EFFECT OF SCOPE CHANGES ON PROJECT COMPLETION AMONG ROAD CONSTRUCTION PROJECTS IN NAIROBI COUNTY: A CASE OF LANG'ATA SUB COUNTY

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AN APPLIED RESEARCH PROJECT SUBMITTED IN PARTIAL FULFILMENT OF THE REQUIREMENTS FOR THE AWARD OF MASTER OF BUSINESS ADMINISTRATION DEGREE IN THE SCHOOL OF BUSINESS, MBA DEPARTMENT OF AFRICA NAZARENE UNIVERSITY

SEPTEMBER 2019

DECLARATION

I declare that this research project is my original work and that it has not been presented to any other University for academic purpose.

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SUPERVISOR'S DECLARATION

This applied research project is submitted for examination with my approval as the University Supervisor

Signature…… Date……..

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DEDICATION

I dedicate this work to my Family for the support, love and care offered during the research process. Friends and Colleagues who criticized my research work during the process contributed positively in achieving this milestone. I truly appreciate and dedicate my work to them as well.

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ABSTRACT

Projects are undertaken with the end goal of getting completed someday. Project completion is a collective responsibility among the parties involved. The dilemma and struggle for project completion is a concern in the 21st century. The study intended to find out possible effect of scope changes on project completion among road construction projects in Nairobi County with a distinct case of Langata Sub county. The key variables for the study were; project regulatory compliance changes, project technological changes, project objective changes, as well as project stakeholders' changes. These variables were used to help determine and make informed decisions on the effect of project completion. The viability of the variables was verified through subjecting them into the theoretical literature reviews. The theories for determining project completion against the supreme variables involved: Contingency theory and Theory of Constraints (TOC). The study engaged descriptive research design and methodology techniques that enhanced data collection procedures and analysis for effective and reliable findings to the effect of project completion. The study anticipated to solve the menace of scope changes on project completion among road construction projects in Nairobi County, Langata Subcounty. Data was collected through a structured questionnaire in Langata Subcounty. The respondents provided relevant and useful information based on the research questions that were asked. It is through such information that informed decisions from the findings were made regarding the effect of scope changes on project completion among road construction projects in Nairobi County and recommendations deduced. The recommendations indicated clearly that project completion is a collective responsibility among the parties involved. The data gathered was analyzed using the Statistical Package for Social Sciences (SPSS) version 25. Descriptive statistics such as; frequencies, percentages, mean and standard deviation were conducted. In addition, correlation statistics, regression analysis was used to test the relationship between the dependent and independent variables. The study was therefore viewed as a tool and a guide in determining the effect of scope changes on project completion among road construction projects across the country. The research project used a target population of 350 Licensed Road Contractors and Supervising Engineers. The research project adopted a Nassimas formula that arrived at a sample size of 78 respondents. From the findings, only 53 response rate was obtained representing 67.9% which was considered to be very good for analysis. Findings were presented in figure and table form, explained and summarized as well as recorded on a five-point Likert scale anchored on strongly disagree (1) to strongly agree (5). Recommendations were made to project managers, licensed road contractors, construction professionals, project developers, National and County Governments to use findings of the study to realize project completion.

ACKNOWLEDGEMENT

I am enthusiastic to God for the gift of life, good health, knowledge and understanding of the research concept. He enabled me to pursue this endeavor of higher learning and provided sufficient and enough resources for the smooth running of my academic journey.

Special acknowledgement goes to Dr. Peter Gaiku for accepting to guide me throughout the research process. Dr. Peter Gaiku has been so helpful in creating time from his busy schedule to perusal through my document and providing corrections and directions where needed.

I am also extending my gratitude to Dr. Simon Obwatho for guiding me through the research topic especially at a time when I completely got stuck. He guided me through exploring the dependent and independent variable. Dr. Simon Obwatho has been very instrumental in assessing the research from the initial stages.

My heartfelt appreciation goes to the authorities of Langata Sub county for allowing me to conduct research in the region. I appreciate all the Licensed Road Contractors and Supervising Engineers who participated in providing relevant and reliable information through filling the questionnaires. This was crucial and very important for the success of this work. Also, without hesitant, I acknowledge the support of my MBA friends who reiterated that the research process is doable as long as one is committed and devoted to it. For sure, research is doable and I am so grateful.

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LIST OF ABBREVIATIONS

AI	Artificial Intelligence
DBR	Drum Buffer Roper
EPM	Enterprise Performance Management
ERP	Enterprise Resource Planning
HCM	Human Capital Management
JIT	Just in time
KUR	Kenya Uganda Railway
NACOSTI	National Commission for Science, Technology and Innovation
NEMA	National Environmental Management Authority
SHAMPU	Shape, Harness and Manage Project Uncertainty
SMART	Specific, Measurable, Achievable, Realistic, Timebound
SOW	Scope of work
SPSS	Statistical Package for the Social Sciences
TOC	Theory of Constraints
UNDP	United Nations Development Program
UNEP	United Nations environment program
UNESCO	United Nations educational, Scientific and Cultural Organizations

UNICEF	United Nations Children's Fund
UNIDO	United Nations Industrial Development Organization
US	United States
WBS	Work Breakdown Structure

DEFINITION OF TERMS

Change: - Refers to exchanging one thing for another thing, especially of a similar type (Young, 2013).

Compliance: - The fact of obeying a particular law or rule, or of acting according to an agreement (Bennett, 2014).

Constituency: - Is a group or body that patronizes, support, or offers representation (Varma, 2013).

Objective: - Something that you are planning to do or achieve (Thomsett, 2002).

Project: - Is an individual or collaborative enterprise that is carefully planned to achieve a particular aim (Pinto & Slevin, 2012).

Regulatory: - Refers to relating to the activity of checking whether a business is working according to official rules or laws (Garside, 2014).

Stakeholder: - A person, group or organization that has interest or concern in an organization (Bathurst, 2015).

CHAPTER ONE: INTRODUCTION AND BACKGROUNG OF THE STUDY

1.1 Introduction

This chapter explored the background of the study, statement of the problem, objectives of the study, research questions, significance of the study, scope of the study, limitations and delimitations of the study as well as exemplified a conceptual framework showing the relationship between the independent and dependent variables of the study. Projects are exciting temporary and, in a sense, unique endeavors that requires extreme involvement in order to be completed. Temporary because they only happen once and have a specific period of time and unique in that they are not routine enterprises, but a set of procedures intended to produce a singular product, outcome, service or result (Amponsah, 2014).

The scope of project must be understood by the project managers as well as all parties involved despite the procedures used in order to achieve the goal of project completion. Project scope refers to the part of project planning that involves determining and documenting a list of specific project goals and objectives, deliverables, tasks, costs, and deadlines (Atkinson, 2014). The documentation of a project scope can also be referred to as Scope statement, Terms of Reference as well as Statement of Work (SOW) which clarifies the boundaries of the project and establishes responsibilities for each team member and sets up procedures for how completed work were verified and approved. The documentation helps the project stakeholder and team to remain focused and on task. The scope statement document also provides the team with guidelines for making significant decisions on change requests in the course of the project. Interestingly, the project scope statement is usually different from the project charter. The project charter always

documents that the project exists (Baker, 2015). This is done after project completion. The project scope is expressed in a document that defines the parameters - factors that define the project and determine its behavior - what work is done within the boundaries of the project, and the work that is outside the project boundaries. The project scope of work (SOW) is typically a written document that defines what work was accomplished by the end of the project - the deliverables of the project (Chan & Chan, 2014). The project scope defines what was done, and the project execution plan describes how the work was accomplished. Statistically, there are no templates that work for all projects. Some projects have a very detailed scope of work, and some have a short summary document. The quality of the scope is measured by the ability of the project manager and project stakeholders to develop and maintain a common understanding of what products or services the project was to deliver. The size and detail of the project scope is related to the difficulty profile of the project. A more complex project often requires a more detailed and comprehensive scope document (Chemuturi, Thomas, & Cagley, 2010).

Research by Pettigrew and Thomas (2016) noted that a complete statement of the scope should include project regulatory compliance change, project technological change, project objective changes as well as the project stakeholders change. Scope of work (SOW) is very fundamental for agreeing with all parties of the project. A strong project scope document is equally important for managing change of a project. As the project scope reflects what work was to be accomplished on the project, any change in expectations that was not captured and documented creates the opportunity for confusion. Kim (2016) stated that the most common trends in projects is the incremental expansion in the project scope, which is called scope creep. Scope creep threatens the success of a project since the small

rises in scope require additional resources that were not in the plan before. Rising the scope of the project is a common occurrence, and adjustments are made to the project scope to account for these changes. Scope creep happens when these changes are not identified and not managed. The ability of a project stakeholders to identify potential changes is often related to the quality of the scope documents (Baz, 2014).

Events occur that require the scope of the project to change. Changes in the marketplace requires change in a product design or the timing of the product delivery. Changes in the client's management team and the financial health of the client also result in changes in the project scope. Changes in the project regulatory compliance, project technology, project objectives as well as project stakeholders have an effect on the project completion. Establishing a system for managing change during the project that captures changes to the project scope and assures that these changes were authorized by the appropriate level of management in the client's organization is the responsibility of all parties involved in the project (Wessels, 2017).

1.2 Background of the Study

Managing projects comprises of a complex and integrated array of decisions, actions, and communications necessary to complete projects successfully. A project is a system requiring fully functioning processes and procedures, tools and resources, and when any of these aspects are not working efficiently, resulting from unanticipated changes, a cascade of problems can and does occur. A study by Bass and Reuben (2015) noted that change is not made without inconvenience, even from worse to better. This feeling regarding change remains the same in today's world; especially in the road construction industry. When changes are introduced prior, during or after construction work has been

executed, the synergistic effects of these changes can dramatically affect project performance. The study reiterated that identifying and quantifying the cause and effect relationships between changes in order to mitigate or avoid their impact is vitally important to the road construction industry.

Starting a project is one thing, completing is another. This research study was focused towards identifying the effect of scope changes on project completion among road construction projects in Nairobi County with a distinct case of Langata Sub county. The road construction Industry is a key contributor to the national gross fixed capital formation, which provides over 50% of the National long-term assets (Ashish, 2013). This industry has been patronized with occasional project completion and disruptions causing project regulatory compliance, technological, objectives and project stakeholders changes invade. These project completion variables were sources of potential risks that current studies are looking into ways to manage such as technical, social, economic, legal, financial, resource, construction and commercial (Kikwasi, 2014).

Clients invest in projects with sole aim of reaping benefits from the investments. Road construction industry was known to be involving project regulatory bodies and technology due to its complexity and volatility occasioned by varied needs, wants and preferences. No investor would invest in a road project that seem to last forever without completion and achievement of objectives. The project scope and objectives in project completion is very key. Projects have a finite start and an end. The start to end of a project is focused towards achieving certain goals and objectives. This requires usability of technology, involvement of stakeholders as well as engagement of regulatory bodies. In road construction project, contracts are issued based on adherence to the regulatory bodies,

technology usability, stakeholder acceptance as well as project delivery within set standards and objectives (Waithera, 2014).

Globally, studies conducted by researchers indicated that most projects fail to achieve their mission within set objectives. Institute of Project Policy Regulation (2010) statistics noted that 52% of projects had substandard threshold of set objectives in excess of 10% while 45% of projects had substandard technology usage of over 25%. Same research indicated that similar studies carried out in India showed that 56% of projects had substandard usage of regulatory bodies in excess of 20% while 49% had substandard stakeholder's involvement excess of between 1 and 120 months. Projects were initiated by kings and other leaders to undertake monumental projects to build a name for themselves and their generations to come (Massie, 2015). Ancient structures did not have scope or objectives (Smith, 2015). However, effects of project completion have been identified in various parts of the world recently such as Malaysia, Saudi Arabia, Jordan, Kuwait, Hong Kong and Thailand (Hanover, 2015). The results revealed that there are differences and similarities as to the effects of project scope changes in project completion. Today, those professionals in the road construction field no longer object a design, they design to object. This shows that a client clearly indicates that he/she has the ability and skills to deliver the product as per the set standards and objectives. Projects criterion is followed to the latter to ensure that the required technological changes, regulatory changes as well as the stakeholders changes is adhered to. This limits any form of compromise that comes before, during and after project completion (The Quantity Surveyor, 2014).

Love et al., (2015) stated that project regulatory changes and project technological changes in Australia in traditional and new procurement systems attest for 13-19% of

project scope changes and 10 to 69% of project stakeholders changes. New procurement systems give 11% and 13 to 25% respectively. Many contractors are unfamiliar with these variables and do not have experience and knowledge to manage them effectively and efficiently. There is need to be foresight of improving knowledge of the links between risk perception, attitude towards risk objects and actual behavior (Baloi, 2014). Consultants use skills, knowledge and experience with care to ensure clients‟ interests are protected (Franagan & Pankaj, 2015). Bennis (2010) sites improved effective management of change and clarify project issues from start. Decisions supported through analysis, define and structure of projects continually monitored, clearer understanding of specific risks associated with projects. Build up historical data assist future risk management procedures.

Studies carried out in Tanzania, Uganda, Nigeria, South Africa and Mozambique on causes and effects of risks, procedures, delays in project completion and disruptions in road construction projects and managerial and environmental impacts resulting to project regulatory compliance changes, project technological changes, project objective changes and project stakeholders changes found project completion to be inevitable (Assaf & Hejji, 2016). The researchers found out the major causes of project completion and disruptions as; scope changes, design changes, delays in payment to contractors, information delays, funding problems, poor project management, compensation issues and disagreement on the valuation of work done. Conversely, regulatory compliance changes, stakeholder involvement, negative social impact, idling of resources and disputes are the main effects of project completion. The studies suggested that there still exist a number of effects of project completion and their effects put construction projects at great risk that have an effect on their performance. The studies recommended that adequate regulatory

compliance, contractor issuing of project scope and objective information, finalization of design and project management skills should be the main focus of the parties in project procurement process.

Kagiri (2015) looked into regulatory compliance, objectives and stakeholder involvement in power projects in Kenya; a case study of Kenya Electricity Generating Company Ltd. The research pointed on the many factors that influence or causes regulation compliance, objectives and stakeholder involvement; factors that impede on successful completion of projects on set standards, law compliance and achievement of objectives. Factor analysis of various significant variables from the said survey, revealed eight underlying factors namely; contractor inabilities, improper project preparation, resource planning, interpretation of requirements, works definition, timeliness, Government bureaucracy, and risk allocation as having been significant contributors. On ranking, Government bureaucracy topped the list while risk allocation was shown to have been least significant.

Government of Kenya invests in building facilities such as schools and Institutions, hospitals, residential developments for her workers, offices, infrastructures like roads, water, electricity and telecommunication (Commission of Revenue Allocation, 2013). These facilities require regulatory compliance. Thus, successful management of processes employed in acquisition of these assets are to a large extent determined by the amount of stakeholder involvement, technology taken and quality when compared to similar projects. Most of the studies carried out showed the contractor as the sole cause of regulation malfunction, technology dwarf, objective compromise in project, managerial mishaps as well as tainting the environment. This has been done with the hope that the contractors reap

massive proceeds from the project. This could be true to some extent, but cannot be substantiated as parties privy to contract specify and clearly spell out roles to play for successful implementation of projects completion. It is the responsibility of the client to clearly indicate the scope changes of the project. Consultants are tasked with duty to plan, design and ensure proper implementation and supervision of the project. The contractors are tasked with actualizing the client's desire to tangible product that meets set criterion and within certain set out parameters (City Council of Nairobi, 2017).

Kenyan statistics expected that more than 12 million people will be living in urban areas with about a third of these living in Nairobi by the year 2020 (The Quantity Surveyor, 2014). With the current pathetic situation on unfinished road projects in Nairobi, the situation by 2020 is likely to worsen if measures will not be taken. This study was designed to expose the effect of scope changes on project completion among road construction projects in Nairobi County, a case of Langata Sub county.

1.2.1 Profile of Nairobi County

Nairobi is Kenya's capital, premier city, and one of Africa's most important cities. It has an estimated population of 3.5 million and a land area of 695 square kilometers. The recently created Nairobi Metropolitan Region has an area of 32,000 square kilometers (almost as large as the US state of Maryland) and an estimated population of 6.65 million people (Ministry of Nairobi Metropolitan Development, 2012). The city lies between 1,600 and 1,850 meters above sea level on the southeastern edge of Kenya's agricultural heartland at 1.816'S degrees latitude and 36.848'E degrees longitude; its high elevation gives the city a temperate climate despite its close proximity to the equator. Its average density of 4,515 people per square kilometer is the highest in the country, followed by that

of Mombasa (4,292 people per square kilometer), Kenya's second largest city, whose 2009 population was 939,370 (Commission of Revenue Allocation, 2013). The western side of the city is higher, cooler, and well-drained, whereas the eastern half is lower, hotter, and swampy. The city is traversed by the Mathare and Ngong rivers and is subject to minor earthquakes and tremors given its proximity to the Great Rift Valley. The indigenous Karura forest lies in the north of the city, and the gate into Nairobi National Park, the only game park in the world that is close to a capital city, lies 7 kilometers south of the city center (Chrislip & Larson, 2003). Nairobi is named for the Maasai phrase enkare Nairobi, meaning "a place of cold waters." The city originated when the railhead of the Kenya Uganda Railway (KUR) reached the site in June 1899, paving the way for the creation of the KUR headquarters there in July of that year. By year's end, the British colonial government had an administrative presence in the city that helped it become the colonial capital in 1907 and the capital of independent Kenya in 1963.

Nairobi is called the "safari capital of the world" and is the main center of eastern Africa's global wildlife tourism industry thanks to its many superb hotels, tour companies, and Jomo Kenyatta International Airport, which also serves as the home base of the rapidly growing Kenya Airways (Bienen, 2003). Nairobi is also a key global diplomatic center that hosts the world headquarters of the United Nations Environment Programme (UNEP), UN Human Settlements Program (UN-Habitat), and the regional offices of the UN Children's Fund (UNICEF), UN Educational, Scientific and Cultural Organization (UNESCO), UN Industrial Development Organization (UNIDO), and the UN Development Programme (UNDP) (City Council of Nairobi, 2017). The city is the nerve center of Kenya's economy,

contributing slightly less than 50 percent of its gross domestic product and 43 percent of its urban wage employment.

1.2.2 Langata Sub County

Langata Sub County is an area with glaring contrast in living standards, ranging from the luxurious homes of Karen and Langata, middle-income areas like Nairobi West to the sprawling Kibera slums, which are characterized by poor living standards. Langata Sub County is basically a residential region although a number of businesses including offices and institutions are located in the area. The Sub County is multi-ethnic and multi-racial with Luos, Kisiis, Luyhas and Kikuyus being the dominant dwellers. There are also a number of Caucasian, Aglo-saxon as well as Asian inhabitants. The area is also favored by well to-do in-migrants from other African countries and beyond. Langata Constituency is an electoral constituency in Nairobi County, Kenya, one of *seventeen* constituencies in the county including Westlands, Dagoretti North, Dagoretti South, Kibra, Roysambu, Kasarani, Ruaraka, Embakasi South, Embakasi North, Embakasi Central, Embakasi East, Embakasi West, Makadara, Kamukunji, Starehe and Mathare. It consists of southern and southwestern areas of Nairobi (Commission of Revenue Allocation, 2013).

Langata constituency has common boundaries with Kibera Division of Nairobi. The entire constituency is located within Nairobi County. The constituency has an area of 223 km2 (86.1 sq mi). It was known as Nairobi South Constituency at the 1963 elections but since 1969 elections it has been known as Langata Constituency. Kibera, Kenya's largest slum, borders Langata constituency, and was part of it before the creation of Kibra Constituency by the Independent Electoral and Boundaries Commission. The affluent suburb of Karen and the mainly middle class Langata suburb are part of Langata

Constituency, along with the Nairobi National Park and Langata Barracks, which housed the King's African Rifles during British colonial rule. The case attention of the study was Langata Sub County which had a view to understand the effect of scope changes on project completion. The study served as a benchmark for general road construction projects undertaken in all the 47 counties in Kenya.

1.3 Statement of the Problem

The dilemma of road construction project completion critically was as a result of the capacity of the project regulatory compliance changes, project technological changes, project objective changes and the project stakeholders' changes. Road projects in Kenya have always been approved and constructed but ending up discarded without completion for decades. This tendency left residents stranded and struggle to access road networks to their various stations of engagement. The unfinished roads are left with swampy barriers that hinders normal movement of residents from one point to another. These road projects cause heavy traffic jam especially during peak hours that usually are experienced between 6:30AM-10:30AM and 3:30PM-5:30PM. National Transport and Safety Authority (2014) stated that Kenyan citizens using unfinished road networks spend between 3-4 hours to get to their places of engagement for a distance which would otherwise cost them between 20-30 minutes through means of completed road networks. Government statistics of Kenya (2016) noted that the time wasted in traffic jams represented a cost of $ 578,000 (Ksh 58.4 Million) a day in lost productivity. An average Nairobi resident has to wake up earlier than 4AM, not to study but to beat the heavy traffic that characterizes the city roads from 5AM. All this is due to the unfinished road projects in Nairobi and its environs.

An average Langata resident spent between 2-3 hours to get to Nairobi CBD during the peak hours due to the meagre and unfinished road projects for a distance which they would otherwise spend between 15-20 minutes on a completed road project (Njuguna, 2016). The effects caused by unfinished road projects to the road users are unbearable which include: - lawsuits between owners and contractors, increased costs, loss of productivity and revenue as well as contract termination. Motorists find it difficult to continue using unfinished road projects. The condition of their vehicles deteriorates and reduce value overtime. This make them uncomfortable and reluctant to continue investing in funds that would render them poor and helpless overtime. Instead of investing in personal cars, they change options and start using public means of transport and other available means to help them move from one point to another. The ripple effect to this scenario is on the economy of the country. The car dealers and car hires would no longer be in a booming business as they would be when road construction projects were completed. Petrol stations on the other hand would lose customers to fuel their personal cars. The government therefore would also lose in terms of tax and directly affect the National income tremendously.

Successful road projects consider the project scope changes and usually the rigorous project scope control is essential for project completion. An increase in scope that doesn't include a corresponding adjustment to project regulatory changes, project technological changes, project objective changes and project stakeholders' changes would result to unfinished projects. Baca (2015) stated that scope changes are to bring disturbances to the project outcome. Mochal (2014) argued that without scope change management, projects end up trying to complete more or less work than what was originally

agreed to and budgeted for. In other words, projects would be heading down the road to trouble. This is the reason why the study intended to investigate effect of scope changes on project completion among road construction projects in Nairobi County with a distinct case of Langata Sub County.

1.4 Objectives of the Study

1.4.1 General Objectives of the Study

The overall objective of the study was to establish effect of scope changes on project completion among road construction projects in Nairobi County.

1.4.2 Specific Objectives of the Study

i. To determine the effect of project regulatory compliance changes on project completion among road construction projects in Nairobi county.
ii. To investigate the effect of project technological changes on project completion among road construction projects in Nairobi county.
iii. To assess the effect of project objective changes on project completion among road construction projects in Nairobi county.
iv. To establish the effect of project stakeholders changes on project completion among road construction projects in Nairobi county.

1.5 Research Questions

i. To what extent does project regulatory compliance changes affect project completion among road construction projects in Nairobi County?
ii. In what ways does project technological changes affect project completion among road construction projects in Nairobi County?

iii. How does project objectives changes affect project completion among road construction projects in Nairobi County?

iv. To what extent does project stakeholders changes affect project completion among road construction projects in Nairobi County?

1.6 Significance of the Study

Findings of the study are important to road construction professionals to increase knowledge on the success of construction projects completion by managing well the effect of project scope changes to enhance successful completion. The architects, engineers, quantity surveyors, construction project managers and site agents benefit from this study in applying the results of its findings while carrying out road construction projects.

The findings of the study are important to project developers/clients in achieving greater success in their construction projects. Findings are important to both County and National Government in ensuring the risk factors that affect their projects completion are mitigated effectively.

1.7 Scope of the Study

The study was focused on establishing the effect of scope changes on project completion among road construction projects in Nairobi County. Data was analyzed from road projects in Langata sub county. There were over 300 KM road projects in Langata sub county which were used as the focal point of the findings. Data was collected using structured questionnaire and analysis of the same was determined. The findings of the research concluded a true reflection of the effect of scope changes on project completion among road construction projects across the country.

1.8 Limitations of the Study

The researcher encountered a constraint of time management. Research project requires adequate time from beginning to end. Being a student, an employee, a husband and a father of one child, creating time was a challenge for the researcher. The researcher was able to overcome the challenge on time management by creating a working schedule that accounted for every minute spent. Insufficient fund was a constraint to the researcher. There was a lot of travelling and movement for data collection, printing of questionnaires, as well as getting permission for data collection from NACOSTI and Langata Sub County authorities which involved a lot of spending.

The researcher was able to overcome this challenge by adopting a working budget which accounted for every coin spent. Weather change especially raining seasons drastically affected the research. The researcher adjusted on the working schedule to work when not raining to mitigate the challenge of weather. The researcher faced a constraint of language barrier. The questionnaires were presented to respondents in English. Some of the respondents were not conversant with the language in the area therefore this was a setback. Research assistants were able to interpret areas that respondents couldn't understand and therefore the challenge of language barrier was mitigated. Most of the respondents did not return the questionnaires and were not willing to participate in the interview process hence posed a challenge to the researcher. The researcher worked with a response rate of 53 obtained from the respondents to mitigate the challenge of questionnaires not returned.

1.9 Delimitations of the Study

The research project was confined to Langata Sub County. The variables of emphasis comprised of project regulatory compliance changes, project technological changes, project objective changes, and project stakeholder changes. The research project was kept to a target population of 350 licensed road contractors and supervising engineers with a sample size of 78 respondents. Findings of the study were used for academic purposes only. The research project was focused towards exploring effect of scope changes on project completion among road construction projects in Nairobi County with a distinct case of Langata Sub County.

1.10 Conceptual Framework

A conceptual framework is a plain structure that comprises definite abstract blocks that symbolizes the observational, experimental, and systematic examination aspects of a process or scheme being envisaged (Mugenda & Mugenda, 2013). The conceptual framework is the basis or groundwork brought together to steer the study. This is the logical structure of ideas put together for the purpose of organizing and providing direction on the dependent and independent variables of the study. It provides an explicit explanation why the problem under study exists by showing how the variables relate to each other. The following is a graphical presentation that showed the input and output of the variables of the study.

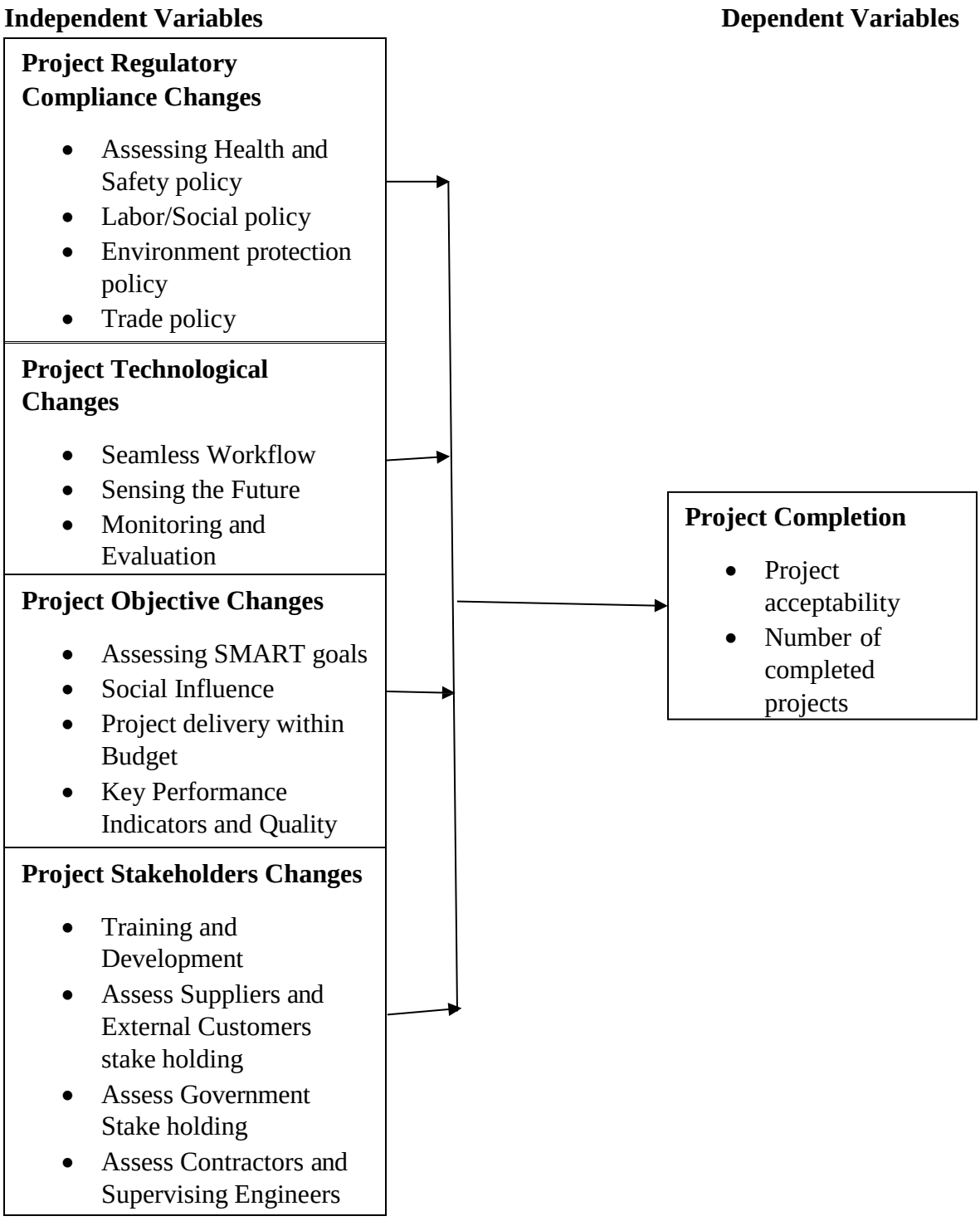


Figure 1.1 Conceptual Framework

Source: Researcher (2019)

As shown in figure 1.1 above, the independent variables had an influence on the dependent variables. Project regulatory compliance changes was a vibrant determining factor of project completion that entailed the rate at which successful projects were achieved and completed within parameters of health and safety policy. Clear procedure and adherence to the health and safety policy by both parties involved in the project enhanced smooth and quality achievement of the product (Chan & Chan, 2014). Labor and social policy is key to success of any project. Clarification of labor laws and social policy by both parties involved in the project would enhance speedy and quality production of the project process. Adherence to environmental policy as stated by bodies such as NEMA was important to project completion. Ignoring such environmental policy would lead to stagnation and delays in project completion. The road construction projects usually involve different parties from across different regions and countries. The trade policy therefore was significant in enabling different tastes and preferences of different trading parties to be met.

Project technological changes was a factor and a tool that could not be ignored in the success of any project undertaken at this contemporary society. Technology keeps changing from time to time. However, technology helps in tracking the seamless flow of work. This was important especially when a project was set to be completed within some specific future dates. The technology help in sensing the future of the project at present. Project completion require a lot of monitoring and evaluation to be effective. Usage of technology enhances the effectiveness and efficiency of monitoring and evaluation (Sing, 2014). Project objective changes was also a variable that played a critical role in project completion. Sherani (2012) noted that projects must work within set goals and objectives. For successful project completion, the goal and objectives must be SMART goals meaning

they should be Specific, Measurable, Achievable, Realistic and Time-bound. At the end of a project, assessment was done based on how SMART goals were met. The objective was ascertained when the project had a social influence. Users of the project would equally benefit and appreciate the services of the project. There were variations on cost and funding of the project. Project would be objective when delivered within Budget. The quality of the project and performance would greatly determine the success and achievement of the project objectives.

Project stakeholders changes was a central determining factor for the success and completion of project. The stakeholders require training and development to understand and appreciate the dynamics of the project before commencement and after delivery (Bathurst, 2015). Suppliers and external customers needed to be assessed in order to achieve the set goals and standards. Government as a stakeholder was a key tool in success and completion of the project. Government assessment on the validity and reliability of project was necessary. The government contract and subcontract the road project to the most qualified and deserving individuals and company to deliver the required project within time, scope and budget. Project completion therefore would be evident when the product delivered was accepted and agreed by the owner. Thomsett (2002) stated that road project completion must be determined and accepted on the bases of meeting the set standards of the effect of scope changes regarding the regulatory compliance, technological observance, objectives and stakeholder's involvement. When the project satisfies all the parties involved, project completion become evident. Road contractors and supervising engineers' consideration for project allocation was determined by the number of completed projects in the previous past. This is an indicator that helped determine the possibilities of

project completion among road construction projects in Nairobi County. The number of completed projects in recent past was a compare and contrast for an informed decision on effect of scope changes on project completion among road construction projects in Nairobi County.

CHAPTER TWO: LITERATURE REVIEW

2.1 Introduction

This chapter presented introduction, theoretical review and empirical review. Herein, detailed literature is reviewed in line with the study objectives. Lastly, summary of the reviewed literature and the emanating knowledge gap was presented.

2.2 Theoretical Literature Review

A theoretical literature review is a collection of interrelated concepts. It guides research to determine what things to measure, and what statistical relationships to look for (Chand, 2018). Sherestha and Upendra (2015) stated that theoretical review is the foundation on which the whole research project is established. They argued that theoretical review is a logically explained, defined and developed network of relations among the variables in the problem situation and documented through such procedures as literature review, observations and interviews. A good research should be grounded in theory (Mendoza, 2014). This study therefore was based on two theoretical foundations: Contingency Theory and Theory of Constraints (TOC).

2.2.1 Contingency Theory

The contingency theory was postulated by Scott in 1981 and states that there is no best way to organize a project, to lead a scope change, or to make decisions on project completion. The theory gives explanations on how variables such as regulatory compliance change, technological change, objective change and stakeholder change affect project completion in Nairobi County. The contingency theory assumes that no single type of project completion is equally applicable to all scope changes. Rather, project effectiveness

is dependent on a fit or match between the type of technology, environmental volatility, the size of the project, the features of the project completion and its information system (Chen, Martha, & Altar, 2014). In this regard, a project completion can only be determined if it responds to the specific needs of a particular road project undertaken in Nairobi region. The contingency theory is not without various limitations (Chand, 2018). These comprised of; Inadequate Literature, which makes it hard to rely on and, it is complex and unpredictable, since although it calls on project managers to do what they deem fit for a situation. It is hard to track the actions made by individual managers which makes it complex; it is difficult to do empirical testing which means it is hard to test in the context of the leeway given to project managers to act as they deem appropriate for a particular situation and; it is reactive not proactive since project managers are responsible to manage the environment in such a way that they avoid the undesirable aspects of environment.

The common observations of contingency theory are building relationships matters most when there is significant mistrust and insecurities with leadership's intentions and methods, highly structured tasks are relatively independent of either relationship or positional power, low structured task accompanied by either directive or participative leadership style, low positional power requiring leaders to use their people-skills to influence the outcome, as well as effective task-oriented leader during times of crisis (Xiaolang, Shanshi, & Hongli, 2015). The strengths of the theory are supported by vast amount of empirical studies that have been tested extensively, the contingency model is predictive and can define any situation, the theory reduces the amount of expectations from a leader and focuses on matching a leader to task, the theory can be used to create leadership profiles in an organization that is important for reorganization and management change

(Massie, 2015). The criticism of the theory is visible in failure to explain the model that is developed empirically and unable to provide reasons for leaderships' effectiveness in various situations, theory scale is very debatable and hard to understand how evaluation of a coworker reflect upon own leadership style, the theory is not a leadership development process while it is good to get the best out of a leader; it doesn't blend well with the career growth of a leader. If the leader doesn't adapt or changes his style, he might never be productive at the higher levels of organizations (Beams, 2014).

2.2.2 Theory of Constraints

The theory of constraints (TOC) is a project management paradigm introduced in 1984 with the publication of The Goal by Eliyahu M. Goldratt, an Israeli business management expert that views any project manageable system as being limited in achieving more of its goals by a very small number of constraints. There is always at least one constraint, and theory of constraints uses a focusing process to identify the constraint and restructure the rest of the project around it. Theory of constraints adopts the common idiom "a chain is no stronger than its weakest link". This means that processes, organizations, projects etc., are vulnerable because the weakest person or part can always damage or break them or at least adversely affect the outcome.

The underlying premise of the theory of constraints is that projects and organizations can be measured and controlled by variations on three measures: throughput, operational expense, and inventory (Cox et al., 2004). Inventory is all the money that the system has invested in purchasing things which it intends to sell. Operational expense is all the money the system spends in order to turn inventory into throughput. Throughput is the rate at which the system generates money through sales.

Before the goal itself can be reached, necessary conditions must first be met. These typically include safety, quality, legal obligations, etc. For most projects, the goal itself is project completion. However, for many organizations and non-profit businesses, making money is a necessary condition for pursuing the goal. Whether it is the goal or a necessary condition, understanding how to make sound financial decisions based on throughput, inventory, and operating expense is a critical requirement.

The theory defines a constraint as anything that prevents the system from achieving its goal. There are many ways that constraints can show up, but a core principle within theory of constraints is that there are not tens or hundreds of constraints. There is at least one, but at most only a few in any given system (Mendoza, 2014). Constraints can be internal or external to the system. An internal constraint (people, market, financial, equipment, policy) is in evidence when the market demands more from the system than it can deliver. If this is the case, then the focus of the project and organization should be on discovering that constraint. An external constraint exists when the system can produce more than the market will bear. If this is the case, then the project and organization should focus on mechanisms to create more demand for its products or services. Some criticisms of Goldratt's theory of constraints include the idea that Goldratt himself treats the theory as a product to sell and he acts as a salesman. Also, some say Goldratt's theory of constraints borrows ideas and concepts from previous studies and theories, but Goldratt does not acknowledge these contributions to his theory (Mugo, 2014).

Thomsett (2002) noted that the theory of constraints is a very practical theory and has its implication worldwide. Both small and large multinational companies widely use it to recognize and rectify the vulnerabilities of their systems or processes. One example is

the Boeing Company – a multi-national company that manufactures and sells aircrafts worldwide. Boeing implemented the theory into its Aerospace Segment in 1996. The results they achieved were the lead time of their supplies was improved by 75% and inventory decrease reduced by 60%. Another example of the practical implementation of the theory of constraints is by the manufacturers of Ford. Ford Motor Company is an American company of automobiles. They applied the Drum Buffer Rope (DBR) system of theory of constraints in 1991, which states that in every manufacturing plant there are some resources that are available in a limited amount due to which the overall production of that plant is restricted. Ford used the model of just in time (JIT) before implementing theory of constraints (TOC), which was implemented to develop on gains already made due to JIT model. The industry segment was 'automotive'. They got very favorable results as the inventory decrease reduced by almost 100 million dollars (which was 50% of the overall inventory), the lead time was improved by 3 days and the return on investments was increased by 20%.

The strengths of the theory of constraints (TOC) as depicted in the two examples above is seen on its simplicity and easy to understand which makes it more practical for the managers of the business, it's approach provide a smooth pattern to follow which enable the user to focus on an area that actually needs attention, it's effectiveness in dynamic business environments as by removing or minimizing the limiting factor in a process where quick results can be achieved, it's implementation result in reduction of many costs like labor, overtime, inbound or outbound logistics etc. as it restructure the overall process of a business (Hilton et al., 2014). The adversity of the theory state that the constraints is ongoing which become hard to maintain, when the company deals with a specific constraint

in a system then another constraint develop which become difficult and sometime impossible to obtain an optimum level of all activities (Cox et al., 2004).

2.3 Empirical Review

The empirical review section presented the reviewed literature linked to the problem and objectives of the study. This section was categorized according to each specific objective in order to ensure reliability to the study problem. Empirical review gave an outline of the other researchers who did studies related to the subject stating what they observed and concluded so as to identify the gap left unstudied and therefore covered by this current study. Empirical review is the assessment using observed evidence. It is a way of gaining knowledge by means of direct and indirect experience (Mugenda & Mugenda, 2013). The researcher reviewed the ultimate objectives/variables to this study.

2.3.1 Project Regulatory Compliance Changes

Extensive researches were undertaken on project regulatory compliance changes pegged on health and safety policies, labor and social policy, environmental and protection policy and the trade policy. Project Regulatory compliance refers to the requirements and activities imposed by various regulatory agencies as "the regulatory process." The regulatory process includes, at a minimum, the development of environmental impact reports or statements, permit applications, public hearings, and permit issuance. It also includes compliance with other miscellaneous requirements of agencies having jurisdiction over the location, engineering, construction, startup, and operation of the project (Poister & Hassan, 2015). Mugo (2014) studied the factors influencing completion of projects in government tertiary institutions. Mugo found that there has been assumption in the past that the regulatory process applied only to large complex projects.

The same research found that projects of all kinds, small or large, have regulatory process requirements. Small projects were receiving a great deal of attention by agencies. Furthermore, for the owner, his project was always important regardless of its size. Mugo further argued that recognizing the regulatory process starts at the inception of any project. From the owner's viewpoint it is in his best interest to get the professional involved early, even before site selection. Bishop (2013) indicated in his study that both the real and emotional problems connected with the project have to be considered. The best way to consider these is through brainstorming sessions. If the owner does not have the qualified staff, he should consider obtaining staff assistance by retaining expert consultants for these services.

The study revealed that project manager should pay particular attention to requirements of the regulatory process during project preparation. The project should include allocations of resources for regulatory process activities. Interestingly, Dewit (2014) denoted that, after the consultant has been selected for performing the work, the initial planning should further elaborate on the details necessary for these activities. The owner may not be aware of the requirements. Consequently, the project manager should take special care to advise the owner of these problems, especially if the project has a tight regulatory compliance policy. The project completion delays and added requirements inherent in the implementation of the regulatory process may become more critical than the execution of other work.

Trade policy is a regulatory compliance tool effective for project completion. Alfeim (2014) stated that the planning for the regulatory process should begin with the identification of the cognizant agencies which administer permit requirements for project

take-off. The regulatory process must consider critical questions such as, what federal, state, and local regulatory agencies have jurisdiction and in what particular areas? What permits are required and do any interrelationships exist between the various permits? In addition to governmental jurisdictions, certain special interest groups and news media may have interests in the project (Davenport & Smith, 2015). Baker (2015) indicated that these elements should be further identified if possible. There's a possibility that special interest groups may remain unidentified for a long period of time and become visible only after the project is deeply committed hence affect project completion. They may be local or may be backed by national organizations. In any case, as soon as they become known, a specific strategy should be developed to deal with the issue that they raised. After having identified the cognizant agencies and requisite permits, the owner, consultant, and architect/engineer should jointly define the role of regulatory compliance bodies played by each in obtaining the permits. For effective implementation, a clear division of responsibility should be established.

Atkinson (2014) argued that, the success of project completion is determined by how well the environmental existing policies are observed. Atkinson further noted that the requirements for the Environmental Impact Report or Statement development, and permit applications must be established. Stakeholders study and understand the laws and regulations applicable to the project, including which courts may get involved in case of litigation. They make early contact with staff representatives of the appropriate agencies to determine and verify their agency's requirements; where necessary, they discern whether the attitude of the agency toward the proposed project is favorable, unfavorable, or undecided. Chirwa et al., (2014) stated that the regulatory compliance agencies recognized

the changing attitudes and even the changing jurisdictions of the groups and public bodies which is affected by the project. The requirements of regulatory agencies may be interpreted differently by different people. During the life of the project the attitude of the regulatory agencies may also change. Stakeholders are cognizant at all times of the legislators, the regulatory agency personnel, local agency representatives, and changing legislation and regulations.

Regulatory compliance change is vital in project completion. Chan and Chan (2014) discovered that all government levels, federal, state, and local, the administration and the people may change during the life of the project. They stated that change of governments is important because one administration may approve certain elements while the succeeding administration may reverse or alter the commitments already made. Chan and Chan recommended that attempts should be made to check on the status of pending applications if such a change should occur. All agreements should be properly documented. This may help eliminate the possible reversal or change of commitments that would otherwise affect project completion.

Chirwa et al., (2014) reiterated that the emphasis during the design and construction phases should be on implementing the previously planned process and eliminating conflicts between various agencies and requirements that would hinder project completion. The regulatory compliance plans should involve the public. Chirwa et al. further noted that, when public hearings are required, it must be recognized that the public, in general, is not technically oriented. The meetings should have a great number of visual aids (models, renderings, charts, etc.) to explain the project in layman's terms. The preparation for these meetings should include dry runs attended by the entire staff. Frequent meetings for small

audiences (as opposed to large mass hearings) are less likely to result in bad publicity or mass reactions such as demonstrations. The reaction was that, it is very important to select the proper personnel to attend these meetings. Maximum emphasis should be given to having people who are recognized in their particular field as experts but yet have the ability to listen intelligently and sympathetically to the public.

Baz (2014) noted that compliance refers to conforming to a rule, such as a specification, policy, standard or law. Regulatory compliance described the goal that organizations aspire to achieve in their efforts to ensure that they are aware of and take steps to comply with relevant laws, policies, and regulations. Due to the increasing number of regulations and need for operational transparency, organizations are increasingly adopting the use of consolidated and harmonized sets of regulatory compliance controls. This approach is used to ensure that all necessary governance requirements can be met without the unnecessary duplication of effort and activity from resources (Amponsah, 2014). A study by Daniell (2014) on effects of policies of project development in Africa, regulatory compliance varies not only by industry but often by location. The financial, research, and pharmaceutical regulatory structures in one country, for example, may be similar but with particularly different nuances in another country. These similarities and differences are often a product "of reactions to the changing objectives and requirements in different countries, industries, and policy contexts."

2.3.2 Project Technological Changes

Technology is allowing innovation faster than even the most optimistic projects thought possible just a few years ago. Shifts in the workforce, employee models and customer expectations are all driving organizations to take advantage of this opportunity

for change. In the context of project management, there is ever-increasing pressure to deliver more quickly and efficiently, leading to the adoption of new technologies (Thamirasu, 2015). This determines significant change to the structure and nature of project management, project teams and even projects completion themselves. Singh (2014) noted that effects of project technological change a few years from now, the mechanics of project management may require no human involvement at all. Singh noted further that, augmented intelligence will have evolved into artificial intelligence (AI) and machine learning, allowing the technology that today automates task assignment, tracking and reporting to operate independently.

Reyes (2014) reiterated that software robots (commonly referred to as "bots") may be able to build project plans based solely on a few simple, high-level parameters and assign tasks intelligently to the appropriate resources- whether human or machine. Reyes further noted that these bots can learn from every data point they consume and interpret, delivering measurable improvements to an organization's top and bottom lines. Another study by Szakonyi (2015) stated that this same technology could use powerful predictive analytics to identify risks much earlier than today's project managers and alter course accordingly to manage those risks. Further to his findings, Szakonyi noted that this will also be true for project performance variances where technology could be trusted to make adjustments. As machines can rapidly consider many more factors than humans, they may be expected to take all of those factors into account and execute on a plan with a high likelihood of success. Yaqoot (2015) stated that emerging technologies are likely to impact the structure of project teams, perhaps even making them obsolete. The work-at-will model that is becoming popular-people work where they want, when they want, for as long as

they want- could become predominant. Yaqoot noted further that work may be assigned by technology based on current availability and workload. The individuals assigned to execute those tasks may not be traditional employees but, instead, freelance contractors working anywhere in the world, at any time of the day, leveraging an intelligent technology ecosystem.

McLead (2014) suggested that people could become more specialized, working on tasks that are aligned to their unique combination of skills, experience and interests. They might never meet the other people working on other pieces of the solution or even know what that solution is. They could deliver their own piece as efficiently and effectively as possible with AI-driven systems ensuring that all the disparate elements come together as a cohesive whole. McLead argued further that projects have spent the last few years focused on shortening the time between identifying the need and delivering a solution. But with the project structure in use today, the desired solutions are still packaged into sections to make the work more manageable, creating inevitable delays in project completion. Mendoza (2014) argued that future technology may take this trend to its logical conclusion by shortening projects to the point where they no longer exist. Discrete projects could be replaced by a continuous stream of updates, features and enhancements, delivered to customers as soon as the technology determines that they are fit for purpose. Mendoza suggested that such automation drives down or even eliminates delays on project completion between the time a need is identified and the time a solution is implemented. It maximizes the ability to drive up benefits and value. AI could potentially drive the decisions to release new features and manage the potential for disruption. Smaller,

incremental deliveries are far less disruptive than packaged projects and build an expectation of continuous improvement.

Ashish (2013) reported that organizations are driving projects to deliver more quickly by shortening planning windows and increasing the pace of deliveries. Menium (2015) argued that technology is creating a more dynamic project delivery environment. Individual team members are increasingly working in new ways. Traditional desk-and-cubicle models are being replaced by social working concepts such as offices with no set desk spaces where team members relocate from one day to the next. The office environment is also less important as work spaces become mobile and productivity is just as high wherever an individual chooses to be there. Ashish (2013) noted that human beings recently moved from the human imagination driving technology as people sought technical solutions to challenges, to technology driving human innovation as people found new ways to apply the technology they had created. Singh (2014) noted that Augmented Intelligence is becoming mainstream- refrigerators are placing grocery orders and people are answering the doorbell from thousands of miles away. Just a few short years ago, this was the realm of science fiction. Now, there is no sign that advancement is slowing down.

Singh further noted that infrastructure changes are driving the adoption of emerging technologies. The need for an on-premises data center has been replaced with cloud systems provided by vendors from their own data centers. Cloud is not only cheaper, it's faster and easier to update on a regular basis with the latest innovations-eliminating the lag time associated with on-premises upgrades. The workflow of such environments will continue to fall as management of all elements becomes more automated, with bots handling everything from load balancing and maintenance to the replacement of physical

components. Sherestha and Upendra (2015) argued that the recent developments around big data provide the final foundational piece for project technological change. Data is the fuel for the analytics that will drive the automated project planning, evaluating and adjusting. To be effective, the data will need to come from enterprise software platforms sharing the same corporate data such as ERP (Enterprise Resource Planning), EPM (Enterprise Performance Management), and HCM (Human Capital Management). Organizations without that data will be unable to make full use of technology for project work and will likely be at a competitive disadvantage hence affect project completions (Garside, 2014).

2.3.3 Project Objective Changes

The project objective describes the project's outcomes: intended and direct, short- and medium-term effects on the target group. The project objective must lie within the scope of the project, and one must be able to directly attribute the effects to the project. The project objective is often formulated in terms of the project's utility for the target group: "Better… higher…" It also makes sense to formulate the project objective as a situation to be achieved in the future. A study by Sherani (2012) on Construction industry, back born of national development, stated that the project objective describes an outcome, meaning of the effect of change that the project is supposed to cause for the target group. Further stated that, in practice it is often not quite so simple to distinguish outcomes from outputs, that is, the project's products and deliverables. Well-formulated, genuine outcome (and impact) objectives are therefore of great importance if the outcome and impact assessment is to have any significance. Sherani indicated that objectives are concrete statements that describe what the project is trying to achieve. The objective should be

written at a lower level, so that it can be evaluated at the conclusion of a project to see whether it was achieved or not. Goal statements are designed to be vague. Objectives should not be vague. A well-worded objective should be Specific, Measurable, Attainable/Achievable, Realistic and Time-bound (SMART).

Thamirasu (2015) noted that effective objectives in project management must be specific. Thamirasu noted further that a specific objective increases the chances of leading to a specific outcome. Therefore, objectives shouldn't be vague, such as "to improve customer relations," because they are not measurable. Objectives should show how successful a project has been, for example "to reduce customer complaints by 50%" would be a good objective. The measure can be, in some cases, a simple yes or no answer, for example, "did we reduce the number of customer complaints by 50%?" Thamirasu reiterated that though there may be one major project objective, in pursuing it there may be interim project objectives. In lots of instances, project teams are tasked with achieving a series of objectives in pursuit of the final objective. In many cases, teams can only proceed in a stair step fashion to achieve the desired outcome. If they were to proceed in any other manner, they may not be able to develop the skills or insights along the way that will enable them to progress in a productive manner.

Oladapo (2015) observed that objectives are often set under three headings; Performance and Quality: - Oladapo alluded that the end result of a project must fit the purpose for which it was intended. At one time, quality was seen as the responsibility of the quality control department. In more recent years the concept of total quality management has come to the fore, with the responsibility for quality shared by all staff from top management downwards.; Budget: - Further, Oladapo noted that the project must

be completed without exceeding the authorized expenditure. Financial sources are not always inexhaustible and a project might be abandoned altogether if funds run out before completion. If that was to happen, the money and effort invested in the project would be forfeited and written off. In extreme cases the project contractor could face ruin. There are many projects where there is no direct profit motive, however it is still important to pay proper attention to the budgets, and financial management remains essential and Time to Completion: -Observation by Oladapo on this concept was that, the actual progress has to match or beat planned progress. All significant stages of the project must take place no later than their specified dates, to result in total completion on or before the planned finish date. The timescale objective is extremely important because late completion of a project is not very likely to please the project purchaser or the sponsor.

Ramanathan and Rathinakumar (2015) noted that a well written objective is crucial because it can affect every step of the project life cycle. They suggested that when creating a specific objective, the project manager should give the project team a greater chance of achieving the objective because they know precisely what they're working towards. Clear project objectives also support the current emphasis on total quality management: every member of the team can consider themselves responsible for quality, because the whole team can see the desired outcome from the beginning of the project. Ramanathan and Rathinakumar suggested that all types of endeavors can benefit from objectives. They also reiterated that one important objective of the project should be to stay on budget. Every project should have a specific budget assigned. The project manager must keep track of project costs, and make adjustments as necessary to avoid going over budget.

Typical costs include resources such as team members, supplies, materials and equipment, depending on the nature of the project (Bathurst, 2015). Additional costs might include travel and other administrative expenses. Ramanathan and Rathinakumar (2015) noted that another objective should be to bring the project to completion on time. In order to manage time, many project managers use Gantt charts to track tasks, dependencies and milestones. Whether a Gantt chart or other tracking model is used, the critical path must be identified. Critical tasks are those that will delay the project if they are not completed on time. Project managers should identify these tasks, determine how long each will take, and gauge their dependence on other tasks. The project manager should also stay abreast of when critical path tasks are completed so he can gauge the progress toward the objective of on-time project completion. Ramanathan and Rathinakumar noted further that a third objective for a project manager is to keep the project in scope.

The project's scope defines its boundaries. If the project represents an engineering design, for example, the scope will identify the features and functionality that must be included. Over time, stakeholders can influence the scope, such as when they try to add new features and functionality that were not originally discussed. In-scope items are typically defined in a work breakdown structure, or WBS. The WBS should be monitored to identify and prevent anything that can impact the project's scope (Greer, 2012). Varma (2013) noted that building quality into the project management process is another potential objective. Varma argued that measuring quality is based on maintaining the balance of social influence, SMART goals, as well as Key Performance Indicators in addition to reviewing customer or stakeholder satisfaction indicators. Varma further noted that stakeholders will be satisfied if the project meets all of its key objectives, or provides added

value by improving the efficiency of the overall process. Additional value can be provided if the project comes in under budget or early, or if the team can meet both of those original objectives while also delivering out-of-scope items that had been identified as "want-to-have" but not "need-to-have" items by stakeholders.

Varma further noted that an organization's objectives are the single most important factors shaping its structure and behavior. The objectives define the function (purpose) of the organization. As a result, the primary and secondary organization systems are defined-with consequent major organizational groupings, relationships, information routing requirements and so on. In defining the purpose of the change, the change objective has a clear impact on the strategy and plans required to achieve the change (Wessels, 2017). The study noted that changes are requested as a result of the different perspectives that each stakeholder has on the project. The objective defines the what, why, how, when, and who. Without its objectives adequately defined, a project will run into major problems. Managers will develop their own objectives and projects will achieve inappropriate ends; resources will be committed without due analysis of their availability; and action will be carried out without taking full account of other important factors.

2.3.4 Project Stakeholders Changes

Techniques of managing projects vary depending upon the kind of stakeholders for the projects. In case a project has multiple stakeholders from different backgrounds, there is a possibility of disagreement between them. In such cases, project management becomes extremely challenging as projects cannot afford to have unhappy stakeholders and clients. Great convincing and negotiation skills are required in such cases to reach a consensus. It can be time consuming and hence the actual time dedicated to resources reduce. The project

manager needs to adopt tactful approaches in such cases and get the work done. Aibinu and Jaghoro (2012) noted on effects of construction delays on government project delivery that a stakeholder could change their mind at any point in the course of the project. And they frequently do! The study indicated that, If the stakeholders' new opinion relates to the format or quality of the output of the project then the project will be making a change to incorporate their new ideas. Essentially, this is a change to requirements. The study reiterated that the earlier the project can get these out of the stakeholders, the less impact they will have on the project overall. While the project is still at the requirements elicitation phase, stakeholders can pretty much change their minds as often as they like.

Bathurst (2015) noted that stakeholders include people within and outside the project; some of these will have requested the project, or will finance it, or benefit from it, or have been annoyed by it or helped to deliver it. Many of the stakeholder groups will be outside the direct control of project management. The effect of this can be underestimated. Indeed, some projects might provide a surprise in terms of the large amount of time and effort we need to devote to the stakeholder groups to achieve success in the project. The study indicated that stakeholders are a major source of uncertainty in projects. This uncertainty encompasses who relevant stakeholders are, how they could influence a project, and what their motives are in so far as their actions affect project activity is concerned. Al-Kharashi and Skirtmore (2015) suggested that a generic project uncertainty management process framework is employed to provide a structure for a review of approaches to analyzing stakeholders and related uncertainty management issues. This framework, the SHAMPU (Shape, Harness, and Manage Project Uncertainty) process, consists of nine phases: project definition, focusing the uncertainty management process,

identifying sources of uncertainty, structuring issues, clarifying ownership, estimating variability, evaluating implications of uncertainty, harnessing plans, and managing implementation. The study showed a variety of approaches to stakeholder analysis are considered in relation to these phases. In particular, characterizing projects on a 'hard–soft' spectrum suggests generic strategies for managing stakeholder expectations and fostering trust between stakeholders. An important conclusion is that a systematic approach to stakeholder management is facilitated by the use of project uncertainty management processes that distinguish different stages of the project life cycle.

According to the studies above, early stakeholder involvement yields at least the following benefits: a) Early involvement leads to a lower likelihood of developing poor designs, b) Early involvement in the design stage leads to a higher likelihood of a more effective design, improved construction operations, and less scrap, c) Early knowledge about the end-users leads to higher customer satisfaction regarding the product's function and usage, d) The more the stakeholders know about the customers' or end users' actual usage of the products, the more efficient the stakeholders' operations are in terms of meeting the buyer's needs and purposes, e) The more the stakeholders know about the exact objectives of the design specifications, the more the stakeholders are able to meet or revise those specifications by adjusting their capabilities, f) Early involvement allows room for creative solutions and the intensive exchange of ideas, g) Early involvement leads to procedures that are synchronized and run in phases.

Arditi and Mochtar (2013) on trends of productive projects in US construction noted that stakeholders are all those groups, units, individuals, or organizations, internal or external to our organization, which are impacted by, or can impact, the outcomes of the

project. This includes the project team, sponsors, steering committee, customers, and customer co-workers who will be affected by the change in customer work practices due to the new product or service; customer managers affected by modified workflows or logistics; customer correspondents affected by the quantity or quality of newly available information; and other similarly affected groups. The study refers to the project team as the group responsible for planning and executing the project. It consists of a project manager and a variable number of project team members, who are brought in to deliver their tasks according to the project schedule.

The project manager is the person responsible for ensuring that the project team completes the project. The project manager develops the project plan with the team and manages the team's performance of project tasks. It is also the responsibility of the project manager to secure acceptance and approval of deliverables from the project sponsor and stakeholders. The project manager is responsible for communication, including status reporting, risk management, escalation of issues that cannot be resolved in the team, and, in general, making sure the project is delivered in budget, on schedule, and within scope. The project team members are responsible for executing tasks and producing deliverables as outlined in the project plan and directed by the project manager, at whatever level of effort or participation has been defined for them. On larger projects, some project team members may serve as team leads, providing task and technical leadership, and sometimes maintaining a portion of the project plan (Reyes, 2014). The executive sponsor is a manager with demonstrable interest in the outcome of the project who is ultimately responsible for securing spending authority and resources for the project. Ideally, the executive sponsor should be the highest-ranking manager possible, in proportion to the project size and scope.

The executive sponsor acts as a vocal and visible champion, legitimizes the project's goals and objectives, keeps abreast of major project activities, and is the ultimate decision-maker for the project. The executive sponsor provides support for the project sponsor and/or project director and project manager and has final approval of all scope changes, and signs off on approvals to proceed to each succeeding project phase. The executive sponsor may elect to delegate some of the above responsibilities to the project sponsor and/or project director. The project sponsor and/or project director is a manager with demonstrable interest in the outcome of the project who is responsible for securing spending authority and resources for the project (Baz, 2014).

The project sponsor acts as a vocal and visible champion, legitimizes the project's goals and objectives, keeps abreast of major project activities, and is a decision-maker for the project. The project sponsor will participate in and/or lead project initiation; the development of the project charter. He or she will participate in project planning (high level) and the development of the project initiation plan. The project sponsor provides support for the project manager; assists with major issues, problems, and policy conflicts; removes obstacles; is active in planning the scope; approves scope changes; signs off on major deliverables; and signs off on approvals to proceed to each succeeding project phase. The project sponsor generally chairs the steering committee on large projects. The project sponsor may elect to delegate any of the above responsibilities to other personnel either on or outside the project team (Arditi & Mochtar, 2013). The study reiterate that the steering committee generally includes management representatives from the key organizations involved in the project oversight and control, and any other key stakeholder groups that have special interest in the outcome of the project. The steering committee acts individually

and collectively as a vocal and visible project champion throughout their representative organizations; generally, they approve project deliverables, help resolve issues and policy decisions, approve scope changes, and provide direction and guidance to the project. Depending on how the project is organized, the steering committee can be involved in providing resources, assist in securing funding, act as liaisons to executive groups and sponsors, and fill other roles as defined by the project. The study noted that customers comprise the business units that identified the need for the product or service the project will develop.

Arditi and Mochtar (2013) noted that customers can be at all levels of an organization. Since it is frequently not feasible for all the customers to be directly involved in the project, the following roles are identified as discussed by the study: - Customer representatives are members of the customer community who are identified and made available to the project for their subject matter expertise. Their responsibility is to accurately represent their business units' needs to the project team, and to validate the deliverables that describe the product or service that the project will produce. Customer representatives are also expected to bring information about the project back to the customer community. Towards the end of the project, customer representatives will test the product or service the project is developing, using and evaluating it while providing feedback to the project team. Customer decision-makers are those members of the customer community who have been designated to make project decisions on behalf of major business units that will use, or will be affected by, the product or service the project will deliver. Customer decision-makers are responsible for achieving consensus of their business unit on project issues and outputs, and communicating it to the project manager.

They attend project meetings as requested by the project manager, review and approve process deliverables, and provide subject matter expertise to the project team. On some projects they may also serve as customer representatives or be part of the steering committee.

The above studies emphasized on different issues that are to be the causes of project success or failure such as corruption, inadequate skills or lack of professionalism, inadequate planning or design and management problems among others. Most of these studies did not look at the scope as a factor that contributes to project success or failure. The findings of factors influencing implementation of the African development bank funded project in the ministry of higher education, science and technology- Kenya by Njau (2014) showed that effective implementation of donor funded projects is defined by a number of project constructs which were identified as project scope, project budget, project timelines and adherence to set quality standards. He adds that a project that successfully attains these constructs is therefore said to be effective in project implementation. Even though project scope was mentioned it was not considered as a factor of effective implementation. Effective implementation does not necessary mean completing project successful. Project can be implemented according to the proposed plan as well as proposed procedures but at the end it will be seen that it did not meet its objectives. This study therefore intended to explore the effect of project scope changes on project completion pegged on the project regulatory compliance changes, project technological changes, project objective changes and project stakeholders' changes.

2.4 Summary of Reviewed Literature

This section of the chapter covered the theoretical literature and empirical reviews. The bond between the theories guiding the study (dependent and independent variables) was explored. The empirical literature review was revised based on the study objectives in relation to other existing studies. There were numerous studies that were undertaken by other researchers and were compared and contrasted to make an informed decision on the subject matter of this study. A careful search for the study and knowledge gap was identified. The knowledge gap was identified after a thorough critique of other existing studies and gap presented.

2.5 Knowledge Gap

Various studies indicated that successful completion of projects is multifaceted and that no single factor can lead to successful completion in projects. For instant Greer (2012) pointed out that project is successful if it satisfies all three legs of the triple constraint, namely, performance (specification), cost and time. Thomsett (2002) in an extensive examination of 20 failing projects over a period of 18 years expanded this criterion of success as: ‘satisfies stakeholder groups, meets functional requirements, meets quality expectations and requirements, within cost, deadline, delivers sustained and actual benefits and provides the team with professional satisfaction and learning. Pinto and Slevin (2012) argued that in spite of extensive study, there has been limited convergence on the components and causes of project completion. Dewit (2014) and many other studies made a distinction between project success and project management success. They contended that project success is measured by comparing the project outcomes to the overall

objectives of the project; whereas project management success tends to be measured against the traditional measures of performance, namely, cost, time and quality.

The studies above looked at success of project but little or none has dwelt on project completion and factors leading to successful completion of projects in the Kenyan perspective. This study combined both success and completion rates as one aspect – successful completion of projects - and looked at project completion in terms of regulatory compliance change, technological change, objective change as well as stakeholders change. The study looked into the effect of scope changes on project completion among road construction projects in Nairobi County with a case of, Langata Sub county. Cooke-Davies (2015) in a study of 136 European projects executed between 1994 and 2000 by a total of 23 organizations found that there was a strong correlation between schedule delay and cost escalation. However, cost escalation was not primarily caused by schedule delay but due to lack of mature project scope change process thus project did not achieve success. Sutton (2015) contended that projects success and failure are not dichotomous, it is not a matter of completion per se, but that there are degrees of success and failure when implementing projects to its completion. Sutton identified four distinct levels of success, each having its own discipline, tools and techniques.

There was enough evidence for undertaking the study on the effect of scope changes on project completion among road construction projects in Nairobi County with a case study of Langata Sub County. The variables project regulatory compliance changes, project technology changes, project objective changes and project stakeholders' changes were not effectively used by any of these studies. Therefore, there existed a knowledge gap in this regard.

CHAPTER THREE: RESEARCH DESIGN AND METHODOLOGY

3.1 Introduction

This chapter discussed the methods to be used in undertaking the study. It contained research design, target population, sample size and sampling procedure. It also contained research instruments, data collection procedures and data analysis used.

3.2 Research Design

The study adopted descriptive research design to accurately portray the respondents in the various strata in the target population. The purpose of descriptive research design was to determine and report the way things are, and produce statistical information about aspects of project completion that interested policy makers and educators. Research design is a systematic model that enables the researcher to draw conclusions concerning casual relationships amongst the variables under investigation (Kothari, 2008). Further, descriptive design can be used to collect information about people's attitudes, opinions or habits. The design was used to allow researcher gather, present and interpret information for this research.

3.3 Research Site and Rationale

The study was conducted to investigate effect of scope changes on project completion among road construction projects in Nairobi County. Data collection was conducted at the Langata Sub county. The findings of the study were used to determine the effect of project regulatory compliance changes, project technological changes, project objective changes and project stakeholder changes on project completion. Informed decisions and conclusive remarks were made based on the verifiable and provable findings.

3.4 Target Population

McLead (2014) defined target population as the entire group of individuals or objects to which researchers are interested in generalizing the conclusions. The target population usually has varying characteristics and it is also known as the theoretical population. The target population of the study involved licensed road contractors and supervising engineers in Langata Sub County. There are 350 licensed road contractors and supervising engineers in Langata Sub County spread across the five main wards namely Karen, Nairobi West, Mugumoini, South C and Nyayo Highrise (National Construction Authority, 2016). The study target population therefore involved the 350 licensed road contractors and supervising engineers of Langata Sub County. This study target population operated under similar conditions and was easily accessible and easy to collect data and analyze.

Table 3.1 Target Population

	Grouping	Target Population	Valid Percent	Cumulative Percent
Valid	Road Contractors	150	42.9	42.9
	Supervising Engineers	200	57.1	57.1
	Total	**350**	**100.0**	**100.0**

Source: Researcher (2019)

3.5 Sampling Procedure

The study used stratified random sampling procedure. In this sampling technique, the population was divided into smaller groups known as strata. The strata comprised of

the licensed road contractors and supervising engineers in Langata Sub County. In addition, the respondents were randomly sampled from each stratum. The stratum reduced the amount of tension and suspense of respondents towards the study hence provided honesty and reliable information. Orodho (2014) noted that stratified random sampling method involves dividing research population into homogenous sub group and then taking the simple random sample in each sub group. Orodho continued to say that the sample is selected in such a way that certain sub groups in the population are represented in the sub group in proportions to their number in population.

3.6 Sample Size

The study adopted Nassiumas (2014) formula to calculate the size of the sample as illustrated below;

$$n = \frac{NC^2}{C^2 + (N-1)\,e2}$$

C= Coefficient variation (0.5)

N= Total number of populations

e= is the level of precision (0.05)

n =Sample Size

$$n = \frac{350*0.5^2}{0.5^2 + (350-1) * 0.05^2} = {}^{87.5}/_{1.1225}$$

$({}^{87.5}/_{1.1225}) = 78$

n = 78

n= Sample Size

Therefore n = 78 Sample Size

Table 3.2 Sample Size of Langata Sub County

	Grouping	Target Population	Sample Size	Valid Percent (%)	Cumulative Percent (%)
Valid	Road Contractors.	150	$(^{78}/_{350}X150)$ =33	42.9	42.9
	Supervising Engineers	200	$(^{78}/_{350}X200)$ =45	57.1	57.1
	Total	**350**	**78.0**	**100.0**	**100.0**

Source: Researcher (2019)

3.7 Data Collection Procedures

The researcher obtained a research authorization letter from Africa Nazarene University. Thereafter, research permit was obtained from the National Commission for Science, Technology and Innovation (NACOSTI). Research assistants were engaged in administering questionnaires to the respondents.

3.8 Research Instruments

Data was collected from the five main wards in Langata Sub County. Licensed road contractors and supervising engineers were issued with structured questionnaires to enhance the process of data collection. The structured questionnaire was subdivided into six main sections. Section one was collection of demographic information of the respondents. The rest of the sections collected data based on the independent and dependent variables of the study. Questionnaire as a method of data collection was preferred over the other methods due to its flexibility and easy to administer to the respondents.

3.8.1 Piloting of Research Instruments

Pilot study was conducted to determine the feasibility of conducting a large-scale study. The pilot study helped to inform the researcher on the strength or weakness of the study. The prior testing was established to assist in determining accuracy, clarity and suitability of the research instrument. This involved 35 respondents (10% of the target population, conducted in Kibra Constituency, one of the seventeen Constituencies in Nairobi County) who filled the questionnaires and its accuracy was tested. The 35 respondents were not involved in the final study to ensure non-compromise of the research data. The respondents helped to estimate the time needed to fill the questionnaires and identified errors to be corrected. Pilot of research instruments was done one week before actual data collection exercise and helped the researcher to make informed decision on what works and what doesn't. Research assistants were engaged to carry out the exercise. Since the research site for the actual study was Langata Constituency, Kibra Constituency was a good site for piloting because being separate from the research site, would help the researcher avoid sampling the same respondents in piloting the main study. The exercise involved 15 licensed road contractors and 20 supervising engineers responding to the questionnaires for the pilot study.

3.8.2 Validity of Research Instruments

Mugenda and Mugenda (2013) showed that validity is the degree through which results obtained from data analysis represent the phenomenon under study. To ensure validity of the study, the researcher conducted a pilot study through issuing a 10% of questionnaires to the study target population, other than the actual sampled respondents to

allow for projection of the outcome of the study. This exercise was conducted one week before the actual sampled respondents and research assistants were engaged in the exercise.

3.8.3 Reliability of Research Instruments

Reliability is a measure of the degree to which a research instrument yields consistent results after repeated trials. Reliability of the instrument was improved through revision of the questionnaire that were used in the prior testing on the 35 selected respondents that were not included in the final study. Mugenda and Mugenda (2013) pointed out that reliability is a measure of the degree to which a research instrument yields consistent results after repeated trials. The data obtained from the pilot study was used to ascertain the appropriateness and relevance of the questionnaire to the study. For effectiveness and efficiency, the exercise was conducted one week before the actual data collection and research assistants were engaged to carry out this activity.

3.9 Data Analysis and Presentation

Data analysis began upon inspection of data collected to identify spelling errors, wrong responses and blank spaces left by the respondents. The data collected was coded and analyzed mainly by the use of descriptive analysis and inferential statistics to test relationship between dependent and independent variables through means of SPSS version 25 program and presented using tables from frequencies and percentages of responses.

Quantitative analysis was used and involved statistical analysis and interpretation of data by use of inferential statistics that relied on numerical values, which was computed. Data was coded and frequency tables were produced as well as other analysis processes with the help of SPSS version 25 computer program. This produced quantitative data values that were interpreted for meaning qualitatively and quantitatively. The data was

synthesized into coherent description of what was found out. Correlation analysis was run and correlation coefficients (R) values were provided for understanding of the relationship that existed between the variables concerned. Qualitative analysis was also used to deduce meaning from written literature by the respondents.

3.10 Ethical Consideration

Informed consent was sought before administering the questionnaire and interviews scheduled. Confidentiality and privacy were observed by not having had to identify information on the questionnaire and allowed the respondents to fill the questionnaire in privacy. The study protected and kept information confidential and, before revealing any information, the consent of the respondent would be sought first.

CHAPTER FOUR: DATA ANALYSIS AND PRESENTATION OF FINDINGS

4.1 Introduction

This chapter discussed major findings of the research project. The researcher utilized a quantitative approach to analyze data. The output was presented in table form, explained and summarized in percentages, frequencies, descriptive statistics and Pearson correlation coefficient.

4.2 Reliability Results

The study sought to ascertain the reliability of the research instrument. The results are as shown in table 4.1

Table 4.1 Reliability Results

Variable	N of Items	Cronbach's Alpha
Project Regulatory Compliance Changes	4	.711
Project Technological Changes	3	.723
Project Objective Changes	4	.718
Project Stakeholders Changes	4	.726
Project Completion	2	.809

Source: Researcher (2019)

The analysis comprised of 53 questionnaires that were successfully filled and returned by the respondents. Mugenda and Mugenda (2013) indicated that a coefficient of 0.6 as acceptable reliability coefficient while Cooper and Schindler (2010) maintaining that the alpha coefficient values were described as excellent (0.93–0.94), strong (0.91–

0.93), reliable (0.84–0.90), robust (0.81), fairly high (0.76–0.95), high (0.73–0.95), good (0.71–0.91), relatively high (0.70–0.77), slightly low (0.68), reasonable (0.67–0.87), adequate (0.64–0.85), moderate (0.61–0.65), and satisfactory (0.58–0.97). From the table above it was observed that the individual Cronbach's alpha coefficients for each variable individually ranged from 0.711 to 0.809 revealing the high degree of reliability. Since all the reliability results exceeded 0.71 threshold, the internal consistency reliability of the measures used for the study was considered very reliable to sufficiently measure the study variables**.**

4.3 Response Rate

The researcher sought to establish the response rate of the respondents. The results are as shown in table 4.2 below.

Table 4.2 Response Rate

	Grouping	Frequency	Valid Percent	Cumulative Percent
Valid	Response	53	67.9	67.9
	Non-Response	25	32.1	32.1
	Total	**78**	**100.0**	**100.0**

Source: Researcher (2019)

The researcher prepared 78 questionnaires for distribution to the respondents. From the table 4.2 the response rate obtained from the respondents was 53 which represented 67.9%. 25 out of 78 respondents did not respond to the questionnaires which represented 32.1%. Nachmias (2010) observed that a response rate exceeding 50% was believed to be sufficient for analysis and therefore a response rate of 67.9% was considered to be very good for this study.

4.4 Demographic Information of Respondents

The basic and general information of respondents concerning their gender, age, time lived in Langata Sub County, academic qualifications and their respective wards of residence was presented in this section.

4.4.1 Gender of Respondents

The study sought to establish the gender of the respondents. The results are as shown in table 4.3 below.

Table 4.3 Gender of Respondents

	Grouping	Frequency	Valid Percent	Cumulative Percent
Valid	Male	32	60.4	60.4
	Female	21	39.6	100.0
	Total	**53**	**100.0**	

Source: Researcher (2019)

According to table 4.3 above, the number of male who responded to the questionnaires was 32 representing a response rate of 60.4% while the number of female who responded to the questionnaires was 21 representing a response rate of 39.6%. The number of male respondents therefore was greater than that of female respondents. This indicated that majority of the licensed road contractors and supervising engineers who took part in construction of road projects were male, may be because of the gender bias.

4.4.2 Age of the Respondents

The study sought to ascertain the age of the respondents. The results are as shown in table 4.4 below.

Table 4.4 Age of the Respondents

		Frequency	Valid Percent	Cumulative Percent
Valid	below 25	5	9.4	9.4
	25-30	7	13.2	22.6
	31-35	8	15.1	37.7
	36-40	9	17.0	54.7
	41-45	8	15.1	69.8
	46-50	6	11.3	81.1
	51-55	5	9.4	90.6
	above 55	5	9.4	100.0
	Total	**53**	**100.0**	

Source: Researcher (2019)

According to table 4.4 above, 9.4% of the respondents were below 25 years, 13.2% of the respondents were age between 25-30 years. Age between 31-35 years were 15.1% while 17.0% of the respondents were age between 36-40 years. 41-45 years of the respondents were 15.1% while 11.3% were age between 46-50 years. 9.4% of the respondents were age between 51-55 years while those respondents above 55 years were 9.4%. This indicated that the licensed road contractors and supervising engineers had adequate experience and were mature enough to provide relevant and reliable information.

4.4.3 Longest Time Lived in Langata Sub County

The study sought to establish the longest time lived in Langata Sub County by the respondents. The results are as shown in table 4.5 below.

Table 4.5 Longest Time Lived in Langata Sub County

Time in Years		Frequency	Valid Percent	Cumulative Percent
Valid	0-5	9	17.0	17.0
	6-10	9	17.0	34.0
	11-15	12	22.6	56.6
	16-20	4	7.5	64.2
	21-25	2	3.8	67.9
	26-30	6	11.3	79.2
	31-40	7	13.2	92.5
	above 40	4	7.5	100.0
	Total	**53**	**100.0**	

Source: Researcher (2019)

From table 4.5 above, 17.0% of the respondents had lived in Langata Sub County between 0-5 years and 6-10 years respectively. Respondents who lived in Langata Sub County between 11-15 years were 22.6%, 16-20 years were 7.5%, 3.8% had lived in Langata Sub County between 21-25 years. Those lived between 26-30 years were 11.3%, 13.2% had lived between 31-40 years while those respondents who had lived in Langata Sub County for above 40 years were 7.5%. The majority of the respondents had lived in Langata Sub County between 11-15 years.

4.4.4 Highest Academic Qualification

The study sought to establish the highest academic qualifications of the respondents. The results are as shown in table 4.6 below.

Table 4.6 Highest Academic Qualification

Qualification		Frequency	Valid Percent	Cumulative Percent
Valid	KCPE	1	1.9	1.9
	KCSE	8	15.1	17.0
	Diploma	28	52.8	69.8
	Degree	12	22.6	92.5
	Master Degree	2	3.8	96.2
	PhD	1	1.9	98.1
	None	1	1.9	100.0
	Total	**53**	**100.0**	

Source: Researcher (2019)

From table 4.6 above, 1.9% of the respondents were KCPE holders, 15.1% were KCSE holders, 52.8% were Diploma holders, 22.6% were Degree holders, 3.8% were Master Degree holders, while 1.9% were PhD holders. There were 1.9% response rate which had none of the academic qualifications.

4.4.5 Ward of Residence in Langata

The study sought to determine the ward of residence in Langata Sub County of the respondents. The results are as shown in table 4.7 below.

Table 4.7 Ward of Residence in Langata

Ward of Residence		Frequency	Valid Percent	Cumulative Percent
Valid	Karen	9	17.0	17.0
	Nairobi West	10	18.9	35.8
	Mugumoini	14	26.4	62.3
	South C	10	18.9	81.1
	Nyayo Highrise	10	18.9	100.0
	Total	**53**	**100.0**	

Source: Researcher (2019)

According to table 4.7 shown above, 17% of the respondents reside in Karen ward, 18.9% reside in Nairobi West, 26.4% reside in Mugumoini, 18.9% reside in South C and Nyayo Highrise respectively. This indicated that the information gathered represented the entire Langata Sub County which comprise of the five main wards i.e Karen, Nairobi West, Mugumoini, South C, and Nyayo Highrise.

4.4.6 Project Regulatory Compliance Changes

The study sought to get answers on the awareness of the respondents on the project regulatory compliance changes as a key variable affecting road project completion in Nairobi County. The responses from the respondents were logged on a five-point Likert scale anchored by Strongly Disagree (1), Disagree (2), Neutral (3), Agree (4) and Strongly Agree (5). Table 4.8 displays the responses to statements regarding project regulatory compliance changes.

Table 4.8 Project Regulatory Compliance Changes

	N	Strongly disagree	Disagree	Neutral	Agree	Strongly Agree	**Mean**	**Std. Deviation**
My Sub County observe the healthy and safety policy changes of all project regulatory bodies that ensures appropriate project completion**.**	F	9	4	2	17	21		
	%	17.0	7.5	3.8	32.1	39.6	3.6981	1.48822
Any project opportunity changes are considered for the local laborers for community growth and cohesion in my Sub County**.**	F	9	3	4	19	18		
	%	17.0	5.7	7.5	35.8	34.0	3.6415	1.44241
Environment protection policy changes are carefully considered to suit road construction projects undertaken in my Sub County**.**	F	16	9	4	11	13		
	%	30.2	17.0	7.5	20.8	24.5	2.9245	1.61542
Trading partners in road project changes are fairly selected in my Sub county**.**	F	15	14	2	9	13		
	%	28.3	26.4	3.8	17.0	24.5	2.8302	1.60211
Valid N (listwise)	53						3.2736	1.53704

Source: Researcher (2019)

All measures were logged on a five-point Likert scales anchored by Strongly Disagree (1) to Strongly Agree (5). As illustrated in the table 4.8 above, response rate of

71.6% of the respondents agreed to the statement position that the Sub Counties comply with healthy and safety policy changes of all project regulatory bodies that ensures appropriate project completion. This represented 32.1% of the respondents agreeing while 39.6% strongly agreed. 17.0% strongly disagreed and 7.5% disagreed with the statement position. There were 3.8% of the respondents who were neutral with the position of the statement. The response statement position represented a mean score of 3.6981 with a standard deviation of 1.4882. This was an indication that the statement was largely agreed and accepted by the respondents.

Response rate of 69.8% from respondents agreed to the statement position that any project opportunity changes are considered for the local laborers for community growth and cohesion in the Sub County. This represented 34.0% strongly agreeing and 35.8% agreed. 17.0% strongly disagreed while 5.7% disagreed with the statement position. There were 7.5% respondents who were neutral with the position of the statement. The response statement position represented a mean score of 3.6415 and standard deviation of 1.4424. This was an indication that the statement was largely agreed and accepted by the respondents.

Response rate of 47.2% disagreed to the statement position that environment protection policy changes are carefully considered to suit road construction projects undertaken in the Sub County. This represented 30.2% strongly disagreeing and 17.0% disagreeing. 45.3% of the respondents agreed to the statement position representing 20.8% agreeing and 24.5% strongly agreeing. There were 7.5% respondents who were neutral to the statement position. The response statement position represented a mean score of 2.9245

and a standard deviation of 1.6154 indicating that the statement position was approximately agreed and disagreed.

Response rate of 54.7% disagreed to the statement position that trading partners in road project changes are fairly selected in the Sub County. This represented 28.3% strongly disagreeing and 26.4% disagreeing. 41.5% agreed to the statement position representing 17.0% agreeing and 24.5% strongly agreeing. There were 3.8% of the respondents who were neutral to the statement position. The response statement position represented a mean score of 2.8302 with a standard deviation of 1.6021. This showed that the statement position was not largely agreed and accepted by the respondents. The computed mean of the project regulatory compliance changes was 3.2736 with a standard deviation of 1.53704.

4.4.7 Project Technological Changes

The researcher sought to get answers on the levels of understanding on project technological changes and the impact to project completion from the respondents. The responses from the respondents were logged on a five-point Likert scale anchored by Strongly Disagree (1), Disagree (2), Neutral (3), Agree (4) and Strongly Agree (5). Table 4.9 displays the responses to statements regarding project technological changes.

Table 4.9 Project Technological Changes

	N	Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree	**Mean**	**Std. Deviation**
My Sub County uses advanced technological changes to enhance seamless workflow of road project completion**.**	F	10	9	4	18	12		
	%	18.9	17.0	7.5	34.0	22.6		
							3.2453	1.46636
Road projects undertaken in my Sub County are long lasting and futuristic due to usage of advanced technological changes**.**	F	19	11	2	13	8		
	%	35.8	20.8	3.8	24.5	15.1		
							2.6226	1.54704
Monitoring and Evaluation activity changes are constantly determined and controlled to enhance timely and quality project delivery**.**	F	20	15	2	6	10		
	%	37.7	28.3	3.8	11.3	18.9		
							2.4528	1.55125
Valid N (listwise)	53						2.7736	1.52156

Source: Researcher (2019)

As illustrated in the table 4.9 above, response rate of 56.6% from respondents agreed to the statement position that the Sub County uses advanced technological changes to enhance seamless workflow of road project completion. This represented 34% of the respondents agreeing while 22.6% strongly agreeing. 35.9% of the respondents disagreed to the statement position. This represented 18.9% strongly disagreeing and 17.0% disagreeing with the statement position. There were 7.5% of the respondents who were

neutral with the position of the statement. The response statement position represented a mean score of 3.2453 with a standard deviation of 1.4664. This was an indication that the statement was approximately agreed and accepted by the respondents. 56.6% of the respondents disagreed to the statement that the road projects undertaken in the Sub County are long lasting and futuristic due to usage of advanced technological changes. This represented 35.8% strongly disagreeing and 20.8% disagreeing. 39.6% of the respondents agreed to the position of the statement represented 24.5% strongly agreeing and 15.1% agreeing to the statement. There were 3.8% respondents who were neutral to the position of the statement.

The response statement position represented a mean score of 2.6226 with a standard deviation of 1.5470. This indicated that the respondents did not agree with the statement that the road projects undertaken in the Sub County are long lasting and futuristic due to usage of advanced technological changes. 66% of the respondents disagreed to the statement position that monitoring and evaluation activity changes are constantly determined and controlled to enhance timely and quality project delivery. This represented 37.7% strongly disagreeing and 28.3% disagreeing. 30.2% of the respondents agreed to the statement position representing 11.3% agreeing and 18.9 strongly agreeing. There were 3.8% respondents who were neutral to the statement position. The response statement position represented a mean score of 2.4528 with a standard deviation of 1.5513. This showed that the respondents largely disagreed to the statement position that monitoring and evaluation activity changes are constantly determined and controlled to enhance timely and quality project delivery. The respondents felt that the Sub County has not done enough

on the monitoring and evaluation activities to enhance project completion. The computed mean of project technological changes was 2.7736 with a standard deviation of 1.52156.

4.4.8 Project Objective Changes

The researcher sought to get answers from the respondents on the levels of understanding on project objective changes and the impact to project completion. The responses from the respondents were logged on a five-point Likert scale anchored by Strongly Disagree (1), Disagree (2), Neutral (3), Agree (4) and Strongly Agree (5). Table 4.10 displays the responses to statements regarding project objective changes.

Table 4.10 Project Objective Changes

	N	Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree	**Mean**	**Std. Deviation**
My Sub County undertake road project changes that are Specific, Measurable, Achievable, Realistic and Timely to the needs of the residents**.**	F	8	7	1	19	18		
	%	15.1	13.2	1.9	35.8	34.0		
							3.6038	1.45892
The residents applaud the social influence changes of road projects undertaken in the region**.**	F	6	5	2	20	20		
	%	11.3	9.4	3.8	37.7	37.7		
							3.8113	1.34531
Road project changes are usually delivered within budget and schedule in the region**.**	F	1	19	2	18	13		
	%	1.9	35.8	3.8	34.0	24.5		
							3.4340	1.26353
The quality of the road project changes is determined by the Key Performance Indicator tool in the region**.**	F	6	9	4	19	15		
	%	11.3	17.0	7.5	35.8	28.3		
							3.5283	1.36725
Valid N (listwise)	53						3.5944	1.35875

Source: Researcher (2019)

Table 4.10 above is an illustration of project objective changes responses. Response rate of 69.8% of the respondents agreed to the statement position that the Sub County undertakes road project changes that are Specific, Measurable, Achievable, Realistic and

Timely to the needs of the residents. This represented 35.8% agreeing and 34.0% strongly agreeing to the statement. 28.3% respondents disagreed to the statement position representing 15.1% strongly disagree and 13.2% disagree. There were 1.9% respondents who were neutral to the statement position. The response statement position represented a mean score of 3.6038 with a standard deviation of 1.4589. This was an indication that the statement position was largely agreed and accepted by the respondents. 75.4% of the respondents agreed to the statement position that the residents applaud the social influence changes of road projects undertaken in the region. This represented 37.7% strongly agreeing and agreeing respectively. 20.7% of the respondents disagreed to the statement position. These represented 11.3% strongly disagreeing and 9.4% disagreeing. There were 3.8% of the respondents who were neutral to the statement position. The response statement position represented a mean score of 3.8113 with a standard deviation of 1.3453. This was an indication that the statement position was largely agreed and accepted by the respondents.

Response rate at 58.5% of the respondents agreed to the statement position that the road project changes are usually delivered within budget and schedule in the region. This represented 34.0% agreeing and 24.5% strongly agreeing. 37.7% of the respondents disagreed to the statement position representing 1.9% strongly disagreeing and 35.8% disagreeing. There were 3.8% of the respondents who were neutral to the statement position. The response statement position represented a mean score of 3.4340 with a standard deviation of 1.2635. This was an indication that the statement position was largely agreed and accepted by the respondents. 64.1% of the respondents agreed to the statement position that the quality of the road project changes is determined by the Key Performance

Indicator tool in the region. This represented 35.8% agreeing and 28.3% strongly agreeing. 28.3% of the respondents disagreed to the statement position that the quality of the road project changes is determined by the Key Performance Indicator tool in the region. This represented 11.3% strongly disagreeing and 17.0% agreeing. There were 7.5% respondents who were neutral to the statement position. The response statement position represented a mean score of 3.5283 with a standard deviation of 1.3673. This was an indication that the statement position was largely agreed and accepted by the respondents. The computed mean of project objective changes was 3.5944 with a standard deviation of 1.35875.

4.4.9 Project Stakeholders Changes

The researcher sought to get answers from the respondents on the levels of understanding on project stakeholders changes on the impact to project completion. The responses from the respondents were logged on a five-point Likert scale anchored by Strongly Disagree (1), Disagree (2), Neutral (3), Agree (4) and Strongly Agree (5). Table 4.11 displays the responses to statements regarding project stakeholders changes.

Table 4.11 Project Stakeholders Changes

	N	Strongly Disagree	Neutral	Agree	Strongly Agree	**Mean**	**Std. Deviation**
Training and development changes must be done before, during and after road project task to all stakeholders in the region**.**	F	2	3	0	19	29	4.3208	1.01477
	%	3.8	5.7	0	35.8	54.7		
Assessing Suppliers and external customer changes for road project legality is a priority in the region**.**	F	2	2	0	23	26	4.3019	0.95242
	%	3.8	3.8	0	43.4	49.1		
My Sub County work with National government to push for completion of road project changes in the region**.**	F	5	14	3	14	17	3.4528	1.42189
	%	9.4	26.4	5.7	26.4	32.1		
My Sub county is always transparent with changes on the process of tendering of Contractors and Supervising Engineers for the road projects in the region**.**	F	6	12	7	18	10	3.2642	1.31779
	%	11.3	22.6	13.2	34.0	18.9		
Valid N (listwise)	53						3.8349	1.17672

Source: Researcher (2019)

As illustrated in the table 4.11 above, response rate of 90.5% of the respondents agreed to the statement position that training and development changes must be done before, during and after road project task to all stakeholders in the region. This represented 35.8% of the respondents agreeing while 54.7% strongly agreeing. 9.5% of the respondents disagreed to the statement position. This represented 3.8% strongly disagreeing and 5.7% disagreeing with the statement position. None of the respondents were neutral to the statement position. The response statement position represented a mean score of 4.3208 with a standard deviation of 1.0148.

This was an indication that the statement was largely agreed and accepted by the respondents. 92.5% of the respondents agreed to the statement that assessing suppliers and external customer changes for road project legality is a priority in the region. This represented 43.4% agreeing and 49.1% strongly agreeing. 7.6% of the respondents disagreed to the statement that assessing suppliers and external customer changes for road project legality is a priority in the region. This represented 3.8% agreeing and strongly agreeing respectively. No respondents were neutral to the statement position. The response statement position represented a mean score of 4.3019 with a standard deviation of 0.9524. This was an indication that the statement was largely agreed and accepted by the respondents. 58.5% agreed to the statement position that the Sub County work with National government to push for completion of road project changes in the region.

This represented 26.4% of the respondents agreeing and 32.1% strongly agreeing. 35.8% of the respondents disagreed to the statement position that the Sub County work with National government to push for completion of road project changes in the region. This represented 9.4% of the respondents strongly disagreeing and 26.4% disagreeing.

There were 5.7% respondents who were neutral to the statement position that the Sub County work with National government to push for completion of road project changes in the region. The response statement position represented a mean score of 3.4528 with a standard deviation of 1.4219. This was an indication that the statement was proportionately agreed and accepted by the respondents. 52.9% of the respondents agreed to the statement position that the Sub County is always transparent with changes on the process of tendering of contractors and supervising engineers for the road projects in the region. This represented 34.0% of the respondents agreeing and 18.9% strongly agreeing. 33.9% of the respondents disagreed to the statement position that the Sub County is always transparent with changes on the process of tendering of contractors and supervising engineers for the road projects in the region. This represented 11.3% strongly disagreeing and 22.6% disagreeing. There were 13.2% of the respondents who were neutral to the statement position. The response statement position represented a mean score of 3.2642 with a standard deviation of 1.3178. This was an indication that the statement was proportionately agreed and accepted by the respondents. The computed mean of project stakeholders changes was 3.8349. However, the responses had some variation, hence a standard deviation of 1.17672.

4.4.10 Project Completion

The researcher sought to get answers from the respondents on the levels of understanding on project completion. The responses from the respondents were logged on a five-point Likert scale anchored by Strongly Disagree (1), Disagree (2), Neutral (3), Agree (4) and Strongly Agree (5). Table 4.12 displays the responses to statements regarding project completion.

Table 4.12 Project Completion

	N	Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree	**Mean**	**Std. Deviation**
Road project completion is determined by owner's acceptability criteria in my Sub County**.**	F	3	5	0	13	32	4.2453	1.20744
	%	5.7	9.4	0	24.5	60.4		
Road contractors and Supervising Engineers are given tenders based on the number of projects they have completed in the region**.**	F	2	7	3	11	30	4.1321	1.22534
	%	3.8	13.2	5.7	20.8	56.6		
Valid N (listwise)	53						4.1887	1.21639

Source: Researcher (2019)

As illustrated in the table 4.12 above, response rate at 84.9% of the respondents agreed to the statement position that road project completion is determined by owner's acceptability criteria in the Sub County. This represented 24.5% of the respondents agreeing and 60.4% strongly agreeing. 15.1% disagreed to the statement position that the road project completion is determined by owner's acceptability criteria in the Sub County. This represented 5.7% strongly disagreeing and 9.4% disagreeing. No respondents were neutral to the statement position. The response statement position represented a mean score of 4.2453 with a standard deviation of 1.2074. This was an indication that the statement was largely agreed and accepted by the respondents.

Response rate at 77.4% of respondents agreed to the statement position that the road contractors and supervising engineers are given tenders based on the number of projects they have completed in the region. This represented 20.8% of the respondents agreeing and 56.6% strongly agreeing. 17.0% of the respondents disagreed to the statement. This represented 3.8% of the respondents strongly agreeing and 13.2% disagreeing. There were 5.7% of the respondents who were neutral to the statement position that the road contractors and supervising engineers are given tenders based on the number of projects they have completed in the region. The response statement position represented a mean score of 4.1321 with a standard deviation of 1.2253. This was an indication that the statement was largely agreed and accepted by the respondents. The computed mean of project completion was 4.1887 with a standard deviation of 1.21639.

4.5 Correlation Analysis

The findings on correlation statistics were summarized and presented in table 4.13

Table 4.13 Variables Correlation Matrix

		Project Regulatory Compliance Changes	Project Technological Changes	Project Objectives Changes	Project Stakeholders Changes	Project Completion
Project Regulatory Compliance Changes	Pearson Correlation	1				
	Sig. (2-tailed)					
	N	53				
Project Technological Changes	Pearson Correlation	0.000	1			
	Sig. (2-tailed)	0.925				
	N	53	53			
Project Objectives Changes	Pearson Correlation	0.000	0.000	1		
	Sig. (2-tailed)	0.178	0.523			
	N	53	53	53		
Project Stakeholders Changes	Pearson Correlation	0.000	0.000	0.000	1	
	Sig. (2-tailed)	0.720	0.122	0.390		
	N	53	53	53	53	
Project Completion	Pearson Correlation	0.000	0.000	0.000	0.000	1
	Sig. (2-tailed)	0.672	0.326	0.836	0.289	
	N	53	53	53	53	53

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

Source: Researcher (2019)

From the results above, the most significant relationship was between project regulatory compliance changes and project technological changes with a coefficient value

of 0.925 (at significant level of 0.05). Project stakeholders changes also was shown to contribute up to 72% on project regulatory compliance changes. Also, a strong relationship existed between project technological changes and project regulatory compliance changes with a coefficient value of 92.5% (at a significance level of 0.05). Project objectives changes and project completion exhibited a strong relationship at a coefficient value of 83.6% (at a significance level of 0.05).

4.6 Regression Analysis

In this study, a multiple regression analysis was conducted to test the influence among predictor variables. The research used statistical package for social sciences (SPSS Version 25) to code, enter and compute the measurements of the multiple regressions as shown in table 4.14 below.

Table 4.14 Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.842	.651	.641	.86510

a. Predictors: (Constant), Project Stakeholders Changes, Project Regulatory Compliance Changes, Project Technological Changes, Project Objective Changes.

Source: Researcher (2019)

R-Square (coefficient of determination) is a commonly used statistic to evaluate model's goodness of fit. The adjusted R^2, also called the coefficient of multiple determinations, is the percent of the variance in the dependent explained uniquely or jointly by the independent variables. According to the study findings, combined variables had a

strong relationship with project completion, R^2 (0.652); p <0.05. Adjusted R squared of 0.642 indicates that variability in effect of scope changes on project completion is attributed to variability in project regulatory compliance changes, project technological changes, project objective changes and project stakeholders' changes.

Table 4.15 ANOVA Results

Model		Sum of Squares	Df	Mean Square	F	Sig.
1	Regression	86.951	4	33.317	55.206	.000
	Residual	60.027	115	.485		
	Total	146.978	119			

a. Dependent Variable: Project Completion.

b. Predictors: (Constant), Project Stakeholders Changes, Project Regulatory Compliance Changes, Project Technological Changes, Project Objective Changes.

Source: Researcher (2019)

The probability value of 0.000 indicates that the regression relationship was highly significant in predicting how project stakeholders' changes, project regulatory compliance changes, project technological changes and project objective changes influenced project completion. The F calculated at 5% level of significance was 55.369 since F calculated is greater than the F critical (value = 2.70), this shows that the overall model was significant.

Table 4.16 Regression Coefficients

Model		Unstandardized Coefficients		Standardized Coefficients		
		B	Std. Error	Beta	t	Sig.
1	(Constant)	4.473	.521		9.828	.001
	Project Regulatory Compliance Change.	.782	.231	.241	2.719	.005
	Project Technological Changes.	.581	.203	.184	1.778	.008
	Project Objective Changes.	.361	.193	.154	3.010	.004
	Project Stakeholders Changes.	.667	.241	.268	2.475	.003

a. Dependent Variable: Project Completion

Source: Researcher (2019)

Table 4.16 shows that when all variables were combined, the relationship between project regulatory compliance changes and project completion, r (0.782); $p < 0.05$, the relationship between project technological changes and project completion, r (0.581); $p < 0.05$, the relationship between project objective changes and project completion, r (0.361); $p < 0.05$, the relationship between project stakeholders changes and project completion, r (0.667); $p < 0.05$. All the variables were statistically significant.

CHAPTER FIVE: SUMMARY OF FINDINGS, DISCUSSION, CONCLUSION AND RECOMMENDATIONS

5.1 Introduction

This chapter presented a summary of the findings of the study, conclusions and recommendations based on the findings. The study sought to examine the effect of scope changes on project completion among road construction projects in Nairobi County with a distinctive case of Langata Subcounty. The researcher examined four main specific objectives and their effect on project completion which comprised of; project regulatory compliance changes, project technological changes, project objectives changes as well as project stakeholders changes.

5.2 Summary of Major Findings

The findings of the study were established from fifty-three (53) respondents out of seventy-eight (78) sample size. The study found that gender of the respondents was well distributed with male being the majority followed by the female respondents. Majority of the respondents were diploma holders and degree graduates. The respondents were mature enough to provide honesty and reliable information with the majority being between 36-40 years. Langata Sub County was the distinctive case which comprise of five main wards namely Karen, Nairobi West, Mugumoini, South C and Nyayo Highrise. The study established that the respondents were fairly distributed across the Langata wards in the Sub County. The study also established that most of the respondents had lived in Langata Sub County for between 11-15 years.

Findings were recorded on a five-point Likert scale anchored on Strongly Disagree (1), Disagree (2), Neutral (3), Agree (4) and Strongly Agree (5). Statistically, the study indicated that there existed a significant relationship between project regulatory compliance changes and project technological changes with a coefficient value of 0.925 (at significant level of 0.05). Project stakeholders changes also was shown to have a significant relationship of 72% with project regulatory compliance changes. Also, a strong relationship existed between project technological changes and project regulatory compliance changes with a coefficient value of 92.5% (at a significance level of 0.05). Project objectives changes and project completion exhibited a strong relationship at a coefficient value of 83.6% (at a significance level of 0.05). Finally, the effect of scope changes on project completion among road construction projects was found to be influenced by a combination of the four independent variables (project regulatory compliance changes, project technological changes, project objectives changes and project stakeholders changes) examined in this study.

5.3 Discussion

Project scope refers to the part of project planning that involves determining and documenting a list of specific project goals and objectives, deliverables, tasks, costs, and deadline (Atkinson, 2014). Events occur that require the scope of the project to change. Changes in the marketplace requires change in a product design or the timing of the product delivery. Changes in the client's management team and the financial health of the client also result in changes in the project scope.

The study established that changes in the project regulatory compliance, project technology, project objectives and project stakeholders have an effect on the project

completion. Establishing a system for managing change during the project that captures changes to the project scope and assures that these changes were authorized by the appropriate level of management in the client's organization must be a responsibility of all parties involved in the project (Project Management Institute, 2016). The study revealed that success of project completion depends mainly on the scope changes. The study mainly sought to get answers from the respondents on the level of understanding the effect of scope changes on project completion among road construction projects in Nairobi County with a distinctive case of Langata Sub County. The responses were notable and mainly contributed in making conclusive and informative decisions on the actual effect of project completions in Nairobi County.

5.3.1 Effect of Project Regulatory Compliance Changes on Project Completion

Project regulatory compliance changes had a positive ranking with project completion at a correlation coefficient value of 0.672 at a significance level of 0.05. As established in chapter 4, from data on table 4.8, response rate of 71.6% of the respondents agreed to the statement position that the Sub County comply with healthy and safety policy changes of all project regulatory bodies that ensures appropriate project completion. Only 24.5% of the respondents disagreed with the statement position. There were 3.8% of the respondents who were neutral with the position of the statement. The study noted the success and completion of projects would need to comply with the health and safety policy regulations. Response rate of 69.8% agreed to the statement position that any project opportunity changes are considered for the local laborers for community growth and cohesion in the Sub County. Only 22.7% of the respondents disagreed with the statement position. There were 7.5% respondents who were neutral with the position of the statement.

The study noted that considering local laborers for any project opportunity changes would lead to project completion within cost and schedule. 47.2% disagreed to the statement position that environment protection policy changes are carefully considered to suit road construction projects undertaken in the Sub County. There were 45.3% of the respondents who agreed to the statement position. Only 7.5% respondents were neutral to the statement position. This indicated that the Sub County did not carefully consider the environmental protection policy changes to suit road construction projects and therefore there was no effect to project completion. Response rate of 54.7% of the respondents disagreed to the statement position that trading partners in road project changes are fairly selected in the Sub County. Only 41.5% agreed to the statement position. There were 3.8% of the respondents who were neutral to the statement position. The study noted that the trading partners in road project changes are not fairly selected in the sub county and therefore there was no much effect of project completion. The researcher therefore observed that project regulatory compliance changes is a contributor variable for project completion.

The findings were consistent with the theory of constraints which is a management paradigm that views any manageable system as being limited in achieving more of its goals by a very small number of constraints. The few respondents who disagreed to the statement positions and those who were neutral could have achieved more realistic results regarding project regulatory compliance changes as a contributing variable for project completion. Contingency theory was also observed to be consistent with the findings for assuming that no single type of project completion is equally applicable to all scope changes. Rather, project effectiveness is dependent on a fit or match between the type of technology,

environmental volatility, the size of the project, the features of the project completion and its information system (Woods, 2012). Different approach of dealing with project completion could result to different findings.

5.3.2 Effect of Project Technological Changes on Project Completion

Project technological changes had a correlation with project completion at a correlation coefficient value of 0.326 at a significance level of 0.05. As discussed in Chapter 4, table 4.9, response rate at 56.6% of the respondents showed to the statement position that the Sub County uses advanced technological changes to enhance seamless workflow of road project completion. 35.9% of the respondents disagreed to the statement position. Only 7.5% of the respondents were neutral to the position of the statement. The study noted that the Sub County uses advanced technological changes to enhance seamless workflow of project completion to some extent. This was discovered to be a key indicator that the Sub County need to increase usage of technological changes to boost project completion. 56.6% of the respondents disagreed to the statement position that the road projects undertaken in the Sub County are long lasting and futuristic due to usage of advanced technological changes. 39.6% of the respondents agreed to the position of the statement. There were 3.8% respondents who were neutral to the position of the statement.

The study discovered that the road projects undertaken in the Sub County are not long lasting and futuristic. There was need for the Sub County to utilize the power of advanced technology in order to deliver long lasting and futuristic projects. 66% of the respondents disagreed to the statement position that monitoring and evaluation activity changes are constantly determined and controlled to enhance timely and quality project delivery. Only 30.2% agreed to the statement position. There were 3.8% respondents who

were neutral to the statement position. The study noted that monitoring and evaluation activity changes are not constantly determined and controlled to enhance timely and quality project delivery. There was need for the Sub County to embrace the power of monitoring and evaluation activity changes for timely and quality project delivery. The researcher therefore noted that project technological changes had a lean correlation regarding project completion.

Findings were consistent with the theory of constraints which adopted the common idiom "a chain is no stronger than its weakest link". This means that processes, organizations, projects etc., are vulnerable because the weakest person or part can always damage or break them or at least adversely affect the outcome. The ‘weaker’ responses obtained from the statement positions of the project technological changes variable could damage the successful achievement of project completion.

5.3.3 Effect of Project Objectives Changes on Project Completion

Project objectives changes had a very strong correlation with project completion at a correlation coefficient value of 0.836 with a significant value of 0.05. As observed in Chapter 4, table 4.10, response rate at 69.8% of the respondents agreed to the statement position that the Sub County undertakes road project changes that are Specific, Measurable, Achievable, Realistic and Timely to the needs of the residents. Only 28.3% respondents disagreed to the statement position. There were 1.9% respondents who were neutral to the statement position. The study noted that the Sub County undertakes road project changes that are Specific, Measurable, Achievable, Realistic and Timely to the needs of the residents hence completion of projects within time, schedule and budget. Response rate at 75.4% of the respondents agreed to the statement position that the residents applaud the

social influence changes of road projects undertaken in the region. Only 20.7% respondents disagreed to the statement position. There were 3.8% of the respondents who were neutral to the statement position. The study discovered that the residents applauded the social influence changes of road projects undertaken in the region. The residents were delighted with the road construction projects undertaken in their region. 58.5% respondents agreed to the statement position that the road project changes are usually delivered within budget and schedule in the region. Only 37.7% disagreed to the statement position. There were 3.8% of the respondents who were neutral to the statement position.

The researcher realized that the road project changes are usually delivered within budget and schedule in the region. The Sub County understood well objectives of project completion. 64.1% respondents agreed to the statement position that the quality of the road project changes is determined by the Key Performance Indicator tool in the region. Only 28.3% of the respondents disagreed to the statement position. There were 7.5% respondents who were neutral to the statement position. The study noted that the Sub County subjected quality of road project changes into Key Performance Indicators for determination. The researcher therefore discovered that there existed a strong correlation between project objectives changes and project completion. For any project completion, the Sub County needed to spell out all objectives clearly to avoid any form of delays and cost constraints.

The findings were consistent with the theory of constraints which is a management paradigm that views any manageable system as being limited in achieving more of its goals by a very small number of constraints. The few respondents who disagreed to the statement positions and those who were neutral could have achieved more realistic results regarding project objectives changes as a contributing variable for project completion. Contingency

theory was also observed to be consistent with the findings for assuming that no single type of project completion is equally applicable to all scope changes. Rather, project effectiveness is dependent on a fit or match between the type of technology, environmental volatility, the size of the project, the features of the project completion and its information system (Wood, 2014). Different approach of dealing with project completion could result to different findings.

5.3.4 Effect of Project Stakeholders Changes on Project Completion

The researcher discovered a correlation between project stakeholders changes and project completion at a correlation coefficient value of 0.289 at a significance value of 0.05. As discussed in Chapter 4, table 4.11, response rate at 90.5% of the respondents agreed to the statement position that training and development changes must be done before, during and after road project task to all stakeholders in the region. Only 9.5% of the respondents disagreed to the statement position. None of the respondents were neutral to the statement position. The researcher discovered that training and development was an important tool and the Sub County undertook it to all project stakeholders before, during and after the project tasks. 92.5% of the respondents agreed to the statement position that assessing suppliers and external customer changes for road project legality is a priority in the region. 7.6% of the respondents disagreed to the statement position. None of the respondents were neutral to the statement position. It was discovered that Langata Sub County prioritizes on assessing suppliers and external customer changes' legality on road construction projects. This was in bid to avoid illegal tenders and below standard road construction projects in the region. 58.5% of the respondents agreed to the statement position that the Sub County work with National government to push for completion of

road project changes in the region. Only 35.8% of the respondents disagreed to the statement position that the Sub County work with National government to push for completion of road project changes in the region. There were 5.7% respondents who were neutral to the statement position.

The study discovered that the Sub County work closely with the National Government through the county to push for completion of road projects changes in the region. Working with the National Government was necessary because county funds allocation is done by the central government at 30% of the last audited National budget. 52.9% of the respondents agreed to the statement position that the Sub County is always transparent with changes on the process of tendering of contractors and supervising engineers for the road projects in the region. 33.9% of the respondents disagreed to the statement position that the Sub County is always transparent with changes on the process of tendering of contractors and supervising engineers for the road projects in the region. There were 13.2% of the respondents who were neutral to the statement position. The study discovered that the Sub County was transparent with changes on the process of tendering of road contractors and supervising engineers. This was in bid to complete road construction projects within time and budget. The researcher therefore discovered that project stakeholders' changes was an effective variable for project completion.

The findings were consistent with the contingency theory for assuming that no single type of project completion is equally applicable to all scope changes. Rather, project effectiveness is dependent on a fit or match between the type of technology, environmental volatility, the size of the project, the features of the project completion and its information system (Wood, 2014). In this regard, project completion was determined by the responses

of the statement positions with specific needs of Nairobi County in Langata Sub County. Conducting same study with similar variables in different counties could led to different results.

5.4 Conclusion

From the results of the study, it was concluded that project regulatory compliance changes and project technological changes had the strongest correlation at a coefficient value of 0.925. On project completion, the correlation was highest at project objectives changes at a coefficient value of 0.836. Project stakeholders' changes was high in correlation with project regulatory compliance changes with a coefficient value of 0.720. These variables were vital in determining the effect of scope changes on project completion among road construction projects in Nairobi County.

5.5 Recommendations

Project scope changes must be understood by the project managers as well as all parties involved despite the procedures used in order to achieve the goal of project completion. Stakeholders involved in road construction projects must ensure that projects undertaken are delivered within time, budget and quality. Project acceptability must be pegged on a Key Performance Indicator criterion before project delivery as agreed upon by parties involved.

The results of the study are significant to the road construction professionals and must utilize the findings to increase the success of construction projects completion by managing well the effect of project scope changes. The architects, engineers, quantity

surveyors, construction project managers and site agents must use this study by applying the results of its findings while carrying out road construction projects.

The study further recommends that project developers/clients must also use findings of this study to achieve greater success in their construction projects. Both County and National Government must apply findings of this study in ensuring the risk factors that affect their projects not completed successfully are mitigated.

Licensed road contractors must team up with all the stakeholders involved in road projects so that they can take over the management and aid in running the projects. Effective training and development before, during and after project delivery is essential in enhancing their participation.

5.6 Areas for Further Studies

Similar study should be carried out in other counties in Kenya to investigate if the effect of scope changes on project completion is comparable. Different variables on the same area should be used to determine the actual source of delays in project completion for informed decisions to be made. 35.9% from the regression analysis could not be explained by my variables. Further studies must also be undertaken using similar variables to test and ascertain the 34.9% that couldn't be explained by this study.

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APPENDICES

APPENDIX 1: LETTER OF INTRODUCTION

Dear Respondent,

I am a graduate student at Africa Nazarene University of admission number 16J03DMBA037 and currently undertaking an academic research project on *Effect of Scope Changes on Project Completion among Road Construction Projects in Nairobi County: A case of Langata Sub County.* This research is a requirement for the award of Master of Business Administration of Africa Nazarene University, School of Business.

I am requesting you to participate in the data collection process by filling out the questionnaires provided. The data collected will be used for academic purposes only and no violation of such data will be witnessed. Your identity and responses will be treated with a lot of confidentiality. Kindly provide as honest and correct answers as possible that will help the researcher make informed decision during data analysis. This process of filling the questionnaire will take about 8 minutes of your time. Please do not write your name on the questionnaire. Kindly follow instructions provided for each section.

Thank you so much for your participation.

Signature (Researcher)…….. Date……...

APPENDIX II: QUESTIONNAIRE

Instructions: Please answer the questions by putting a tick [✓] in appropriate boxes.

Please tick one box.

Section A: Demographic Information

1 Gender

Male [ ] Female [ ]

2 Age in years

25 and below [ ] 25-30 [ ] 31-35 [ ] 36-40 [ ]

41-45 [ ] 46-50 [ ] 51-55 [ ] Over 55 [ ]

3 How long have you lived in Langata Subcounty?

0-5 years [ ] 6-10 years [ ] 11-15 years [ ] 16-20 years [ ]

21-25 years [ ] 26-30 years [ ] 31-40 years [ ] Over 40 years [ ]

4 What is your highest academic qualification?

KCPE [ ] KCSE [ ] Diploma [ ] Degree [ ]

Master degree [ ] PhD [ ] None [ ]

Others, please specify……

5 Which is your ward of residence in Langata Subcounty?

Karen [ ] Nairobi West [ ] Mugumoini [ ]

South C [ ] Nyayo Highrise [ ]

Section B: Project Regulatory Compliance Changes

To what extent do you agree with the following statements? Rate in a scale of 1 to 5 (1 Strongly disagree, 2 Disagree, 3 Neutral, 4 Agree, 5 Strongly Agree)

	Rating				
Statement	1	2	3	4	5
My Sub County observe the healthy and safety policy changes of all project regulatory bodies that ensures appropriate project completion.					
Any project opportunity changes are considered for the local laborers for community growth and cohesion in my Sub County.					
Environment protection policy changes are carefully considered to suit road construction projects undertaken in my Sub County.					
Trading partners in road project changes are fairly selected in my Sub county					

Section C: Project Technological Changes

To what extent do you agree with the following statements? Rate in a scale of 1 to 5 (1 Strongly disagree, 2 Disagree, 3 Neutral, 4 Agree, 5 Strongly Agree)

	Rating				
Statement	1	2	3	4	5
My Sub County uses advanced technological changes to enhance seamless workflow of road project completion.					
Road projects undertaken in my Sub County are long lasting and futuristic due to usage of advanced technological changes.					
Monitoring and Evaluation activity changes are constantly determined and controlled to enhance timely and quality project delivery.					

Section D: Project Objectives Changes

To what extent do you agree with the following statements? Rate in a scale of 1 to 5 (1 Strongly disagree, 2 Disagree, 3 Neutral, 4 Agree, 5 Strongly Agree)

	Rating				
Statement	1	2	3	4	5
My Sub County undertake road project changes that are Specific, Measurable, Achievable, Realistic and Timely to the needs of the residents.					
The residents applaud the social influence changes of road projects undertaken in the region.					
Road project changes are usually delivered within budget and schedule in the region.					
The quality of the road project changes is determined by the Key Performance Indicator tool in the region.					

Section E: Project Stakeholders Changes

To what extent do you agree with the following statements? Rate in a scale of 1 to 5 (1 Strongly disagree, 2 Disagree, 3 Neutral, 4 Agree, 5 Strongly Agree)

	Rating				
Statement	1	2	3	4	5
Training and development changes must be done before, during and after road project task to all stakeholders in the region.					
Assessing Suppliers and external customer changes for road project legality is a priority in the region.					
My Sub County work with National government to push for completion of road project changes in the region.					
My Sub county is always transparent with changes on the process of tendering of Contractors and Supervising Engineers for the road projects in the region.					

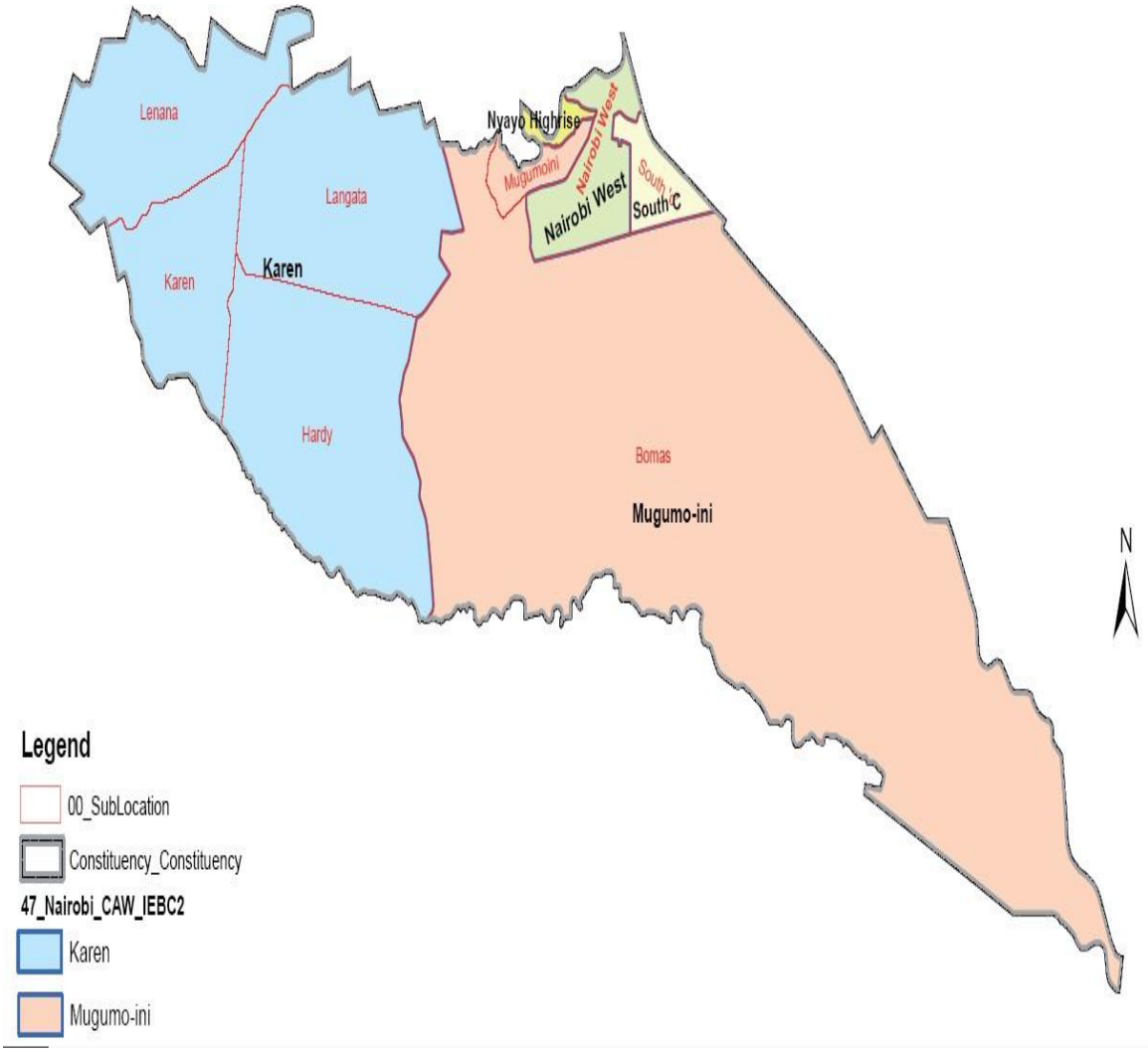
Section F: Project Completion among Road Construction Projects in Nairobi County.

To what extent do you agree with the following statements? Rate in a scale of 1 to 5 (1 Strongly disagree, 2 Disagree, 3 Neutral, 4 Agree, 5 Strongly Agree)

	Rating				
Statement	1	2	3	4	5
Road project completion is determined by owner's acceptability criteria in my Sub County.					
Road contractors and Supervising Engineers are given tenders based on the number of projects they have completed in the region.					

*****THANKYOU FOR PARTICIPATING*****

APPENDIX III: STUDY LOCATION



Key:

The map above is an illustration of Langata Sub County with all the five main wards in it. Langata is the case for the research project where data was collected.

APPENDIX VI: ANU RESEARCH AUTHORIZATION LETTER

AFRICA NAZARENE
UNIVERSITY

7th, June 2019

E-mail: researchwriting.mba.anu@gmail.com

Tel. 0202711213

Our Ref: 16J03DMBA037

The Director.
National Commission for Science,
Technology and Innovation (NACOSTI),
P. O. Box 30623, 00100
Nairobi. Kenya

Dear Sir/Madam:

RE: RESEARCH AUTHORIZATION FOR: MR. GEORGE KITSAO NGALA

Mr. Ngala is a postgraduate student of Africa Nazarene University in the Master of Business Administration (MBA) program.

In order to complete his program, Mr. Ngala is conducting a research entitled: "**Effects of Project Scope Changes on Project Completion among Government Projects in Nairobi County A Case of Road Projects in Langata Sub-County"**

Any assistance offered to him will be highly appreciated.

Yours Faithfully,

AFRICA NAZARENE UNIVERSITY
PRINCIPAL NAIROBI CBD CAMPUS
06 JUN 2019
Sign.....
P. O. Box 53067 - 00200, NAIROBI
Tel: 0774 952 934

MR. ISAAC MWANGI,
AG. PRINCIPAL: NAIROBI CBD CAMPUS.

APPENDIX V: NACOSTI RESEARCH AUTHORIZATION LICENSE

REPUBLIC OF KENYA

NATIONAL COMMISSION FOR SCIENCE,TECHNOLOGY & INNOVATION

Ref No: **472327**

Date of Issue: **14/August/2019**

RESEARCH LICENSE



This is to Certify that Mr.. George Ngala of Africa Nazarene University, has been licensed to conduct research in Nairobi on the topic: EFFECT OF SCOPE CHANGES ON PROJECT COMPLETION AMONG ROAD CONSTRUCTION PROJECTS IN NAIROBI COUNTY: A CASE OF LANG'ATA SUB COUNTY for the period ending : 14/August/2020.

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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
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3. The Licensee shall inform the relevant County Governor before commencement of the research
4. Excavation, filming and collection of specimens are subject to further necessary clearence from relevant Government Agencies
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