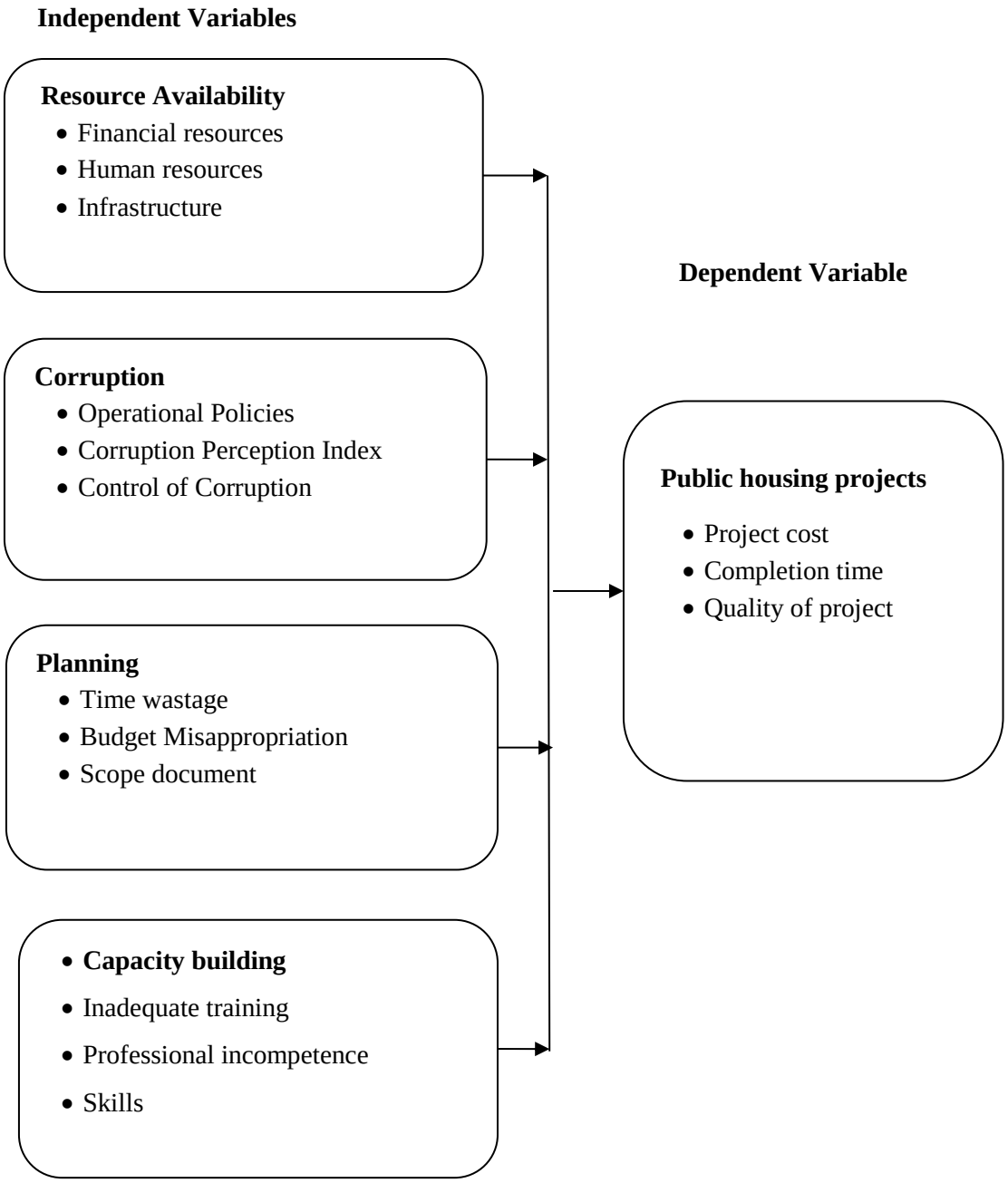


FIGURE 2.1

Conceptual Framework

2.5 Operational Definition of Variables

The variables will be operationalized as follows

TABLE 2.1

Operationalization of Variables

Variable	**Variable Type**	**Indicators**	**Measurement Scale**	**Type of analysis**
Availability of Resources	Independent	Financial resources Human resources Infrastructure	Nominal & Ordinal	Descriptive Inferential
Corruption	Independent	Operational Policies Corruption Perception Index Control of Corruption	Nominal & Ordinal	Descriptive Inferential
Planning	Independent	Time wastage Budget Misappropriation Scope document	Nominal & Ordinal	Descriptive Inferential
Capacity Building	Independent	Inadequate training Professional incompetence Skills	Nominal & Ordinal	Descriptive Inferential
Public Housing Projects	Dependent	Project cost Completion time Quality of project	Nominal & Ordinal	Descriptive Inferential

2.6 Research Gaps

Studies by (Adenuga, 2013; Agyemang & Morrison, 2018; Ali & Raswol, 2017; Fisher, 2020; Kavishe & Chileshe, 2018; Nyein & Hadikusumo, 2021) offer insights into the implementation of housing development projects around the globe. From the aforementioned studies, significant portion of inquiry identified public housing projects to be influenced by factors notably; sustainable affordable housing, customary land use, project management, operational coordination, quality assurance of housing projects, implementation weakness due to unwillingness amongst branches of centralized governance structure, capacity in planning, customary land problems and planning on land use. The study by Alteneiji *et al*. (2019) offers insight on success factors that boost housing projects governance which in turn prevents any loopholes for corruption, poor planning or inadequate capacity, which is a far-cry in comparison to African housing projects. Areas of inquiry such as project planning, project resources, corruption and capacity building have require more examination with focus on public housing projects in Nairobi County.

Studies by(Ali & Raswol, 2017; Latiff *et al*., 2020; Lin, 2011; Takuva, 2017;Ojebode, 2016) have shown how different administrations and jurisdictions have handled the situation in regard to public housing and the implementation of public housing projects. The study by Latiff *et al*., (2020) looks into housing projects governance in Malaysia, thus failing to correlate the findings in the Kenyan Context, requiring more inquiry. The study by Lin (2011) points to success in public housing with

main factor being government driven public policy anchored in the strategy of developing affordable and decent public housing system. On the other hand, the study by Ojebode(2016) demonstrated the dangers of poor housing project conceptualization that contributes to the failure of PPP strategy in Nigeria. This study shall examine public housing development projects in Nairobi County.

Procedures and methods utilized by scholars in canvassing the subject of public housing projects across the globe were diverse and designed to bring in considerable sufficient evidence in regard to state of public housing. Fisher (2020) utilizes mixed methods, both qualitative and quantitative to investigate aspects of housing projects in South Africa. Takuva (2017) research employed survey technique to look into failures of past single housing projects in Zimbabwe. Kavishe and Chileshe (2018) utilize a survey technique with a thematic focus to investigate critical success factors for PPPs in public housing. In addition, significant portion of past studies rely heavily on key informants interviews to make generalized conclusions. Numerous methods employed in many of the aforementioned past have failed to offer comprehensive assessment of the multi-dimensional failures across different stakeholders in public housing development projects. This study shall seek insight from multi-sectoral players including; government officers in ministries of finance, physical planning, housing and lands. In addition, the role of private developers in complementing government efforts for public housing development in Nairobi Shall be scrutinized.

2.7 Summary of Literature Review

The literature has reviewed the Resource Dependency Theory, Theory of Constraints, Critical Chain project management theory and the Facilitation Theory. The four theories have a significant relevance to the study's independent variables have therefore been covered by the theoretical review. As such, the study variables have been linked with the outlined theories. The chapter has gone further to provide the empirical literature on the factors affecting public housing projects. The empirical literature has been divided into various aspects that are geared towards addressing the aim of the study. The aspects are resources availability, corruption, planning and capacity building. To cater for the independent as well as the dependent variables covered by the study, the reviewing of literature has been done covering the dimensions of the conceptual framework. To illustrate the need of undertaking this study, the gap in research has similarly been identified in the chapter.

CHAPTER THREE

RESEARCH METHODOLOGY

3.1 Introduction

The approach that will be utilized to conduct this study is presented in this chapter. Further, it defines the target population, the source of data as well as its type, and methods of sampling as well as the sample size selection techniques that will be utilized. The procedure to be employed for collection of data and its analysis are also described in the chapter. The appropriate directions on how the information needed will be gathered and processed are elaborated here.

3.2 Research Design

Kothari and Garg (2014) state that a research design is the plan, structure, strategy from which used solutions to problems of research are generated. Saunders and Lewis (2017) postulate that a design of research can be conceived as the research's organization. A descriptive design will be utilized for the current study. The importance of this scheme is derived from the fact that it makes provision a chance to blend the information (qualitative and quantitative) that this study will generate. Moreover, in comparison to other designs, this design consumes a smaller amount of time. As per the postulation of Cooper and Schindler (2014) a study which is descriptive concerns itself with the establishment of a phenomenon's where, how as well as what. This study therefore will be able to generalize the findings to all the Public housing development projects in Nairobi County.

3.3 Target Population

Population refers to the collection of individuals or object, which are the focus of a scientific query (Cooper & Schindler, 2014). The target population in this study encompasses policy and commercial level stakeholders in the housing projects implementation sector. In Kenya, housing policy formulation and implementation rests with the ministry of Roads and Infrastructure which in-turn oversees the state department for Housing and Urban Development. The study will target all top level, middle level and low level staff from the Housing Division. The study shall also integrate officials from the ministry of lands, who are responsible planning and identification of land tracts that public housing projects can be developed. Other stakeholders that the study targets include; Ministry of Finance official who are responsible for determining financial allocations of funds to public housing programs drawn from the exchequer. Further; government partners in housing development including investors, developers and contractors operating within Nairobi County shall be targeted to participate in the study.

Data available from the Competition Authority of Kenya (CAK) indicates that a total of 18,000 contractors and developers are licensed to operate in Nairobi and Across Kenya (CAK, 2017). The study shall target 2500 officials from State Department of Housing and Urban Development, a total of 1000 staff from the ministry of lands, and 500 officials from the ministry of finance, which totals to 4000 junior to top level government officers. Total target population for the study is therefore 22,000 persons.

TABLE 3.1

Target population Distribution

Stakeholder category	**Population**	**Calculation**	**Percentage in total target population (% rounded)**
Developers and Contractors	18,000	$\frac{18,000}{22,000} \times 100 = 81.8$	82%
Department of Housing and urban Development	2,500	$\frac{2,500}{22,000} \times 100 = 11.3$	11%
Ministry of Lands and physical planning	1,000	$\frac{1,000}{22,000} \times 100 = 4.5$	5%
Ministry of Finance	500	$\frac{500}{22,000} \times 100 = 2.2$	2%
Total	**22,000**	-	**100%**

Sources: CAK (2017); Public Service-Government of Kenya (2020)

3.4 Sampling

A sample size refers to the actual respondents the researcher aims to interview (Cooper & Schindler, 2014). Saunders and Lewis (2017) observed that when selecting a sample size, a researcher must ensure that the right procedures are followed so as to get the most adequate number of respondents. The study will employ Krejcie and Morgan formula for sample size calculation (Krejcie & Morgan, 1970). The target population for the study is 22,000 persons who are stakeholders at the policy and commercial level in public housing projects ecosystem within Nairobi County.

$$n = \frac{X^2\ NP\ (1-P)}{e^2(N-1)+X^2\ P(1-P)}$$

Where;

n=sample size

N= Target population (22,000)

P = Population proportion (50% thus is 0.5)

e = error margin (0.05)

x^2 = chi-square table value (for 95% CI = 3.84)

Thus, calculate the sample size

$$n = \frac{3.84*[22{,}000*0.50(1-0.5)]}{0.05^2(22{,}000-1)+*[\ 0.50(1-0.50)]}$$

$$n = \frac{3.84*(22000*0.5)*0.5}{0.0025(21{,}999)+\ [3.84*0.5(0.5)]}$$

$$n = \frac{3.84*(11{,}000*0.5)}{54.9975+0.96}$$

$n = \frac{21{,}120}{55.9575}$ = 377.42, rounded-off to the nearest person = 377

Therefore the sample size would be **377 people**

TABLE 3.2

Sample Size Distribution Table

Category	**Sample Size Calculation**	**Sample Size**
Developers and Contractors	$\frac{82}{100} \times 377 = 309.14$	309
Department of Housing and urban Development	$\frac{11}{100} \times 377 = 41.47$	41
Ministry of Lands and physical planning	$\frac{5}{100} \times 377 = 18.85$	19
Ministry of Finance	$\frac{2}{100} \times 377 = 7.54$	8
TOTAL	**NA**	**377**

Source: Researcher, 2021

3.5 Data Collection Tools

The researcher will employ a questionnaire as the primary tool for the field survey. A questionnaire is a pre-formulated written set of questions to which the respondents record the answers usually within rather closely delineated alternatives (Saunders & Lewis, 2017). The study will utilize a structured questionnaire with close ended questions. The questions shall have a 5-point satisfaction likert scale will be utilized to seek the respondent's views on the challenges hampering successful implementation of public housing projects.

Since primary data will be used in the study, a structured questionnaire will be used as the main data collection instrument. As Mugenda and Mugenda (2009), notes, in

comparison to other research instruments, the questionnaire is a speedy method of obtaining data. As such the researcher can gain comprehensive data on numerous factors (Field, 2015). This research will use questions that are closed-ended as well as open-ended. The main reason why the researcher will utilize a questionnaire is that it will permit him in asking uniform questions therefore ensure that the responses are compatible. When the researcher sets to develop the questionnaire, unstructured and structured questions will be the two general types of questions that will be under consideration.

As Field (2015) posits, structured questions in most cases are followed by a list of the various alternatives which the respondents are supposed to consider and select the ones that best refers to their position. The construction of the questions will be done to cover the specific objectives and allow for the provision of a few possible answers. The main reason for using structured questions is that they are relatively quick and easy to create, code and interpret. The questionnaire will have the background information section as well as four sections with questions covering each variable.

The questionnaire will be self-administered by the researcher in the gathering of information. The research respondents will be given a guarantee that the administered instruments will be academic research only and that their answers will be confidentially treated and will be only used for the intended purposes. The researcher will seek for a written approval from the university which will be presented to the officials in the ministries and thereafter personally convey the instruments to the respondents while

others will be mailed to them. After the questionnaires have been filled upon the request of the researcher, the researcher will collect them ready for processing.

3.6 Validity Test of Research Tools

Cooper and Schindler (2010) while clarifying on the features of a reliable research tool of measurement contended that the research instrument should be a precise depiction of the measurement intended by the research. Moreover, the tool should have efficiency as well as ease of use. A tool like this should therefore undergo validity test which basically is the extent to which an assessment examines the actual measure as intended by the researcher. It should also undergo tests of reliability, or simply put the precision and correctness of a technique of measurement. Practicality is also ascertained which basically is concerned with economic factors, interpretability as well as convenience.

The degree within which an instrument offers sufficient coverage of the objectives being investigated by the study is referred to as content validity (Field, 2015). To confirm that the tool will collect the information as intended, it is therefore imperative to authenticate them before administering them to the sampled population. Varied forms of validity will thus be utilized to authenticate them namely the face as well as the content validity.

In their definition Kothari and Garg (2014) state that content validity is the level at which the items in a tool is a representation of the originally designed content of the instrument. Face validity, on the other hand, is the level at which from a glance, the instrument is seen as measuring what the researcher intended it to measure. To guarantee

the validity of the tool, the supervisors, colleagues as well as other experts will be engaged to ascertain its face as well as the content validity. This will be helpful in determining the level at which the envisioned information will be gathered. The required adjustments will be made in tandem with the feedback given by colleagues, the supervisors as well as other scholars and researchers. For instance, relevant adjustment may include the elimination of items that are vague, errors in typing or any spelling mistakes that might have occurred.

3.7 Reliability of Research Tools

The consistence, steadiness as well as stability of the data are what reliability refers to. Cooper and Schindler (2010) states that the intent of a researcher when measuring a variable is to be assured that the measurement will deliver reliable and constant outcomes. The probability of making an erroneous action influences the research's reliability. As postulated by Mugenda and Mugenda (2009) reduction of reliability occurs when a random error rises. So, for a researcher to be able to work with the results, they must be valid as well as reliable.

To be able to gauge the reliability of the questions and the consequent reliability of the data that will be gathered using the instruments, a pilot test will be carried out before the real data collection. The pilot tests will be carried out using officers who will not form the population of the actual study. A pilot study is good at enabling the researcher to evaluate the instruments clarity as well as how easy it will be to use. Mugenda and Mugenda (2009) states that the advantage of a pretest is in allowing errors

detection and prior to the start of the main study, it facilitates the researcher with an opportunity to train the research assistants. They further state that the ease of use as well as the clarity of the instrument is ascertained by the researcher at the instrument's pre-test stage.

The gathered information will be utilized for undertaking an initial analysis during the piloting study for enabling the answering of the questions by the research. The approach of internal consistency will be utilized to test how reliable the pre-test observation schedule will be to reduce the error of instrumentation and therefore increase the reliability of the collected data. This will be ascertained by using scores acquired from ministry officers who will not participate in the real study. This is because as Babbie (2011) postulates, the subjects of pre-tests should not necessary be included in the possible list of respondents and instead should be picked from individuals who have features that are the same as those of the respondents.

The study's instrument will be taken through the entire analysis of reliability for ascertaining the internal consistency. As such and as a measurement of internal consistency, Cronbach alpha will be utilized to measure the internal consistency. Internal consistency is used for measuring the connections existing between diverse items on the same test as well as whether similar scores are produced by the numerous elements that intend to measure similar overall construct. As rules of the thumb, Castillo (2009) provides the following: <0.5 – Unacceptable, >0.5 – Poor, >0.6 – Questionable, >0.7 –

Acceptable, >0.8 – Good, and >0.9 – Excellent. For this study, the acceptable value of 0.7 will be utilized as a limit of reliability.

3.8 Data Analysis Methods

Kothari (2011) notes that data analysis is the entire procedure which begins immediately after collection of data and ends when the data has been interpreted and processed. The filled in questionnaires will be revised to check for uniformity and comprehensiveness. From the study, qualitative information will as much as quantitative one be derived. The Statistical Packages for Social Scientists (SPSS Version 25) will be utilized to code and enter quantitative the quantitative information which will be analyzed by use of inferential as well as descriptive statistics. Content of responses will be the basis for analysis of the qualitative information. Here, answers which have similar topics or patterns will be assembled into comprehensive categories. Frequencies, the use of percentages that are relative and absolute, mean as well as standard deviation which are measures of central tendency and dispersion will be the descriptive statistics used. Graphs and tables will be used to present quantitative data explanations will be presented in prose form.

3.9 Model Specifications

Karl Pearson's coefficient of correlation as well as multiple regressions will be utilized to ascertain the nexus between the dependent variables and the independent variables. As shown below, the regression equation will be.

$$\mathbf{Y = \beta_0 X_0 + \beta_1 X_1 + \beta_2 X_2 + \beta_3 X_3 + \beta_4 X_4 + \varepsilon}$$

where;

$\beta_0 X_0$ = Constant

Y = Public housing projects

X_1 = Resource Availability

X_2 = Corruption

X_3 = Planning

X_4 = Capacity building

$\boldsymbol{\beta_1}$, $\boldsymbol{\beta_2}$, $\boldsymbol{\beta_3}$ and $\boldsymbol{\beta_4}$ = Beta coefficients for independent variables.

$\boldsymbol{\varepsilon}$ = error term

3.10 Diagnostic Tests

To come up with a reliable model for this survey the researcher will carry out appropriate diagnostic tests. Tests on diagnostics for normality, linearity, homoscedasticity, multicollinearity, and test for outliers.

3.10.1 Normality

Normality tests the difference between forecasted and obtained responses variable which need to be generally distributed about the distributed dependent variable scores (Cooper & Schindler, 2011). For normality test in this research, Shapiro Wilk test will be utilized by the researcher. The data will be considered normally distributed if the

significant value (p-value) > 0.05, on the contrary the null hypothesis will be rejected if the value is < 0.05, which will imply that there is normal distribution of data.

3.10.2 Linearity

Linearity entails an examination of whether the relationship of the independent variable and dependent is linear. It tests whether the residuals have a straight-line relationship with the predicted dependent Variables (Borg & Gall, 2012). It is measured using correlation analysis to determine the relationship between independent and dependent variables. Deviation from linearity is > 0.5, then the relationship between the dependent and independent variables are linearly dependent while if < 0.5 there is no linear relationship.

3.10.3 Multicollinearity

To ascertain whether independent variables have resemblance with each other, Multicollinearity will be carried out. There will be a very strong relationship if the independent variables are similar in any way (Kothari & Garg, 2014). Testing for Multicollinearity will involve the use of variation inflation factors (VIF). Absence of Multicollinearity indicators will be shown by a VIF value of 1-10.

3.11 Ethical Considerations

The confidentiality and safety of the respondents as we as the information they will provide will be guaranteed from the onset by informing them that the research will be utilized in its entirety for academic reasons and thus they won't be victimized based on the responses they give. Additionally, the researcher will seek an informed consent

from the participants and their attention will be drawn to their ability to withdraw their participation from the study in the middle of the research if they feel uncomfortable. The National Commission for Science, Technology, and Innovation (NACOSTI) will provide a research clearance permit after approval to conduct the research has been sought from the University. To prevent unauthorized access to the raw data, it will be destroyed immediately after use. Additionally, to prevent unauthorized access of digitally stored information, the researcher will use password.

CHAPTER FOUR

DATA PRESENTATION AND FINDINGS

4.1 Introduction

This section of the study presents the data collected from the field survey on factors influencing completion of housing development projects in Nairobi County. The participants of the study were critical stakeholders in government and private sector who are directly involved in the implementation of housing projects. Factors including resources, corruption, planning, and capacity building were critically on their effect on the implementation and completion of housing projects within Nairobi City County. The study utilized structured questionnaire in data collection from key stakeholders in the Public Housing and Infrastructure projects.

4.2 Response Rate

The data in table 4.1, highlight the breakdown in questionnaire response based on the questionnaires issued and those which were returned in time for data analysis.

TABLE 4.1

Response Rate

Feedback	**Frequency**	**Percentage**
Responded	268	71%
Not Responded	109	29%
Total	**377**	**100%**

The results in table 4.1, indicate that a total of 377 questionnaires were handed out. From this, a total of 268 questionnaires were successfully returned in time for data analysis which represents 71% response rate. According Cooper and Schindler (2014) a response rate of above 70% is considered sufficient to offer accurate representation of the study population. Therefore, N=268 will be the number of respondents who participated in this study that investigated factors that impacted on the delivery of public housing projects in Nairobi County.

4.3 Demographic Data

Demographic analysis presents data relating to the respondents background information notably; age distribution, education level occupation and work experience.

4.3.1 Respondents Distribution by Age

The first demographic unit measured was age distribution amongst the respondents and is presented in table 4.2 tabulated in frequencies and percentages.

TABLE 4.2

Respondents Age Distribution

Age categories	Frequency	Percent
25 - 30 years	23	8.6%
31 - 35 years	51	19.0%
36 - 40 years	86	32.1%
41 - 50 years	77	28.7%
Over 50 years	31	11.6%
Total	**268**	**100.0**%

The results in table 4.2 highlight the respondent's distribution by age. Majority of the respondents, 86 (32.1%) indicated to be in the age-group 36 – 40 years, 77(28.7%) of the respondents indicated to be in the age group 41 – 50 years. Further, 51(19.0%) of the respondents indicated to be in 31 – 35 age bracket, 31 (11.6%) of the respondents indicated to be over 50 years and 23(8.6%) of the respondents indicated to be in the age-group 25 – 30 years. The results show diversity in age distribution amongst stakeholders in public housing development projects. The results imply that age diversity is crucial in public projects implementation, with majority of key stakeholders being the middle ages.

4.3.2 Respondents Distribution by Education Level

The second demographic item for the study was the level of education amongst the participant in the study drawn from the construction sector and public service. The data in table 4.3 is tabulated in frequencies and percentages.

TABLE 4.3

Education Level

Education level categories	Frequency	Percentage
Professional Certificate/College Diploma	30	11.2%
Under-graduate Degree	124	46.3%
Master's degree/Post-Graduate Diploma	95	35.4%
PhD	19	7.1%
Total	**268**	**100.0%**

The results in table 4.3, highlights the respondents level of academic attainment. Majority of the respondents, 124 (46.3%) were found to have attained an Under-graduate Degree, 95 (35.4%) of the respondents attained post-Graduate qualification at Masters Level or Post-Graduate Diploma, 30 (11.2%) of the respondents attained a professional certificate or College Diploma and finally 19(7.1%) of the respondents attained a PhD. The results imply that academic attainment is a critical component for those participating as critical stakeholders in the public housing development sector, public services departments on housing and private enterprise in the construction sector.

4.3.3 Respondents Distribution by Occupation

The third demographic item was area of occupation among the respondents within the public housing development sector and is tabulated in frequencies and percentages.

TABLE 4.4

Respondent Occupation

Occupation Categories	Frequency	Percent
Developer/Contractor	39	14.6%
State Department on Housing and Urban Devt	104	38.8%
Ministry of Lands and Physical Planning	89	33.2%
Ministry of Finance/Treasury	36	13.4%
Total	**268**	**100.0**%

The results in table 4.4, presents respondents distribution by occupation. Majority of the respondents 104 (38.8%) were staff members at the State department on Housing and Urban Development, 89 (33.2%) of the respondents worked at the Ministry of Lands and Physical Planning, 39 (14.6%) were contractors and developers from the private sector and finally 36 (13.4%) of respondents were drawn from the Ministry of Finance. The diversity in regard to obligations implies the width of critical partnerships across government and private sector towards the implementation of public housing projects.

4.3.4 Respondents Distribution by Work Experience

The fourth demographic item is work experience which is tabulated in frequencies and percentages and presented in table 4.5.

TABLE 4.5

Respondents Work Experience

Work experience categories	Frequency	Percent
Below 5 years	51	19.0%
6 - 10 years	113	42.2%
11 - 15 years	55	20.5%
16 - 20 years	34	12.7%
Over 20 years	15	5.6%
Total	**268**	**100.0**

The results in table 4.5, presents the distribution of respondents by work experience within the public housing development sector. Majority of the respondents, 113 (42.2%) have work experience of 6 – 10 years, 55 (20.5%) have work experience of 11 – 15 years, 51 (19%) have work experience of below 5 years and finally 15(5.6%) of the respondents have work experience of over 20 years. Results on work experience distribution shows mixture in wealth of experience (over 20 years, over 15 years) with younger stakeholders (with experience below 5 years) in the public housing development ecosystem. The findings implies that at present, there are few experienced technocrats in public housing industry thus highlighting need for increased investment in boosting pool of experience and technical capacity within public housing development sector.

4.4 Interpretation of data

4.4.1 Project Resources and development of public housing projects

The respondents were asked the extent at which project resources affect the development of public housing projects in Nairobi county. From Figure 4.1 below 50% of the respondent agrees that resources allocation affects the development of public housing projects while 36% of the respondents strongly agrees. This agrees with Kavishe and Chileshe (2018)

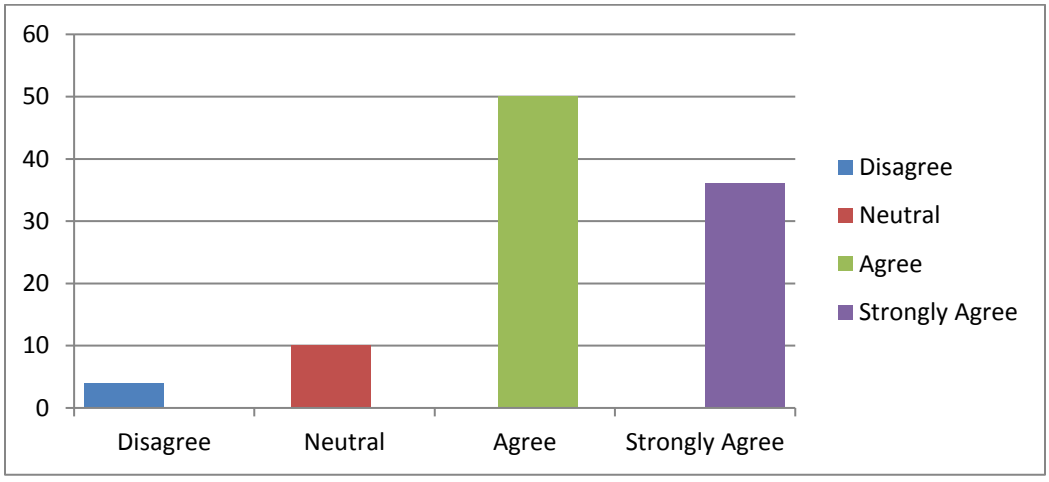


FIGURE 4.1

Resources and Public housing projects

As illustrated in the table 4.6 the respondents agree that insufficient financial allocations to projects and insufficient specialist personnel in housing policy research affects development of public housing projects with a mean of 4.36 and 4.35, respectively. This agrees with Ali and Raswol (2017) Competitiveness in private land

prices and inadequate innovative and technical skill in housing affects public housing with a mean grade of 4.15 level of agreement. Poor infrastructure, red tape in government treasury services centering on fund transfers, financial mismanagement at the implementation has a respondent rate of 4.3,4.4 and 4.04 respectively .This agrees with Lin(2011).In addition, inadequate financial planning capacity and cost determination together with poor planned infrastructure in roads ,rails and airports has 3.89 and 3.8 respondents level of agreement which agrees with Bakhtyar *et al*. (2013)

TABLE 4.6

Means and Standard Deviation for Project Resources

Statements	**Mean**	**Std. Deviation**
Insufficient financial allocation to projects	4.36	0.723
Financial mismanagement on projects implementation	4.04	0.718
Red tapes in government treasury services centering on funds transfer	4.4	0.677
Deliberate mismatch in cost determination of construction materials	4.34	0.504
Inadequate finance planning capacity and cost determination.	3.89	0.912
Inadequate innovativeness and technical skills for housing	4.15	0.844
Insufficient specialist personnel in housing policy research	4.35	0.639
Competitiveness in private land prices	4.15	0.736
Poor infrastructure plan	4.3	0.548
Poorly planned infrastructure in road, rail, and airports	3.8	1.01

4.4.2 Corruption and Public Housing Development Projects

The respondents were asked the extent at which Corruption on the implementation of public housing development projects.53% of the respondents agrees ,with 33% strongly agreeing that corruption affects the development of public housing projects.12% of the respondents were neutral about the effects of corruptions as illustrated in figure 4.2 below. The finding agrees with Latiff *et al* (2020)

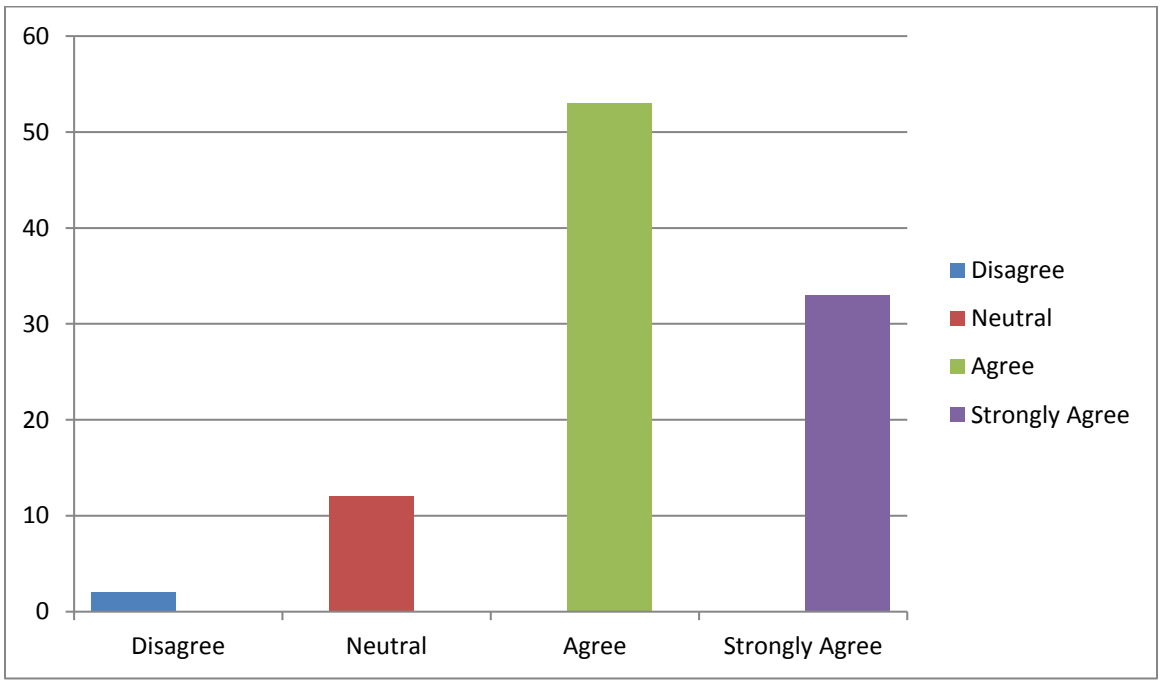


FIGURE 4.2

Corruption and Public housing Projects

TABLE 4.7

Mean and Standard Deviation on Corruption

Statements	Mean	Std. Deviation
Irregularity in procurement laws	4.28	0.549
Complex bureaucracy in public housing projects	4.21	0.667
Lack of comprehensive prosecution capacity for fraud	4.13	0.816
Political interference and selfish interest in public housing tenders.	4.06	0.704
Poor application Public Disposal and Procurement Act of 2015.	4.25	0.729
Fraud loopholes in land purchasing	4.12	0.747
Judicial adjudication of disputes relating to private land sale.	4.15	0.669
Corrupt practices in contracting process for public housing projects.	4.27	0.705
Existence of fraud loopholes in tendering and procurement processes	4.18	0.781
Weak transition policies for guaranteeing house access to beneficiaries.	4.11	0.687

As illustrated in the table 4.7 most respondents agreed that irregularity in procurement, poor application of Public Disposal and Procurement Act 2015 and corrupt practices in contracting process for public housing project as shown by a mean score of 4.28, 4.27and 4.25 respectively, this agrees with Opoko and Oluwatayo (2014). Additionally, as illustrated by a mean score of 4.21, most respondents agree that Complex bureaucracy in public housing projects and this can be backed up by the findings of

Latiff, Jaapar and Isa (2020). Additionally, as illustrated by a mean score of 4.18 and 4.15 respectively, most respondents agreed that existence of fraud loopholes in tendering and procurement processes and Judicial adjudication of disputes relating to private land sale, this statement agrees with finds of Opoko and Oluwatayo(2014) and Kavishe and Chileshe(2018). Additionally, as illustrated by a mean score of 4.13, 4.12 and 4.11 respectively, most respondents agreed that lack of comprehensive prosecution capacity for fraud, fraud loopholes in land purchasing and Weak transition policies for guaranteeing house access to beneficiaries. Finally, most respondents agreed that political interference and selfish interest in public housing tenders as shown by a mean score of 4.06 and this agrees with Takuva (2017).

The respondents were asked the extent at which Planning influences Successful implementation of Public Housing Development Projects. The results were illustrated below in figure 4.3 below. 38% of the respondents strongly agrees while most of the respondents agrees at 47% ,12% of the respondents were neutral about the the effects of planning on development of public housing projects. This agrees with Opoko and Oluwatayo (2014)

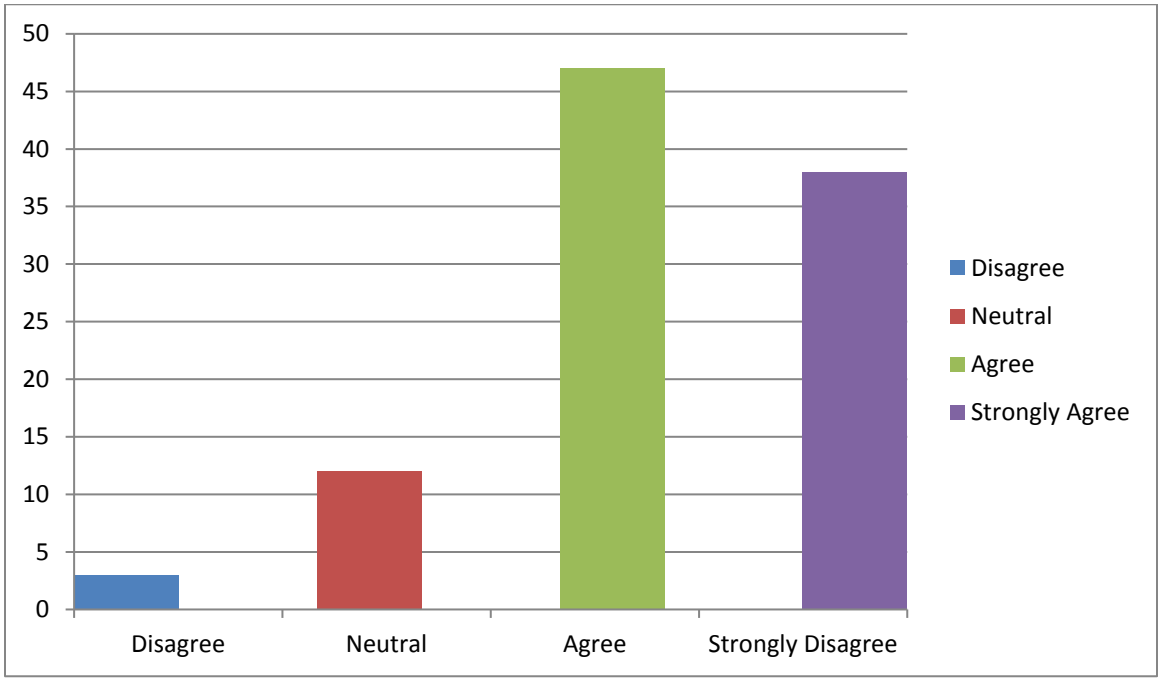


FIGURE 4.3

Planning and Public housing projects

The results in table 4.8, presents the respondents perspectives on the influence of planning on the development of public housing development projects. Tedious process in the legality and authenticity of critical documentations, complexity in validation process of construction approvals and political changes results in disruption of housing projects by mean of 4.49,4.34 and 4.35, respectively. This agrees with Takwa (2017).Additionally as illustrated by mean 4.22,4.19 and 4.15 , Selfish political forces in budgeting processes in public housing projects ,bureaucracy that lays down the feasibility assessment of projects and many government entities involved in execution in public housing projects affects the development of public housing projects .This agrees with Latiff Jaanar and

Isa(2020). Repetitive process in regulatory framework and Poor coordination of government agencies not forgetting political selfish interests derailing budgeting process affects the development of public housing projects by mean scores of 4.03,4.07 and 3.93, respectively. This agrees with Agyemang and Morrison (2018)

TABLE 4.8

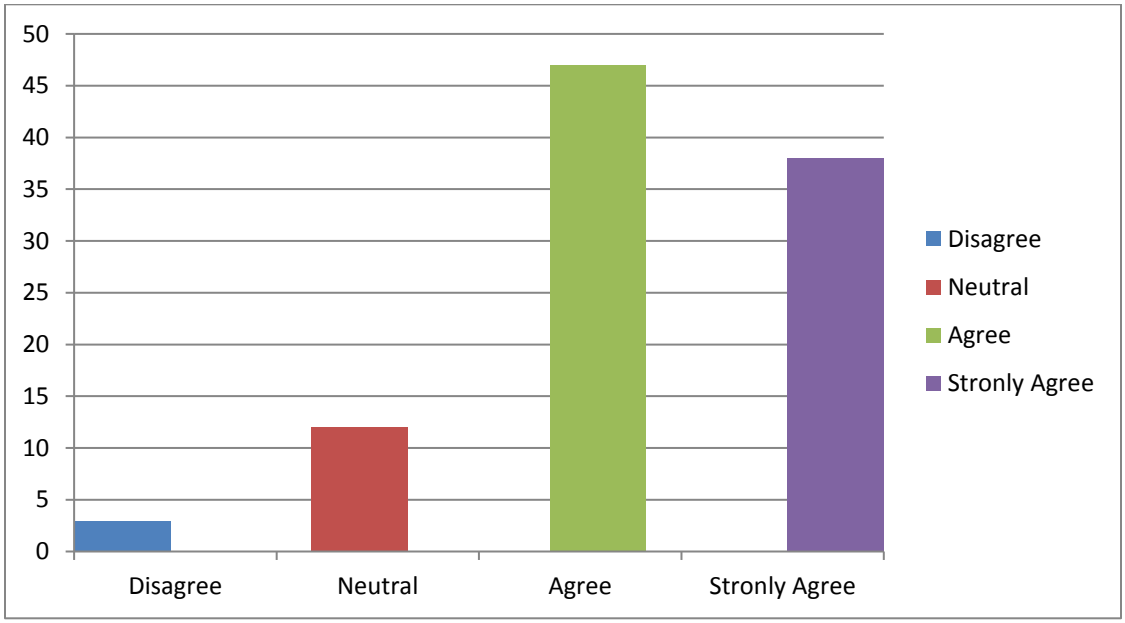
Means and Standard Deviation on Planning

Statements	Mean	Std. Deviation
Bureaucracy that lays down the feasibility assessment of projects	4.19	0.821
Many government entities involved in execution in public housing projects	4.15	0.705
Repetitive process in regulatory framework	4.03	0.897
Poor coordination between government agencies	4.07	0.905
Selfish political forces wield influence in budgeting processes in public housing projects.	4.22	0.768
Political selfish interest derails budgeting process	3.93	0.852
Tedious process in the legality and authenticity of critical documentation	4.49	0.501
Complexity in validation process of construction approvals	4.34	0.704
Political changes result in disruptions of public housing projects.	4.35	0.589

4.4.4 Capacity building and Public Housing Development Projects

The respondents were asked the extent at which Capacity building affects the development of Public Housing Development Projects. Most of the respondents agrees at

47% while 38% strongly agrees that capacity building have effects on the development of public housing projects. 12% of the respondents were neutral on whether capacity building affects the development of public housing projects. This finding agrees with Kavishe and Chileshe(2018)



As illustrated in the table 4.9 most respondents agreed that incompetency amongst critical stakeholders in public housing sector as shown by a mean score of 4.41. This statement agrees with Kavishe and Chileshe (2018). Additionally, as illustrated by a mean score of 4.34 and 4.32 respectively, most respondents agree that; Incompetent stakeholders contributing to cost fluctuations and compromised quality and lack of sufficient training centers and technical institutions on public housing projects. Additionally, as illustrated by a mean score of 4.07 and 4.06 respectively, most respondents agree that; There exists substantial gap between skilled personnel for

construction sector and the volume of skilled professionals and poor remuneration packages for personnel in the frontline of public housing projects. Additionally, most respondents agreed that costs incurred in construction skills advancements as shown by a mean score of 3.88.

TABLE 4.9

Mean and Standard Deviation on Capacity Building

Statements	**Mean**	**Std. Deviation**
There exists substantial gap between skilled personnel for construction sector and the volume of skilled professionals.	4.07	0.919
Poor remuneration packages for personnel in the frontline of public housing projects.	4.06	0.777
Lack of sufficient training centers and technical institutions on public housing projects.	4.32	0.731
Incompetency amongst critical stakeholders in public housing sector.	4.41	0.694
Incompetent stakeholders contributing to cost fluctuations and compromised quality.	4.34	0.511
Costs incurred in construction skills advancements.	3.88	0.928

4.5 Analysis of Data

4.5.1 Diagnostic Tests

To come up with a reliable model for this survey the researcher carried out appropriate diagnostic tests. Tests on diagnostics for normality, linearity, multicollinearity, and test for correlation were done.

4.5.1.1 Multicollinearity

Study sought to understand the collinearity effect between the independent variable and the variance inflation factor was conducted. The results of the findings are presented in table below.

TABLE 4.10

Multicollinearity Test

Variable	VIF	1/VIF
Capacity_b~g	3.77	0.265579
Resources	3.59	0.278515
Corruption	1.73	0.579055
Planning	1.54	
0.648279		
	Mean VIF	2.66

From the results above the mean average inflation factor was at 2.66. These findings indicate that there is no collinearity among the independent variable having the variance inflation factor of lower than 10 that is the threshold for collinearity.

4.5.1.2 Normality test

The study sought to understand the normality of the distribution. Shapiro Wilk test was conducted. The findings indicate that the all the independent variable are normal distribution having p- value less than the alpha value at 95% confidence level.

TABLE 4.11

Normality Test

Shapiro-Wilk W test for normal data					
Variable	**Obs**	**W**	**V**	**z**	**Prob>z**
Resources	**268**	**0.98771**	**2.371**	**2.015**	**0.02195**
Corruption	**268**	**0.99798**	**0.389**	**-2.205**	**0.98627**
Planning	**268**	**0.97421**	**4.973**	**3.745**	**0.00009**
Capacity_b~g	**268**	**0.95613**	**8.459**	**4.985**	**0.00000**
Project_su~s	**248**	**0.98638**	**2.453**	**2.087**	**0.01843**

4.5.1.3 Linearity

The study also sought to understand whether the relationship of the independent variable and dependent is linear. The results of the Pearson correlation analysis are presented in table below.

TABLE 4.12

The results of the Pearson correlation analysis

	Projec~s	**Capaci~g**	**Planning**	**Corrup~n**	**Resour~s**
Project_su~s	**1.0000**				
Capacity_b~g	**0.7642**	**1.0000**			
Planning	**0.3131**	**0.4925**	**1.0000**		
Corruption	**0.5802**	**0.5368**	**0.5000**	**1.0000**	
Resources	**0.8765**	**0.8299**	**0.3522**	**0.5631**	**1.0000**

From the results above, the correlation coefficient for all the variable were between 0 and 1. this research finding indicate that the independent variable has linear relationship to the dependent variable

4.6 Inferential Analysis

4.6.1 Multivariate Regression Analysis of Factors Affecting Public housing project

The model of the study is a multivariate linear regression model with independent predictor variables being the factors for project implementation notably; resources, corruption, planning and capacity building. The dependent variable for the model test is public housing project

TABLE 4.13

Model Summary for the Study Model

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.886	.786	.782	.23081
a. Predictors: (Constant), Capacity Building, Planning, Corruption, Resources				

The results in table 4.13, indicate the model summary for the study model, which is the multivariate linear regression test for the factors influencing project implementation notably; Resources, Corruption, Planning and Capacity Building against Public housing project which is the dependent variable. This model summary deduces; R of 0.886 and R^2 of 0.786 for the study model. The results imply that there exists a strong positive

correlation (R=0.886) between project implementation factors and projects success. In addition the results (R^2 = 0.786) imply that the project implementation factors including; Resources, Corruption, Planning and Capacity Building account for 78.6% in variability on the successful implementation of public housing development projects, whereas 21.4% of variability in project success is attributed to factors external to the four factors of project implementation.

4.6.2 ANOVA Test

An ANOVA of the study model was carried out to further investigate the above link and the following outcomes of the study are presented in Table 5.3

TABLE 4.14

Analysis of Variance for Project Implementation Factors

Model		**Sum of Squares**	**df**	**Mean Square**	**F**	**Sig.**
1	Regression	47.430	4	11.858	222.573	.000[b]
	Residual	12.946	243	.053		
	Total	60.376	247			
a. Dependent Variable: Public housing project						
b. Predictors: (Constant), Capacity Building, Planning, Corruption, Resources						

The results in table 4.14, highlights the ANOVA for the study model regression between project implementation factors and project success. The computation deduces; F (4, 243) = 222.573, p-value of 0.000 (p <0.05). The results imply that there exists big difference in means for all the variable tested thus no overlapping hence the model is fit

to give accurate statistically significant prediction. The Findings also imply there exist a statistical association between factors notably; Resources, Corruption, Planning and Capacity Building and Successful implementation of public housing development projects and is significant at 0.05, significance level.

4.6.3 Regression Results

TABLE 4.15

Coefficients for the Model Test of Project Factors versus Public housing project

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	.348	.187		1.857	.005
	Resources	.838	.067	.709	12.591	.000
	Corruption	-.189	.050	.147	-3.766	.000
	Planning	.078	.037	.076	2.071	.009
	Capacity Building	.124	.053	.135	2.339	.002
a. Dependent Variable: Public housing Projects						

The results in table 4.15 presents the coefficients output for the model test. The test deduces; beta-constant = 0.348 ($p = 0.005$, $p < 0.05$), Beta-Resources (β_1) of 0.838 ($p=0.000$, $p<0.05$), Beta-Corruption (β_2) = - 0.189 ($p=0.000$, $p<0.05$), Beta-Planning (β_3) =0.078($p=0.009$, $p<0.05$) and Beta-Capacity Building (β_4) = 0.124 ($p=0.002$, $p<0.05$). Therefore the model equation for this test is; $Y = A + \beta_1X_1 + \beta_2X_2 + \beta_3X_3 + \beta_4X_4$,

Therefore, the model equation for the study is;

$Y = 0.348 + 0.838X_1 - 0.189X_2 + 0.078X_3 + 0.124X_4$

Where.

Y = Public housing project, $\beta_{1,2,3 \text{ and } 4}$ = beta-values for independent variables

X_1 = Resources,

X_2 = Corruption,

X_3 = Planning,

X_4 = Capacity Building.

4.7 Hypothesis Testing

The study testing the following hypothesis

4.7.1 Effects of resources on development of public housing projects in Nairobi county

H_1: Resource availability has no significant effect on development of public housing projects in Nairobi County

The formulated hypothesis was resources has no significant effects on development of public housing projects in Nairobi county. To validate this resource revealed a positive significant regression of 0.838 and a P- value of 0.000 at 95% confidence level. The implication of this was that our analysis failed to accept the null hypothesis since our P-value is lesser than 0.05($p<0.05$) thus reject the null hypothesis and accept alternative hypothesis. This statement agrees with Kavishe and Chileshe (2018)

4.7.2 Effects of Corruption on development of public housing projects in Nairobi county

H_2: Corruption has no significant effect on development of public housing projects in Nairobi County

The formulated hypothesis was corruption has no significant effects on development of public housing projects in Nairobi county. To validate this resource revealed a negative significant regression of -0.189 and a P- value of 0.009 at 95% confidence level. The implication of this was that our analysis failed to accept the null hypothesis since our P-value is lesser than 0.05($p<0.05$) thus reject the null hypothesis and accept alternative hypothesis. The statement agrees with Apoko and Oluwatayo (2014)

4.7.3 Effects of Planning on development of Public housing projects in Nairobi county

H_3: Planning has no significant effect on development of public housing projects in Nairobi county

The formulated hypothesis was corruption has no significant effects on development of public housing projects in Nairobi county. To validate this resource revealed a positive significant regression of 0.078 and a P- value of 0.000 at 95% confidence level. The implication of this was that our analysis failed to accept the null hypothesis since our P-value is lesser than 0.05($p<0.05$) thus reject the null hypothesis and

accept alternative hypothesis. The statement agrees with Kavishe and Chileshe (2018).

4.7.4 Effects of Capacity Building on development of public housing projects in Nairobi County

H_4: Capacity building has no significant effect on development of public housing projects in Nairobi county

The formulated hypothesis was corruption has no significant effects on development of public housing projects in Nairobi county. To validate this resource revealed a positive significant regression of 0.124 and a P- value of 0.002 at 95% confidence level. The implication of this was that our analysis failed to accept the null hypothesis since our P-value is lesser than 0.05($p<0.05$) thus reject the null hypothesis and accept alternative hypothesis. This statement agrees with Adenuga(2013)

4.6 Discussion

The regression analysis above implies that taking all the factors into account (Recourses ,planning, capacity building and Corruption)constant at zero ,success of public housing projects will be at 0.348(34.8%.The results also shows that taking the independent carriable at zero ;a unit change in Resources will trigger a 0.838(83.8%) units change in Public housing project success, a unit change in corruption will trigger an inverse change (-)of 0.189(-18.9%) in public housing project success, a unit change in planning will trigger a 0.078(7.8%) change in project success and finally a unit change in

capacity building will result in 0.124(12.4%) units change in project success. The results have confirmed that project implementation factors notably; Resources, Corruption, Planning and Capacity Building wield an influence on Successful implementation of Public Housing Development Projects in Nairobi County

CHAPTER FIVE

SUMMARY OF THE FINDINGS, CONCLUSION AND RECOMMENDATIONS

5.1 Introduction

This section presents the summary of the findings, conclusion and recommendations on the factors affecting housing development projects in Nairobi County.

5.2 Summary of the Findings

5.2.1 Resource and Public housing development projects

The study found resources as the most critical item in determining the outcome of housing projects thus it wield an overwhelming effect in the success or failure of housing projects. Increased access or availability of resources automatically translates into increased prospect of project success. Negative attributes on resources such as the lack of sufficient resources, misuse or poor determination leads to project stalling and subsequent failure.

The study establishes that project resources factor is determined by attributes notably, sourcing mechanism, management style of available resources, artificial price fluctuations and highly competitive land prices. Reliability of sourcing mechanisms for project resources wields effect on success or failure of projects. Levels of administrative framework determine the effectiveness of management in utilization of resources committed to housing projects. Price fluctuations for critical input materials contribute to projects costs fluctuation which increases the likelihood of projects stalling. Land prices competitiveness limits structural acquisition by government for implementation of public

housing projects due to land price rapid artificial fluctuations, which results in housing project cost fluctuation thus making it economically unfeasible.

5.2.2 Corruption and Public Housing Development Projects

The study found that corruption wielded significant influence on project outcome thus form the biggest negative dimension which contributes substantially to stalling, delaying and subsequent collapse of public housing development projects. The study establishes that, positive change in curtailing opportunities for corruption factor wields an equivalent positive factor in boosting the prospects of public housing development projects succeeding.

The study established that corruption factor in public housing development projects is exacerbated by aspects notably, existence of loopholes of procurement laws, complex government bureaucracy, failed prosecution system, slow judicial adjudication of land cases and government transitions. The study found that the existing procurement laws in Kenya (Public procurement & Asset Disposal Act of 2015) still has weaknesses making it difficult to effectively prosecute irregularities conducted by officials implementing public housing development projects. Judiciary handling of land cases also critically slows down public housing projects as selfish parties have always used these channels to block government projects. Finally, bureaucracy in government and government transitions has repeatedly resulted in altering of priorities thus programs such as public housing resulting in stalling when new administrations come.

5.2.3 Planning and Public Housing Development Projects

The study establishes that planning forms an important component which determines the fate of public housing development projects. Planning plays a central role in regard to facilitating the movement of critical components and resources involved in the implementation of public housing projects. Lower rating in planning factor increases the likelihood of housing projects failing whereas enhanced levels of planning boosts the likelihood of projects success.

The study makes a finding that planning factor effect on housing projects outcome is subject to the following planning dimensions, pre-project implementation phase feasibility analysis, poor operational coordination, tedious approval processes and political interference. Incomprehensive project feasibility compromises all planning processes which exposes the project to failure. Further, it sets challenges such as operational coordination which slows down execution of projects implementation tasks. Political selfish interests are also exposed on the planning stage which creates barriers for effective coordination and faster regulatory approvals for project implementation. Any minimal fault on planning minimizes the likelihood of project success, whereas good project planning boosts odds of the project success.

5.2.4 Capacity Development and Public Housing Development Projects

The study establishes that Capacity forms a critical pillar in the implementation of public housing development projects.It forms a key factor for determining the operation scope of public housing projects. Positive changes in level of technical capacity results in

enhanced prospects of projects success. Lack of investments on capacity building on the other hand increases the likelihood of project failure for public housing development projects.

The study makes a finding that capacity building factor in public housing development in Nairobi is characterized by the following; existence of gap in technical skills, high turnover rates, insufficient training facilities, incompetent leadership and lack of sufficient funding for construction training. Gap in technical skills contributes to slow implementation process of housing projects. High turnover rates result in cost fluctuation due to rehiring expenditures and stalls work activities in projects implementation. Lack of financing world class capacity development for construction sector is due to incompetency in leadership. The outcome is cost fluctuation due to the need to hire expensive expatriates to undertake specialized tasks in public housing projects implementation.

5.3 Conclusion

The study concludes that Corruption, resources, capacity building and Planning has significant positive affects development of public housing projects .The study therefore concludes that increase of resources, elimination of corruption, increase in capacity building and proper planning increases the success of public housing projects in Nairobi county.

5.4 Recommendations

The study makes the following recommendations.

5.4.1 General Recommendation

The study recommends that implementation of housing development projects should be mapped out after a concrete feasibility process with sufficient consideration for surplus to cover any shortfalls during project implementation. Classification of resources in terms of; project materials, personnel, and equipment, should be designed in a pyramid format with a central coordination system to ensure highest levels of operational efficiency. Increasing finance allocation for training technical courses on construction and public housing should be taken into consideration by providing more funding for National institutions offering technical training.

5.4.2 Policy Recommendation

The study recommends the government should adopt a centralized procurement system and simplified supply chain to reduce existing bureaucracy in planning, coordination, and tasks execution in the implementation of public housing development projects. It also recommends reforms in areas of procurement laws, prosecution strategy and public service accountability charter.

5.5 Suggestions for Further Studies

This study examined the factors that play a critical role in the implementation of public housing projects. These factors including resources, corruption, planning and capacity building were found to wield significant influence on the housing projects

development. In the course of this study, the aspect of partnerships, between the government and private sector under the PPP framework emerged as an important area of examination in respect to public housing development projects. The study recommends future researcher to explore the factors which can boost effective implementation of housing development projects under the PPP framework. In addition, the study recommends for study on government contribution in solidifying binding agreements for housing projects developed under PPP in order to prevent excesses that could disadvantage the public beneficiaries. Finally, the study recommends for a study on strategies for streamlining government development programs in public housing and its effect on timely delivery of public housing projects.

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APPENDIX I: QUESTIONNAIRE

SECTION A: BACKGROUND INFORMATION

1. Age Distribution

i. 25 – 30 years ☐
ii. 31 – 35 years ☐
iii. 36 – 40 years ☐
iv. 41 – 50 years ☐
v. Over 50years ☐

2. Education Level

i. Professional Certificate/College Diploma ☐
ii. Under-graduate Degree ☐
iii. Master Degree/Post-Graduate Diploma ☐
iv. PhD ☐

3. Stakeholder Occupation in the Housing and Construction Industry

i. Developer/Contractor ☐
ii. State Department on Housing and Urban Development ☐
iii. Ministry of Lands and Physical Planning ☐
iv. Ministry of Finance/ Treasury ☐

4. Your Experience in the Occupation within the Housing and Construction Sector

i. Below 5 years ☐
ii. 6 – 10 years ☐
iii. 11 – 15 years ☐
iv. 16 – 20 years ☐
v. Over 20 years ☐

In the subsequent sections, kindly indicate how much you agree/disagree with the following statements on a scale of 1 to 5 as per the table below:

SECTION B: PROJECT RESOURCES						
Using a scale of 1-5, where: **1 = Strongly Disagree, 2= Disagree, 3 = Neutral, 4 = Agree and 5 = Strongly Agree**. Please indicate the extent to which you agree with the following statement on the influence of resources on the development of public housing projects in Nairobi County						
No.	**STATEMENTS**	**RATING**				
I	Insufficient financial allocation to housing projects in Nairobi county hampers effective delivery of critical housing projects	1	2	3	4	5
II	Financial mismanagement at the implementation level of housing projects, stall timely delivery of housing projects in Nairobi County	1	2	3	4	5
III	Red tapes in government treasury services centering on funds transfer to government housing development entities contribute in slowing down the timelines of projects implementation.	1	2	3	4	5
IV	Deliberate mismatch in cost determination at government level and market rates for construction materials result in cost inflation for public housing projects stalling timely completion	1	2	3	4	5
V	Inadequate finance planning capacity and cost determination contribute in housing projects cost inflation hampering successful deliveries.	1	2	3	4	5

VI.	Inadequate innovativeness and technical skills for housing innovation limits timely completion of public housing projects	1	2	3	4	5
VII	Insufficient specialist personnel in housing policy research at government level limits effective determination of effective government policy on comprehensive housing program for Nairobi City	1	2	3	4	5
VIII	Competitiveness in private land prices across Nairobi metropolitan region increases substantially the cost of implementing public housing projects beyond financial resources available to government	1	2	3	4	5
IX	Poor infrastructure plan hampers effective design of public housing project that can accommodate mass and rapid transport and telecommunication systems	1	2	3	4	5
X	Poorly planned infrastructure in road, rail and airports hampers effective urban interconnectivity which is critical in implementing futuristic designs for urban housing projects in Nairobi County	1	2	3	4	5

SECTION C: CORRUPTION						
Using a scale of 1-5, where: **1 = Strongly Disagree, 2= Disagree, 3 = Neutral, 4 = Agree and 5 = Strongly Agree**. Please indicate the extent to which you agree with the following statement on the influence of corruption on public housing projects in Nairobi County.						
No.	**STATEMENTS**	**RATING**				
I.	Irregularity in procurement laws has created loopholes for fraud in relation to implementation and contracting of housing projects contributing to project cost inflation hence stalling of many public housing projects in Nairobi county	1	2	3	4	5
II.	Complex bureaucracy in public housing projects needs assessment, evaluation and implementation has created loopholes for fraud in regard to tendering process hence late delivery of housing projects.	1	2	3	4	5
III.	Lack of comprehensive prosecution capacity for fraud in public housing financing mechanisms has enabled corrupt practices at the expense of development of public decent housing system.	1	2	3	4	5
IV.	Political interference and selfish interest in public housing construction tenders has hampered effective and timely delivery of the housing projects in Nairobi County	1	2	3	4	5
V	Incompetence in evidence collection and weaknesses of the Public Disposal and Procurement Act of 2015 has made it impossible to prosecute fraud in tendering processes for public housing hence hampering effectiveness in implementing public construction system	1	2	3	4	5
VI	Fraud loopholes in land purchasing for public housing	1	2	3	4	5

	projects contribute in price fluctuation resulting in high cost increment for public housing projects thus derailing timely delivery of the project					
VII	Judicial adjudication of disputes relating to private land sale or repossession by government for public housing projects are vulnerable to manipulation thus prolonging the cases and adversely derailing implementation of the public housing projects.	1	2	3	4	5
VIII	Corrupt practices in contracting process for public housing projects has made it difficult to attract FDI in public housing development through PPPs thus turning away potential sources for funding to finance public housing.	1	2	3	4	5
IX	Existence of fraud loopholes in tendering and procurement processes in public housing projects implementation exposes public housing projects to compromised quality which delays in construction approvals thus derailing the project implementation.	1	2	3	4	5
X	Weak transition policies for guaranteeing house access to beneficiaries including; slum residents or low income earners has enable fraud where developers collude to bypass desired beneficiaries and sale the public houses to the formal property market	1	2	3	4	5

SECTION D: PLANNING						
Using a scale of 1-5, where: **1 = Strongly Disagree, 2= Disagree, 3 = Neutral, 4 = Agree and 5 = Strongly Agree**. Please indicate the extent to which you agree with the following statements on the influence of planning on public housing projects in Nairobi County						
No.	**STATEMENTS**	**RATING**				
I	Bureaucracy that lays down the feasibility assessment of project housing needs complicates design schedules for public housing projects thus derailing implementation timelines	1	2	3	4	5
II	Many government entities involved in execution in public housing projects have overlapping mandates which hampers effective coordination and subsequent delays in housing project implementation	1	2	3	4	5
III	Regulatory framework governing the implementation of public housing projects requires for repetitive processes in building designing and approvals thus stalling project implementation.	1	2	3	4	5
IV	Poor coordination between government agencies obligated to oversee implementation of public housing projects such and their implementation partners including contractors, local community who are beneficiaries of these projects results in implementation delays due to expansive chain of consultations derailing operational execution	1	2	3	4	5
V	Selfish political forces wield influence in budgeting processes in pushing for financial gains from public housing projects thus hampering effective planning and	1	2	3	4	5

	resources mobilization for project implementation					
VI	Political selfish interest derails budgeting process or underfunding government public housing programs thus scattering decent public housing projects in effort to maintain ethnic tyranny in congested informal settlements, which allows gratification of tokenism thus enabling politicians to score political millage and remain in power	1	2	3	4	5
VII	Legality and authenticity of critical documentation relating to land acquisition and transfer for the implementation of public housing projects is tedious thus slowing down public housing projects implementation.	1	2	3	4	5
VIII	Complexity in validation process of construction approvals, financing capacity, land titles follows extremely tedious red-tapes thus derailing implementation schedule of public housing projects.	1	2	3	4	5
IX	Political changes result in disruptions and ultimate failure of critical public housing projects as successive political administrations reprioritize to developing new public housing plans foregoing their predecessors projects thus stalling them.	1	2	3	4	5

SECTION E: CAPACITY BUILDING						
Using a scale of 1-5, where: **1 = Strongly Disagree, 2= Disagree, 3 = Neutral, 4 = Agree and 5 = Strongly Agree**. Please indicate the extent to which you agree with the following statements on the influence of capacity building planning on public housing projects in Nairobi County?						
No.	**STATEMENTS**	**RATING**				
I	There exists substantial gap between skilled personnel for construction sector and the volume of skilled professionals needed to implement public housing projects in Nairobi County derailing delivery schedules for active projects	1	2	3	4	5
II	Poor remuneration packages for personnel in the frontline of public housing projects implementation contributes to high turnover rates thus slowing down the completion of public housing projects.	1	2	3	4	5
III	Lack of sufficient training centers and technical institutions to impart cutting edge construction sector knowledge of Kenyan housing professional limits the capacity to effectively deliver on public housing projects needed to accommodate millions presently living in informal settlements	1	2	3	4	5
IV	Incompetency amongst critical stakeholders in public housing sector like town planners, procurement experts, surveyors etc contributes to frequent operational crises due to improper coordination thus derailing timely delivery of public housing projects.	1	2	3	4	5
V	Incompetent stakeholders with critical obligations in	1	2	3	4	5

	operational facilitation such as price and quality evaluation of housing construction materials contributing to cost fluctuations and compromised quality which derails success of public housing projects across Nairobi County.					
VI	Costs incurred in construction skills advancements hampers establishment of advanced skilled housing development personnel pool necessary for timely delivery of public housing projects.	1	2	3	4	5

SECTION F: PUBLIC HOUSING PROJECTS

Using a scale of 1-5, where:

1 = Strongly Disagree, 2= Disagree, 3 = Neutral, 4 = Agree and 5 = Strongly Agree.

Please indicate the extent to which you agree with the following statements detailing the development of public housing projects in Nairobi County.

No.	**STATEMENTS**	**RATING**				
I	Efficiency levels in pre-implementation activities including feasibility, land tract identification, beneficiaries' demographics and economic incentive of public housing projects shall indicate project success.	1	2	3	4	5
II	Levels of accuracy in details regarding, total projected implementations costs, volume of personnel needed and operational time schedule shall offer a pointer to the success in implementation projection.	1	2	3	4	5
III	Design of project materials supply chain and efficiency in distributing construction to secured operational locations of the project frontline shall indicate prospects of the project success based on the preliminary progression.	1	2	3	4	5

IV	Levels of adherence to the activity schedules across different housing project implementation phases shall indicate the prospects of the project success	1	2	3	4	5
V	Activity timelines relating to training of technical personnel on the specifics of the project and team orientation and operational initiation shall offer indication of projects success prospects.	1	2	3	4	5
VI	The standards of quality for materials utilized in the implementation of the house construction projects shall offer an indication into the prospects of project success.	1	2	3	4	5

Thank you very much