CRITICAL SUCCESS FACTORS AND PERFORMANCE OF COMPLETED CONSTRUCTION PROJECTS AT NATIONAL SOCIAL SECURITY FUND, NAIROBI CITY COUNTY, KENYA

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DECLARATION

I declare that this proposal is my original work and has not been presented in any other University or Institution of higher learning for examination.

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This proposal has been submitted for examination with my approval as University Supervisor

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DEDICATION

To my husband Dr Christopher Khisa and my children for their support and constant encouragement that keeps me going. To my dear late parents Mr. and Mrs. Patrick Wanyama, for showing me the way to acquiring education.

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ABBREVIATIONS AND ACRONYMS

ASALS: Arid and semi-arid lands

BCA: Building and Construction Authority

CBD: Central Business District

CDF: Constituency Development Fund

CSF: Critical Success Factors

KNBS: Kenya National Bureau of Statistics

KPI: Key Performance Indicators

MCA: Member of County Assembly

NACOSTI: National Commission for Science, Technology and Innovation

NCA: National Construction Authority

NPV: Net Present Value

NSSF: National Social Security Fund

SC: State Corporations

SPSS: Statistical Package for Social Sciences

SSA: Sub-Saharan Africa

OPERATIONAL DEFINITION OF TERMS

Availability of Funds: Funds available for the intended project.

Client Variations: This refers to the project changes initiated by either

Construction Dispute: Refers to issues that arise from disagreements between the parties involved in a contract.

Critical Success Factor: Refers to an element that is needed by an organization carrying out a project to help attain to stated goals and mission. It is a factor necessary to guarantee the project's success for an organisation.

Fund: The National Social Security Fund is a Kenyan social security provider responsible for ensuring that members benefit from wise future investment through savings in

Management Skills: Refers to the practice of understanding, development and placing workforce according to their skills.

National Social Security

Project management: This refers to the planning, organizing and management of project funds for the project success in accordance with the goals.

Stakeholder: A stakeholder is any person, organization, or a society that has an interest in a project or an endeavor.

the developer or the owner.

ABSTRACT

The construction sector seems competitive, complex and involves high-risk business making success a critical factor within this sector. The study focused on examination of effect of selected factors on construction projects performance at NSSF in Nairobi City. In this case, the study focused on the various problems that link to completion of projects and how they are influenced by various critical factors. Majority of the projects in various regions consumes more time and energy than scheduled, with most construction companies' deficient of the ability to accomplish the projects within the scheduled time and also failing to deliver to the required quality standards. The main objective was to establish the critical success factors and their effects on performance of construction projects. The specific objectives entailed: assessing the effect of client variations on performance, determining how availability of funds influence the performance and determining the extent to which construction disputes impacts on NSSF construction projects performance in Nairobi County. Four theories—Game theory, Principal-Agent theory, Construction Management, and Soft Value Management (SVM) theory—served as the foundation for this research. Descriptive research design was utilized for data collection, analysis, presentation and interpretation. The target population were six complete commercial and residential NSSF projects. Sample size selection was done by use of purposive sampling for selection of 84 participants. Semi-structured questionnaires were used in the study to collect data. The data were analyzed and explained using descriptive and inferential statistics. Thematic analysis was used in this instance to analyze qualitative data using SPSS version 26, whereby, frequency tables, graphs, and charts were used to display data. The significance of the entire model and each individual parameter was tested using the F test and t tests, respectively. The acquired data underwent diagnostic checks to make sure it was trustworthy and stable for the analyses. According to the findings, the R-square value revealed that 28.2 percent of the critical success factors is attributable to the three independent factors considered in this investigation (Client variations, availability of funds and construction disputes), and the remaining 71.8 percent can be attributed to other critical success factors outside the purview of this study. The study also shown a substantial correlation between predictor variables and construction project performance as reveled by the R-value. An analysis of variance (ANOVA) with a significance level of 0.05 produced an F statistic that was higher than the F critical value, indicating that the model's conclusion was statistically significant. The data also revealed that client variations, financial availability and construction disputes are statistically significant determinants affecting performance of NSSF construction projects. The study's conclusion was that the key critical success factors in the performance of NSSF completed construction projects include client variations, funds availability and construction disputes. The study recommends that company should adhere to the principles that safeguard project management to adequately manage the critical factors and ultimately minimize project delays.

CHAPTER ONE: INTRODUCTION

1.1 Background of the Study

The construction sector seems to be a very competitive as well as complex industry at a global perspective. Such level of complexity entails such issues as high-risk market defined by certain level of failures (Babu, 2015). Mashwama, Aigbavboa and Thwala, (2017) posits that the overall capacity and value of the construction market globally on annual basis stood at $3200 billion. Also, up until 2007, the prior estimate for the value of construction in the Gulf region was 1.5 trillion US dollars. (Mashwama *et al.,* 2017). It has been documented that the construction sector faces various issues that relates mainly to time, cost, quality, as well as safety (Mashwama *et al.,* 2017). Portugal, being one of the prime global examples, reported a delay of approximately 40 percent of mega projects. In this case, 14 percent of these projects were concluded to have faced budget overrun (Ribeiro *et al.,* 2013). Another major challenge in the country was provision of low-quality services by the service providers and this has become one of the critical challenges faced within the current sector. Such barriers have the possibility of leading up to approximately 40 percent loss within the profit of the contractor (Mashwama *et al.,* 2017).

In Asia the government of Malaysia used approximately $46 billion towards improvement as well as construction of the market (Yap, Chow & Shavarebi, 2019). Citing Sri Lanka, the construction industry in the country witnessed an improvement of approximately 20 percent 2014 from previous year that experienced approximately 14 percent growth, the improvement was due to government involvement and utilization of appropriate policies in construction sector (Silva *et al.,* 2016). In Saudi Arabia, the construction sector comes second after the petroleum sector in relation to

the economic contribution to the nation. The government spent close to $574.7 million on infrastructure between the year 2008 and 2009 (Alhammadi *et al.,* 2016). Despite such significant contributions, There are numerous risks and obstacles that the building business must deal with uncertainty within developing and developed economies.

Regionally, the demand within the construction sector in the Sub-Saharan Africa (SSA) seem unstable due to the influence from the low economy as experienced across these markets. Construction companies lack stability within market demand; they lack required abilities to keep skilled staff (Kerzner, 2017). Despite many developing economies within the Sub-Saharan Africa having sufficient natural resources, majority lack technical abilities that would help them utilize these resources efficiently in the construction industry. Many a times, the construction industry within SSA mainly depends on the availability of unskilled labor but this negatively influences the quality of performance. Blumenfeld, Wemakor, Azzouz and Roberts's (2019) study concluded that the construction project's actual cost appears to be more than anticipated within the SSA countries by about 30 percent of which 8.3 percent represents change orders. In Jordan, being a developing country, time overrun represents a major set-back that faces the construction industry (Ghoddousi & Hosseini, 2012). Majority of the sub-Saharan countries lack financial and technical abilities to manage large initiatives, hence they are compelled to obtain loans from several international monetary organizations to carry out the construction projects, for instance, roads (Bouraima, Stević, Tanackov and Qiu, 2021). Therefore, this study helps highlight the various key elements that affect how well building projects function within the SSA region.

Looking at a local perspective, the construction industry in Kenya is considered to be very important among areas that anchor the county's economic growth. There is an expectation that the sector will grow steadily within the next ten years owing because there are more tasks now especially, infrastructural development, within the various Counties in line with Kenya's Vision 2030 (Wetangula & Mazurewicz, 2017). Despite the vision on infrastructural development, there has been complains from majority of Kenyan construction firms concerning their Chinese rivals having a competitive advantage in public infrastructure as well as smaller-scale private sector projects (Competition Authority of Kenya, 2017). The construction companies in Kenya encounter challenges attributable to prevailing market competition as well as entry of foreign contractors within the market that appear strategic in comparison to their local counterparts (Competition Authority of Kenya, 2017). Apart from compliance, cost maximization is one of the main challenges that players within the construction sector in Kenya face, since they tend to settle at the same level annually. Report by Arrow and McGrath (2019) on construction industry in Kenya reveals the occurrence of challenges such as poor administrative capabilities, a superfluous increase in project usage, lack of organization alongside budgetary arrangements including unreasonable project management. Notably, Kenya experiences an elaborate housing shortfall annually and is progressively passive within urban areas such as Nairobi County. Consequently, Ministry of Housing statistics records the current yearly housing shortfall to be approximately 156,000 units annually owing to population increase due to rural-urban or urban-urban relocation (KNBS, 2020).

The first chapter of this study contains background data that expands on the study's context and idea. Subsequently, the background is followed by the statement of the problem, various research questions applicable, alongside objectives and study

significance. Then there's review of existing literature in the second chapter, while third chapter provides study methodology.

1.1.1 Project Performance

Achievement of the value of the project construction performance requires assessment against the right criteria, monitoring alongside assessment or benchmarking against set standards has to be carried out (Ogunde, Joshua, Amusan & Akuete, 2017). The pace at which a project is moving forward is determined by how closely all the established goals and objectives have been followed. To successfully manage project performance, the organization's goals and objectives must be properly aligned, alongside those of the individuals and the departments carrying out the project. Basically, before the onset of a project, an organization needs to have set goals and know how these goals will be achieved.

In this study, projects are used to denote one-time endeavours undertaking that has a clear anticipated outcome with an exceptionally large and long-range objective. Ogunde *et al,* (2017) states that the project is further divided into tasks and work lots that are themselves composed of work units. There are instances where the work units are divided into various sub-tasks integrated for the purposes of achieving a specific outcome upon completion. However, the various schedules alongside activities require careful co-ordination including control as pertains to the effects of timing, precedence, cost, as well as performance. In most cases, the entire project should always be under coordination with other projects being undertaken by the same parent organization.

The various key performance criteria against which project performance is measured include relevance, efficiency, and effectiveness as well as its impact on the beneficiaries and the level of sustainability of the various interventions. In this case, the aspect of relevance focuses on whether the project goings-on perform in accordance to the main concerns of the stakeholders namely: target group, recipient as well as investors (Kerzner, 2017). However, there are crucial questions that are essential when it comes to the assessment on the relevance on the nature of response from the recipient's needs alongside whether the different activities alongside project outputs resonate with the ultimate goals. The level of effectiveness acts as the benchmark that measures the ability of certain projects realizing their goals. Similarly, impact examines the various associated changes that results from the project. Efficiency provides the means of assessing existing inputs against outputs to identify the possibility of optimizing on available resources for the purposes of achieving the desired results (Assaad, El-Adaway & Abotaleb, 2020). Ultimately, the aspect of sustainability focuses on evaluating how well the project can progress upon closure.

1.1.2 Critical Success Factors

Critical Success Factors (CSF) in construction projects always vary depending on the region, particular operative environment, and various policies alongside required legal limitations. This reveals that such typical set of factors are not common across all countries (Gunduz & Yahya, 2018). The success factors, as per researchers, have been separated into different sets. These sets address project results, project management, business performance, the make-up of the project team, and external repercussions (Moradi & Zanjirchi, 2012). Sometimes project success factors take two dimensions; focus may be on hard, objective, tangible and quantifiable or on

softness, subjectivity, intangibility and being less quantifiable (Silva *et al.,* 2015). An attempt towards determination of various critical success factors is still progressive, and is given different approach by different scholars. For instance, previous authors focused on identifying standard factors contributing towards the accomplishment of the projects. Beleiu *et al,* (2015) states that of importance to highlight is the various critical success factors that exist in relation to the nature of the project (Beleiu *et al.*, 2015).

The aspect of altering processes requires at times, temporary stoppages that delay the overall completion of projects. In this case, one of the main issues facing the construction project focuses on variation order that occurs during the construction phase. This results into project delays alongside cost overruns. Some of these changes can easily be undertaken by the project team to fulfill such purposes as use of unworkable designs, changes in ideologies, taste or market conditions. The feature of deviations at some time during the project life cycle is not in any way eliminated by the planning and scheduling of building projects. For instance, Gunduz & Yahya (2018) identifies the classifications of the various project variations as "anticipated variation" as well as "emergent variation". There is advance planning when it comes to anticipation of the intended projects. Proper identification and communication of the CFS and connecting them to the project goals guarantees that the project is well focused and on course. This also guarantees that resources set aside for the project are spent on the most important areas; there will be no wastage.

Critical success factors in this study could be measured through a heuristic two-part model, which is supported with three scientific fields (Nunes & Abreu, 2020). The fields include project management, risk management as well as social network

analysis that tend to unveil and measure the extent to which various dynamic interactions of stakeholders through networks of collaboration across all the project phases within the lifecycle. These indicators impact on the project outcome through identification of critical success factors as regards communication, cross collaboration, management, teamwork as well as clustering. The identified critical success factors are then utilized to ensure provision of guidance in future projects. The model helps in identification and measuring of the various impacts of stakeholders' interactions across construction project lifecycle. The model contributes towards organizational transformation as regards people risk management. In this study, the social network analysis will be applicable in measuring the CSF as pertains to client variations, availability of funds and construction disputes.

1.1.3 The National Social Security Fund Construction Projects

The construction projects in Nairobi County include, but are not limited to, building homes, roads, street lights, bore holes, and storm-water drainage systems. The Kenya Economic Survey (2017) predicted that over the next ten years, the construction market will increase by about 6% annually, elevating Kenya to the top spot among sub-Saharan African countries for construction projects. The National Construction Authority, the Building Inspectorate, a division of the Ministry of Public Works, and the Government of Nairobi all provide oversight for the NSSF construction projects. For any construction project to commence, it has to go through all the approval stages with the three bodies (NCA, 2019). The Kenya National Bureau of Statistics (KNBS) (2016) indicated that various projects within the construction industry grew by approximately 9 percent in 2016 up from 2015.

The NSSF construction projects on residential units such as Nyayo Estate Embakasi was completed in in 5 phases that provided 4,774 housing units. The nature of accommodation was packaged by mixing of self-contained maisonettes and units of 4-storey 8-unit apartment blocks that included the duuka maisonettes that provided the services of local shopping needs, which is a potential self-employment unit. The intention of the NSSF was that the completion of the project would provide a significant improvement in accommodation serving the middle-class in Nairobi. However, Ernst & Young audit revealed that NSSF began building the Sh5.053 billion Tassia housing project and the Sh4.6 billion Nyayo Estate phase six before receiving authorisation from the appropriate government bodies. The Hazina Towers, Nyayo Estate, and Tassia projects all had delays as a result of modifications made to the initial plans, which had an impact on both the clients' preferences and the project's budget. Further, the completed NSSF Milimani close apartments comprised of 104 units, 3 bedroomed with servant quarters all ensuite targeting high-end clients. The study settled on NSSF construction projects because NSSF as a parastatal has heavily delved in multi-billion development of houses within the real estate and commercial sectors in Kenya. Further, NSSF in most cases deal with massive units of high-rise buildings, which present more technological as well as logistical problems in the process of construction. Therefore, they are likely to reveal most of the critical success factors and causes of delays in comparison to other types of projects within the construction industry.

1.2 Statement of the problem

The issue of delays within the construction sector is considered a major global phenomenon and the construction projects at NSSF are no exception. The objective of the stakeholders in construction projects either in public or private sector entails

successful completion of the project within scheduled time, planned budget and providing efficiency in a safe manner possible. The NSSF construction projects are influenced by various critical success factors that assist the project stakeholders attain to their goal as planned. This research study focuses on identifying some of the success factors that could help NSSF reach their objective with greater efficiency (Yu Choong, 2018). Majority of the projects in Nairobi City consumes time and energy than scheduled, with most construction companies lacking the ability to accomplish the projects within the assigned time. Further, most of these construction companies also fail to deliver to the required standards in terms of quality (Ronoh, 2020). Thus, many stakeholders within Nairobi City county have lodged complains concerning the effectiveness of building projects depending on quality as well as capacity of work that the companies can handle within a given timeline. Such cases concerning poorly constructed buildings, roads as well as poor drainage systems have become predominant.

Different studies have examined the existing management practices that influence project performances (Odeck, 2014). Ronoh (2020) indicates that 9 out of 10 projects experiences issues on performance such as cost overruns in Kenya. In this case, the cost escalation can occasionally be very large, reaching 183%.that indicates inefficiencies in the project management practices (Oyieyo, Rambo & Ndiritu, 2020). For example, NSSF has encountered several delays within their construction projects within the last two decades. The construction of Hazina Trade Centre project as one of the portfolio of commercial buildings within Nairobi CBD experienced unmet deadline due to political fights and challenges such as litigation from the anchor tenant. Further, NSSF complex delayed for five years contrary to the early scheduled

time of two years (Ronoh, 2020). Such level of failures that results from different challenges results into unexpected negative effects on projects with results amounting to cost escalations, work disruption, loss of productivity, disputes alongside project termination (Oyieyo *et al.*, 2020).

Studies having closest similarity with the primary goal of this study is to address the issue while emphasising important success elements influencing sustainability integration on the management of construction projects (Banihashemi, Hosseini, Golizadeh & Sankaran, 2017; Sfakianaki, 2019). In his study, Sfakianaki (2019) focuses on evaluating the available literature with respect to CSFs applicable in sustainable construction through a review of the most pertinent papers such as Emerald, Elsevier as well as Wiley. On the other hand, Banihashemi et al. (2017) provides a number of CSFs and narrows down to the context of developing countries, therefore, delivering the findings as a conceptual model. The presence of scarce data, information alongside gap in studies, presents a clear problem on the quality of information as pertains CSFs impact on residential construction projects. From such reports, there is sufficient evidence pointing to the idea that various critical factors influence the various problems that link to completion of projects. Therefore, this research study made-up for the information gap by researching the performance of finished construction projects and key success criteria at national social security fund, Nairobi city County, Kenya.

1.3 Objectives of the Study

1.3.1 General Objective

The purpose of this research study was to establish the effect of critical success factors on construction projects performance at National Social Security Fund in Nairobi City, Kenya.

1.3.2 Specific objectives

i. To establish the effect of client variations on NSSF construction projects performance.
ii. To establish the effect of funds availability on NSSF construction projects performance.
iii. To examine the effect of construction disputes impacts on NSSF construction projects performance.

1.4 Research Questions

This study provided results through below questions:

(i) How do client variations influence NSSF construction projects performance?
(ii) How does availability of funds influence NSSF construction projects performance?
(iii) How do construction disputes influence NSSF construction projects performance?

1.5 Significance of the Study

This study information could be useful to different stakeholders within the construction sector such as the NSSF projects. The various building owners may find this study useful in the quest towards making decisions before investing on commercial buildings. The information that relates to causes of the delays may ensure that more attention is accorded into the owner's construction planning process for commercial buildings.

The study also would provide useful information to policy makers as pertains to the significant decisions when it comes to utilization of public funds on construction of projects where emphasis is on efficiency and effectiveness. Both the local and international industry practitioners may find such information useful, alongside various investors with interest in making ventures into commercial buildings, despite lacking information that is pertinent to construction sector in Kenya. Therefore, developing extensive perspective concerning critical success factors within the commercial projects, hence availability of appropriate guidance.

The findings of this study may provide a useful basis of reference to the scholars and researchers, both present and future, as well as suggesting areas to be further researched upon. The study's academic contribution may entail the creation of a survey instrument based on the value and accessibility of the information that has to be obtained. By helping practitioners build an empirical project delivery database, the study advances the aspect of research and practice.

1.6 Scope of the study

To establish the effect of critical success factors on construction projects performance at National Social Security Fund in Nairobi City, Kenya.was the topic of the study. The research was limited to Nairobi City County NSSF housing construction projects, both commercial and residential namely Hazina Estate South C, State House Road apartments, and Nyayo Estate Embakasi, Social Security Plaza, View Park Towers, Bruce house and Hazina towers. The study took place between August 2022 to September 2022.

The survey was conducted through administering questionnaires and interview schedules to officials from National Social Security Fund at senior management level, contractors, and subcontractors.

1.7 Assumptions of the study

In this research, it was believed that sufficient funds, client variations and construction disputes are key factors to be considered in the performance on construction projects. The other assumption was that NSSF plays an important role in commercial and housing sector in Kenya and therefore it was the target group in this research.

1.8 Limitations of the Study

Respondents exhibited reluctance to share information considered confidential. This limitation was solved by ensuring that participants sign consent forms before participation. Additionally, the findings of the study were focused only on NSSF construction projects, therefore, making it challenging to generalize the results to other construction projects in Kenya despite serving similar roles in construction sector.

1.9 Organization of the Study

Chapter One: The first chapter of this study contains background data that expands on the study's context and idea.

Chapter Two: This represents the review of literature where theoretical framework, empirical literature, conceptual framework and gaps in the literature.

Chapter Three: The focus entails research design, target population, sampling techniques, research instruments, data collection process and analysis.

Chapter Four: Based on the suggested study design, this chapter presents and analyses the research findings from the field survey.

Chapter Five: This part includes a summary of the analysis, the study's conclusion as inferred from the goals of the study, and suggestions for further research.

CHAPTER TWO: LITERATURE REVIEW

2.1 Introduction

A review of previous scholarly works/literature from other authors is covered in this chapter. There is presentation of the theoretical review, empirical review, literature gaps and ultimately conceptual framework.

2.2 Theoretical Literature Review

2.2.1 The Principal-Agent Theory

The Principal-Agent Theory was propagated by Michael Jensen of Harvard and William in 1970s. The incorporation of this theory to management of construction projects tend to focus on information asymmetry, whereby there is a possibility of one of the two parties being highly likely to be considered as compared to the other. Further, there is always higher probability that they do not share the same level of interests, therefore, higher possibilities of one party taking advantage of the other (Gong, Tang, Liu & Li, 2017). In this scenario, the idea of irregular information proves to be of great importance to modern economic theory. This plays a crucial role in processes that pertains to construction projects. Notably, the owner of the project could hire a project owner in a standard situation, whereby the contractor performs all the activities as per the requirements for the completion of the project. In this theory, the existing relationship between the parties entails high level of personal interest of each party.

There is always the assumption that the collaboration amongst the various project participants gears towards achievement of as a specific objective. However, the existence of individual interests at times results into instances of potential conflict of

interests amongst parties involved. According to Principal-Agent Theory, the project owner must wait until the hiring process is complete before learning all of the details about the contractor, according to the features establishing the connection between the principle owner and the contractor. Subsequently, the project owner also does not seem to be familiar with the project manager before completion of the hiring process; these same conditions and provisions apply in the case of the contractor and the project manager. In some instances, parties tend to hide vital information or actions, which eventually result into moral hazards risk within such projects, and such actions could easily lead to stalling of projects. For instance, the scenarios where the project manager invests some resources at various project stages and eventually depend on the co-operation of the contractor (Gong *et al.*, 2017).

The contractor, however, may adopt opportunistic behaviors that could easily derail the whole project. For instance, the case where the contractor possibly delays work process owing to existing difficulties in supply of materials but does not fully disclose such information to the client. The scenario can also apply on the client's side. Gong *et al*, (2017) further states that the contractor is capable of investing finances at every stage of project with expectation of full cooperation from the project owner. However, the project owner may turn opportunistic, therefore, interfering with the whole process. A good example is where there are variations, and before approval the contractor carries out various works alongside implementation, only for a dispute to arise later.

In this study, the theory's contribution lies in the recognition and assessment of risks as introduced by the project stakeholders. The constructs that underlies the theory include; claims, conflict resolution as well as legal processes. This involves risk

assessment and identification of appropriate processes that could be utilized to mitigate these risks. Therefore, risk mitigation helps improve performance through optimization of stakeholder goals. The theory linked to the first study objective; to establish how client variations influence the results of completed NSSF construction projects in Nairobi City.

2.2.2 Theory of Construction Management

Radosavljevic and Bennett (2012) developed this theory with the objective of looking into the level of efficiency in construction projects. The theory entails development of a construction management model that uses various differentiated methodologies for ensuring perfect completion of building and construction projects. The purpose is development of a "rigorous theory" that is built on "tool kit of concepts as well as relationships" capable of enhancing efficiency alongside quality of "building goods".

The management of construction projects requires taking responsibility for each stage while providing measure of efficiency of each step. Such process ensures the achievement of the intended objective with the theory emphasizing the importance of analyzing failure or success of factors that influence project completion (Njiru, 2018). This theory links to the study objectives on the premise of use of resources, quality and ultimate client satisfaction. In the event that the NSSF construction projects require quality and client satisfaction, then the theory of construction management provides for the need of checking the construction project's critical success factors. The theory linked to the second objective of the study.

2.2.3 Soft Value Management Theory

Soft value management (SVM) theory was proposed by Al-Yamni and Price (2006) and is applicable when developing plans on the reduction of negative impact that the

project may incur during implementation process (Leung, Dongyu, & Liu, 2014). Provision of a clarity on the ways in which project should be done leads to minimization of negative effects, hence a successful project. For verification purposes, soft value management simply represent one of the ways of conceptualizing value management in construction projects. However, there is no expectations that the theoretical position of the soft value management is maintained in practice. This is because the various assumptions that guide behavior of human factors are usually not accessible (Leung, Dongyu, & Liu, 2014).

Therefore, it is important to focus on forms of rhetoric applicable for both conceptualization and full enactment. The management approaches focus on how the potential of cost reduction declines amidst project progression that corresponds to increment in the cost towards change. The SVM theory is applicable in this study as regards to examination of the various critical success factors and how to minimize their negative effects such as cost, client variations, therefore, ensuring successful completion of projects (Leung, Dongyu, & Liu, 2014).

2.3 Empirical Literature Review

2.3.1 Client variations and performance of construction projects

Tayeh, Salem, Abu Aisheh and Alaloul (2020) using project owners, consultants as well as contractors, as the three key groups of research participants, carried out a study on the factors that influence the performance of the various construction developments in the Gaza Strip. In this case, the survey results indicated that all the participants agreed concerning most important factors that influence project performance. These included project delays attributable to such activities as road closure and occurrence of natural calamities. The challenges determined the level of

utilization of required resources such as raw materials and human resources. However, the study did not clearly capture the entire group of factors, therefore, could not easily be applicable for universal purposes.

In construction projects, scholars alongside professional's ascent to the fact that variations influence various sections of the project have a negative impact on production, either directly or indirectly (Tayeh *et al,* 2020). This provides a subjective scenario since the contractor attributes the loss to variations resulting from the designers and owners' faults. On the contrary, project owners' attributes productivity loss to contractors' lack of proper management capabilities (Tayeh *et al,* 2020). The common changes in design results from the architects and the clients' instructions.

A detailed study by Mhando (2017) of high-rise buildings in Kenya reveals that 69 percent of the construction projects reports occurrence of client variations especially within the private sector. Tayeh et al, (2020) re-affirms that the issues that concerns changing plans or scope by clients is usually seen as one of the factors that basically contributes towards what triggers disparities within the construction sector, specifically in Iran and Seychelles respectively. Other studies share the same view, pointing out that client errors are the major reasons why variations and omissions happen in projects such as construction. Such factors as changes in specifications, changes in planning alongside non-compliance design issues provides major issues surrounding client variations in Singapore construction projects (Tayeh *et al,* 2020).

A study by Wang, Ford, Chong and Zhang (2018) on what leads to development of Chinese building projects has been delayed used questionnaire surveys to establish the primary causes of construction delays. The results which were specific to Chinese

constructions revealed the two unique causes as client demands for unreasonable capital to be paid upfront and difficulties in making indemnity claims. However, the study failed to capture the client variations that could be generalized globally and specifically to African set-up since it only focused on Chinese construction projects.

On the other hand, a study by Johnson and Babu (2020) on influence regarding time and expense escalations in the construction sector was conducted in the United Arab Emirates (UAE); a mixed-method data collection approach was utilized. The results of the research concluded that client and contractors' design variations, clients change orders, delay in decision making and financial constraints are some of the issues that leads to project delays. However, the study failed to capture the impact of current tools in influencing construction project performance. Similarly, this study will focus on client involvement and coordination as major concern for construction project completion.

Ganbat, Chong, Liao and Lee (2019) conducted a review focusing on addressing issues related to risks in international construction projects. The study applied a cross-systematic approach to identify Building Information Modeling risks, analysis of risks as well as management techniques required. The results of the study provided various practical references that pertain to industry players that are key to future risk management and development within projects.

2.3.2 Construction Disputes and Performance of Construction Projects

Study by VO, Nguyen and Nguyen (2020) focused on disputes in managing projects in the Vietnam's construction industry. The study considered construction disputes as a common feature within the construction industry revealing the existence of some level of confusion amongst construction professionals, such as conflict and dispute,

since such terms are applicable interchangeably especially within the construction sector. Further, Alaloul et al. (2019) in their study argues that dispute arises in the event that a claim or compensation request is presented is denied. The various disputes surrounding a construction project occurs at different phases of any project, for instance, some arise from financing processes, alongside contractual agreements (Tolson, 2013).

Illankoon, Tam, Le and Ranadewa (2019) demonstrates what causes wrangles and disagreements in Sri Lankan construction industry and the influencing factors. The study indicates how crucial the construction sector is to the expansion of the economy and how difficult and expensive it is to resolve numerous issues within this sector. The process leads to losses across projects including time overrun (Illankoon *et al.*, 2019).

In Kenya, negotiation of the building contract takes place in accordance to the Joint Building Council's Agreement and Terms of Contract for Construction Works (JBC, 2019). It is the responsibility of this body to set contract conditions for building alongside works. In this case, the clause 45 within the JBC addresses settlement of disputes within the processes of the constructions. The Clause further makes a provision for both parties in a construction contract to reach a solution before resorting to any legal action.

A study by Hasanzadeh, Esmaeili, Gad and Gransberg (2018) on how owner's decisions alongside dispute influences the performance of projects, was conducted using an empirical study. Analysis of data was done to identify any statistical significant differences between disputes and performance. The results indicated that projects procured through appropriate qualifications had low records on disputes and

vice-versa. In this case, appropriate selection steers various success factors that eventually determines smooth project completion and performance.

Charehzehi, Chai, Md Yusof, Chong and Loo (2017) in their study focused on building information modeling as a way of mitigating construction conflicts. The study objective was to propose building information model as a way of controlling conflicts before occurrence of disputes. The results reveal that BIM promotes high level networking on collaboration and coordination from project initiation to completion. The study provides details not only on dispute management but also on its elimination, which provides one of the essential elements that determines efficiency of the construction projects.

Prasad, Vasugi, Venkatesan and Bhat (2019) conducted an analysis concerning delay causes and prevention measures in construction projects in India. The authors conducted a study to compare on a design build and design bid-build projects where survey was applicable by use of semi-structured questionnaire. The findings indicated that financial-related disputes were the primary reasons for project delays in construction. The study provided a detailed comparison on the various delay causes in construction projects and solutions that would be beneficial in identifying critical success factors influencing project performance.

Wanjau (2015) studied the various factors influencing the project completion within the building industry in Kenya, and used descriptive survey as the design. However, in this study, there was no clear guidance on the means of measuring the results from the building project. The study recommended that organizations should provide clarity concerning measurement of any building project. The project managers should be aware of various efficient project management techniques that eventually lead to

efficient completion of projects. However, it is difficult for the project management to stop a project from coming to completion while they provide the necessary incentives.

2.3.3 Availability of Funds and Project Performance

Oghenekevwe, Olusola and Chukwudi (2014) carried out a study that revealed that most countries desire the aspect of maintaining a stable price level of goods alongside various services within every construction sector. Notably, such maintenance of stable prices seems to be complex owing to the prevailing price inflation across the developing countries globally. For instance, price inflation on construction materials presents a key milestone that ensure the accomplishment alongside being a factor in occurrence of cost overruns alongside delays (Oghenekevwe *et al*., 2014).

According to Idoro (2010), the various materials applicable in building account for approximately 50 to 60 percent of the cost of the project alongside the control estimated at 80 percent of the entire schedule. Consequently, high prices of materials eventually influence the ultimate construction cost, however, poor management negatively affects the delivery of the project. The cost of construction materials is continually rising, which has an impact on how the sector operates. The aspect of many projects stalling and failure of some projects to be completed within the scheduled time is attributed to the price of materials. Notably, inflation in the price of construction materials influences the fixed price of construction contracts (Idoro 2010).

Study by Seboru (2015) on cost overruns in construction projects in Kenya reveal that contractors encounter financial issues during different phases of construction project. Wafula (2017) noted that significant amount of funds allocated for construction projects by the government usually ends up being misappropriated, therefore, hurting

the pace of development. The fund issue always arises during construction because the contractors usually settle dues for work in progress and receive their pay after project completion. Such aspect requires that contractors should have sufficient funds capable of off-setting project bills. It is necessary that the various projects undergo design phase to ensure proper allocation of resources including proper scheduling. In another study Muturi and Oguya (2016) conducted a study on road construction projects within the ASALS in Kenya. The study revealed the various factors influence project outcome and performances; such factors included project finance, the level of competency of the contractor as well as disputes that explains 83 percent of the existing variance in performance of construction projects.

2.4 Summary of Literature Review and Research Gaps

Table 2.1: Summary of gaps in literature

Author (year)	Topic	Results	Research gap	Contribution of the present study
Oisanga (2022)	Assessment of the Ng-cdf Project Management Structure on Performance of Ng-cdf Projects in Kenya.	The independent variable technical officers exhibits a statistically significant relationship the CDF performance	There was no clear indication that competency positively impacted on the performance of the project. Conceptual gap	This shows that presence of skilled manpower influences the development of the project
Usman, Kamau, and Mireri, (2014)	The task performance at conception in the Construction Industry in Abuja, Nigeria	The result reveals that the first stage that concerns success factors provides a significant factor concerning project performance. In	There was no clear indication revealing that the nature of performance of a project depends on the initial stage principles' applicable for project success,	The various activities undertaken at the initial stages of the project provide key factors that ensures the project success.

		this case, such principles should be considered for efficient delivery to clients.	which is a significant factor. This is an indication of a conceptual gap	
Oyalo (2015)	The various characteristics that influences the completion various projects funded by the CDF in Kangundo Constituency	The outcomes of the CDF programmes were significantly influenced by leadership.	There was no clear indication that the involvement of MPS in the CDF projects led to the projects' failure. This is an indication of the contextual gap.	It is essential to identify client variations before the start of the project. This would guarantee the realisation of the project.
Njiru (2018)	Practices Surrounding Project Management and their Implementation within Nairobi City County, Kenya.	Strategies of communication showed a strong statistical link between project implementation and implementation.	The study did not clearly indicate role of communication strategies in minimizing potential disputes. This is a contextual gap.	Clarity in communication would help in reducing the level of construction disputes
Seboru (2015)	The cost overruns in construction projects in Kenya	Contractors encounter financial issues during different phases of construction project	The study did not show whether the project underwent through the design phase. This is a conceptual gap	It is key that projects undergo all initial stages to ensure proper allocation of resources including proper scheduling.

Wanjau (2015)	The various factors that impacts on building project completion in Kenya	The results reveal the importance of organizations in providing clarity concerning measurement of any building project.	There was no clear guidance on the means of measuring the results from the building project. This is a methodological gap.	There is need for awareness on the various efficient project management techniques that guarantee successful completion of projects.

2.5 Conceptual Framework

This shows a diagrammatic presentation concerning existing relationship between the independent and outcome variables.

Independent variable

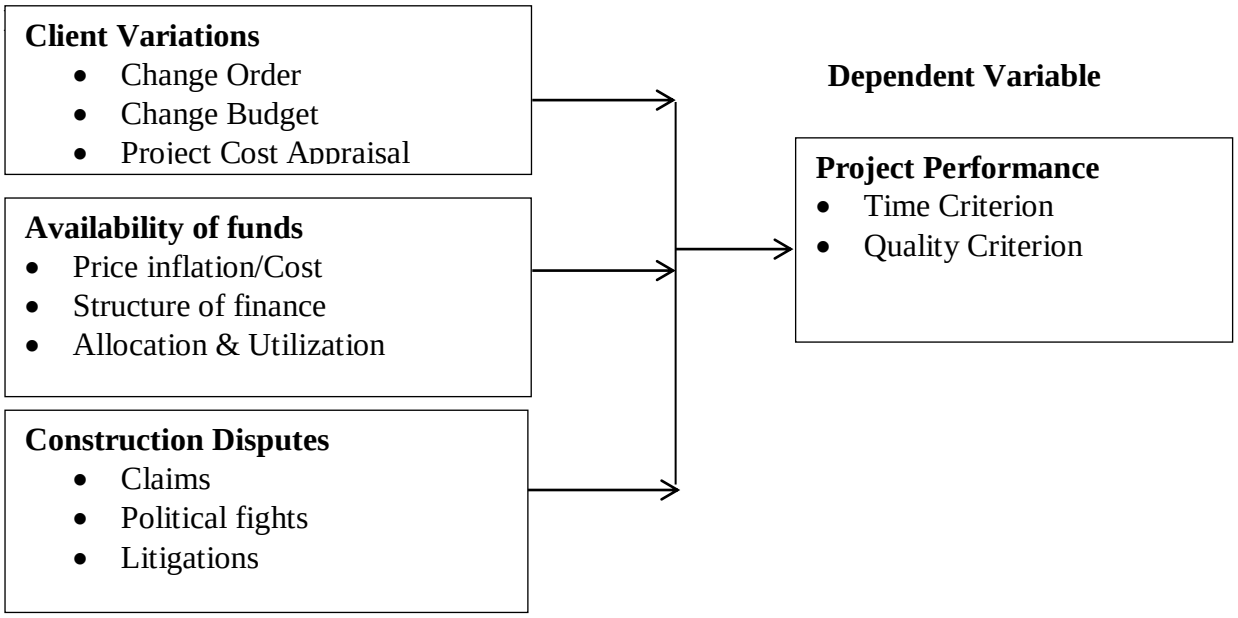

Figure 2.1: Conceptual Framework

(Source: Author, 2022)

CHAPTER THREE: RESEARCH METHODOLOGY

3.1 Introduction

This section focused on various procedures applicable in the investigation of the research questions and objectives. The focus entailed research design, target population, sampling techniques, instruments, data collection process and analysis.

3.2 Research Design

This study utilized descriptive research design (Zikmund, Babin, Carr, & Griffin, 2013). This is because the descriptive technique allows for an elaborative description of the phenomenon under study (Simiyu, 2013). The research technique is considered ideal for this study since the researcher's focus is to examine the critical success factors that influences construction projects performance. A descriptive design obtains information regarding description of existing occurrences through various questions that relates to individual perceptions alongside attitudes (Bryman & Bell, 2011). The use of inferential analysis was further applicable to help in the determination of the influence of CSFs on the construction projects performances.

3.3 Target Population

The term is used in this study to denote a large group of people or things where a researcher is interested in and hopes to learn more about through a research study. A population is a collection of people who share at least one observable attribute (Mugenda & Mugenda, 2012). This study targeted the six completed NSSF construction projects both commercial and residential namely; Social Security Complex in Upper Hill that houses its headquarters offices in Nairobi, Nyayo Estate Embakasi, Milimani Flats along statehouse road, and Hazina Estate in South-B, View

Park Towers and Bruce House (Human Resource NSSF, 2020). The National Social Security Fund chose the respondents based on their involvement in advancing of construction projects. The population was stratified and comprising contractors and sub-contractors directly involved with the construction of the NSSF projects (Human Resource NSSF, 2020). The study selected 527 stakeholders directly involved with construction projects (Human Resource NSSF, 2020). These respondents were selected for their participation in the performance of construction projects at National Social Security Fund. The population was stratified as project managers, contractors and sub-contractors giving three strata as shown.

Table 3.1 Groups of targeted respondents

Categories of respondents	**Population**	**Sample size calculation**	**Sample Size**
Project managers	30	(84/527) * 30	5
Contractors	145	(84/527) * 145	23
Sub-contractors	352	(84/527) * 352	56
Total	527		84

Source: (Human Resource NSSF, 2020)

3.4 Sample Size and Sampling Technique

3.4.1 Sampling size

The study incidentally comprises of a small population, 6 NSSF projects, therefore, there was no need for sampling for this study. The stratum comprises of six National Social Security Fund's commercial and residential projects in Nairobi namely; Social Security Complex in Upper Hill that houses its headquarters offices in Nairobi, Nyayo Estate Embakasi, Milimani Flats along statehouse road, and Hazina Estate in South-B, Social Security Complex, View Park Towers and Bruce House (Zikmund *et al.*,

2013). The people working on NSSF building projects served as the unit of observation, and the projects themselves served as the unit of analysis.

Table 3.2 Respondents sample size

Respondents	**Sample Size**
Project managers	5
Contractors	23
Sub-contractors	56
Total	84

(Author, 2022)

Stratified sample formula (Sample size of the strata = size of entire sample / population size * layer size) was used for the calculation of the proportion of personnel from each category of respondents (Singh & Masuku, 2014).

3.4.2 Sampling Technique

Purposive sampling technique was utilized in the selection of personnel capable of providing appropriate information from the sector concerning construction initiatives within Nairobi City County. This technique helps in the selection of a unit of the population considered as a typical representation of the overall population as provided by the study's judgment (Zikmund *et al.,* 2013). A stratified simple random sampling was applicable in the selection of the participants. This is adopted in this study because the method has minimum or no sampling and classification errors, and it can easily be understood by the population other than the frame (Rukwaru, 2015). Besides, the method is suitable in the situations with scarce information concerning the population and data can be obtained from randomly distributed items, or where the cost of sampling is small. The sample size (n) in this study was adjusted by use of

Yamane formula (1967), because the population is finite (Mugenda and Mugenda, 2012).

Yamane formula allows for the calculation of the sample size at different percentages 5 percent, or 10 percent precision (e) level and 0.1 confidence level (Cooper & Schindler, 2013). The degree of variability (p) equivalent to 50 percent (0.05), thus;

$n = N/ 1+N(e^2)$

Whereby; n denotes the sample size.

N denotes the population target

e = the acceptable significance level (10%).

$N = 527/ (1+527(0.1)^2$

n = 527 / (1+5.25)

n = 527/ (6.25)

n = 84

3.5 Data Collection Instruments

The vast majority of the information for this inquiry was gathered via semi-structured questionnaires. In this case, the use of closed-ended questions was applicable for survey. The 5-point Likert scale format was used in the construction of the questions. It is possible to collect both subjective and objective data from the research population by employing these questionnaires, which ultimately results in the achievement of statistically meaningful results. The use of questionnaires as the instrument enables the privacy of the respondents. The self-administered questionnaires are considered easier due to time-saving factor (Mugenda & Mugenda, 2012). The various measures on the questionnaires are developed from the study constructs.

3.5.1 Data collection procedure

In order to gather quantitative data, self-administered questionnaires were used; nevertheless, semi-structured interviews were used to gather qualitative data. The questionnaires were distributed to the participants at their respective offices, and the participants were chosen subsequently by the researcher once the questionnaires had been completed. Before completing the questions, the participants had to sign consent documents provided by the researcher. Before beginning the primary field data collection, an authorization letter from the institution was issued.

3.5.2 Pilot Testing

The pilot test was suitable for evaluating the reliability of the questions in the data gathering tools (Cooper & Schindler, 2013). The pilot study was done at one of the NSSF residential units in Embakasi called Nyayo Estate. Pilot testing is always done by choosing 10 percent of the total sample population that will not be part of the final sample population (Bryman & Bell, 2015). In this case, eight respondents (one project manager, three contractors and four sub-contractors) were used.

3.6 Validity

Both construct and content validities were applicable in the study and confirmatory factor analysis was used to test for validity. The aspect of construct validity ensures that questions within the research instrument are aligned to research objectives through factor analysis. On the other hand, content validity ensures that questions are valid with the knowledge and assistance of the supervisor (Cooper & Schindler, 2014).

3.7 Reliability

The internal reliability test of the questions in the questionnaire was tested by use of Cronbach Alpha's reliability coefficient, α. In this case, a greater internal consistency is revealed when α moves closer to 1.0 of the items in the scale (Cronbach, 1951). Cronbach proves the level of variable reliability as well as consistency. When the instrument passes the reliability test with an alpha value of 0.7 or higher, it is deemed to be acceptable and dependable.

3.8 Data Analysis and Presentation

The analysis of the quantitative data was done by SPSS software. In this case, descriptive statistics provided values as standard of measures for the data. Charts and tables were used to present the information. To analyse the data, inferential statistics were employed (Cooper & Schindler, 2013). The study's variables were correlated using Pearson correlation as part of the inferential analysis.

Using the multiple regression analysis technique, the impact of crucial success factors on project performance was established. This calculated how much each of the four important factors affected the dependent variable. The project performance outcome variable was regressed against each independent variable. The multiple regression models that was used for this research is as follows:

Construction Project performance (Y) = $\beta_0 + \beta_1 X_1 + \beta_2 X_2 + \beta_3 X_3 + + \varepsilon$

β_0 = Constant

χ_1 = Client Variation

χ_2 = Availability of Funds

χ_3 = Construction Disputes

ε = Error term

$\beta_{1 \dots} \beta_4$ = the coefficients associated with X_1, X_2, and X_3 respectively

Y = Project Performance

Factors analysis was the regression approach applicable in this study to combine indicators for the purposes of calculating the factor score. The new factor score was used as the main indicator representing other indicators mentioned.

The study used a modified version of a model created by Eniola and Akinselure (2016) that showed the functional relationship between the outcome and independent variables as follows:

$$Y = \beta 0 + \beta 1X1 + \mu \text{ ………………(1)}$$

Whereby:

Y = the outcome variable, represented by the success of the construction project

X1 = Independent variables, which was represented by Client variation, β0 – as the constant, β1 – the regression coefficient, and μ = Error term.

The three elements of the crucial success criteria for building projects were added to the model of Eniola and Akinselure (2016) in order to meet the study's objectives. The linear regression model is as presented below:

$$Y = f(X) \text{………………………………………………………… (2)}$$

$$Y = \alpha + \beta 1\ X1 + \mu \text{…………………………..……...……………. (3)}$$

$$CPP\ (PfM) = \alpha + \beta 1\ CV + \mu \text{………………………..….………………… (4)}$$

Where,

CPP = Construction project performance, CV= Client variation, β0 represents the intercept, β1 represents regression coefficient, and μ = Error term.

When the relevant variables are substituted, the results of the multiple linear regression analysis that showed the functional link between the three components of

the integrated framework for critical success elements and construction project performance (CPP) will be as follows:

$$CPP\ (PfM) = \alpha + \beta 1\ CV + \beta 2\ FA + \beta 3\ DIP + \mu \ldots\ldots\ldots\ldots\ldots\ldots..(5)$$

Where:

OGP = Construction project performance, CV = Client variation, FA = Fund Availability, DIP = Construction disputes, β_0 - the intercept, β_1, β_2, β_3, represent regression coefficient of each of the individual variables and μ = Error term.

3.8.1 Multiple regression model assumptions

Table 3.3: Multiple regression model assumptions

Assumptions		**Determination**	**How to rectify the assumption**
Assumption 1: Linear Relationship	In multiple linear regression, it is assumed that each predictor variable and the response variable have a linear relationship.	- Making a scatter plot with the response variable and each predictor. There is likely a linear relationship between the variables if the scatter plot's points generally follow a straight diagonal line.	-Use a nonlinear transformation on the predictor variable, such as the square or log root. - Remove the model's predictor variable.
Assumption 2: No Multicollinearity	- Multiple linear regression assumes that there is no significant correlation between any of the predictor variables.	- For each predictor variable, determine the VIF value. Potential multicollinearity is indicated by VIF > 5.	- Just eliminate the predictor variable(s) with high VIF values.
Assumption 3: Independence	Each observation in the dataset is assumed to be independent in multiple linear	- Conduct a thorough statistical analysis known as a Durbin-Watson test to determine whether autocorrelation	- If there is a positive serial correlation, think about include lags of the dependent and/or independent

	regression.	exists in the residuals and, consequently, in the observations.	variable in the model.
Assumption 4: Homoscedasticity	- When using multiple linear regression, it is assumed that the residual variance is constant across the board for the entire linear model. When this is not the case, the residuals are regarded as heteroscedastic.	- Plot the standardised residuals against the expected values. - If the P-value is 0.05 or higher, the variance is not uniform.	- Change the response variable's shape. - Modify the response variable. - Employ a weighted regression

(Source: Plonsky & Ghanbar, 2018)

3.9 Ethical Considerations

Data will be tagged to safeguard respondents' identities, ensuring their confidentiality and right to anonymity. The researcher gave respondents sufficient and accurate information about the study so that they may decide whether or not to participate in it. When managing the information provided by the respondents, the researcher will maintain a high standard of confidentiality. The researcher obtained permission from National Social Security Fund and an introduction letter from Kenyatta University including NACOSTI permit for field data collection. These helped authenticate the use of the data, which is for academic purposes only.

CHAPTER FOUR: RESEARCH FINDINGS AND DISCUSSIONS

4.1 Introduction

This chapter provides presentation and analysis of the research findings from the field survey based on the proposed research design. The presentation of the findings is in the form of tables and figures.

4.2 Questionnaire Response Rate

A total of 84 questionnaires were distributed out of which 80 of them were returned. In this case, the response rate was at 95 percent. According to Venkatesh et al. (2014) analysis and inference-making are permitted when the response rate exceeds 70%. Such a high response rate was achieved owing to effort made by the researcher to follow-up participants through frequent text messages on the need to cooperate in filling and returning the questionnaire in time. The contacts in form of phone numbers were obtained during the time of questionnaire distribution.

4.3 Demographic Characteristics of Respondents

The respondents' demographic traits are indicated by including respondents' gender, age, experience, and educational background. The traits are underlined in the sub-sections as below.

Table 4.1: Respondents by Age

		Frequency	Percent
Valid	18-20	4	4.5
	21-30	22	25.0
	31-40	32	45.0
	Above 40	22	25.5
	Total	80	100

(Source: Researchers Survey Computations, 2022)

The table 4.3.1 results show that the highest age group represented was 31-40 (45%), followed by above 40 (25.5%), then 21-30 (25%) then least representation from 18-20 years (4.5%).

Table 4.2: Respondents by Gender

		Frequency	Percent
Valid	Female	19	21.6
	Male	61	69.3
	Total	80	90.9

(Source: Researchers Survey Computations, 2022)

The respondents' genders were determined in order to ascertain if the completion of NSSF construction projects was influenced by gender. The results showed that male (69.3%) were highly represented as compared to female respondents (21.6%). This study is consistent with that of Rai, Brown & Ruwanpura (2019) which found male dominance in both the formal and informal sectors.

Table 4.3: Education Level of Respondents

		Frequency	Percent
Valid	Certificate	16	18.2
	College degree	29	33.0
	University Degree	26	29.5
	Postgraduate	9	10.2
	Total	80	90.9

(Source: Researchers Survey Computations, 2022)

The link between respondents' education and the outcome of construction projects was largely determined by their educational background. College degree had the highest representation (33%) followed by University degree (29.5%), then Post graduate (10.2%) and finally certificate (18.2%). Knowing the respondents' educational backgrounds is important since education conveys knowledge, values, and abilities that could have an impact on the construction sector.

4.4 Descriptive Statistics Analysis

This statistics analysis provides the mean and standard deviation values in relation to the performance of completed building projects at the national social security fund and the essential success elements. The participants were required to tick appropriately the different measures under each variable. Likert scale was applicable in rating responses after which SPSS analysis was applied in generating the mean, standard deviation as well as p-values.

Table 4.4: Mean and Standard Deviation Values

Descriptive Statistics			
	Mean	Std. Deviation	N
PFM	4.0792	1.28635	80
CV	3.2900	1.44043	80
FA	3.2281	1.18147	80
DIP	3.2083	1.31888	80

(Source: Researchers Survey Computations, 2022)

The respondents agreed (M=4.079, SD=1.286) that there was improved project performance when the critical success factors were fully worked out. The result correlates with the sentiments by Wang, Ford, Chong and Zhang (2018) on what leads to delays of construction projects. The results show that the various success factors as applicable in this study relates to strategic management and direction of the projects as overseen by the project managers and that putting into practice is always the responsibility of the sub-contractors and contractors. This research data reveals an overall value of standard deviation that is equal to one, which is an indication that participants had convergent opinions as well as views on essential elements and effects on project performance. The indication of the various high values provided by standard deviation on these statements could be interpreted that participants sampled

had mixed reactions on the topic of discussion (some agreed; others disagreed while others had no idea).

The results provided an overall mean score (M=4.0792); this shows that significant percentage of the respondents consented on the statements provided under project performance. In this study, the overall standard deviation is 1.286; which in real sense is equal to one. The conclusion is that respondents shared same opinions as well as views on critical success factors influence on project performance.

4.5 Correlation Analysis

To investigate any links between the specific critical success factors and the NSSF construction performance, the Pearson correlation coefficient (r) was applicable. According to this research study, the r-value was specifically used to investigate the direction and strength of correlations between the variables (r). The correlation test was performed at a 2-tailed significance threshold of 0.05. The type of relationship between the variables has to be established before performing further analysis. A very strong positive relationship is one where the r statistic is 0.7 or higher, a strong positive relationship is one where the r statistic is 0.5 to 0.7, a moderate positive relationship is one where the r statistic is between 0.3-0.49, and a weak positive relationship is one where the r statistic is below 0.29. If the value of r is less than 0, there is a negative correlation between the variables, and if r = 0, there is no link between the variables.

The study discovered that client variation (CV) had a very strong positive significant relationship with perceived construction firm performance, r =.804, p =.0001. It also revealed that financial availability had a moderately positive significant effect on firm

performance with r = .360 and p =.0001, further, construction disputes had a weak positive significant relationship with construction performance (r =.141, p =.012).

Table 4.5: Correlation Results

Correlations					
		PFM	CV	FA	DIP
PFM	Pearson Correlation	1			
	Sig. (2-tailed)				
	N	80			
CV	Pearson Correlation	.804**	1		
	Sig. (2-tailed)	.000			
	N	80	80		
FA	Pearson Correlation	.360**	.437**	1	
	Sig. (2-tailed)	.000	.000		
	N	80	80	80	
DIP	Pearson Correlation	.141*	.125*	.286**	1
	Sig. (2-tailed)	.012	.026	.000	
	N	80	80	80	80
Correlation is significant at the 0.05 level (2-tailed).					

(Source: Researchers Survey Computations, 2022)

The value of the correlation coefficient (r) of this study's research indicates that crucial success criteria and construction project completion have a statistically significant linear relationship (β) of 0.531 at p=0.000. Construction project parameters are responsible for 28.3 percent of the variance in performance, according to the coefficients of determination, which is R-square (R^2) of 0.282. The model's significance value for forecasting how crucial success criteria affects the performance of NSSF-completed construction projects is statistically significant at 0.000, which is less than 0.05. Additionally, it was determined that an F-significance value of p = 0.000 indicated that there was a 0.00% chance that the regression model would reject the hypothesis. This therefore, approves the aspect that the performance of NSSF construction projects is positively impacted by crucial success elements. The same

results were echoed by Tayeh *et al,* (2020), which revealed that various sections of the project are influenced by client variations that either directly or indirectly result into a reduced level of productivity, hence project delay.

4.6 Test of Statistical Assumption Analysis

In this study, Normality tests and multi-collinearity tests were the two main diagnostic tests used. They met the criteria outlined in the ensuing subsections.

4.6.1 Test of Normality

Prior to analyzing the linear regression model, tests are crucial. Keya and Rahmatullah (2016) indicates that the alpha coefficient is a helpful measure of the variance that can be assigned to subjects, as well as the relationship between topics and items. Factor analysis is a tool used in exploratory research to assist in determining whether the independent factors under consideration are capable of explaining the dependent variable (Field, 2005). Prior to that, the study determined whether or not the study's variables were evenly distributed.

The data set did not follow a normal distribution (Table 4.2.1) since the statistics showed that all the values under Shapiro-Wilk were significant. The Shapiro-Wilk is usually used to test for normality in cases where data has less than 100 participants. Kolmogorov-Smirnov is always applicable in dataset with more than 100 participants. Therefore, the dataset did not originate with respect to a population having a normal distribution. In case of normality in data, the statistical variables should not have been statistically significant $p > 0.05$. The fundamental premise is that independent and dependent variables differ significantly from one another. In this case, we reject the

null hypothesis. Non-significant value is a clear indicator that the applicable model exhibits good-fit to the used data or fits the data well.

Table 4.6 Normality test

Tests of Normality						
	Kolmogorov-Smirnov[a]			Shapiro-Wilk		
	Statistic	df	Sig.	Statistic	df	Sig.
CV	.225	80	.000	.866	80	.000
FA	.181	80	.000	.913	80	.000
DIP	.183	80	.000	.889	80	.000
PFM	.072	80	.200*	.955	80	.004

(Source: Researchers Survey Computations, 2022)

4.6.2 Multi-Collinearity Test of Independent Variables

In a statistical model, multi-collinearity is said to occur when at least two independent variables are linearly associated and R as either exceeds or falls below zero, as measured by the correlation coefficient (Alin, 2010). The required range for the variance inflation values was 1 to 10. Multicollinearity, on the other hand, occurred if the VIF (Variance Inflation Factor) was either less than one or greater than ten.

Table 4.7 : Multi-Collinearity Test

	Coefficients of Collinearity Statistics	VIF
1	Client Variation	4.021
	Funds Availability	3.835
	Construction Dispute	2.655

a. Dependent Variable: Project performance

(Source: Researchers Survey Computations, 2022)

4.7 Inferential Statistics

There was the application of statistics for the purposes of determining the probability that the research questions used on how critical success factors effects on construction projects performance at National Social Security Fund in Nairobi City for this research study were answered. The questions showing that observations are the results of pure chance were statistically tested alongside the real effect drawn alongside a component of chance variation. For each individual variable, regression analysis was performed to identify the contribution of the various operationalization of the variable to the variation in the connection between the variables.

4.7.1 Model Summary

The table 4.6.1 results, the R Squared = 0.28 taken as a set, the predictors of project performance, the independent variables (DIP, CV and FA) accounts for 28 percent of the variance in project performance. R squared measures the proportion of the dependent variables variance that the Independent variables can explain collectively. The significance value of 0.001 indicates that the critical success factors variables used provided reliable data that could be applicable in the prediction of the NSSF construction performance.

Table 4.8 Model Summary

				Std.	Change Statistics					
Model	R	R Square	Adjusted R Square	Error of the Estimate	R Square Change	F Change	df 1	df 2	Sig. F Change	Durbin - Watson
1	.531[a]	.282	.254	1.11112	.282	9.961	3	76	.000	.833

(Source: Researchers Survey Computations, 2022)

4.7.2 Analysis of Variance (ANOVA)

The ANOVA table 4.5.2 results tests whether the values of the R^2 is significantly more than zero, in this case P=0.000. The R^2 value is an indication that the independent variables (predictors) accounts for significant amount of variance in firm performance. The regression model is significant. Testing using alpha = 0.05, the overall regression model was statistically significant; F (3,76) = 13.2, p= 0.001, R^2 = .28. Thus, the significance value of 0.001, which is < 0.05, is an indication that the independent variables used in the study provided data that could adequately predict the essential elements and the effect on the project performance. The ANOVA value was substantial enough to back up the model's goodness of fit in describing the variation in the outcome variables.

Table 4.9 ANOVA results

ANOVA[a]

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	36.893	3	12.298	9.961	.000[b]
	Residual	93.828	76	1.235		
	Total	130.721	79			

a. Dependent Variable: Construction Performance (PFM)

b. Predictors: (Constant), DIP, CV, FA

(Source: Researchers Survey Computations, 2022)

Table 4.6.2 results imply that the findings were statistically significant and that the relationship's model adequately matched the data. The findings also suggest that the independent variables are reliable indicators of construction project performance. The findings also suggest that these independent variables were strong determinants of project performance. The stated p=0.000, which was below the usual probability of 0.05 significant level, also corroborated this.

4.7.3 Regression Coefficient Values

The evaluation of the unstandardized coefficients of the model provided the effect of the three independent variables on project performance at an independent level. The independent variables applicable were client variations, financial availability and construction dispute.

Table 4.10 Coefficient Values

Model		Unstandardized Coefficients		Standardized Coefficients			Collinearity Statistics	
		B	Std. Error	Beta	t	Sig.	Tolerance	VIF
1	(Constant)	2.912	.454		6.414	.000		
	CV	.171	.161	.192	1.062	.050	.289	3.455
	FA	.055	.198	.051	.279	.047	.285	3.510
	DIP	.484	.099	.496	4.894	.000	.919	1.088

a. Dependent Variable: PFM

(Source: Researchers Survey Computations, 2022)

The table 4.6.3 shows that Client variations (*B = 0.171*, p< 0.05) has statistical significance, FA *B = 0.047* (p < 0.05) shows that the variable is statistically significant and DIP *p = 0.000* (p < 0.05) is also statistically significant. According to the multiple regression equation below, the findings clearly demonstrate that the three independent factors had a positive influence on the dependent variable:

$Y = \alpha + \beta_1 X_1 + \beta_2 X_2 + \beta_3 X_3 \ldots\ldots + \varepsilon$

Project Performance Y = 2.912 + .171 (X_1) + .055 (X_2) + 0.484 (X_3) whereby;

X_1 = Client Variation

X_2 = Funds Availability

X_3 = Construction Dispute

The results suggest that project performance increases by 0.171 for every unit change in client variation, indicating a favorable influence on NSSF project performance.

Further, for every unit increase in availability of funds, the project performance increases by 0.055. Finally, for every unit increase in construction dispute, there is 0.484 improvement in project performance. The study's results support those of Tayeh et al (2020), who found a strong relation between crucial success variables and the efficiency of construction projects.

The lack of funds for equipment for the construction projects, according to all of the respondents, impedes project advancement. Further, lack of funds affects the quality of NSSF construction projects and according to their responses, all respondents agreed that lack of funds interferes with the quality of the construction projects. Regression analysis was done on the mean of funds availability and construction project performance (Ycp). At a 95 percent confidence level, the significance of R square, regression coefficient (B), and correlation coefficient (β) were used to test this. The test conditions were established so that the study would accept the hypothesis if the value of beta, $\beta_2 \neq O$. The formula $Y = \alpha + \beta_2 X_2 + e$, was used, where Y stands for construction project performance in the construction industry, α is the y-intercept term, X_2 stands for funds availability, β_2 stands for beta value, and e is the standard error term. In NSSF completed construction projects, the mean of funds availability (X_2) and mean of project performance (Y) were regressed. The findings show that beta has a value of $0.055 \neq 0$, showing that there is a statistically significant association between the availability of funds and the project performance of NSSF completed construction projects ($p = 0.047$). The study reflects the sentiments of Seboru (2015) on cost overruns in construction projects in Kenya, which revealed that contractors require sufficient funds to ensure adequate and efficient completion of different phases of construction project. Muturi and Oguya (2016) who revealed

availability of funds as one of the factors influencing project outcome and performances echoed the same sentiments.

The performance of the construction project (Y) and the mean of construction disputes (DISP) were regressed. Establishing the link between construction dispute variable and the project performance of the NSSF completed construction buildings in Nairobi County was the objective of the investigation. At a 95.0 percent confidence level, the significance of R-square, the regression coefficient (B), and correlation coefficient (β) were used to test this. The findings show that beta was 0.484≠ 0, revealing a statistically significant relationship between construction disputes and project performance. The results showed an existing statistically significant relationship existing between construction dispute and construction project performance (p=0.0001). the results showed some level of similarity with the study by VO, Nguyen and Nguyen (2020), which focused on disputes in the management of construction projects in the Vietnam's construction industry, where construction disputes were discovered as a common influence within the construction industry. Similarly, the study by Prasad et al., (2019) concluded that financial-related disputes were the major causes of construction project delays.

Given that, "construction project success is repeatable" it is worthwhile to look at past projects and pinpoint the factors that contributed to their success. To establish meaningful correlations between these project factors and project outcomes, various researchers built empirical databases of construction projects. However, many of these studies are no longer relevant due to the significance of knowledge transfer, and the use of new procedures and technologies. The key to completing a successful building project is therefore dealing with the important success elements.

CHAPTER FIVE: SUMMARY OF FINDINGS, CONCLUSIONS AND RECOMMENDATIONS

5.0 Introduction

This section presents summary of the analysis, the conclusion of the study as drawn from the research objectives and the recommendations then finally further areas of research.

5.1 Summary

The first research objective was to establish the effect of client variations on NSSF construction projects performance. The test criteria were established so that if the value of beta $\beta 1 \neq 0$, the study accepts the negative answer to the research question. Construction project completion was studied using the regression formula $Y = \alpha + \beta 1 X_1 + e$, whereby Y is the performance of the project, α is the y-intercept term, X_1 is the critical success factors, $\beta 1$ is the beta value and representing standard error term. In NSSF Completed construction projects in Nairobi County, the mean of critical success factors was regressed against the mean of performance of completed construction projects (Y). R square significance and the regression coefficient were used in this analysis, which had a 95.0 percent level of confidence. The results for client variation revealed a significant relationship with performance of NSSF construction projects. The second research objective was to establish the effect of funds availability on NSSF construction projects performance, which also revealed a statistically significant relationship with construction performance. The third objective was to examine the effect of construction disputes impacts on NSSF construction projects performance, this also revealed a significant correlation with construction performance.

5.2 Conclusions

Establishing the influence that client changes have on the success of NSSF building construction tasks was the first research goal. According to the research findings from this study, it is sufficient to draw the conclusion that key essential parameters in the performance of NSSF completed construction projects include client variations, funds availability and construction disputes. Client variations showed a statistically significant positive relationship with NSSF construction project performance ($p = 0.050$). In this case, the performance of such construction projects (residential or commercial) is statistically significantly positively impacted by critical success factors.

The study's second objective was to establish the effect of funds availability on NSSF construction projects performance. The funds availability variable was found to be statistically significant at 0.05. This was an indication of existence of a positive correlation between funds availability and NSSF construction program performance ($p = 0.047 < 0.05$). In this case, a construction project that takes too long to complete might not be done well since it will deteriorate and cost additional money. If the schedule is followed, the desired quality will probably be obtained. Since project duration might hinder ongoing funding of a project, a good project should be completed within the allotted time range to avoid diluting quality. The quality of the entire project may suffer if the project's cost is too high since work may be sacrificed in an effort to reduce it.

The study's third objective was examining the effect of construction disputes on NSSF construction projects performance. The construction disputes also had a positive correlation with NSSF construction projects performance ($p = 0.0001$). The

combination of critical success factors variables as used in this study had a statistically significant impact on the performance of NSSF construction projects in Nairobi County. The construction projects are completed in part due to the client variations, availability of funds and construction disputes. Focus needs to be placed on key critical success factors from this study such as construction disputes in order to guarantee the successful completion of construction projects.

5.3 Recommendations

The top management of the project should swiftly approve the strategy and allocate enough resources to the building projects, the report advises. This is consistent with the first aim, which identifies the impact of client variances on the effectiveness of NSSF construction projects.

According to the second objective, which establishes the effect of funds availability on NSSF construction projects performance. The study recommends that for a success of a task, the top management must be completely engaged. Further, for projects to be finished on schedule, with the appropriate quality and cost, and in a manner that would satisfy clients, timely availability of cash, supplies, and equipment is essential.

On the third objective on examining the effect of construction disputes on NSSF construction projects performance, the study recommends that the company should adhere to the principles that safeguard project management to minimize the occurrences of client disputes.

5.4 Suggestions for Further Research

It is advised to do additional research to determine the effects of other critical success factors that were not considered in this study. Future research is also recommended to determine how government policy compliance directly affects the completion of

construction projects. After a period of ten years, future researchers and academicians can carry out a similar study to evaluate whether these findings still hold. This will be of great importance because it will act as an eye opener to project managers and project contractors on the critical success factors of performance of construction projects.

REFERENCES

Abdilatif, M. & Makori, M. (2015). Effect of Procurement Outsourcing on Project Performance of Non-Governmental Organization in Kenya; A case of Development Alternative INC. (DAI). *The Strategic Journal of Business & Change Management. Vol 2(52), pp 106 - 144.*

Abimola, O. W., Sunday, J. O. & Abdulrauf, A. (2016). Emerging Trends in ConstructionOrganizational Practices and Project Management Knowledge Areas. *Presented at the 9th CIDB Post-Graduate Conference.*

Adad, A. O. (2016). Business Process Improvement and Operational Efficiency of Microfinance Institutions in Kenya.

Akade, S. A. (2017). Understanding the Impact of Culture on Project Execution in a Developing Country: A case of Six International Oil and Gas Companies in Nigeria. *University of Liverpool.*

Alaloul, W. S., Hasaniyah, M. W., & Tayeh, B. A. (2019). A comprehensive review of disputes prevention and resolution in construction projects. In *MATEC web of conferences* (Vol. 270, p. 05012). EDP Sciences.

Ater, J. A. (2013). Challenges Facing the Implementation of Total Quality Management Practices in Public Secondary Schools in Kenya. (A survey of Schools in Migori County). *Kenyatta University.*

Baffour, B., King, T. & Valente, P. (2013). The Modern Census: Evolution, Examples and Evaluation. *International Statistical Review. 81, 3, 407–425*

Bagaya, O. & Song, J. (2016). Empirical Study of Factors Influencing Schedule Delays of Public Construction Projects in Burkina Faso. *Journal of Management in Engineering, 5 (32).*

Balint, B. (2014). The Impact of Personal Attributes of Project Managers Working in ICT Sector on Achieving Project Success. *Corvinus University Budapest.*

Banihashemi, S., Hosseini, M. R., Golizadeh, H., & Sankaran, S. (2017). Critical success factors (CSFs) for integration of sustainability into construction project management practices in developing countries. *International journal of project management*, *35*(6), 1103-1119.

Beatrice, N. W. (2015). Factors Influencing completion of Building Projects in Kenya, Ministry of Lands, Housing and Urban Development, Nairobi County, *University of Nairobi*

Bulle, H. & Makori, M. (2015). Influence of Strategic Planning on Performance of Urban Road Projects in Kenya. *A case study of Kenya Urban Roads Authority.*

Chemengich, M. K. (2014). Determinants of Competitiveness of Electrical and Electronics Manufacturing Enterprises in Kenya. *Jomo Kenyatta University of Agriculture and Technology*.

Chepngeno, J. & Kwasira, J. (2020). Influence of Project Planning Practices on Implementation of Constituency Development Funded Projects in Kericho County. *International Journal of Academic Research in Business and Social Sciences. Pages 310 – 322.*

Competition Authority of Kenya. (2017). *The Construction Industry- Alalysis of the State of Competition*. Nairobi: Kenya Government Press.

Cronbach, L. J. (1951). Coefficient alpha and the internal structure of tests. *Psychometrika, 16*(3), 297–334

Davies, A. (2013). Innovation and project management. In *The Oxford handbook of innovation management*.

Devan, D. V. G. (2012) Public Private Partnerships - Risk Management in Engineering Infrastructure Projects. *University of Johannesburg.*

Doloi, H. (2012). Cost overruns and failure in project management: Understanding the roles of key stakeholders in construction projects. *Journal of construction engineering and management*, *139*(3), 267-279.

Enshassi, A., Mohamed, S. & Abushaban, S. (2012). Factors Affecting the Performance of Construction Project in the Gaza Strip. *Journal of Civil Engineering and Management. Vol 12. Issue. 2*

Fomunjong, M. G. (2016). Recruitment and Selection. The Case Study of National Oil Refinery Company. *University of Gotehnbug, Faculty of Social Sciences.*

Ganbat, T., Chong, H. Y., Liao, P. C., & Lee, C. Y. (2019). A cross-systematic review of addressing risks in building information modelling-enabled international construction projects. *Archives of Computational Methods in Engineering*, *26*(4), 899-931.

Gitahi, S. M. & Tumuti, J. (2019). Management of contracting risks on performance of Construction Projects in Kilifi County, Kenya. *International Academic Journal of Information Sciences and Project Management, 3(3), 105-130*

Gitonga, J.M., Nzulwa, J. & Kwena, R. (2017). The Effect of Critical Success Factors on the Completion of Public Construction Projects in Machakos County Kenya. *The Strategic Journal of Business & Change Management. Vol 4, Issue3, Article 35.*

Gong, D., Tang, M., Liu, S., & Li, Q. (2017). Reconsidering production coordination: A principal agent theory based analysis. *Advances in Production Engineering & Management*, *12*(1).

Gunduz, M., & Yahya, A. M. A. (2018). Analysis of project success factors in construction industry. *Technological and Economic Development of Economy*, *24*(1), 67-80.

Gunathilaka, S., Tuuli, M. M., & Dainty, A. R. (2013, September). Critical analysis of research on project success in construction management journals. In *Procs 29th Annual ARCOM Conference*.

Hasanzadeh, S., Esmaeili, B., Gad, G. M., & Gransberg, D. D. (2018). Impact of owners' early decisions on project performance and dispute occurrence in public highway projects. *Journal of Legal Affairs and Dispute Resolution in Engineering and Construction*, *10*(2), 04518004-1.

Haule, R. (2017). *Assessment of Factors Affecting Community Participation Towards Water Projects Sustainability in Kinondoni Municipal.* The Open University of Tanzania.

Hawo, M. C. (2015). The Effect of Integrated Financial Management Information System on the Financial Management of Public Sector in Kenya. *University of Nairobi.*

Herawi, A., Coffey V. & Trigunarsyah, B. (2015). Evaluating the Level of Stakeholder Involvement during the Project Planning Processes of building projects. *International Journal of Project Management. 33(5)*

Hillis, S. R. (2016). Delay Management in Construction Projects in the Gaza Strip – Clients Perspectives. *The Islamic University – Gaza.*

Idoro, G. I. (2010). Influence of quality performance on clients' patronage of indigenous and expatriate construction contractors in Nigeria. *Journal of Civil Engineering and Management*, *16*(1), 65-73.

Illankoon, I. M. C. S., Tam, V. W., Le, K. N., & Ranadewa, K. A. T. O. (2019). Causes of disputes,factors affecting dispute resolution and effective alternative dispute resolution for Sri Lankan construction industry. *International Journal of Construction Management*, 1-11.

Ikechukwu, A.C., Emoh, F.I. & Okorocha, K.A. (July 2017). Causes and Effects of Cost Overruns In Public Building Construction Projects Delivery, In Imo State, Nigeria. *OSR Journal of Business and Management (IOSR-JBM) Volume 19, Issue 7. PP 13-20*

Ikileng, S. J., & Makori, M. (2015_. Determinants of Adoption of E-learning in Kenyan Public Universities: A case of Jomo Kenyatta University of Agriculture and Technology. *The Strategic Journal of Business & Change Management. Vol. 2, No. 73*

Leung, M. Y., Dongyu, C., & Liu, A. M. (2014). Impact of values on the learning approaches of Chinese construction students in Hong Kong. *Engineering, Construction and Architectural Management*.

Johnson, R. M., & Babu, R. I. I. (2020). Time and cost overruns in the UAE construction industry: a critical analysis. *International Journal of Construction Management*, *20*(5), 402-411.

Kerzner, H. (2017). *Project management metrics, KPIs, and dashboards: a guide to measuring and monitoring project performance*. John Wiley & Sons.

Kirimi, P. W. (2015). Influence of Automation of Revenue Collection on Organizational Performance. *A case of County Government of Meru, Kenya.*

Kirop, D. K. (2013). An Evaluation of Green Supply Chain Management Practices in Cement Industry in Kenya. (A Case Study of East African Portland Cement Company Limited). *University of Nairobi.*

Korir, K. K. (2015). Critical Factors Affecting Government Implementation of Housing Projects in Kenya; case of Kenya Police Service. *Kenyatta University.*

Kyalimpa, P. (2014). Leadership Competencies and Sustainable Funding of Non-Governmental Organizations in Uganda. *Mbarara University of Science and Technology.*

Lepartobiko, W. (2012). Factors that influence success in large construction projects: the case of Kenya Urban Roads Authority projects.

Mahamid I. (2016). Micro and macro level of dispute causes in residential building projects: Studies of Saudi Arabia. *Journal of King Saud University – Engineering Sciences. Vol. 28, Issue 1. Pages 12 – 20.*

Maimula, S. (2017). Challenges in Practicing Monitoring and Evaluation: The Case of Local Government Water Projects in Mkuranga, Tanzania. *The Open University of Tanzania.*

Makore, S. (2015). The Role of Knowledge Management in Organizational Performance. *University of Pretoria.*

Makori, M. J. (2015). Factors Influencing Timely Completion of Community Initiated Tea Buying Centres Construction Projects in Kisii County, Kenya. *University of Nairobi.*

Makori, S. & Mundia, M. (2019). Influence of Work Breakdown Structure Technique Project Performance of Registered Building Works Contractors in Nakuru County, Kenya. *Jomo Kenyatta University of Agriculture and Technology. International Journal of Innovative Research and Knowledge. Vol – 4, Issue – 9.*

Maweu, C. K. (2015). Assessing the Level of Stakeholders'' Participation in Project Risk Management in Mineral Exploration in Kenya. A case of Tullow Oil in Turkana County. *University of Nairobi*.

Mchembere, D. & Jagongo, A.O. (2017). Effect of Agency Banking Operation on Profitability of Commercial Banks: A Case Of Selected Commercial Banks in Nairobi County. *International Journal of Finance and Accounting. Vol.2, Issue 2 No.1, pp 107-126*

Motene, J.K. (2017). Employability of Graduates on the Public Service Internship Programme: The Case of the Limpopo Department of Economic Development, Environment & Tourism (Ledet), South Africa. *University of Limpopo.*

Mugo, I. (2018). Strategic Management Determinants of Organizational Performance in the Insurance Industry in Kenya.

Mkutano, S. M. & Sang, P. (2018). Project Management Practices and Performance of Non-Governmental organizations projects in Nairobi City County, Kenya.

Muli, M. J. K. (2013). Factors Influencing Performance of Women in Leadership Positions at Safaricom Limited in Kenya. *University of Nairobi.*

Munene, J.W. (2016). The Effect of Creative Accounting on Shareholders' Wealth In Listed Companies in Kenya.

Mungai, J. G. (2014). Operations Strategies and Project Performance of Japan International Cooperation Agency Funded Projects in Kenya. *University of* Nairobi.

Musyoki, A. N. & Gakuu, C. (2018). *Institutional factors influencing implementation of Infrastructure projects by county governments in Kenya: A case of Embu County, Kenya.* International Academic Journal of Information Sciences and Project Management, 3(2), 446-471

Mutinda, V. & Kiruja, E. (2015). Role of Monitoring and Evaluation on Performance of Public Organization Projects in Kenya: A case of Kenya Meat Commission. *International Journal of Innovative Development & Policy Studies 3 (3):12-27*

Mutungi, J. N. (2015). *Factors Influencing the Sustainability of Donor Aided Projects in Msambweni Constituency, Kwale County Kenya*. University of Nairobi.

Muturi, W. & Oguya, S.A., (2016). Factors affecting performance of road construction projects in arid and Semi-Arid areas in Kenya. *International Journal of Social Sciences and Information Technology. 2*(3). Pp. 2412-294

Mwangunya, L. M. (2016). Factors Influencing Implementation of Wildlife Conservation Projects: The Case of World Wide Fund for Nature in Nairobi, Kenya. *University of Nairobi.*

Mashwama, N., Aigbavboa, C., & Thwala, D. (2017). An assessment of the critical success factor for the reduction of cost of poor quality in construction projects in Swaziland. *Procedia Engineering*, *196*, 447-453.

National Construction Authority, (2016). *Code of Conduct and Ethics for the Construction Industry.* Gazette Notice No. 40 and 2692 of 15th April 2016

Ngunjiri, G. G. (2017). The Effect of Earnings Management on Financial Performance of quoted Companies in Kenya. *Semantic Scholar.*

Njama. A. W. (2015). Determinants of Effectiveness of a Monitoring and Evaluation Systm For Projects: A Case of AMREF Kenya Wash Programme. *University of Nairobi.*

Njiru, S. G. (2018). *Project Management Practices and Implementation of Projects in Manufacturing Companies in Nairobi City, Kenya*, Kenyatta University.

Njogu, E.M. (2016). Influence of Stakeholders Involvement on Project Performance in Nema Automobile Emmission Control Project in Nairobi County, Kenya. *University of Nairobi.*

Nkatha, D. G. (2016). Factors Influencing the Performance of Female Owned Enterprises: a case of Business in the Central Business District of Nairobi, Kenya. *Semantic Scholar.org*

Nyang'au, P. S. & Gurhan. I. M. (2020). Effect of Project Management Constraints on Implementation of Public Housing Projects in Isiolo County, Kenya. *International Journal of Social Sciences Management and Entrepreneurship 4(1): 247 – 267.*

Nyangwara, P. O. & Datche, E. (2015). Factors affecting the performance of construction projects: A survey of construction projects in the coastal region of Kenya. *International Journal of Scientific and Research Publications. Vol. 5, Issue 10.*

Ochunga, F. O. (2016). Influence of Stakeholder Participation on Sustainability of Community Development Projects Implemented By Plan International in Homa Bay Town Sub-County. *University of Nairobi.*

Oduma, C. O. (2015). Relationship between Earnings Management and Stock Market Returns among Companies Listed in Nairobi Securities Exchange. *University Of Nairobi.*

Ogongo, E. (2014). *Customer Retention Strategies Adopted By Commercial Banks in Kenya.* University of Nairobi.

Oghenekevwe, O., Olusola, O., & Chukwudi, U. S. (2014). An assessment of the impact of inflation on construction material prices in Nigeria. *PM World Journal*, *3*(4), 1-22.

Ogunde, A., Joshua, O., Amusan, L. M., & Akuete, E. (2017). Project management a panacea to improving the Performance of construction Project. *International Journal of Civil Engineering and Technology (IJCIET)*, *8*(9), 1234-1242.

Ohando, R. O. (2015). Relationship between Fraud Risk Management Practices and Financial Performance of Commercial Banks in Kenya. *University of Nairobi.*

Oisanga, S. N. (2022). *Assessment of the Ng-cdf Project Management Structure on Performance of Ng-cdf Projects in Kenya; a Case Study of Public Secondary Schools in North Mugirango Constituency in Nyamira County* (Doctoral dissertation, University of Nairobi).

Okiro, K. O. (2014). Corporate Governance, Capital Structure, Regulatory Compliance and Performance of Firms Listed at the East African Community Securities Exchange. *University of Nairobi.*

Olalere, T.O. & Adesoji, A.A. (2013). Human Capital Development in First Bank of Nigeria PLC. *Mediterranean Journal of Social Sciences, Vol 4, No.2*

Onukwube, H. N., Iyabga, R., & Fajana, S. (2010). *The Influence of motivation on job performance of construction professionals in construction companies in Nigeria.* In Construction, Building and Real Estate Research Conference of the Royal Institution of Chartered Surveyors.

Osman, M. A. & Kimutai, G. (2019). Critical success factors in the implementation of road projects in Wajir County, Kenya. International *Academic Journal of Information Sciences and Project Management, 3(3), 73-104*

Oyalo, N. & Bwisa, H. (2015). Factors That Influence The Completion of CDF Funded Projects in Kingundo Constituency. *The Strategic Journal of Business & Change Management. Vol. 2, No. 49*

Oyieyo, P. A., Rambo, C. M., & Ndiritu, A. (2020). Ranking the prevalence of construction cost overrun risk factors in completion of public-private partnership projects: A case of the Sondu-Miriu hydro-electric power project in Kenya. *International Journal of Research in Business and Social Science (2147-4478)*, *9*(5), 351-356.

Peter, O. N. and Evelyn, D. (2015). *Factors Affecting the Performance of Construction Projects: A survey of Construction Projects in the Coastal Region of Kenya. International Journal of Scientific and Research Publications*, 5 (10).

Prasad, K. V., Vasugi, V., Venkatesan, R., & Bhat, N. (2019). Analysis of causes of delay in Indian construction projects and mitigation measures. *Journal of Financial Management of Property and Construction*.

Project Plus.com.ng. (2017/08/15) Assessment of Factors Affecting Cost Performance of Construction Project in Nigeria.

Radosavljevic, M., and Bennett, J. (2012). Construction Management Strategies: A theory of construction management, Oxford, Wiley-Blackwell.

Rotimi, J. O., Glen, M. & Ramachandra, T. (Vol 3. No. 1. 2011). The Skill sets required for Managing Complex Construction Projects.

Samuelson, L. (2016). Game theory in economics and beyond. *Journal of Economic Perspectives*, *30*(4), 107-30.

Seboru, M. A. (2015). An investigation into factors causing delays in road construction projects in Kenya. American Journal of Civil Engineering, 3(3), Pp. 51-63

Seymour, T., & Hussein, S. (2014). The history of project management. *International Journal of Management & Information Systems (Online)*, *18*(4), 233.

Smith, J., Jaggar, D., Love, P. E. D., & Olatunji, O. A. (2007). Building Cost Planning for the Design Team (ed.).

Soransora, D. T. (2013). Influence of Community Participatory Monitoring and Evaluation on Performance of Development Project. A case of Ewaso Ng'iro North Development Authority, Isiolo County. *University of Nairobi.*

Tayeh, B. A., Salem, T. J., Abu Aisheh, Y. I., & Alaloul, W. S. (2020). Risk Factors Affecting the Performance of Construction Projects in Gaza Strip. *The Open Civil Engineering Journal*, *14*(1)

Tshuma, E. (2012). Management perceptions regarding Privatisation of Parastatals in Zimbabwe. *The Nelson Mandela Metropolitan University.*

Tuazama, P.D. (2015). Supply Chain Management Practices and Organizational Performance of Supermarkets in Nairobi. *University of Nairobi.*

Usman, N., D. Kamau, P. & K. Mireri, C. (2014). The Impact of Initial Phase Principles on Project Performance within the Building Industry in Abuja, Nigeria. *American International Journal of Contemporary Research. Vol. 4, No. 7*

Venkatesh, V., Brown, S. A., & Bala, H. (2013). Venkatesh, V., Brown, S. A., & Bala, H. (2013). Bridging the qualitative-quantitative divide: Guidelines for conducting mixed methods research in information systems. *MIS quarterly, 37(1).*

VO, K. D., Nguyen, P. T., & Nguyen, Q. L. H. T. T. (2020). Disputes in managing projects: A case study of construction industry in Vietnam. *The Journal of Asian Finance, Economics, and Business*, *7*(8), 635-644.

Wachaiyu, V. W. (2016). Monitoring and Evaluation Factors Influencing Success of Development Projects: A Case of Starehe Sub-County, Kenya. *University of Nairobi.*

Wafula, E. F. (2017). *Factors influencing road projects performance in Kenya: A case of road Contractors in Machakos County* (Doctoral dissertation, University of Nairobi).

Wambugu, P. M. (2019). Effects Of Working Capital Management Practices On Profitability: Of Small And Medium Enterprises In Nairobi County, Kenya

Wang, T. K., Ford, D. N., Chong, H. Y., & Zhang, W. (2018). Causes of delays in the construction phase of Chinese building projects. *Engineering, Construction and Architectural Management*.

Wangui, R. N. (2012). The Effectiveness of Internal Audit in Promoting Good Governance in the Public Sector in Kenya. *University of Nairobi.*

Wanjau, B, N. (2015). Factors influencing completion of building projects in Kenya, Ministry of Lands, Housing and Urban Development, Nairobi County.

Wanjawa, D.S., Yugi, C. T. & Muli, W.M. (2017). Contribution of Agricultural Loans Accessibility to Performance of Small Holder Sugar Cane Farmers in Kakamega County, Kenya. *International Journal of Research and Review – Vol 4; Issue 10.*

Wetangula, J., & Mazurewicz, M. (2017). *Market Research Preliminary Report Report: The Construction Market in Kenya*. Nairobi: Polish Investment & Trade Agency.

Wire, C. W. (2015). Influence of Working Capital Management Practices on Financial Performance Of Small and Medium Manufacturing Enterprises in Nairobi County, Kenya. *Jomo Kenyatta University of Science and Technology.*

World Bank Group. (2014). *World development indicators 2014*. World Bank Publications.

World Bank Group. (2013). *Global financial development report 2014: Financial inclusion* (Vol. 2). *World Bank Publications.*

Yala, J.O. (2016). Learn Supply Chain Management Practices and Operational Performance of the Manufacturing Firms in Kenya. *University of Nairobi.*

Yang, R. J. & Shen G.Q. P. (2013). Framework for Stakeholder Management in Construction Projects. *Journal of Management in Engineering Vol 31, Issue – 4.*

Yasa, P. and Rangika, U. H. (2010). Factors influencing the duration of Road Construction Projects in Sri Lanka. *Engineer: Journal of the Institution of Engineers, Sri Lanka 43(4), pp. 17-30, October 2010.*

Yap, J. B. H., Chow, I. N., & Shavarebi, K. (2019). Criticality of construction industry problems in developing countries: Analyzing Malaysian projects. *Journal of Management in Engineering*, *35*(5), 04019020.

Yue Choong, K. O. G. (2018). Top Construction Delay Factors for Kenya. *Editorial Board*.

APPENDICES

APPENDIX I: RESEARCH QUESTIONNAIRE

SECTION A: Participant's background

1. **Gender:** Male [ ] Female [ ]
2. **Age Range**

   a) 18-20 b) 21-30 c) 31- 40 d) above 40

3. What is your highest educational qualification?

a) Post graduate □ b) University degree □ c) College degree □ d) Certificate □

CRITICAL FACTORS THAT AFFECT CONSTRUCTION PROJECTS

State the extent to which you agree with the following as pertains the critical success factors determining the construction projects performance? On a scale of 1-5 Where the scale of extent: (5- Strongly agree 4- Agree 3 – Neutral 2 - Disagre 1- Strongly disagree)

B: Client variations

1. I believe proper project planning and scheduling is important for a successful project completion

   (1) (2) (3) (4) (5)
2. The aspect of monitoring and control influences the extent of construction project completion

   (1) (2) (3) (4) (5)
3. The clients knowledge and experience influences the project performance levels

   (1) (2) (3) (4) (5)
4. The contractor's competence is key to project performance

   (1) (2) (3) (4) (5)
5. The change management influences the construction project outcome

   (1) (2) (3) (4) (5)

C: Construction disputes

1. The project management decision making abilities influences the outcome

   (1) (2) (3) (4) (5)

2. Political fights leads to loss of productivity in construction projects

   (1) (2) (3) (4) (5)

3. The occurrence of litigation from the stakeholders in construction projects results into delays

   (1) (2) (3) (4) (5)

4. Financial-related disputes are the major causes of construction project delays

   (1) (2) (3) (4) (5)

D: Availability of Funds

1. The timely disbursement of funds influences the various schedules in a construction project

   (1) (2) (3) (4) (5)

2. The purchasing and tendering process in construction projects determines ultimate success of the project

   (1) (2) (3) (4) (5)

3. The delivery of the construction project was within the budget as compared to other projects

   (1) (2) (3) (4) (5)

4. Price inflation on construction materials leads to frequent cost overruns and delays the affects timely completion of a project

   (1) (2) (3) (4) (5)

E: Success of construction project management

1. The time required for construction project completion in comparison to other projects was a success

   (1) (2) (3) (4) (5)

2. The construction project delivered expected quality as per the project requirements

   (1) (2) (3) (4) (5)

3. The construction project achieved the level of stakeholders' satisfaction

   (1) (2) (3) (4) (5)

4. The construction project achieved the intended purpose

   (1) (2) (3) (4) (5)

APPENDIX II : RESEARCH PERMIT

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This is to Certify that Ms. Inviolata Khisa of Kenyatta University, has been licensed to conduct research in Nairobi on the topic: CRITICAL SUCCESS FACTORS AND PERFORMANCE OF COMPLETED CONSTRUCTION PROJECTS AT NATIONAL SOCIAL SECURITY FUND, NAIROBI CITY COUNT, KENYA for the period ending : 08/September/2023.

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