PROJECT COMMUNICATION AND THE IMPLEMENTATION OF PUBLIC HOUSING CONSTRUCTION IN NAIROBI COUNTY, KENYA

BY

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DECLARATION

Declaration by Candidate

This research project is my original work and has not been presented for an award of a degree in any other University. This research project should not be reproduced without prior consent of the author and/or Moi University

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DEDICATION

I dedicate this research thesis to my dear family and friends that have supported me in my quest to fulfill my academic goals. A special feeling of gratitude to my parents Mr. and Mrs. Achar who persistently supported me financially and emotionally and encouraged me to go on, may God of Heavens bless them abundantly. I also dedicate this work and give special thanks to my brothers and sisters for being there for me throughout the entire process. All have been my pillars of strength.

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ABSTRACT

The implementation of housing projects should aim to get construction work completed within stipulated time and within the costs estimated. The frequencies of stalled construction projects, the government dismantling some illegally constructed buildings, collapsing buildings and the disturbing death toll that accompanies these events, have become significant issues in Kenya. The study sought to examine the effects of project communication on implementation of public housing construction projects in Nairobi County, Kenya. Nairobi County was chosen for the study since it is the capital city of Kenya with many housing construction projects ongoing. The objectives of this study were to assess how communication channels affects implementation of public housing construction projects within Nairobi County; to determine the effect of project team communication skills on the implementation process of public housing construction projects within Nairobi County and to examine the effect of communication structures on the implementation of public housing construction projects within Nairobi County. This study was anchored on Project management theory by Koskela and Howell (2002b), Implementation theory by Maskin and Sj'strom (2002) and Groupthink theories by Irving Janis (1972. To attain the research objectives, the study used the cross-sectional research design, in which it selected a sample of 252 respondents from a target population of 681 employees at the Nairobi County Government, Building Inspection Unit, licensed architectural and quantity surveyor firms and building contractors operating in Nairobi. The study used descriptive statistics, correlation analysis and regression analysis to analyze the data collected from the respondent using structured questionnaire. Multiple linear regression model was used to answer the research hypothesis. Based on the results obtained in the study, it was found out that communication channels (β_1= 0.003146, p=0.009); Communication skills (β_2=0.227, p=0.006) and Communication structures (β_3=0.687, p<0.001) had significant positive effect on implementation of public housing construction projects within Nairobi County. In conclusion, given that Channels of communication are key to the execution of construction projects, secondly having a team with better communication skills can provide quick decision making during critical stages of construction and lastly Communication structure forms a crucial aspect of the process of project execution. It was evident that project communication had a significant positive impact on implementation of public housing construction projects within Nairobi County. The study therefore, recommends that construction firms embrace project communication in order to enhance successful implementation of housing construction projects.

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ABBREVIATIONS & ACRONYMS

BORAQS	-Board of Registration of Architects and Quantity Surveyors of Kenya
CIP	- Construction Industry Policy
CM	-Construction Manager
CMAR	-Construction Management At-Risk
GC	-General Contractor
GDP	- Gross Domestic Product
GOK	- Government of Kenya
HRM	-Human Resources Management
ICT	-Information and Communication Technology
KNBS	- Kenya National Bureau of Statistics
NCA	- National Construction Authority
NCC	- Nairobi City County
NCG	- Nairobi County Government
NEMA	- National Environment Management Authority
NYS	- National Youth Service

OPERATIONAL DEFINITION OF TERMS

Big 4 Agenda – Agenda of the Kenyan Government under President Uhuru Kenyatta`s leadership to improve the welfare of its citizens including food security, affordable Housing, manufacturing and universal healthcare.

Construction Projects/Works – refers to the construction, extension, installation, repair, maintenance, renewal, removal, renovation, alteration, dismantling, or demolition of roads, buildings, drainage, mechanical, electrical or any other works as described in the NCA Act, 2014

Contract Management – is the process of managing contract creation, execution and analysis to maximize operational and financial performance at an organization, all while reducing financial risk (Musyonka, 2015).

Dependent variable-The measures that are used to observe a possible effect Shaughnessy, Zechmeister & Zechmeister (2000)

Government Policy – this refers to a rule or rule of order having the force of the constitution, prescribed by a superior and competent authority relating to the actions of those under the authority (Kwofie, Fugar, Adinyira&Ahadze, 2014).

Independent variable-Factors which are controlled or manipulated by the experimenter Shaughnessy, Zechmeister & Zechmeister (2000)

Infrastructure Projects – Public projects that benefit the society. They are normally in the main sectors of the economy like health, education, agriculture, and transport (Hwang & Ng, 2013).

Project – a temporary endeavor to achieve an objective. (PMBOK Guide)

Project Communication- a way of referring to information exchanges particularly intended to create understanding, effectiveness and eventual impact on project quality (Nangoli, 2010; Ramsing 2009).

Quality housing – refers to a pleasant environment that ensures the well-being, safety and health of its occupants (WHO, 2018)

Stakeholder – An individual, group or organization who may affect, be affected by, or perceive itself to be affected by a decision, activity or outcome of the project (Grossohlme, 2014).

Variable – is a measurable characteristic that assumes different values among the subjects. It is therefore a logical way of expressing a particular attribute in a subject (Mugenda & Mugenda, 2012).

CHAPTER ONE

INTRODUCTION

1.0 Overview

This chapter examined the background information on project communication and the implementation of housing construction in Nairobi County, Kenya. The chapter included the statement of the research problem, the general and specific objectives, and research questions, justification of the study and scope of the study.

1.1 Background of the Study

In Saudi Arabia, Assaf and Al-Hejji (2009) found that only 30% of construction projects were completed within the scheduled completion dates and that the average time overrun was between 10% and 30%, and over 30% were not implemented as required. El-Razek et al. (2008) found that delayed payments, coordination difficulty and poor communication in Egypt were among the factors influencing implementation of housing projects. Sambasivan and Soon (2007) established poor planning, poor site management and poor project design as the factors affecting effective implementation of most of Malaysia government housing projects.

The Government of Ghana and international organization reports World Bank reports (2013) on procurement in Ghana have continued to deplore poor performance within the construction industry with many projects failing to exceed the expectations of clients. As a result, most research work on the industry has focused mainly on the influence of factors such as; procurements, health and safety, access to credit, performance improvement, etc. Beyond these, very little or similar work has been done on the lighter factors such as construction communication and how it affects the construction industry in Ghana. World Bank report (2013).

Research has revealed that projects involve unique coordinated activities and resources during implementation, which calls for a project manager's unique skill in communication in order to lead and control unique sets of activities and resources for the project to attain its set quality performance goals Hwang & Ng. (2013). Project communication is gaining prominence as a way of referring to information exchanges particularly intended to create understanding, effectiveness and eventual impact on project quality Nangoli (2010); Ramsing (2009).

In a project environment, it is exemplary for people to communicate with each other to enable the execution of planned tasks with certainty right through the project life cycle Nangoli & Ahimbisibwe (2012). Effective project communication relates to how project information is availed in the right format, at the right time, and with the right impact to the project stakeholders Priyadharshini & Satheesh (2015).

Reeta and Neerja (2012) examined communication and project success and results revealed that Project communications is a key factor in quality project performance; the authors argue that effectiveness in communication ensures timely and appropriate collection, dissemination, storage, and ultimate disposition of project information among project stakeholders. With exultant projects being those that meet desired beneficiary specifications within specified budget and time schedule, therefore to achieve efficient project outputs, there is need for the application of knowledge, skills, tools, and techniques to project activities at each stage of project development Ye, Zia & Skitmore (2014).

Additionally, Reeta and Neerja (2012) argue that the core difference between very successful projects and less successful projects is in the ability of project manager's development of interpersonal skills. A project manager's major responsibility should

be executing decision making and building efficient mutual relationships among a diverse group of project stakeholders Grosseohlme (2014).

In agreement Muszyinka (2015) insists that its only through communication that information is shared to provide a fundamental understanding of the tasks that are to be performed as well as the goals to shoot at, since most project are always undertaken by people from various ethnic complexities and attitudes. Sembassvian and Soon (2017) add that effectual communication creates a feeling of responsibility within a person and the tasks he has been allocated to accomplish, making it possible for members and various stakeholders on the team to act without supervisory control to enhance quality in the projects.

Additionally, Gossoehlme (2014) contends that communication drives people to work and collaborate with each other to achieve asset targets. Since projects involve people of different qualities and desires, the greater the level of communication in a project the higher the level of teamwork and quality of projects. Basing from this discussion its evident that communication positively impacts on quality of projects and eventual success; it's upon this that this study seeks to assess whether the registered failures in quality of public housing projects can be attributed to failure in communication.

In the United Kingdom for example, a succession of government-commissioned reports has leveled criticism at the industry for its apparent inability to communicate effectively, both internally and externally Kwofie, Fugar, Adinyira & Ahadzoe (2014). In Nigeria, the country's construction industry has suffered many setbacks in terms of completion of the projects at stipulated period and within the predetermined sum and quality. Lack of effective communication between project stakeholders is one of the

major causes of delay, which results in abandonment of projects in construction projects in Nigeria Kasimu &Usman (2013).

There is evidence that erection of poor quality structures is a common occurrence in Kenya and this occurrence has increased in frequency and severity from mid 1990s to date and it is baffling. Some of the structures fail in their functionality, they malfunction in service to space user, while others fail to the extent of physical collapse in the process of construction or when tenants are already occupying it, thereby causing great inconvenience, loss of property and loss of life. According to the governments' Building Audit Report (2015), in the early 80's and 90's Kenya had almost no cases of collapsing buildings. As the number of construction projects increases in Kenya some key challenges including failed construction structures is increasing too. For example, Nairobi's Eastlands estates, particularly Umoja, Huruma, Dandora, Kayole, Kariobangi, Doonholm, Tena and even as far afield as Zimmerman, is full with poorly-constructed structures, many of them are disasters waiting to happen.

In 1996, after the collapse of Sunbeam Building in Nairobi, a commission of Inquiry to Examine the Existing Building Laws and Regulations was formed. This was mainly to investigate and determine the cause of the collapse of the Sunbeam Building and to examine the existing Building Laws, By-laws and Regulations and make recommendations with a view to prevent similar incidences. In 2009, a committee for Review and Harmonization of Planning and Building Laws and Regulations was established under the Ministry of Housing which in charge of coordinating the review process. Subsequently the ministry brought together key stakeholders comprising of private sector players, academia, professional bodies, 9 representatives from various interests groups and relevant public institutions. The outcome of the review committee was the draft of The National Planning and Building Regulations (2009) which was

referred to as the Building Code (2009) and aimed at replacing the earlier version of Building Code (1968). In the new constitution, the Building Code (2009) lacked an enforcing authority. This administration gap has manifested itself in diverse ways as is evidenced by failure by the county authorities to enforce the building regulations, legal and institutional arrangements in the building and construction industry towards sustainable, well planned, safe and healthy built environment. As a result, for over 5 years now, the country has witnessed accidents and incidents leading to loss of lives and injuries in the construction industry.

The world is urbanizing at a very rapid rate, and according to a report by the UN Habitat three out of ten people on the planet reside in urban areas by the mid-20th century (Habitat, 2010). Urbanization is also growing rapidly in Kenya driven largely by rural poverty and decreasing ownership of land of farming and grazing leading to a high level of rural-urban migration. More than 34 percent of Kenya's total population lives in urban areas and of this, more than 71 percent is confined in informal settlements (UN Habitat, 2009). It is estimated that, by the year 2030, 60 percent of the population will be living in the urban areas (GoK, 2007). This growth presents a fundamental transition from spatially low-density rural communities to higher density urban societies, with huge demand for land, shelter, infrastructure, social facilities, and jobs (Kimani & Musungu, 2010). The spiralling urban population has already exerted pressure on the existing infrastructure, housing and social amenities, leading to unprecedented sprouting of informal settlements within and around demarcated urban areas. Even urban suburbs planned and developed under Nairobi City Master Plan of 1948 have also succumbed to the undue population pressure, with most of the alienated sport, recreation and other social amenities land having been hived off to formal and informal housing and socio-economic developments. This is inconsistent with the national vision

to transform Kenya into a “newly industrializing, middle-income country providing a high quality of life to all its citizens by the year 2030” (GoK, 2007)

The motivation to review the archaic Building Code of 1968, which deals with controls in housing quality, building materials and planning standards (Kahi, 2015), has also been lacking. Leaving the industry with the code that is grossly inconsistent with modern construction materials and technologies, that is largely ignored by professionals and regulators; a factor that has played a major role in precipitating failures of constructed facilities. Technically, failure of constructed facilities is attributable to various causes like incompetent, inadequate or defective designs, incompetent implementation of designs by unqualified or non-compliant contractors’, use of substandard materials, lack of quality control as a result of missing, inadequate or incompetent supervision, among others (Windapo & Rotimi, 2012). All this can be directly attributed to failure in entrenching or implementing policy, legal and institutional framework for development control in the construction industry. Proliferation of informal settlements in the urban areas, urban sprawl, congestion, and property development in excess of the carrying capacity of available infrastructure are the most obvious evidence of failure to plan urban development and enforce the designated laws and standards (Kimani & Musungu, 2010)

Affordable housing is a major project that the government of Kenya is keen on realizing with a large number of projects having began and expected to be completed within five years (2018-2022) in several counties, project management will be critical to ensure the houses are delivered within time and in the intended quality. However, the drawbacks experienced in the sector means that the quality of public building projects might be compromised thus not well managed and funded for each to realize its objectives, Kieti, Rukwaro & Olima (2020). The government of Kenya under the Affordable Housing

Programme proposed construction of units in Makongeni estate where 20,000 houses were to be constructed, Kibera, Marigoini and Kiambui slums with 11,000 houses targeted and Jeevanjee estate in Nairobi where 1600 units were to be constructed, Republic of Kenya (2016). According to an article published by Business Daily on 17th January 2020, the number of stalled projects in Kenya is increasing because of insufficient allocation of funds and litigation cases in court.

Ministry of Transport and Infrastructure Development (MTID) reports on collapsed structures apportion the blame to lack of proper supervision and poor construction procedures (MTID, 2006). Kioko (2014) Building failures occurs due to use of substandard materials, poor workmanship, faulty construction methodology, on-compliance with methodology, lack of supervision, poor inspection and monitoring, structural defects and illegal conversations and alterations.

Given the importance of the construction industry to Kenya's economic growth prospects, investigating communication challenges between the various actors to ensure its correct functioning is very important. The construction industry in Kenya is faced with problems of project delays, completion rates and standard quality Republic of Kenya (2007). It is in this prospect that this study sought to examine the effect of project communication on implementation of housing construction in Nairobi County.

1.2 Statement of the Problem

The implementation of housing projects should aim to get construction work completed within stipulated time and within the costs estimated. The huge risks that government invests to housing projects and the fact that these funds are from the public means that more effort should be put in place to ensure they are spent prudently. Stop and

Papadopoulou (2012) indicate that around the world, development ventures encounter time, cost and quality deviations from their unique arrangement.

Currently, the situation in the construction industry is bleak. The frequencies of incomplete buildings, the Kenya government dismantling some illegally constructed buildings, collapsing buildings and the disturbing death toll that accompanies these events, have become significant issues in Kenya.

Kenya also has a huge housing shortfall, which is developing each year and is progressively pervasive in urban zones including Nairobi County. As per the Ministry of Housing, the present yearly lodging shortfall is assessed to be more than 156,000 units on a yearly premise in view of the populace development and urban relocation. The pace of construction is still limited with slightly above 50,000 units constructed annually and the deficit filled by growth in slum dwelling and poor-quality traditional housing Walley (2011). The rate of construction of buildings in Nairobi County is high to accommodate the rising number of people looking for settlements. As a result, some developers rush the project managers to finish their construction projects within shorter periods, to meet the high demands of housing. This has led to poor implementation of housing projects due to factors like fast tracking the project thus missing some processes during implementation, insufficient skills in project coordination amongst others. There have been a few reports of maladministration of undertakings, superfluous surge in project usage, lacking organization and budgetary arrangements and exorbitant project management Usman, Kamau &Mireri (2014).

Njogu (2011) studied factors influencing performance of informal laborers in the construction industry in Karatina Municipality, Central Province, Kenya. Munyoki (2014) analyzed factors influencing completion of construction projects Nairobi

County, Kenya. Wanjau (2015) studied factors influencing completion of building projects in Kenya. However, little has been done on the "softer" factors such as project communication and how it affects the construction industry.

Project communication is the transmission of data, information and knowledge between two or several stakeholders Sambasvan & Soon (2007) and plays a key role in project success Ye, Zia &Skitmore (2014). Project communication has significant impact on the project success as poor communication can adversely affect the project performance Musyinka (2015) by directly affecting the outcome. Due to the high number of people involved in large construction projects at the implementation stage, communication becomes a challenge since information has to be passed down through various people i.e from the project architects to the engineers down to the construction workers. Any breakdown of communication along this chain can have catastrophic effects on the overall project implementation leading to massive delays and increase in overall costs of the project. It is on this premise that this study sought to establish whether project communication could affect the implementation of housing construction projects in Nairobi County, Kenya.

1.3 Research Objective

The overall objective of this study was to assess if project communication affects the implementation of housing construction projects within Nairobi County, Kenya.

1.3.1 Specific Objectives

The study was guided by the following specific objectives:

i. To establish if Communication channels affects implementation of housing construction projects in Nairobi County, Kenya.

ii. To determine whether communication skills affect implementation of housing construction projects within the County

iii. To examine the impact of communication structure on the implementation of housing construction projects in Nairobi County, Kenya.

1.4 Hypothesis of the Study

H_{01} – There is no significant effect that communication channels have on the implementation of housing projects in Nairobi County

H_{02} – There is no significant effect that communication skills play during the implementation of housing construction projects within the County

H_{03} Communication structure does not significantly impact the implementation of housing construction projects in Nairobi County, Kenya.

1.5 Significance of the Study

The study assessed the concept and level of importance of project communication as a key component in project performance. The study contributed to the practice of project communication and specifically demonstrated the ability of public housing projects to use project communication to enhance the implementation process and possibly increase quality and reduce on costs. This study also presented an opportunity for the projects to streamline communication mechanisms and techniques in a bid to realize the importance of principles of project management in the projects.

It will also assist on identifying gaps and training needs in project team and further prompt allocation of resources towards improving different aspects of implementation in the projects. Through the findings, the study will equip project team with the relevant skills and knowledge necessary for effective project implementation and further explore ways through which the project will engage its team satisfactorily to enhance quality in

the projects. As a result, the study aimed at creating an environment where project managers are able to understand the needs of project team and how to meet their expectations. It will lead to a motivated, inspired, retained and engaged workforce hence enhancing productivity and performance of the projects.

The study will assist the Nairobi County government and agencies like the National Construction Authority come up with better policies in regulating the construction industry in order to ensure effective performance in building construction projects. To the citizens, the study will suggest ways of providing timely services, which are necessitated by accessibility and availability of information. It will encourage transparency on how public housing projects activities are conducted in order to generate trust, team spirit and accountability with the aim of enhancing customer satisfaction. In addition, the study will be of significance to researchers and those in academic field of communication as it will serve as a source of reference in forming a base to their future research topics and studies.

1.6 Scope of the Study

The purpose of the study was to examine the role of project communication on implementation of housing construction projects in Nairobi County, Kenya. Nairobi County was chosen for the study since it is the capital city of Kenya with many housing development projects being implemented by the private developers, development partners, County and National government. The study targeted project managers, consultants and regulators involved in the implementation of the projects who are likely to provide pertinent information about the research problem. Conceptually, the study was limited to examine the influence of communication channels, communication skills and communication structure on the implementation of quality housing projects within stipulated time and within the costs estimated.

CHAPTER TWO

LITERATURE REVIEW

2.0 Overview

This chapter discusses the theoretical review, conceptual framework, empirical review which provides information from publications on topics related to the research problem as well as what various scholars and authors have discussed about the concept of project communication and quality of construction projects. It also covers the critique of existing literature, summary of literature and research gaps. The research was aimed at determining the effects of project communication on the implementation process of public housing construction projects within Nairobi County with the dependent variable being the implementation of quality housing projects.

2.1 Project Communication

Project communication is the transmission of data, information and knowledge between two or several stakeholders Sambasvan & Soon (2007) and plays a key role in project success Ye, Zia & Skitmore (2014). Projects success occur when faster decision-making tools and techniques are needed more than possible in a normal operation and include resources provided by the company in which the project is operated Sambasvan & Soon (2007).

As project organizations grow larger and the complexity of the project objective increases, it becomes harder for project teams to manage efficient communication Remidez & Jones (2012); project team members representing different knowledge areas needed to communicate despite possessing different knowledge backgrounds. Therefore, project teams need to understand and operate efficient project communication.

Efficient project communication is achieved when meaning of information sent conform to interpretations of information received Musyinaka (2015); the meaning intended by the transmitter should conform to the interpretation made by the receiver. Furthermore, efficient project communication requires information to travel fast. In contrast, inefficient communication includes waste activities, which are activities with no value for the end customer Remidez & Jones (2012). The objective of performing efficient communication is therefore to minimize waste activities Kwofie, Figar & Adinyira (2014) without jeopardizing the understanding and clarity of information.

Project communication is one important tool to perform well to reach project success Reeta & Nerja (2012). Project success is commonly associated with the outcome Remidez & Jones (2012), which is affected by all processes included in the project. Project communication has significant impact on the project success as poor communication can adversely affect the project performance Musyinka (2015) by directly affecting the outcome. In fact, project communication, among other tools within projects, aims to control the achievement of the project objective Kwofie, Figar & Adinyira (2014). By eliminating waste in project communication, efficiency can be achieved and greater project success can be accomplished Grant & Osanloo (2014). W. Lamorte (2019). The problem with large projects is that sudden changes may have huge implications to the individual parts under the project. Therefore, during planning it is important to know the people in the group and how they adapt to such changes, this will help in packaging the type of project communication needed for each audience. While a number of people may be comfortable in adjusting to conform to new requirements, some may be unable to cope and work efficiently as before. LaMorte (2018) There are five established adopter categories and these are:Innovators who want to be first to try innovation, Early adopters who enjoy leadership roles and embrace change, Early

majority who need to see evidence that the innovation works before embracing it and Late majority who are skeptical but will embrace after the innovation has been tried by the majority and Laggards who are bound by tradition and very conservative, very skeptical of change and are the hardest group to bring on board.

2.1.1 Communication Channels and Project implementation

The communication process involves several elements like the stimulus, source/sender, the message, the medium/channel, the recipient and finally the feedback. According to Kwofie, Figar and Adinyira (2014), the sender sends a message to the recipient through a medium or channel. As a fact, any communication that occurs in an organization is characterized by a medium for instance face-to-face conversation, memos, printouts, emails and schemes depending on the content and messaging, and the aim of the message which the sender wants to relay to the target audience.

Reeta and Neerja (2012) notes that open channels of communication foster and enhances creativity, innovation and new ideas. The authors state that employees who are informed about their organizations are able to know what is important to their companies and work towards making improvements and spotting opportunities for innovation that can help further success. When employees know that organization's leaders will be open minded and that their ideas and opinions shall be sought after, besides being responsive to their feedback; they are more likely to contribute their ideas freely. To help make a manager's task easier, the types of communication channels are divided into three main groups namely formal, informal and unofficial (Hwang & Ng, 2013).For effective functioning of organizational communication, the communication channels and arrangements in construction projects must be carried out so that the channel and information deficits are as narrow as possible. This can be done by concentrating on improving 'the way that informative messages move around in the

project site, by creating set databases and by charting how the management communicates. By doing this, it is possible to have projects that have effective communication strategies that can enhance the working environment and ultimately remove any barriers that may hinder the implementation of quality construction projects.

2.1.2 Communication Skills and Project implementation

Effective communication in a project is of essence today compared to the past years owing to the complexities in the business and environmental conditions. This is because there is a lot of information flow today and it is important that employees are engaged in an understandable form of communication Reeta & Neerja (2012). According to standard economic theory, communication decisions for managers are relatively straightforward: managers should only engage in top-down communication of information that is instrumental in nature. Instrumental information is important, because it comprises task-specific knowledge that is necessary for the employee to complete his/her work task Musyinka (2015). A key implication of this perspective is that communication of any other information (e.g., changes in a company's vision or goals) is irrelevant for employee performance. Thus, it is optimal for managers to withhold such information from employees to reduce communication costs.

While there are a number of unanswered questions on the validity of this perspective, it is evident that the concept of relevant information in organizational contexts may be more complex. For instance, an article describes a lack of top-down communication in connection with changes in corporate policies, goals, visions, or financial results Reeta& Neerja (2012), and relate it to frustration, demotivation and reduced productivity among employees. Public housing projects should be concerned about these observations because they suggest that managers frequently misjudge the

relevance and motivational power of information for subordinate employees, implying that top-down communication is often ineffective. A key challenge is therefore to provide such project managers in housing projects with a more extensive guidance on what type of information they need to communicate to subordinates to ensure enhanced quality of the housing projects undertaken.

According to Emmitt (2010), project teams do not always realize the importance of communication to organizational goals or know how to establish and maintain healthy communication systems. It is therefore, the responsibility of managers to improve communication in the workplace by training employees in communication skills and encourage informal communication amongst staffs. It was found that job satisfaction was positively impacted by effective communication from supervisors regarding expectations and feedback on job performance. Project teams are known to have their own sources, their own information system which is separate from the channels embraced by the management Hwang & Ng, (2013).

Therefore, communication skills are just as important in project management and implementation. A breakdown in communication causes a number of disruptions in the flow of information hence having the right skills will enable all the involved parties to be able to come up with solutions in time to avoid disruptions and ensure quality housing projects are delivered as expected.

2.1.3 Communication Structure and project implementation

A Project should have a vision, a mission statement, core values and goals. It should also have a structure in place for effective decision making. It should equally have clear strategies and plan of action to achieve these goals. The very establishment of an organization structure is a sign that communications are supposed to flow on a

particular path'. Robbins & Judge (2012) mirrored this notion by commenting that a structure governs 'who reported to whom, and the normal coordinating mechanisms and interaction patterns' that should be followed. Therefore, without communication, there would be no project. The traditional perception of social structure as a constraint on interaction can be expanded by the recognition that interaction creates the structure of constraint to which it is subjected Ye, Zia & Skitmore (2014). Some organization scholars developed theories such as the structuration theory by Anthony Giddens (1984) to show how people use communication in the structuration of an organization. This is a social theory of the creation and reproduction of social systems that is based in the analysis of both structure and agents without giving primacy to either. Here, people create structure as they organize, and they must communicate to do so. In this case, repeated interactions are the foundation of social structure.

It must be recognized that leaders are important pillars and social actors in organizations because they are centrally involved in establishing and maintaining institutional values. A theoretical framework of the process is advanced whereby leaders' claims function as transformational mechanisms of value infusion in the institutionalization of projects Muszynka (2015). Project communication should foster good communication among the employees and should also provide for orderly succession. These factors are the most important in counteracting the strong emotions that can arise. The main challenge of leadership in organizational communication is how to keep the operations of governance smooth. Kwofie, Fugar, Adinyiru and Ahdze (2014), says that just like organizational structure, organizational communication is also a multidimensional construct where employees are not merely satisfied or dissatisfied with communication in general, but they can express varying degrees of satisfaction about aspects of communication. Projects should be visible among employees on a regular basis

especially when the organization is very hierarchical or scattered to an extensive geographical area. They can do this by making special arrangements to meet employees in their offices or walk around and have a personal chat with them to develop and enhance a good working relationship. The aim of a project structure is to ensure an orderly flow of information from both ends i.e. top-down and vice versa which is described as the best way in which responsibility and power are allocated and work procedures are carried out by organizational members

2.2 Theoretical Review

The study was built upon the Project Management Theory and the Implementation Theory with regard to project management and implementation which has much links with quality in the projects. On the other hand, Communication theories that are relevant to the focus of the study with regards to project management and implementation were used, these include Diffusion Theory and Groupthink Theories which build up on the importance of proper and effective communication.

2.2.1 Project Management Theory

According to the project management theory initiated by Koskela and Howell (2002b), the most common thing in all major projects all over the globe is the planning, organizing, coordinating and controlling of both human and material resources with a sole purpose of realizing the project outcome. Construction industry is organized on a project basis.

In a traditional management approach, the project coordinator usually performs the role of project manager but with limited capacity since the final say is usually held by the client. In most cases, this is usually the architect or engineer.

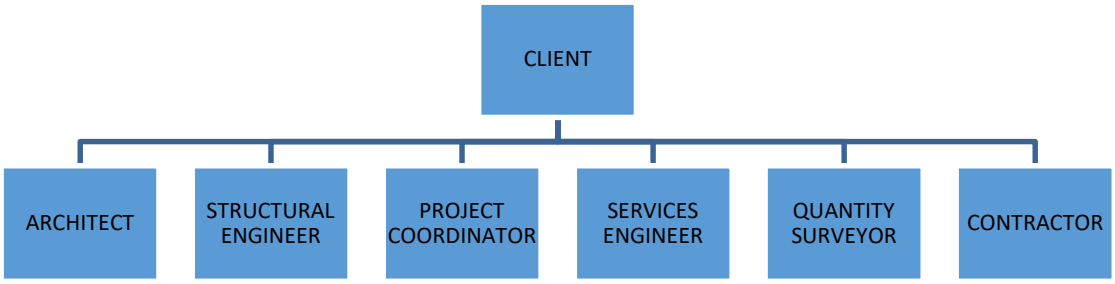

Figure 2.1: Traditional Management Structure
Source: Ekundayo, et al., (2013)

However, with the development of project management as a profession in the 1950s, it was determined that it was an independent and efficient way to achieve project goals and objectives Koskela et al (2002). Project management is defined as application of knowledge, skills tools and techniques to project activities to achieve the project requirements and is accomplished through the application and monitoring of project management processes that are initiating, planning, executing, monitoring and controlling as well as closing Lewis (2007, p.4).

Project management allows for extensive planning and coordination, which also enables work to be organized across the various functional groups that work together. This results in improved coordination and communication among employees and managers.

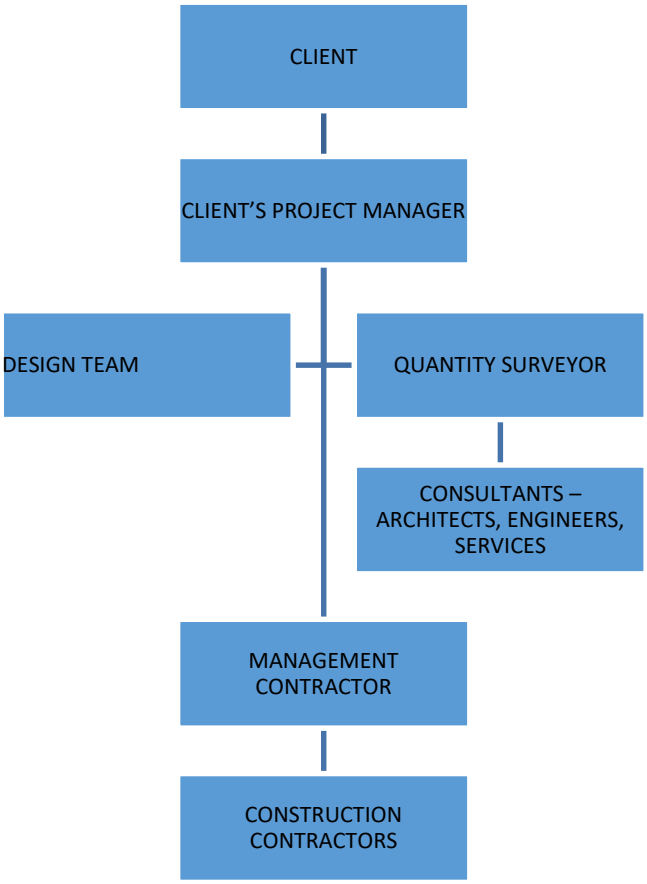

Figure 2.2: Project Management Structure
Source: Ekundayo, et al., 2013

The importance of project management and the benefits it brings if properly utilized in implementation of construction projects is immense and cannot be downplayed. Data from NCA shows that just a small portion of construction projects that are in Nairobi County are actually compliant with construction regulations thus showing a huge problem that can be dangerous if not rectified National Construction Authority (2019).

Project management encompasses a number of levels of management that is responsible for ensuring that each portion of the project is completed successfully. Therefore, communication is a critical aspect that comes in to ensure that all parties are able to know what the other is doing. Given that project management works with time frames and schedules, ensuring that each party completes its work in time and to the required specifications determines the success of the project.

2.2.2 Implementation Theory

According to the Implementation theory by Maskin and Sj'strom (2002), the implementation problem is the problem of designing a mechanism (game form) such that the equilibrium outcomes satisfy a criterion of social optimality embodied in a social choice rule. If a mechanism has the property that, in each possible state of the world, the set of equilibrium outcomes equals the set of optimal outcomes identified by the social choice rule, then the social choice rule is said to be implemented by this mechanism.

In this theory, the problem of implementation lies with coming up with an equilibrium outcome which may be socially optimum for all members in such a society. Therefore, proper implementation can be accomplished with a smaller set of possible states/outcomes of the situation Hayek (1945). This means that in instances of project management, the project manager can have a greater chance of properly implementing the project successfully, if he/she is aware of the actions or strategies of those directly under them. In this case, understanding how managers are planning on carrying out their activities ensures that the project manager can align the activities of the project to ensure effective implementation.

Implementation theory can be linked to the topic of project communication and the implementation of public housing construction in Nairobi County, Kenya. Implementation theory focuses on understanding and analyzing the processes and factors that influence the successful execution of policies, programs, or projects. In the context of the study, project communication plays a crucial role in the implementation of public housing construction. Effective communication practices are vital for ensuring that project goals, objectives, and requirements are clearly communicated and understood by all stakeholders involved in the construction process. Implementation

theory emphasizes the importance of communication as a key factor in achieving successful implementation outcomes. According to implementation theory, effective communication in project implementation involves not only the transmission of information but also the establishment of shared understanding, coordination of actions, and resolution of conflicts or challenges that may arise during the construction process. It recognizes that effective communication enhances collaboration, minimizes misunderstandings, and facilitates the timely flow of information and decision-making. Furthermore, implementation theory highlights the role of communication channels, structures, and skills in ensuring successful implementation. The findings of the study, which emphasize the significance of communication channels, skills, and structure, align with the key concepts of implementation theory. By linking implementation theory to the topic of project communication and the implementation of public housing construction in Nairobi County, Kenya, the study can provide insights into the factors that influence the successful execution of housing projects. It can shed light on how effective communication practices contribute to overcoming implementation challenges, ensuring stakeholder alignment, and achieving project objectives. Moreover, it can offer recommendations based on implementation theory to enhance project communication strategies and improve the implementation outcomes of public housing construction initiatives in Nairobi County.

2.2.3 Communication Theories

Communication theories are diverse and numerous in the field of social sciences. However, in this study focus will be on the theories that are relevant to the focus of the study with regards to project management and implementation. The theories include: Groupthink Theory and Diffusion Theory.

2.2.4 Groupthink Theory

Groupthink theory states that when team members work together too well, letting their desire to conform interfere with their ability to make sound decisions. In this theory created by Irving Janis (1972), the focus is on a large group of people who are involved in a singular project. Project managers have to ensure that all the members in the group have the same goals and are aiming for the same objective. Additionally, the team members must acknowledge that the project goals supersede their individual needs and personal differences. This is difficult to achieve in most cases since finding cohesion especially in very large projects that include several line managers becomes difficult Aronson et al. (2003). This theory was chosen for this study because it covers issues that become present when there is a large group of people undertaking a similar task that has a singular expected outcome. By understanding how individuals are most likely to behave in this type of situation then it is possible to come up with possible solutions.

Group theory emphasizes on the impact of social norms, cohesion, and trust within a group. These factors play a significant role in shaping communication patterns and the effectiveness of project teams. By considering the social dynamics within project groups, the study can explore how social norms, cohesion, and trust impact communication practices, information sharing, and problem-solving processes. Understanding these dynamics can inform the development of strategies to foster a positive and collaborative communication environment within housing construction projects in Nairobi County. By linking group theory with project communication and the implementation of public housing construction in Nairobi County, the study can provide valuable insights into how communication practices can be optimized to enhance collaboration, decision-making, and overall project implementation outcomes. It can explore the dynamics, leadership, roles, and social aspects within project groups,

providing a deeper understanding of how effective project communication can be achieved in the context of housing construction projects in Nairobi County.

2.2.5 Diffusion Theory

Everett Rodgers (1962) came up with this theory which describes how new ideas, technologies, products or processes can spread through communication among member of a group/society through different communication channels. It originated in communication to explain how, over time, an idea or product gains momentum and spreads through a specific population or social system. Rogers (2003) Communication channels, interpersonal networks and social modeling were particularly powerful elements in the change process. Across broader cultural and disciplinary contexts, Rogers identified general patterns and similarities in the change process. Lamorte (2019) The problem with large projects is that sudden changes may have huge implications to the individual parts under the project. Therefore, during planning it is important to know the people in the group and how they adapt to such changes. While a number of people may be comfortable in adjusting to conform to new requirements, some may be unable to cope and work efficiently as before. LaMorte (2018) There are five established adopter categories and these are: Innovators who want to be first to try innovation, Early adopters who enjoy leadership roles and embrace change, Early majority who need to see evidence that the innovation works before embracing it and Late majority who are skeptical but will embrace after the innovation has been tried by the majority and Laggards who are bound by tradition and very conservative, very skeptical of change and are the hardest group to bring on board. A project manager has to properly plan to ensure that there are minimal changes throughout the duration of the project and at the same time be well versed to enable him/her make transitions as smooth as possible for most team members. This theory is significant to this study

because it can explain how changes in project deliverables or timelines may affect the individuals involved in the project. This can ultimately affect the entire project in the long run.

Diffusion theory can be linked with project communication and the implementation of public housing construction in Nairobi County, Kenya. Diffusion theory focuses on how innovations or new ideas spread and are adopted within a social system. In the context of the study, effective project communication practices can be considered as an innovation that needs to be diffused and adopted by stakeholders involved in public housing construction projects. By applying diffusion theory, the study can explore the factors that influence the adoption and diffusion of effective communication practices within the housing construction industry in Nairobi County. It can examine how communication practices are perceived, communicated, and adopted by different stakeholders, including project teams, contractors, government agencies, and local communities. Additionally, the study can identify the key characteristics of effective communication practices that facilitate their adoption and diffusion, such as simplicity, compatibility with existing practices, observability of benefits, and the influence of opinion leaders. By understanding the diffusion process of effective communication practices, the study can provide insights into how to facilitate the widespread adoption and implementation of these practices in the context of public housing construction in Nairobi County.

2.3 Research Gap

The implementation of housing projects should aim to get construction work completed within stipulated time and within the costs estimated. Currently, the situation in the construction industry is bleak. The frequencies of incomplete buildings, the Kenya government dismantling some illegally constructed buildings, collapsing buildings and

the disturbing death toll that accompanies these events have become significant issues in Kenya.

Ministry of Transport and Infrastructure Development (MTID) reports on collapsed structures apportion the blame to lack of proper supervision and poor construction procedures (MTID, 2006). Kioko (2014) Building failures occurs due to use of substandard materials, poor workmanship, faulty construction methodology, on-compliance with methodology, lack of supervision, poor inspection and monitoring, structural defects and illegal conversations and alterations.

Njogu (2011) studied factors influencing performance of informal laborers in the construction industry in Karatina Municipality, Central Province, Kenya. Munyoki (2014) analyzed factors influencing completion of construction projects Nairobi County, Kenya. Wanjau (2015) studied factors influencing completion of building projects in Kenya. However, little has been done on the "softer" factors such as project communication and how it affects the construction industry. This study sought to fill this research gap by assessing the concept and level of importance of project communication as a key component in project performance, a case of Nairobi County.

2.4 Conceptual Framework

The Conceptual Framework is a concise description accompanied by a graphical or visual depiction of the major concepts of the study and the hypothesized relationships and linkages among them Mugenda &Mugenda (2012). It assumes that project communication channels, project team communication skills and project team structure influence the implementation of housing construction projects (dependent variable). This is as illustrated in Figure 2.3

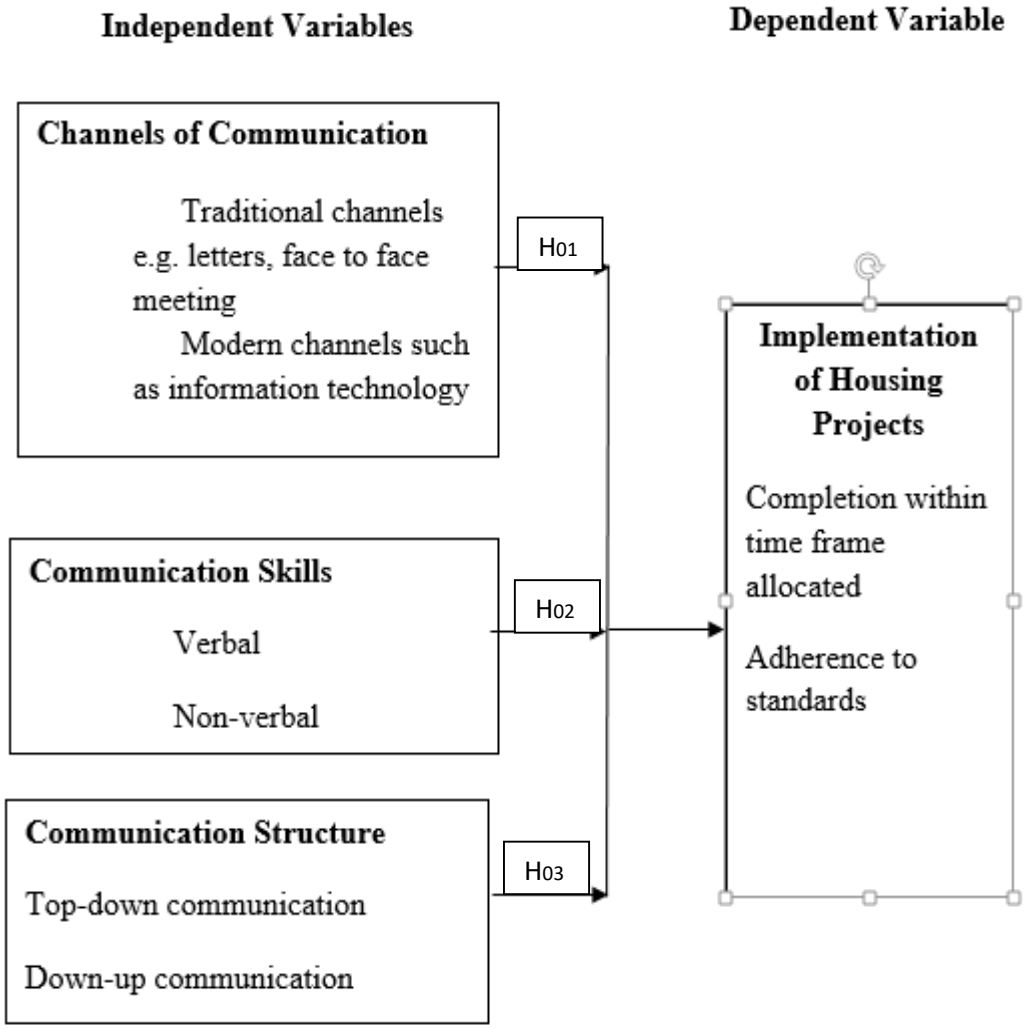

Figure 2.3: Conceptual Framework

CHAPTER THREE

RESEARCH METHODOLOGY

3.0 Introduction

This chapter explains and outlines the methodology that was employed to achieve the objectives of the study. The following sub-sections are also included; research design, target population, data collection instruments, data collection procedures and finally data analysis and presentations.

3.1 Research Design

This study adopted cross-sectional research design as it involved the collection of data from a section of the population at a given point in time. The study adopted this method because it intended to gather facts and figures from a section of the Nairobi City County Government Building Inspection Unit department. The study intended to use the information collected from the sample group to make a conclusion regarding the study objectives (Kothari & Garg, 2014). It is on this premise; the descriptive cross-sectional research design was employed to provide the current study with appropriate procedure for examining the effect of project communication on quality of public housing projects in Nairobi City County, Kenya.

3.2 Study Area

The study area was Nairobi County in which majority of construction projects are done. Its status as the capital city makes it ideal for the study since it hosts major government offices and headquarters of major organizations that are key to this study with many housing development projects being implemented by the private developers, development partners, County and National government.

3.3 Target Population

This study targeted respondents from the Nairobi City County Government, those from Building Inspection Unit. Questionnaires were distributed to the officers from the building Inspection Unit. Additionally, licensed architectural and quantity surveyor firms and building contractors operating in Nairobi were used. The study also targeted senior registration officers from the National Construction Authority (NCA) which is a regulator of the construction industry as well as those from the National Environmental Management Authority (NEMA) who spearhead environmental protection and building contractors. Members of the Board of Registration of Architects and Quantity Surveyors (BORAQS) were also targeted in the study. Table 3.1 illustrates the distribution of respondents that was targeted during this study.

Table 3.1: Target Population

Category	***Population***	***Percentage (%)***
Architectural firms	94	13.80
Quantity Surveyors	63	9.25
Building Contractors	436	64.02
NCA Officers	18	2.64
NEMA Officers	25	3.67
Nairobi County Govt. Officers	35	5.14
BORAQS Officers	10	1.45
Total	**681**	**100**

3.4 Sampling Frame and Sample Size

Yin (2013) explains that sampling is the procedure of selecting a representative of the total population as much as possible in order to produce a miniature (small) cross

section. Stratified random sampling technique was used to draw the sample. This method was to assist in improving the presentation of each stratum (groups) within the population, as well as ensuring that the strata are not over-represented. Owing to practical difficulties with responses from large survey groups, a meaningful survey sample size was determined. The study used the following Taro Yamane formula to get a sample size at a confidence interval of 95%;

$$Sample\ size\ (n) = \frac{N}{(1 + N(e)^2)}$$

Where;

N is the total population (681),

e is the margin of error/significance level (0.05),

$$(n) = \frac{681}{(1 + 681(0.05)^2)}$$

$$(n) = \frac{681}{(1 + 681\ (0.0025))}$$

$$(n) = \frac{681}{(1 + 1.7025)}$$

$$(n) = \frac{681}{2.705}$$

$$(n) = 251.988899 \approx 252$$

Therefore, the sample size (n) used was 252.

By using the different proportions of the selected categories, the sample size was computed for all the categories.

Table 3.2: Sample Size Distribution

Category	*Population(N)*	*Proportion (%)*	*Sample(n)*
Architectural firms	94	13.80	38
Quantity Surveyors	63	9.25	25
Building Contractors	436	64.02	176
NCA Officers	18	2.64	7
NEMA Officers	25	3.67	10
Nairobi County Govt. Officers	35	5.14	14
BORAQS Officers	10	1.45	5
TOTAL	**681**	**100**	**252**

Proportion sampling was conducted for each category in which summation for all category formed the entire sample of 252.

3.5 Methods and Tools of Data Collection

The study employed the use of primary data collection. Primary data is described as the data observed or collected through first-hand experience and has not been manipulated or analyzed to give any type of information Mugenda (2003). The study adopted a primary method of data collection in which the quantitative data supported the reviewed literature.

3.5.1 Collection of Data

To enhance the reliability of the data collected, quantitative data collected from the respondents was coded and analyzed using quantitative methods. These include descriptive statistics, correlation and association. This was critical to enable the comparison and analysis of the different types of information collected from the

respondents under the different sections of the questionnaire. From this data, it was then possible to perform scoring and compare the levels with which the respondents agree or disagree with statements. This was presented using descriptive statistics.

3.6 Validity and Reliability

3.6.1 Validity

Validity is the degree to which the sample of the test item represent the content that is designed to measure, that is, the instrument measures the characteristics or trait that is intended to measure Grossoehme (2014). The study purposed to ensure validity of research instruments by using simple language free from jargon that can be understood by the respondents. The need to assess validity was to ensure the response by the respondent are consistent. The researcher engaged her supervisor and other experts to ensure that the questions were tested or measured what was intended. The research adopted content validity which refers to the extent to which a measuring instrument provides adequate coverage of the topic under study. It is recommended that instruments used in research should have Content Validity Index of approximately 0.78 or higher Doody & Nonna, (2013). The study thus used a threshold of 0.78 to check the validity and appropriateness of the sample of items under measure.

3.6.2 Reliability

The measurement of reliability provides consistency in the measurement variables. Internal consistency reliability is the most commonly used psychometric measure assessing survey instruments and scales. Cronbach alpha is the basic formula for determining the reliability based on internal consistency Yin (2013). Reliability is increased by including many similar items on a measure, by testing a diverse sample of individuals and by using uniform testing procedures. In order to test the reliability of the instruments, internal consistency techniques were applied using Cronbach's Alpha.

The alpha value ranges between 0 and 1 with reliability increasing with the increase in value. A Coefficient of 0.6-0.7 is commonly recommended measure to indicate an acceptable reliability. Therefore, a value of 0.7or higher indicates good reliability hence this study will be based at a threshold of 0.7

3.7 Data Analysis and Presentation

Data collected was analyzed using quantitative method. Data analysis involved the testing of the data gathered so as to make inferences and deductions. Quantitative data was entered, cleaned and analyzed using Statistical Software, SPSS version 25. This enabled the researcher to come up with inferential statistics as well as descriptive statistics such as measures of central tendency and dispersion along with percentages to organize and summarize numerical data. This was done through cross tabulation, frequency distribution and charts.

In order to analyze the relationship between the independent variables and the dependent variable, the study adopted multiple regression analysis based at a 5% level of significance. Since the study aimed at analyzing several independent variables, multiple regression was used based on the formula below:

$$y = \alpha_0 + \alpha_1 X_1 + \cdots + \alpha_k X_k$$

Where;

y Dependent variable

α_0 Constant

X_k k^{th} term. Each term can be a single predictor, a polynomial term, or an interaction term. The k^{th} term for this model is a single predictor variable forming bases for variation in the dependent variable.

α_k estimate of k^{th} regression coefficient

The study findings were presented by the use of tables, figures, charts and graphs.

3.8 Limitations of the Study

A number of limitations were faced during the study. There was difficulty in gaining access to the sampled respondents who work in the organizations involved in regulatory and approval of construction projects which worsened after the Ministry of Health "Work from home" policy due to the COVID-19 world pandemic. Additionally, the conservative nature of some respondents and oaths of secrecy administered on their employees regarding information disclosure rendered data collection difficult. To mitigate these limitations, the researcher reached the prospective respondents and asked for permission from the senior administration officers in these organizations so as to request for their permission and support in collecting data, the researcher also used electronic means to collect data as opposed to physical questionnaires.

The study experienced resistance from the respondents who were suspicious of the study intentions despite formal assurance that the findings and study will be purely for academic purposes. The respondents also had doubts on confidentiality when requested to complete the questionnaires. In order to mitigate this, the respondents were fully assured of the anonymity and ethical handing of the study through the introductory letters and approvals.

3.9 Ethical Considerations of the Study

It is upon all researchers at the university to familiarize themselves and adhere to the ethical code of the institution Saunders (2011). This must be observed in writing research proposals, research projects, dissertations and theses. The researcher ensured that all the necessary ethical standards and regulations were adhered to during the duration of the study. The respondents were informed of consent before the visit. Apart

from that, all the information gathered from the respondents was treated with strict confidentiality and anonymity to ensure that they cannot be identified.

CHAPTER FOUR

DATA PRESENTATION, INTERPRETATION AND DISCUSSION

4.1 Introduction

This chapter presents the findings of the data generated using various statistical techniques on the role that communication plays in the construction of houses in Nairobi County. The analysis of data collected through questionnaire was subjected to descriptive and inferential statistics. The descriptive statistics provide the measures of central tendency, measures of dispersion, frequencies and percentages. On the other hand, inferential statistics were computed to establish the relationship between the variables in the study. Inferential statistics are critical in drawing inference about the population from the sample. The approach adopted under inferential statistics is the regression analysis. Regression analysis establishes the relationship between the dependent and the independent variable. Additionally, the chapter provides a summary of the response to the data collection exercise. The presentation begins by describing the response rate and demographic information of respondents. Further, the presentation, interpretation and discussions of study findings are made in the sub-sequent sections.

4.1.1 Response Rate

A total of 252 questionnaires were distributed to sampled respondent and 158 questionnaires were successfully returned representing a response rate of 63.0%.

4.1.2 Demographic Information

Demographic information presents information related to gender, geographical location, marital status, education of respondents who participated in the study. The need to analyze the demographic information is to assess the distribution of respondent

and to understand how their various profiles could explain their views with regard to role of communication in housing sector construction projects in Nairobi County.

The respondents were asked to indicate the professional qualifications that they held. Figure 4.1 provides the distribution of respondent by the area of specialization.

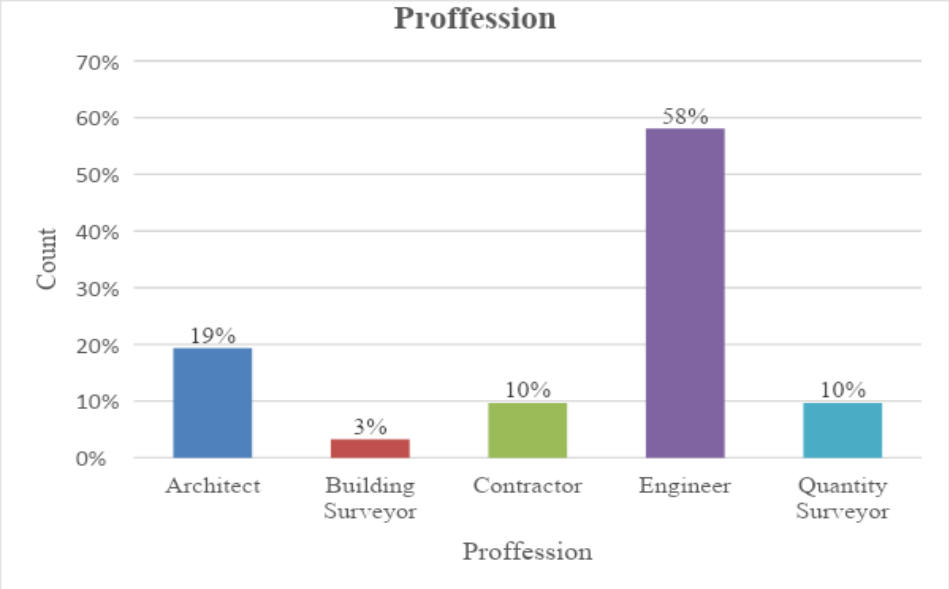

Figure 4.1: Distribution of respondent by profession

The results show that 58% of the respondents were engineers, 19% architects, 20% of contractors and quantity surveyors and 3% building surveyors. The involvement of the respondents with various professional backgrounds brought about different levels of expertise as required in a construction project and would help in understanding the role that communication plays in the housing sector across all these professionals.

The respondents were asked to indicate the number of years they have been engaged in the construction sector. Figure 4.2 shows the distribution of respondent by the years of experience.

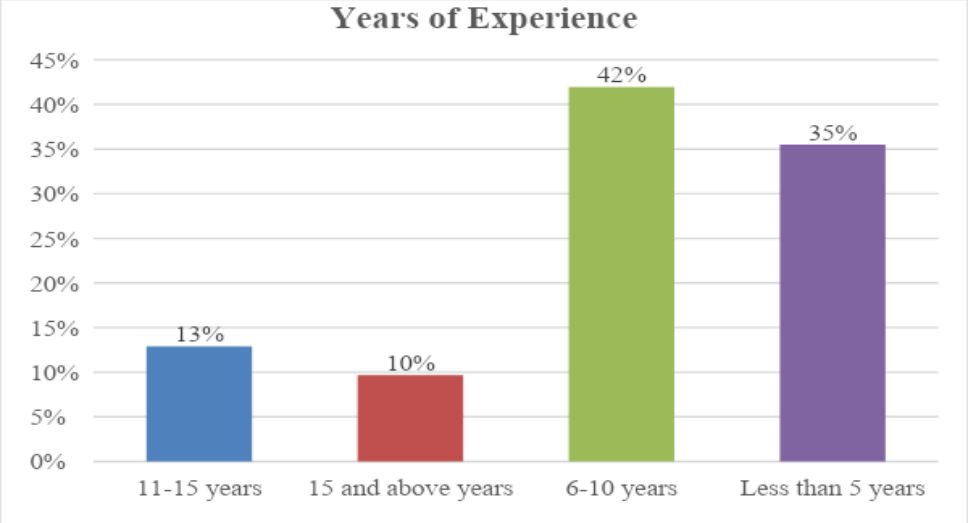

Figure 4.2: Distribution of respondent by year of experience

Findings show that 42% of the respondents had experience ranging from 6 to 10 years. Respondents with less than five years' experience were 35%, respondents with experience between 11 to 15 years were 13% while 10% of the respondent were above the experience of 15 years. The responses on experience indicates that at least 65% of respondents had been in the construction sector for a period of more than 5 years hence understand the dynamics associated with communication practices. These findings provide insights into the respondents' level of experience in the construction sector and its potential impact on their understanding of communication practices. The findings suggest that a significant proportion of the surveyed individuals had been working in the construction sector for a substantial period, gaining valuable knowledge and familiarity with industry practices over the years. Furthermore, 35% of the respondents had less than five years of experience. This indicates that a notable portion of the surveyed individuals were relatively new to the construction sector, potentially implying that they might have less exposure to the intricacies of communication practices compared to those with more experience. The findings also reveal that 13% of the respondents had experience between 11 to 15 years. This indicates that a smaller

percentage of the surveyed individuals had a moderate level of experience in the construction sector, likely possessing a deeper understanding of communication practices compared to those with less experience. Moreover, 10% of the respondents reported having more than 15 years of experience. This suggests that a relatively small but still significant proportion of the surveyed individuals had extensive experience in the construction sector. These individuals are likely to have a comprehensive understanding of the dynamics associated with communication practices due to their long-term involvement in the industry. Based on these findings, it can be inferred that at least 65% of the respondents had been in the construction sector for more than five years, indicating a substantial portion of individuals who possess knowledge and familiarity with the communication practices in this industry. However, it's important to note that the specific details of their understanding and proficiency in communication practices cannot be determined solely based on the experience levels mentioned in the findings.

The respondents were asked to indicate highest level of education. Figure 3 provides the results.

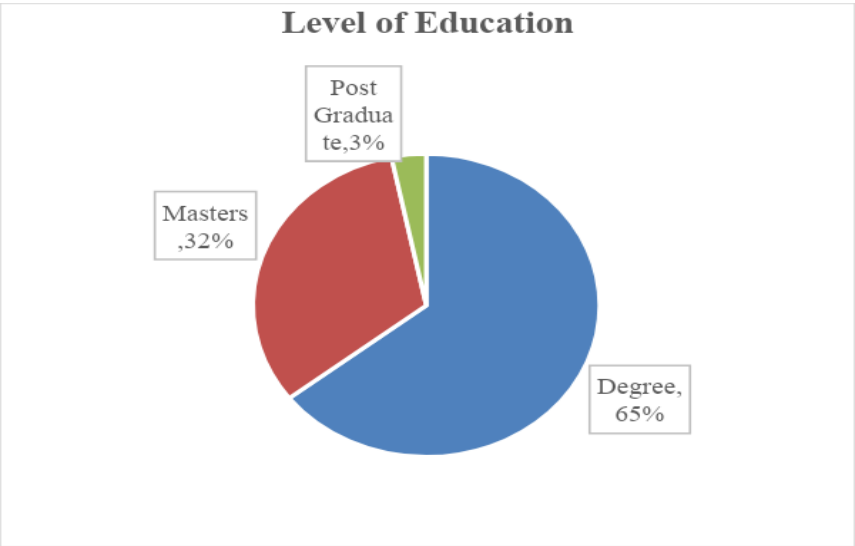

Figure 4.3: Distribution of respondent by the level of education

Findings show that the majority, 65% of respondents were undergraduate degree, 3% had postgraduate qualifications like PhD while 32% had master's level. These findings indicate the educational qualifications of the respondents surveyed. According to the data, the majority of respondents, accounting for 65%, had undergraduate degrees. This suggests that a significant portion of the surveyed individuals had completed their bachelor's degree as their highest level of education. In addition, the findings indicate that a small percentage, specifically 3% of the respondents, possessed postgraduate qualifications such as a PhD. This implies that only a small fraction of the surveyed individuals had pursued advanced degrees beyond a master's level. Furthermore, the data reveals that 32% of the respondents had master's level qualifications. This suggests that a considerable proportion of the surveyed individuals had completed a master's degree as their highest level of education. Overall, based on these findings, it can be inferred that the surveyed population consisted primarily of individuals with undergraduate degrees, followed by those with master's level qualifications. The percentage of respondents with postgraduate qualifications, such as a PhD, was relatively low compared to the other categories.

The study also sought information on respondents' age category. Figure 4 provides the distribution of respondent by age group.

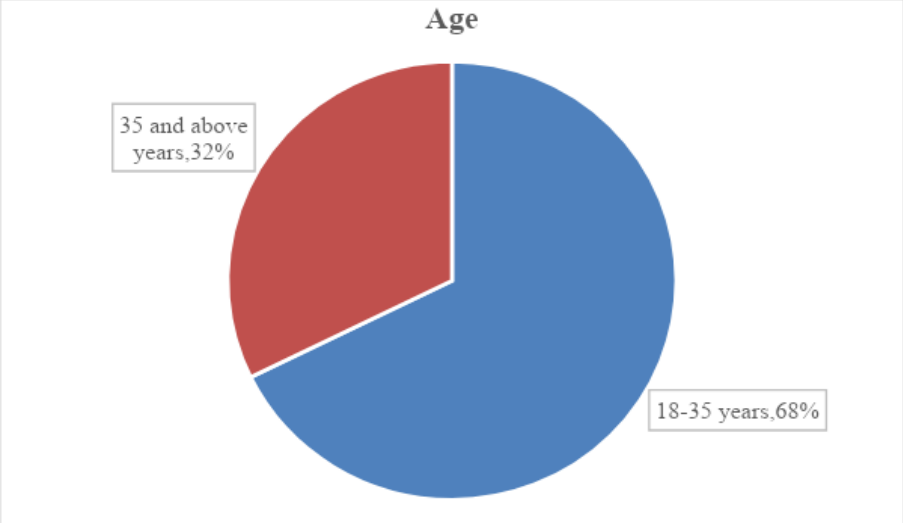

Figure 4.4: Distribution of respondent by Age

Result show that most (68%) respondents were aged between 18-35 years whereas 32% were aged 35 years and above. This illustrates how the construction industry is dominated by generally young people. The findings indicate the age distribution of the respondents and shed light on the demographic composition within the construction industry. According to the results, the majority of respondents, accounting for 68%, fell within the age range of 18 to 35 years. This suggests that a significant proportion of individuals working in the construction industry are relatively young. The dominance of this age group implies that there is a substantial presence of young professionals and workers in the sector. On the other hand, the findings also reveal that 32% of the respondents were aged 35 years and above. This suggests that there is still a notable representation of individuals with more experience and potentially higher positions within the construction industry who fall into the older age group.

Overall, these findings illustrate that the construction industry tends to be dominated by a generally young workforce. The higher percentage of respondents in the 18-35 age range indicates that a significant number of individuals entering the industry are relatively young, potentially reflecting a trend of younger professionals joining and

contributing to the sector. The presence of respondents aged 35 years and above highlights the importance of experienced individuals who bring their knowledge and expertise to the construction industry. Notably, these findings provide insights into the age distribution among the respondents, they may not necessarily represent the entire construction industry. The specific demographics of the industry may vary across regions, companies, and job roles.

4.2 Descriptive Statistics

The researcher computed the descriptive statistics for the independent variable; communication channels, communication skills and communication and dependent variable; housing project implementation. These variables were measured using several statements that were designed on a Likert scale of five showing = Very Small Extent (1), Small Extent (2), Neutral (3), Great Extent (4) and Very Great Extent (5). Table 4.1 represents the summaries for the descriptive statistics for the variables.

Table 4.1: Descriptive Statistics

Statistics	Channels of Communication	Communication Skills	Communication Structure	Project Implementation
Mean	3.1437	2.8312	3.1796	3.4718
Standard Error	0.16782	0.12185	0.11069	0.23747
Median	3.2	2.9	3.25	3.9
Mode	4	2.6	3.5	3.9
Standard Deviation	0.94938	0.68929	0.62615	1.34337
Sample Variance	0.9012	0.4751	0.39207	1.8046
Kurtosis	0.24813	0.23579	0.132281	-0.57504
Skewness	-0.6392	-0.57468	-0.11870	-0.70839
Range	4	3	2.5	4.5
Min	1	1	2	0.5
Max	5	4	4.5	5

NB: Table 4.1 provides the descriptive statistics' table offers the measure of central tendency and variation for all the continuous variables in the study. The computation of the mean for all the five variables was facilitated by data transformation in which average of all the elements under the variables was computed.

The descriptive statistics shows that among the three independent variables; communication structure was ranked highly (M=3.17, SD=0.62) followed by communication channels (M=3.14, SD=.94) and the least ranked was communication skills (M=2.83, SD=0.68). Despite the variations in ranking, all appear to show that communication aspect was at an average level (Mean of between 2.5 – 3.4) as perceived by professionals in the housing sector in Nairobi County. On the dependent variable, respondents indicated that it was to a great extent (M=3.47, SD=1.34). The standard deviation values are above 1 which implies that there are a considerable number of respondents who tended to drift away from the majority. The findings provided highlight the rankings and perceptions of professionals in the housing sector in Nairobi County regarding communication variables and the dependent variable. The findings suggest that professionals in the housing sector perceive communication structure as a significant aspect of communication practices. Communication channels were ranked second with a mean (M) of 3.14 and a slightly higher standard deviation (SD) of 0.94. This indicates that professionals also consider communication channels to be important, but there may be some variation in their perceptions compared to communication structure. On the other hand, communication skills were ranked the lowest among the independent variables, with a mean (M) of 2.83 and a standard deviation (SD) of 0.68. This implies that professionals in the housing sector perceive communication skills as relatively less important compared to communication structure and channels. Despite the variations in the rankings of these communication variables, the findings indicate that all three aspects were perceived to be at an average level, with means falling between 2.5 and 3.4. This suggests that professionals in the housing sector in Nairobi County generally considered communication to be moderately important.

Regarding the dependent variable, respondents indicated that it was to a great extent, with a mean (M) of 3.47 and a relatively higher standard deviation (SD) of 1.34. The standard deviation value above 1 suggests that there is a considerable number of respondents who deviated from the majority perception of the dependent variable. This implies that there might be diverse opinions or interpretations among professionals in the housing sector regarding the extent of the dependent variable. Overall, these findings provide insights into the perceived importance and rankings of different communication variables by professionals in the housing sector in Nairobi County. While communication structure and channels were generally ranked higher, communication skills were considered relatively less important. Additionally, the standard deviation values indicate that there is a degree of variation in the perceptions of professionals regarding the dependent variable, suggesting a diversity of opinions within the surveyed population.

4.2.1 Channels of Communication

The first independent variable sought to find out the commonly used channels of communication in housing projects. The respondents were asked to indicate the degree to which print, electronic, face to face and social media channels were used to communicate project information in Nairobi County housing sector. The results are indicated in Table 4.2.

Table 4.2: Channels of Communication

	Extent of usage				
Channels of Communication	**Very Great Extent)**	**Great Extent**	**Neutral**	**Small Extent**	**Very Small Extent**
Print channels	9%	31%	19%	28%	13%
Electronic channels	13%	34%	13%	22%	19%
Face-to-face channels	38%	13%	9%	34%	6%
Social Media channels	9%	31%	22%	13%	25%

Note: Table 4.2 provides the measures of extent for all the elements under the aspect of communication channels.

Result show that 31% of respondents indicated that print channels of communication were utilised to a great extent, 19% were undecided, 28% said that print media was used at a small extent, 9% used it to a very great extent whereas 13% said that print media was used to a very small extent. The result shows that 40.0% of housing industry uses print media on regular occasions whereas 41.0% do not use this channel. This means that construction professionals also value the importance of print media as a channel of communication in housing construction project.

For the electronic channels' usage, 13% said that it was to a very great extent, 34% indicated that it was to a great extent, 13% were neutral, 22% used to a small extent whereas 19.0% used electronic media to a very small extent. This means that close to half (47%) use electronic media channels (email, telephone, messages, video calls among others) to communicate with various stakeholders in the construction sector while 41.0% have not yet embraced electronic channels of communication. This means that less than 50% of housing sector construction professionals have not adopted electronic channels of communication during implementation of projects. The finding presented in this section aligns with Quoreshi and Anders (2017) findings as electronic and social media forms the key components of channels of communication.

On the use of face-to-face methods of communication, 6% used to a very great extent, 13% utilized them to a great extent, 9% were neutral, 34.0% utilized it to a small extent and 6.0% utilized it to a very small extent. The result shows that to a higher extent, more than half (51.0%) of construction stakeholders communicate via face-to-face interaction when implementing housing projects. This is because through face-to-face communications, the message from the sender is received instantly and appropriate feedback is provided from the receiver whereas the use of other mediums of communication might delay the delivery of the feedback.

Results on social media channels use indicate that 9% used it to a very great extent, 31% used it to a great extent, 22% were undecided, 13% used it to a small extent and 25% used it to a very small extent. The result show that 40.0% of construction stakeholders have embraced social media with only 38.0% appearing not to have yet embraced social media applications (YouTube, Facebook, WhatsApp, Telegram, Messaging, Twitter, Snap chat, LinkedIn and Instagram) to communicate on project matters. This means that the usage of social media platforms as channels of communication was to a moderate extent in communicating project information to different stakeholders. The results align with Berg, Quoreshi and Anders (2017) found out that social media has emerged as an efficient means of communication; however there exist safety issues in such platforms.

4.2.2 Communication Skills

The second objective of the study was to examine how competency in communication skills by project team members affected the implementation of housing projects in Nairobi County. Therefore, the respondents were asked to indicate the level of communication skills as used in housing project implementation and results are provided in Table 4.3.

Table 4.3: Communication Skills

Communication Skills	Very Great Extent)	Great Extent	Ratings Neutral	Small Extent	Very Small Extent
The extent to which the media used for communication is effective	9%	41%	25%	13%	13%
The extent to which the project team employ listening skills when communicating	6%	53%	13%	22%	6%
The extent to which the project team express courtesy when communicating	3%	38%	31%	22%	6%
The extent to which feedback mechanisms are instilled in the project	6%	41%	22%	25%	6%
The area to which training on effective communication is practiced	19%	19%	22%	41%	0%
The extent to which project team is sensitized on social media	28%	16%	16%	41%	0%

Note: Table 4.3 provides the measures of extent for all the element under the aspect of communication skills.

Findings in Table 4.3 indicates that, 9% of respondents perceived that the extent at which media channel used for communication was effective to a very great extent, 41.0% said that it was effective to a great extent, 25.0% were neutral, 13% said that it was effective to a small extent and 13% said that it was effective to a lesser extent. The result show that at least half (50.0%) of respondents perceived that the communication modes chosen in their construction work is effective to a great extent. this means that the communication media channel chosen by the housing project under implementation stakeholder is effective to ensure information is reached to every person and feedback is provided.

Secondly, research results show that 6.0% of respondents indicated that the degree to which project team members employed listening skills when communicating was to a very great extent, more than half (53.0%) reported that it was to a great extent, 13.0%

were neutral, 22% said that listening skills are employed to a small extent when communicating and 6% used in to a very small extent. The result show that at least 59.0% of respondents agree that members of the project team use listening skills in order to hear and understand information from their colleagues when undertaking housing construction work which increases productivity as it removes misunderstandings, corrections and costly errors that may happen during project implementation.

Findings show that only 3% of respondents said that project team expresses courtesy when communicating to a very great extent, 38.0% said that they normally show courtesy to a great extent, 31.0% were undecided, 22.0% said that courtesy is expressed to a small extent and 6% said that it was expressed in a very small extent. The result shows that only 41% of project team members express courtesy when speaking to their colleagues while 28.0% do not. The aspect if well embraced by project team members when communicating will ensure that needs, feelings, wants and thoughts of the other people are heard. This will build respect among the project team members hence enabling the accomplishment of project goals.

Research findings also showed that 6.0% of respondents said that feedback mechanism are instilled in the housing project to a very great extent, 41.0% said that they were instilled to a great extent, 22.0% were neutral, 25.0% said that feedback mechanism have been instituted to a small extent and 6.0% said that they had been instilled to a very small extent. The result show that less than half (47.0%) of project teams have instituted feedback mechanism in housing project construction. When there is feedback in housing project, essential areas where issues arise are identified and feedback also improved project team members' mutual learning hence increasing reliability of project success.

Results also revealed that 19.0% of respondents indicated that area to which training on effective communication is needed is practiced to a very great extent, 22.0% were neutral and 41.0% said that it training was practiced to a small extent. This shows that respondents had mixed opinion on importance of training on effective communication in their housing project work. Lack of effective communication may result to poor project implementation since communication is critical to project success. Therefore project team leaders have to identify areas which they feel there is need for additional training on effective communication.

Finding also show that 28.0% of respondents said that project team members are sensitised on social media aspects to a very great extent, 16.0% are made aware to a great extent, 16.0% were undecided while 41.0% were sensitised to a small extent. The result show that respondents had mixed reaction to this statement as only 44.0% admitted to have been sensitised on social media whereas 41.0% have received inadequate sensitisation on social media and its relation to construction industry work. As it is known, social media can enhance housing construction firm brand image by building its presence online and also acts as a medium for engagement of different stakeholders (audience) on matters pertaining project activities. There are also disadvantages of social media as it may be addictive to some social media members and also spread of false information which may affect the achievement of project objectives.

Averagely, the mean score for the communication skill factor is 2.83 and a standard deviation 0.69 (M=2.83, SD= 0.69). Listening skills, feedback mechanism and media effectives were viewed to be of great importance as components of communication skills. The findings correspond with Olanrewaju, Tan and Kwan (2017) who asserted that poor performance sectors were hugely based on poor communication. The results showed that the major causes of poor communication are: Key factors identified were

absence of a shared language between superiors and workers, workplace stress, superiors, and colleagues' attitude towards site workers, misinterpreting of instructions, and poor communication skills among workers.

4.2.3 Communication Structure

The third objective of the study investigated how communication structure aspects influenced implementation of housing project in Nairobi County. Therefore, respondents were asked to indicate their rating of how communication structure aspects measured on a Likert scale of five influenced implementation of housing projects in the study area. The results of analysis are given in Table 4.4.

Table 4.4: Communication Structure

Communication Structure	Very Great Extent)	Great Extent	Extent Neutral	Small Extent	Very Small Extent
The extent to which the project team engages in Asymmetrical Downward	16%	59%	9%	13%	3%
The extent to which the project team participates in Symmetrical Upward	9%	34%	13%	41%	3%
The extent to which the executive management involves in lateral (horizontal)	13%	41%	28%	16%	3%
The extent to which information flow between the top middle and lower	3%	34%	34%	28%	0%

Results show that 16.0% of respondents reported that project team members engage in asymmetrical downward communication to a very great extent, 59% engaged to a great extent, 9% were undecided, 13% engaged to a small extent and 3.0% engaged to a very small extent. The result implies that majority (75%) of housing sector stakeholders have implemented information asymmetries downward communication systems to support the implementation of housing project in Nairobi County.

Result shows that 9.0% of respondents' project team participate in symmetrical upward communication to a very great extent, 34.0% participated to a great extent, 13.0% were neutral, 41.0% participated to a small extent and 3% participated to a very small extent. This means that respondents have divided opinion on symmetrical upward communication as 43.0% agree that it is practiced to a great extent whereas 44.0% disagrees. This means that symmetrical upward structure of communication is favoured in some housing construction sector to enhance formal and informal interactions while in others it has not yet been embraced.

Thirdly, research result indicates that 13.0% of respondents said that executive management incorporates lateral communication to a very great extent, 41.0% said that it happens to a great extent, 28.0% were neutral, 16.0% said that this structure of interaction was happening in a small extent whereas 3.0% said that it happened to a very small extent. This implies that most (54.0%) of executive management use horizontal communication in implementing housing projects in Nairobi County. The benefit of using lateral communication structure by top management is to ensure coordination in different phases of construction work to attain overall goals. This may happen when there is coordination between main contractor and sub-contractors to enhance information flow.

Lastly, 3.0% of respondents indicated that information flow between top middle and lower cadre in their project was to a very great extent, 34.0% said that it was to a great extent, 34.0% were neutral and 28.0% indicated that information was flowing from top, middle and lower levels to a small extent. The result shows that information flow from top-middle-lower has not yet been fully embraced as only 37.0% of respondents agreed that this existed in their construction work while 28.0% said that this does not exist. The finding proves that a well-established communication structure is essential in

efficient implementation of projects. In relation to Tsushman (2014) study on administrative and communication pattern, the findings proved that various patterns had diverse impact on projects. The author further reinforces the importance of managing communication patterns in organizations and further supports the importance of boundary spanning individuals.

4.2.4 Housing Project Implementation

The dependent variable for this study was housing project implementation measured through the following: project completion time, client satisfaction, coordination level by team members, project completion within budget and project adherence to standards. The scale of implementation through which respondents were asked to rate the level of implementation was categorized as: 0-20.0%, 21-30.0%, 31 – 40.0%, 41 – 50.0% and 51% and above. Figure 4.5 provides the status of project implementation stages.

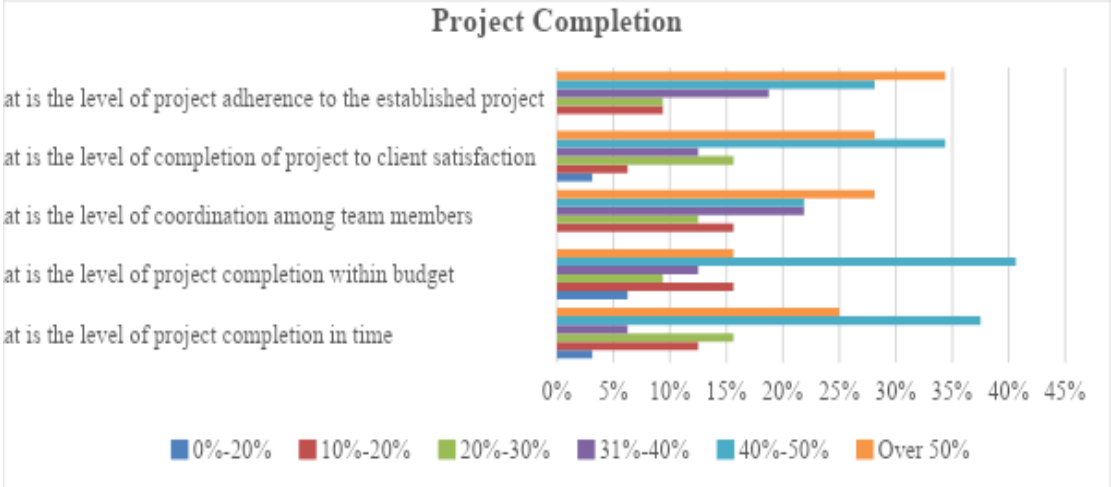

Figure 4.5: Project Completion

Results show that over 40.0% of respondents indicated that their housing project was being completed within the set budget at between 41-50.0%. Findings also show that only 34.0% of respondents indicated that their project adherence to established project guidelines to more than 51.0% and above. On client satisfaction, 34% indicated that the

project execution level ranged between 41 – 50.0%. It is also seen that 38.0% of respondents indicated that project completion time ranged from 41 – 50%. With regard to coordination among team members, 28.0% said that it ranged more than 51% and above. The level of client satisfaction was ranked at between 41 – 50.0% by 34.0% of the members. The result on project implementation level by respondents stood at between 41 – 50.0% and through the inferential analysis, this study looks at how communication influenced it in the next sub-section.

4.3 Inferential Statistics Analysis

The inferential statistics are computed to test hypothesis and establish the degree of relationship between independent and dependent variable. The inferential statistics utilized in this study were; Karl Pearson Correlation and Multiple Linear Regression. The hypotheses for the study were stated in null form as:

H_{01} There is no significant effect that communication channels have on the implementation of housing projects in Nairobi County

H_{02} There is no significant effect that communication skills play during the implementation of housing construction projects within the County

H_{03} Communication structure does not significantly impact the implementation of housing construction projects in Nairobi County, Kenya

4.3.1 Correlation Analysis

One of the requirements of linear regression analysis is that the dependent variable must have a linear relationship with each of the independent variables. To assess if each of the independent variable has a linear relationship with the dependent variable, the study carried out Correlation analysis. Correlation analysis is an inferential analysis technique that helps in determining the linear relationship between two variables together with

the strength and direction of relationship between the variables (Wherry, 2015). The study used correlation analysis to assess whether there was a linear relationship between overall project implementation and each of the independent variables (channels of communication, communication skills and communication structure). The results of the correlation statistics were as illustrated in Table 4.5.

Table 4.5: Correlations

		Channels of Communication	Communication Skills	Communication Structure	Project Implementation
Project Implementation	Pearson Correlation	.475	.588	.683*	1
	Sig. (2-tailed)	.033	.011	.030	
	N	158	158	158	158

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

The results in table 4.5 shows that there exists a positive linear relationship between project channels of communication and housing project implementation (r=0.475, p = 0.033). Secondly, result shows that there exists a positive linear relationship between communication skills and housing project implementation is moderately positive (r= 0.588, p=0.011). Lastly, the study also showed that there exists a positive linear relationship between structure and housing project implementation (r= 0.683, p= 0.030). This shows that all the independent variables have a linear relationship with the dependent variable, therefore, we can use linear regression analysis to assess the effect of each of the independent variables on the dependent variable.

4.3.2 Regression Analysis

Regression analysis is a statistical technique that is used to establish relationship between dependent and independent variables (Chatterjee & Hadi, 2015). The study fitted a multiple linear relationship between project completion as the dependent

variable with channels of communication, communication skills and communication structure as the independent variables.

In order to assess whether the fitted regression model was valid enough to be used to check the effect of communication components on project implementation. The Ordinary Least Square Regression model diagnostic check was carried out on the fitted regression model and the findings were as discussed below;

4.3.2.1 Normality of the Residuals

The OLS estimation that was used in fitting the linear regression model assumes that the residuals of the fitted regression model is normally distributed. To assess this assumption, the study conducted a test for normality of the residual using the Shapiro Wilks test at 95% level of confidence based on the following null and alternative hypothesis;

$\mathbf{H_0}$: The residuals are normally distributed

Against

$\mathbf{H_1}$: The residuals are not normally distributed

At 95% level of confidence, the test showed that the residuals of the fitted regression model were approximately normally distributed (W = 0.98802, p= 0.1922). This showed that the regression model satisfied the assumption for normality of the residuals.

4.3.2.2 Homoscedasticity

The estimation techniques assume that the residuals of the regression model have constant variance. The study assessed this assumption at 95% level of confidence using the Breusch Pagan test based on the following null and alternative hypothesis.

H_0: The residuals have constant variance

Against

H_1: The residuals do not have constant variance

At 95% level of confidence, the results of the test showed that the residuals of the fitted regression model had constant variance (BP = 3.5463, df = 3, p= 0.3148). This showed that the fitted regression model satisfied the assumption of Homoscedasticity.

4.3.2.3 Autocorrelation

The model estimation technique assume that the residuals of the fitted regression model do not have serial correlation among them. To assess this claim, the study conducted the Durbin Watson test for serial correlation at 95% level of confidence based on the following null and alternative hypothesis;

H_0: No serial correlation of the residuals

Against

H_1: There is serial correlation of the residuals

The results of the test showed that at 9% level of confidence, there was no serial correlation in the residuals (DW = 2.1348, p= 0.8019). This showed that the assumption for lack of serial correlation among the residuals was satisfied.

4.3.2.4 Multi-collinearity

Lastly, OLS estimation assume that for multiple linear regression model, there is no strong correlation between the independent variables or in other words the independents variables are not collinear to each other. This assumption was assessed in the study through the used of Variance Inflation Factor (VIF). According to the set standard, VIF values between 1 and 10 shows absence of collinearity while VIF value above 10 or

below 1 shows presence of collinearity. The study obtained the values of VIF for the independent variables in the regression model and the values were as shown in table 4.6.

Table 4.6: Variance Inflation Factor

Independent Variable	Variance Inflation Factor
Channels of Communication	1.012921
Communication Skills	1.027467
Communication Structure	1.016327

Given that the VIF for the independent variables as indicated in table 4.6 were all between 1 and 10, the assumption for absence of multi-collinearity was satisfied. Having satisfied all the underlying assumptions, the fitted regression model was valid enough to be used in making conclusions about the study and also for testing hypothesis.

4.3.2.5 Discussion of Fitted Regression Model

The fitted regression model was as shown below;

$$project\ implementation = 6.309 + 0.003channels + 0.227skills + 0.687structure$$

The summary of the fitted regression model was as illustrated in table 4.7;

Table 4.7: Model Summary for the predicator variables

Model	R	R Square (R^2)	Adjusted R Square	Std. Error of the Estimate
1	.460[a]	.212	.174	.72761

a. Predictors: (Constant), channels of communication, communication skills, communication structure

The result in Table 4.7 the three independent variables could account for 21.2% of the variation in completion rate of housing projects in the county. The margin of error in

the model was 0.72761, this shows that the average variation between the actual completion results and the one predicted by the mode was 0.72721.

To answer the research objectives using the regression model, the study carried out an hypothesis test on the regression model. First, the study carried out a test of adequacy of the fitted regression model to determine if the regression model fitted was good enough to be used to assess the research objectives. The test for adequacy of the regression model was based on the following null and alternative hypothesis;

$$H_0 : \beta_0 = \beta_1 = \beta_2 = \beta_3 = 0$$

Against

$$H_a : \beta_0 \neq \beta_1 \neq \beta_2 \neq \beta_3 \neq 0$$

The test of the above hypothesis for the adequacy of the model was based on the Fisher's test and the results of the test was as illustrated in table 4.8;

Table 4.8: Analysis of Variance

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	8.763	3	2.921	11.733	0.018[a]
	Residual	47.181	155	1.685		
	Total	55.944	158			

a. Predictors: (Constant), channels of communication, communication skills, communication structure
b. Dependent Variable: Project Implementation

Based on the results in table 4.8, there is sufficient evidence to reject the null hypothesis ($F(3,155) = 11.733$, $p=0.018$). This shows that the fitted regression model was adequate at 95% level of confidence and therefore, at least one of the predictor variables have a significant effect on the dependent variable.

To determine the individual independent variable that had a significant effect on the dependent variable based on the regression model and also to answer the research

hypothesis, the study carried out an independent sample t-test on each of the predictor variables. The tests were based on the following null and alternative hypothesis;

$$H_0 : \beta_i = 0$$

Against

$$H_a : \beta_i \neq 0$$

The tests were based on a t-distribution with degrees of freedom and the test statistic was given by the formula;

$$t = \frac{\hat{\beta}_i}{SE\left(\hat{\beta}_i\right)} \tag{4.1}$$

The test results were as illustrated in table 4.9;

Table 4.9: Coefficients[a]

Model	Beta Coefficients	Standard Error	t-Stat	P-value
Constant (y-intercept)	6.309	5.941	1.062	0.710
Channels of Communication	0.003	0.001	2.645	0.009
Communication Skills	0.227	0.081	2.786	0.006
Communication Structure	0.686	0.172	3.994	0.000

a. Dependent Variable: Project implementation

Note: The table provides the results of the coefficient and the p-values for the predictor variable. All of the independent variables are a good predictor of project completion as their p-value is less than the significance level.

The results in table 4.9 were used to answer the research hypothesis as follows.

The first hypothesis stated that:

H_{01} There is no significant effect that communication channels have on the implementation of housing projects in Nairobi County

Based on the results in Table 4.9, at 95% level of confidence, the results show that the coefficient of communication channel was significantly different from zero (β=0.003,

t=2.645, p=0.009). Therefore, we reject the research hypothesis and conclude that communication channels have a significant positive effect on implementation of housing projects in Nairobi County.

The second null hypothesis stated that:

H_{02} There is no significant effect that communication skills play during the implementation of housing construction projects in Nairobi County

Based on the results in Table 4.9, at 95% level of confidence, the results show that the coefficient of communication skill was significantly different from zero (β=0.227, t=2.786, p=0.006). Therefore, we reject the research hypothesis and conclude that communication skills have a positive significant effect on the implementation of housing projects in Nairobi County. This mean that, the higher the communication skills, the higher the chances of completion of housing projects in Nairobi County.

The third null hypothesis for the study stated that:

H_{03} Communication structure does not significantly impact the implementation of housing construction projects in Nairobi County, Kenya

Based on the results in Table 4.9, at 95% level of confidence, the results show that the coefficient of communication structure was significantly different from zero (β=0.687, t=3.994, p<0.001). Therefore, we reject the research hypothesis and conclude that communication structure has a positive significant effect on the implementation of housing projects in Nairobi County. This shows that the better the communication structures, the higher the chances of completing an housing project in the city. A summary of the decision on the research hypothesis were as illustrated in table 4.10.

Table 4.10: Summary of Hypotheses from the Study

Objective	Objective	Hypothesis	Rule	P-Value	Comment
Objective 1	To establish the role of channels on implementation of housing construction projects in Nairobi County	**$H0_1$:** There is no significant effect that communication channels have on the implementation of housing projects in Nairobi County	Reject H_{01} if p value < 0.05	p< 0.05	The null hypothesis was rejected hence there is significant effect of communication channels on implementation of housing projects
Objective 2	To determine the role that communication skills play during the implementation of housing construction projects in Nairobi county	**H_{02}:** There is no significant effect that communication skills play during the implementation of housing construction projects in Nairobi	Reject H_{02} if p value < 0.05	p< 0.05	The null hypothesis was rejected hence there is significant effect of communication skills on implementation of housing projects
Objective 3	To examine the impact of communication structure on the implementation of housing construction projects in Nairobi County	**H_{03}:** Communication structure does not significantly impact the implementation of housing construction projects in Nairobi County	Reject H_{03} if p value < 0.05	p< 0.05	The null hypothesis was rejected hence there is significant impact of communication structure on implementation of housing projects

The results of the regression analysis show that communication channels have a positive significant effect on implementation of housing projects ($p<0.05$). The results align with Reeta and Neerja (2012) findings which deduces that channels of communication foster and enhances creativity, innovation and new ideas. With actualization of the innovations a smooth implementation of the project is thereafter achieved. The findings based on the regression analysis further suggest that communication skills have a significant impact on the implementation of housing projects. The results echo Reeta and Neerja, (2012) findings in which they point how the power of communication can boost motivation among project teams which constitutes to smooth implementation of projects. Additionally, the regression analysis

addresses the relationship between communication structure and project implementation. The findings show that there is significant impact of communication structure on implementation of housing projects. The findings align with Muszynka, (2015) study in which he asserts that communication structure foster good communication among the employees which in return promotes efficient project implementation.

CHAPTER FIVE

SUMMARY, CONCLUSION AND RECOMMENDATIONS

5.0 Introduction

This chapter presents a summary of the findings of the study on project communication and implementation of housing projects in Nairobi County, Kenya. The chapter also presents conclusions and recommendations on the findings and suggestions for future research.

5.1 Summary of Findings

The study was conducted to check on the role that project communication performed on implementation of housing projects in Nairobi County. The respondents for the study involved various construction professionals; architects, building surveyors, contractors, engineers and quantity surveyors. Data for the study was collected via questionnaire to collect information on how communication aspects; channels of communication, communication skills and communication structure impacted on implementation of housing projects in Nairobi County. Results of the dependent variable showed that most of the respondents reported that the level of implementation of housing projects ranged between 41 – 50.0% in the projects that they were involved in.

5.1.1 Channels of Communication and implementation of Housing Construction Projects

The first objective of the study sought to find out how various channels of communication were used and their impact on implementation of housing projects in Nairobi County. In terms of usage, 47.0% of respondents reported to be using various electronic channels of communication to a great extent in their projects. These electronic channels consisted of; e-mails, instant messaging, phone calls, video class, Google meet and zooms were found to be commonly preferred methods of

communication by project stakeholders. However, 41.0% disliked the use of electronic communication channels and instead use the alternative modes. In terms of print media usage, only 40.0% used them to a great extent in communication with other project stakeholders. The same (40.0%) was recorded that they preferred social media channels preference method of communication when implanting projects.

Nevertheless, 51.0% of respondents agreed that they preferred face to face communication with various project stakeholders. Correlation statistics showed a below average effect ($r=0.475$) between channels of communication impact on implementation of housing projects in Nairobi County. The regression coefficient was also weak positive ($\beta=0.003$) suggesting more needs to be done by project stakeholders to improve on the usage of effective channels of communication and promote project success. The first null hypothesis was rejected ($p<0.05$) and hence results suggested that enhanced implementation of housing projects in Nairobi would be achieved when appropriate, effective and fast channels of communication are adopted by housing project stakeholders. The results showed that improving the means of communication increases the overall project completion.

5.1.2 Communication Skills on Implementation of Housing Construction Projects

The second objective of the study examined the extent to which communication skills impacted on implementation of housing construction projects in Nairobi County. Descriptive statistics showed that selection of an effective communication medium was an ingredient towards effective communication when implementing housing construction work. Further, most (59.0%) of respondents reported that listening skills was highly promoted to reduces incidents of misunderstanding and conflict during project implementation. However, less than 50.0% of project stakeholders expressed courtesy when communicating and this shows that more needs to be done to create

awareness on project team on the importance of development of respect and mutual understanding when working together. The study results showed that more training was needed on effective communication in addition to sensitisation on the advantages and disadvantages of social media towards their responsibilities. Nevertheless, close to half (47%) indicated that feedback mechanisms have been developed in their projects. the feedback mechanism is critical to attainment of project goals. Embarking on promoting a mechanism in which feedbacks are generated and communicated within the right time would improve the rate of project completion.

Computed correlation statistics showed that there existed an above average degree of relationship ($r=0.588$) which was significant ($p<0.05$) between communication skills and implementation of housing projects in Nairobi. The regression coefficient was also positive ($\beta=0.227$) which resulted to rejection of the second null hypothesis ($p<0.05$). This means that increase in communication skills and competencies by various stakeholders would significantly result to increase in the level of project implementation beyond 41 – 50.0% threshold that was attained in the study result.

5.1.3 Communication Structure and Implementation of Housing Construction Projects

The third objective of the study investigated how communication structure affected implementation of housing construction projects in Nairobi County. Research results showed that to a great extent, 75.0% of project team engages in asymmetrical downward communication. Research also discovered that 54.0% of respondents agreed that lateral (horizontal) communication existed in their construction work. However, only 43.0% agreed that their project team participated on regular basis in symmetrical upward communication. Information flow from top-middle-lower was also found to be below 40.0% in the construction projects that were investigated in this research.

Average descriptive data showed that communication structure was averagely practiced (M=3.17, SD=0.11) by construction stakeholders in Nairobi County.

Karl Pearson correlation statistics showed existed of above average relationship (r=0.688) between communication structure and implementation of housing projects in Nairobi County. Moreover, the MLR analysis showed that in the three predictors, communication structure had a higher coefficient (β=0.686) in impact on implementation of housing projects. The third null hypothesis was rejected ($p<0.05$) leading to the deduction that there existed significant positive impact of communication structure on project implementation. This means that communication structure forms a crucial aspect of the process of project execution and performed a key role in project completion.

5.2 Conclusion

The study examined how project communication affected implementation of housing construction projects in Nairobi County, Kenya. Multiple Regression Statistics showed that the correlation coefficient was R=0.46 and adjusted R was 0.212 which implied that 21.2% of change in housing project implementation can be explained by the three communication factors studied in this research.

On the first objective, the study found out that communication channels played a significant role in enhancing housing project implementation in Nairobi County. The first null hypothesis was rejected leading to the deduction that the channels of communication that were favoured by the project stakeholders (face to face interactions and electronic modes) facilitated effective interaction hence speeding up of construction project implementation.

On the second objective, study results showed that communication skills that project team members possessed was critical towards enhancing housing project implementation in Nairobi County. The research found out that the level of communication skills competency by respondents was on the average level and this contributed to average effect of implementation of housing projects in the study area. The second null hypothesis was rejected leading to deduction that communication skills were a significant determinant towards higher implementation of housing projects in Nairobi County.

Finally on the third objective of the study, research showed that communication structure was highly rated by respondents in the study area. For instance, the study discovered that lateral communication was highly promoted in addition to asymmetric downward information communication. The symmetric upward communication was not favoured by many project stakeholders. In conclusion, the research found out that there existed significant impact of communication structure and implementation of housing projects in Nairobi County. Conclusively, there is evidence to show that project communication has a significant moderate effect on the implementation of housing construction projects.

5.3 Recommendations

Based on the research findings the following recommendations are made in line with the study objectives:

There is need for construction firms and teams to conduct evaluation of the best channels of communication for their individual housing projects they are involved in. Further, there is need for construction professionals to consider embracing the new

channels of communication which are widely available and accessible, reliable and affordable to be used by all stakeholders.

To address the issue of communication skills, the study recommends that project team members need to be trained on importance of effective communication before commencement of any housing project. Furthermore, all aspects of communication (verbal and non-verbal) need to be covered during training to improve interactions and reduce misunderstandings and incidents of conflict in project work.

To address the issue of communication structure, there is need for top management of construction firms to promote open door policy which allows top-bottom and bottom-up communication. Further, they should also create a mechanism in which feedback is generated and communicated within the right time. Finally, the study recommends for construction projects to have a communication unit/department which will handle all correspondence from inside and outside the project scope.

Based on the conclusion drawn from the study on how project communication affects the implementation of housing construction projects in Nairobi County, Kenya, the following recommendations can be made:

Enhance Communication Channels: Given that communication channels were found to play a significant role in facilitating effective interaction and speeding up project implementation, it is recommended to prioritize and optimize the preferred channels identified in the study, such as face-to-face interactions and electronic modes. Project stakeholders should ensure that these channels are utilized efficiently to enable seamless communication and coordination among team members, contractors, and other relevant parties involved in housing construction projects. Additionally, exploring

innovative communication technologies and platforms can further improve communication channels and enhance project implementation efficiency.

Develop Communication Skills: The study highlighted the importance of communication skills possessed by project team members in influencing housing project implementation. Since the research indicated that the communication skills competency of respondents was at an average level, it is crucial to invest in developing and enhancing communication skills among project team members. Training programs and workshops can be organized to improve various aspects of communication, including active listening, effective verbal and written communication, conflict resolution, and negotiation skills. By improving communication skills, project teams can enhance collaboration, reduce misunderstandings, and ensure clear and effective communication throughout the implementation process.

Optimize Communication Structure: The study revealed that respondents highly rated communication structure, with lateral communication being promoted and asymmetric downward communication preferred over symmetric upward communication. To leverage the positive impact of communication structure on housing project implementation, it is recommended to align organizational structures and processes in a way that facilitates lateral communication and enables effective information flow throughout the project hierarchy. Encouraging open and transparent communication channels for upward communication can also be beneficial for sharing feedback, addressing concerns, and fostering a collaborative environment. Regular assessments and feedback mechanisms can help identify areas for improvement in the communication structure and ensure continuous refinement. In summary, these recommendations emphasize the importance of optimizing communication channels, developing communication skills, and optimizing communication structure to enhance

the implementation of housing construction projects in Nairobi County. By focusing on these areas, project stakeholders can improve overall communication effectiveness, minimize barriers, and contribute to successful project outcomes.

5.4 Areas for Further Studies

The study intended to know how project communication affected implementation of housing construction projects in Nairobi County, Kenya. The study recommends further studies on the impact of digital communication channels on construction project implementation. With the changing environment and advancement in information technology, there's an intense change on how business communication is conducted. Modern communication increasingly utilizes digital media. This study, therefore, recommends that another study be done on the impact of digital communication channels on construction project implementation to expand the findings in the study. The study also suggests that further research should be done on other counties for purpose of comparison.

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APPENDICES

Appendix I: Letter of Transmittal

Milkah Achar,

P.O. Box 48413-00100

Nairobi

Dear Respondent,

RE: REQUEST FOR PARTICIPATION IN DATACOLLECTION

I am a student at Moi University pursuing Masters of Science degree in Project Planning and Management. To meet the requirements for the award of the degree, I am undertaking a study on **'Project Communication and the Implementation of Housing Construction in Nairobi**

County, Kenya'. Kindly provide data that I require for this study through the provided research instruments. The information you provide will be used for research purpose only and your identity will be held confidential.

Thank you

Yours faithfully,

Milkah Achar

Appendix II: Research Questionnaire

Instructions:

*Please fill in the spaces provided or tick where appropriate to complete each section. All the information in this questionnaire will be kept **strictly** confidential.*

Part A: Background Information

Kindly tick with a [✓] *where applicable*

1) Profession:
    i. Architect [ ]
    ii. Quantity Surveyor [ ]
    iii. Engineer [ ]
    iv. Contractor [ ]
    v. Other [ ]

    If other, Please specify……

2) Please indicate how long you have worked in this profession:
    i. Less than 5 years [ ]
    ii. 6-10 years [ ]
    iii. 11-15 years [ ]
    iv. 15 and above years [ ]

3) Indicate your highest level of education:
    i. Secondary [ ]
    ii. College [ ]
    iii. Degree [ ]
    iv. Masters [ ]
    v. PHD [ ]

4) Age

   i. 18-35 years [ ]

   ii. 35 and above years [ ]

Part B: Communication Channels

To what extent do you agree the projects have implemented the following communication channels aspects in an effort to improve implementation of the projects?

Using a scale of: 1 = Very Small Extent; 2 = Small Extent 3 = Neutral; 4 = Great Extent; 5= Very Great Extent)

	Statement	**VSE**	**SE**	**N**	**GE**	**VGE**
		1	**2**	**3**	**4**	**5**
a	Print channels such as memos, notices, letters, brochures, newsletters, reports, policy manuals, annual reports and posters					
b	Electronic channels such as email and voice mail, Intranets, blogs, podcasts, chat rooms, business TV, video conferencing, instant messaging systems and wikis					
c	Face-to-face channels such as speeches, meetings, focus groups, brown bag lunches, social events and gatherings for communication					
d	Social Media channels such as Facebook, WhatsApp, Instagram					
e	Extent to which the media used for communication is effective					

Part C: Communication Skills

To what extent do you agree the projects have implemented the following project team communication skills in an effort to improve quality of the projects?

Using a scale of: 1 = Very Small Extent; 2 = Small Extent 3 = Neutral; 4 = Great Extent; 5= Very Great Extent)

	Statement	**VSE**	**SE**	**N**	**GE**	**VGE**
		1	**2**	**3**	**4**	**5**
a)	Extent to which project team employ listening skills when communicated to					
b)	Extent to which project team express courtesy when communicating					
c)	Extent to which feedback mechanisms are instilled in the project					
d)	Extent to which training on effective communication is practiced in the project					
e)	Extent to which project team is sensitized on social media aspects in the project					

Part D: Communication Structure

To what extent do you agree the projects have implemented the following project team communication skills in an effort to improve quality of the projects?

Using a scale of: 1 = Very Small Extent; 2 = Small Extent 3 = Neutral; 4 = Great Extent; 5= Very Great Extent)

	Statement	**VSE**	**SE**	**N**	**GE**	**VGE**
		1	**2**	**3**	**4**	**5**
a)	Extent to which the organization engages in Asymmetrical (Downward) communication					
b)	Extent to which the organization engages in Symmetrical (Upward) communication?					

c)	Extent to which the executive structure engages in lateral (horizontal) communication					
d)	Extent to which information flow between the top, middle and lower level management is satisfactory in the project					

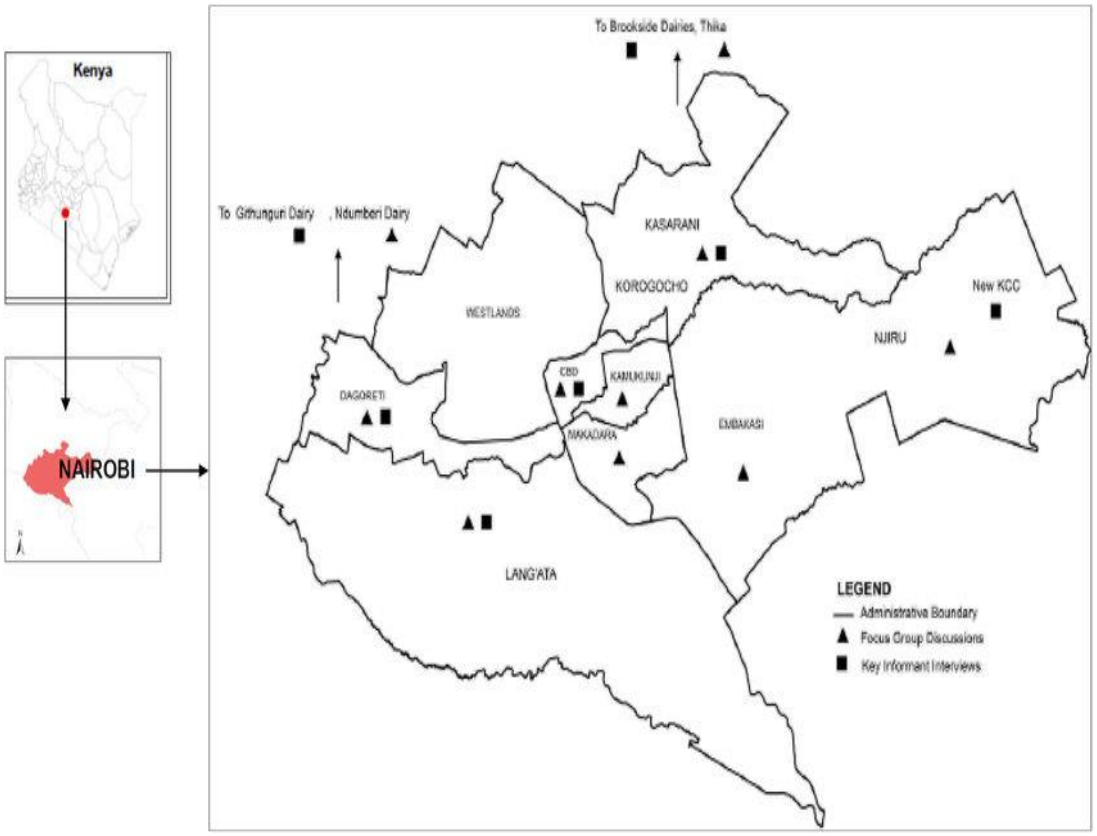
Part E: Implementation of Housing Projects

Please tick the category applicable to your project way of operations with respect to the implementation process?

(**0 – 20%** Representing LOW Satisfaction, **Over 50%** Representing High Satisfaction)

	Statement	**0%-20%**	**10%-20%**	**20%-30%**	**31%-40%**	**40%-50%**	**Over 50%**
1	What is the level of project completion on time?						
2	What is the level of project completion within budget?						
3	What is the level of coordination among team members?						
4	What is the level of completion of project to client satisfaction?						
5	What is the level of project adherence to the established project standards?						
6	What is the overall client satisfaction with the project implementation process?						

Appendix III: Map of Nairobi County, Kenya



Appendix IV: Construction housing project in Nairobi County

Appendix V: Collapsed building in Nairobi County

Appendix VI: NACOSTI License

Permit No: NACOSTI/P/19/31236/26124
Date of Issue:23rd May, 2019
Fee Received: Ksh 1000

THIS IS TO CERTIFY THAT:
MS MILKAH A. ACHAR of MOI UNIVERSITY, 64- 20106 NAIROBI, has been permitted to carry out research in Nairobi County

on the topic: PROJECT COMMUNICATION AND THE IMPLEMENTATION OF HOUSING CONSTRUCTION IN NAIROBI

for the period ending:
23rd May, 2020

Applicant's Signature

Director General
National Commission for Science, Technology & Innovation

THE SCIENCE, TECHNOLOGY AND INNOVATION ACT, 2013

The Grant of Research Licenses is guided by the Science, Technology and Innovation (Research Licensing) Regulations, 2014.

CONDITIONS

1. The License is valid for the proposed research, location and specified period.
2. The License and any rights thereunder are non-transferable.
3. The Licensee shall inform the County Governor before commencement of the research.
4. Excavation, filming and collection of specimens are subject to further necessary clearance from relevant Government Agencies.
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