EFFECTIVENESS OF CONSTRUCTION CONTRACT PROCUREMENT PROCESSES IN PUBLIC PROJECTS IN KENYA: A SURVEY OF COUNTY GOVERNMENT PROJECTS

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Effectiveness Of Construction Contract Procurement Processes In Public Projects In Kenya: A Survey Of County Government Projects

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DECLARATION

This thesis is my original work and has not been presented for examination in any other University or institution of higher learning.

Signature…….Date……

Jacob Omondi Owiti

This thesis has been submitted for examination with our approval as university supervisors

Signature…….Date……

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JKUAT, Kenya

DEDICATION

I dedicate this work to my late mother, Mary Jane Oloo Owiti who worked tirelessly to see me through in life.

ACKNOWLEDGMENT

I wish to express my heartfelt gratitude to the Almighty God for his grace that has made it possible to write this thesis. I would also like to thank Jomo Kenyatta University of Agriculture and Technology for offering me an opportunity to achieve my dreams in academics, my great thanks goes to the School of Architecture and Building Sciences for offering me the actual lectures. I extend my sincere gratitude to my supervisors Prof. Stephen Diang'a and Dr. Abednego Gwaya for their supervision, valuable discussions, suggestions, and comments on the thesis with unmatched success. I am eternally grateful to my spouse Hellen Omondi for her financial and moral support during the whole process of writing this project. My parents, siblings and friends merit mention for their calming voices in so many occasions during my academic journey and other social spheres of life. Suffice it to say that God bless them all.

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ABBREVIATIONS/ACRONYMS

ALDB	Architect-Led Design–Build
ANOVA	Analysis of Variance
BOOT	Build–Own–Operate–Transfer
BOT	Build-Operate-Transfer
DBB	Design-Bid-Build
DBOM	Design-Build-Operate-Maintain
KPIs	Key Performance Indicators
NCA	National Construction Authority
OSHA	Occupational Safety and Health Administration
PDMs	Project Delivery Methods
PMBOK	Project Management Book of Knowledge
PPAB	Public Procurement Advisory Board
PPARB	Public Procurement Administrative Review Board
PPCRAB	Public Procurement Complaints, Review and Appeals Board
PPD	Public Procurement Directorate
PPDA	Public Procurement and Disposal Act
PPOA	Public Procurement Oversite Authority
SDGs	Sustainable Development Goals

ABSTRACT

Procurement process is an important dimension of project management component especially during pre-construction stages of any project. Globally, the economic worth of construction industry's contribution to the growth of a nation can never be overlooked. Failure to effectively manage procurement processes can lead to problems for the entire project and construction team. County governments in Kenya have been accused in the past for flouting procurement rules and processes especially in contract procurement thereby leading to massive losses of public funds. Effective procurement process is one which is transparent and is corruption free. The study sought to investigate effectiveness of procurement process in public projects in Kenya with a special focus on County government projects in Kenya. The objectives of the study were to; describe factors affecting construction contract procurement processes in Counties, establish the relationship between construction contract procurement process and its explanatory variables and develop a model for predicting the effectiveness of procurement processes of public projects by Counties. The study adopted a survey research design where 10 Counties were selected using stratified random sampling technique. The target population consisted of all projects that had been undertaken by County governments in Kenya in the last three years. Random sampling was used to select five projects from each of the selected Counties and respondents consisted of County's procurement departments and contractors who have undertaken specific selected County projects. Descriptive and inferential statistics were used to analyze the data and results presented inform of tables. The study identified three key factors that affect contract procurement processes at Counties; Government policies, Resources dedicated for procurement and Procurement planning. Correlation analysis results showed a positive and significant relationship between the dependent variable and all predictor variables, which included government policies, procurement resources and procurement planning. The model had R^2 of 0.603 indicating that the factors considered for analysis could explain 60.3% of the unit change on the effectiveness of procurement process at the Counties. The study recommends that County governments should ensure strict adherence to PPOA guidelines to boost procurement processes for contractors.

CHAPTER ONE

INTRODUCTION

1.1 Background of the Study

Globally, economic worth of the construction industry's contribution to the growth of a nation can never be avoided (Milner, 2021). Ong'ondo, Gwaya and Masu (2019) also proffers that improvement of execution of construction projects remains a key component in overall improvement of the construction industry and should be given due attention. However, the execution and performance of the construction industry is not optimum (Babu, Gwaya & Masu, 2019). This gives credence to the need for effectiveness and efficiency in execution of public building projects (Rafindadi, Napiah, Othman, Mikic & Al-Ashmori, 2020). Kafile (2018) agree that procurement process is an essential stage of project execution. Thus, realizing project deliverables as per stakeholder expectations remains elusive without effective procurement processes.

Procurement process is an important dimension of project management that needs to be properly examined to counteract the challenges thereof and retain certain standards of success (Kafile, 2018). Failure to effectively manage procurement process can lead to problems for the entire project and construction team. Procurement is the act of obtaining goods, supplies, and/or services. However, in terms of construction project management, it is the purchasing, renting or contract with some external resource to meet your project goals (Kerzner, 2022). Therefore, project procurement is obtaining all the materials and services that are required for the project (Ward, 2018). Project procurement process is comprised of five steps, which includes initiating and planning, selecting, contract writing, monitoring and closing and completing (Nicholas & Steyn, 2020). Thus, project procurement processes ensures goods and services are ordered, received on time and within budget to ensure successful project execution.

However, Mulligan and Bamberger (2019) underscores that little effort is made to warrant that policies, rules and institutional frameworks governing the procurement

system are maintained. Public Procurement and Disposal Act (PPDA) of 2015 failed to address many aspects of public procurement in the execution of public projects such as road construction, exposing significant levels of weaknesses (Mwelu, Davis, Ke & Watundu, 2020). There is lack of adherence to Public Procurement Oversite Authority (PPOA) guidelines on procurement processes leading to unfair competition during the bidding process, thereby compromising on effective project execution (Kagume & Wamalwa, 2018).

In the execution phase, the construction project management plan should be appropriately adopted. As a rule, this phase is divided into two main processes: execution, monitoring and controlling (Koutsogiannis, 2019). During the execution phase, the project management team should review the performance indicators periodically, analyze any overruns, propose and implement corrective actions. According to Townsend and Gershon (2020), execution of construction projects in an efficient and effective way is essential for construction project success. Focusing on economic means, construction is characterized by time and cost intensive production processes which makes it prone to project risks and failure, mainly in terms of time and cost. Mols (2021) explains that failures in effective execution of public construction projects tasks impacts on delivery timelines with a likelihood of late deliveries.

The construction project procurement decisions taken early in the construction project life cycle have a big impact on execution and total cost downstream of the whole construction project. This makes it overly necessary to pay attention to construction project procurement management during construction project execution. Morledge, Smith and Appiah (2021) opines that to guarantee successful execution, it is important at the very outset of the project to carefully consider all factors when selecting the most appropriate construction project procurement approach. It can therefore be inferred that in the absence of an appropriate procurement management process, public construction projects may fail to achieve their objectives. This position is corroborated by Msanga (2020) who avers that procurement management processes have increasingly played an important role in project performance which is an indicator of successful project execution.

Construction project procurement approaches are moving away from selecting contractors based on lowest cost towards approaches considering multiple selection criteria (Morledge, Smith, & Appiah, 2021; Harris, McCaffer, Baldwin & Edum-Fotwe, 2021). However, in many countries, the construction industry frequently receives criticism regarding poor quality and customer satisfaction, frequent conflicts and disputes among different actors, cost and schedule overruns in projects (Bajjou & Chafi, 2020). Qiu, Chen, Sheng and Cheng (2019) avows that increased complexity, uncertainty and time pressure in construction projects have increased the need for cooperation among different project actors. These problems in construction projects are linked to inadequate project procurement processes and lack of focus on long-term project team performance (Liu, Hua, Pang, & Wang, 2022).

In Sweden, different procurement factors at the design, bid invitation, evaluation and sub-contractor selections stages can have various influences on completion of projects (Singh, 2021). In Malaysia and Nigeria, effectiveness of construction contract procurement processes had positive impact on completion of project (Muhammad & Johar, 2019). According to Muhwezi, Musiime and Onyutha (2020), there are gross delays of construction projects completion and shoddy work in Uganda as result of ineffective procurement processes. In addition, there is evidence that the performance of contracted public construction projects in Kenya is poor. One study established that over 70 percent of the projects initiated are likely to escalate with time and costs (Salome, 2018). Besides, County governments have been losing a lot of public funds through poor procurement practices as a result of failure of County governments to comply with procurement policies further compromising on construction project success (Mutangili, 2019). Kagume and Wamalwa (2018) adds that the there are risks of procurement fraud and subversion of law of contractor procurement management at discrete stages of procurement cycle namely, pre-tendering, tendering and post-award phases. However there are limited studies on effectiveness of construction contract procurement processes in Kenya. This motivated the study on effectiveness of construction contract procurement process in County government projects in Kenya.

1.2 Statement of the Problem

Effectiveness of procurement as one of the core functions of public sector agencies is a driver of successful completion of government funded projects. This argument is underpinned by Mutangili (2019) who noted that effective procurement transform taxes and other revenues into consumption by government projects a success for public good. These would guarantee the completion of public funded construction projects as a pedestal for attainment of sustainable development goals. This is underscored by the fact that procurement function is transitioning from a clerical non-strategic unit to an effective socio-economic unit that is able to influence decisions and add value for economic development (Kakwezi & Nyeko, 2019). Thus, effective construction contract procurement process remains indispensable for construction industry to attain its aim which is the motivation behind PPDA of 2015.

Despite these, governments and organizations have experienced project failure globally (Kursai, 2018). Regardless of the PPDA of 2015, in Kenya contracts are awarded to contractors who lack the capacity to execute the required project, hence, increasing the problem of project failure. County governments in Kenya, have been losing a lot of public funds through poor procurement practices which are as a result of their failure to comply with procurement policies in place (AG, 2018). According to the Auditor General's report on 2016-17, expenditures by County executives' reveals unimplemented projects valued at Kshs. 661.3 million, a litany of dead projects and suspect procurement not supported by documentation.

The Auditor General report also noted that there is a serious breach of the Public procurement Oversite Authority (PPOA) rules by some of the Counties and therefore making it extremely hard to trust the outcome of the procurement process in the Counties. The public procurement and disposal act has been constantly violated in the contractor procurement management (Kagume and Wamalwa, 2018). While in the construction industry determining how to procure the item is just as important as contractor procurement management (Sepasgozar, et al., 2019). Earlier research efforts in this area have been limited to the investigation of how a single or a few specific procurement processes affect one or two project objectives (Prior,

Mudiyanselage & Hussain, 2021). In order to achieve construction project success a holistic and systemic approach to procurement processes is crucial (Hofstadler & Kummer, 2021). This is because the construction industry is a project-based industry that relies on the triads of the client, the consultants and the contractors to attain its aim (Le, Elmughrabi, Dao & Chaabane, 2020). These complexities in accomplishing procurement management process necessitates effective management of contractor procurement process.

1.3 General Objective

To investigate the effectiveness of the construction contract procurement process in County government funded projects in Kenya.

1.3.1 Specific objectives

The specific objectives of the study are:

1. To identify the factors affecting the construction contract procurement process in County government projects
2. To establish the relationship between the construction contract procurement process and its explanatory variables
3. To develop a model for predicting the effectiveness of the construction contract procurement process in County government funded projects

1.4 Research Questions

The study was be guided by the following research questions.

1. What are the factors affecting the construction contract procurement process in Kenya?
2. How has construction contract procurement processes been carried out in the past in Kenya?
3. What strategies can be adopted to improve the construction contract procurement processes in Kenya especially in Counties?

1.5 Significance of the Study

Across countries at all levels of development, construction industry has a role to play in achieving the Sustainable Development Goals (SDGs), by promoting inclusive and sustainable economic growth. However, the inordinate failures in execution of public construction projects at the based on procurement process-oriented factors would be a source of challenge to the realization of the vision 2030. These altogether enhances the significance of this study to the Government, Agencies, institutions and Scholars.

1.5.1 Government

Policies which impact and/or target public construction projects management generated across levels of government can enhance policy synergies which potentially galvanizes trade-offs for the government, contractors and taxpayers. This is ascribed to the fact that to make delivery of public construction projects there is need to operationalize strict adherence to the policy framework as enshrined in the public procurement act. In this regard the findings of this study could provide government with information that can be used for policy improvement which enhances adherence to the public procurement act. This will help in revamping the performance of public construction projects in line with the pillars of strategic development goals.

1.5.2 County Government

The findings of this study will provide County governments with information that can be used to strengthen their adherence to the public procurement act. This will enhance effectiveness of construction contract procurement process for performance of public construction projects in line with the needs of the society.

1.5.3 Agencies and Institutions

The study findings could be of benefit to various agencies such as institutions of learning involved in development of construction management to design programs and policies that guide potential management of contractor procurement. The study is expected be of significance to scholars and learners in the discipline of construction

management by extending previous research on effect of projects procurement process on execution of public building projects. The insight generated from the findings of this study would avail a deeper knowledge for understanding of conceptual relationship between project procurement process and execution of public building projects. The findings of the study could be used by scholars to generate new knowledge that widens horizons of existing knowledge in terms of contractor procurement management.

1.6 Scope of the Study and Limitations

1.6.1 Scope of the Study

The study involved the procurement processes in various Counties in Kenya. A random selection of 10 Counties formed the geographical scope of the study. These included Nairobi, Nakuru, Nandi, Narok, Machakos, Nyeri, Uasin Gishu, Kisumu, Bungoma and Kisii Counties. Five projects which have been executed by the Counties in the last three years selected randomly formed the sample population for the study. Respondents of the study included the procurement staff and the contractors who have executed the public construction projects.

1.6.2 Limitations of the Study

The study was limited to the context of County government construction contracts in Kenya. The researcher delimited this by recommending that further studies be done in other private construction contracts with different industrial cultures. The scope of variables was also limited to government policy, resources dedicated for procurement, procurement planning and effectiveness of construction contract procurement process. In this regard the researcher recommended that other constructs be tested against effectiveness of construction contract procurement process in County government funded projects. Sampling was used in this study, thus the study recommended ensures that would have given different results since everybody would have been asked their views and the findings would have been different. The use of questionnaires only could compromise the reliability of findings of this study thus the

researcher recommended the use of multiple instruments in future studies testing similar relationship.

1.7 Definition of Terms

Public projects	A group of interrelated activities with a specific, scope, budget and scheduled undertaken by the government for public use such as buildings, roads, railway, and ports.
Effectiveness	Is the ability to improve delivery within the required time, budget and quality
Procurement processes	Activities involved in buying goods, works or services, buying the basic infrastructure and services for operations and management
Construction project	A group of interrelated work activities in the construction industry constrained by a specific scope, budget and schedule to deliver capital assets needed to achieve strategic goals of an agency
A Model	A diagrammatic representation of a relationship or link between variables.
Project specification	Description of what is needed or wanted for use by the user of a product or service
Procurement Performance	Is the output of procurement functions in relation to its input.
Explanatory Variables	Are elements, features or factors that are liable to varying or changing or predicting dependent variables.

Project: An endeavor that involves a series of activities and resources, aimed at achieving a certain output considering constraints such as time, quality and cost.

CHAPTER TWO

LITERATURE REVIEW

2.1 Introduction

This chapter reviewed literature related to public procurement, project management body of knowledge, effectiveness of construction contract procurement process. Besides, it reviewed literature concerning factors affecting effectiveness of the construction contract procurement process such as government policies, resources dedicated to procurement, procurement planning and how they affect construction contract procurement process. The conceptual framework and research gap are also presented in this chapter.

2.2 Public Procurement in Kenya

Public procurement procedure is broadly defined as the purchasing, hiring or obtaining by other contractual means of goods, construction works and services by public sector (Hossain, 2019). Public procurement of construction projects is characterized by a process starting with procurement planning and proceeding in sequence to project design, advertising, bid invitation, pre-qualification, evaluation, post-qualification, contract award and contract implementation (Aminu, et al., 2020). On the other hand, it is an intricate framework with an arrangement of standards that guide governments in obtaining construction works and services.

According to Manasse (2020) the public procurement system in Kenya has evolved from a crude system with no regulations to an orderly legally regulated procurement system. The Government's Procurement system was originally contained in the Supplies Manual of 1978, which was supplemented by circulars that were issued from time to time by the treasury. Director of Government supply services was responsible for ensuring the proper observance of the provisions of the manual. The manual created various tender boards for adjudication of tenders and their awards. Consequently the establishment of Exchequer and Audit (Public Procurement) Regulations 2001 which created the Public Procurement Directorate (PPD) and the

Public Procurement Complaints, Review and Appeals Board (PPCRAB). Public Procurement Directorate (PPD) was mandated to oversee the public procurement process and the Public Procurement Complaints, Review and Appeals Board (PPCAB) was to handle tendering disputes (Hossain, 2019).

The Public Procurement and Disposal Act, 2005 was thus enacted and it became operational on 1st January, 2007 with the gazettement of the Public Procurement and Disposal Regulations, 2006. The Public Procurement and Disposal Act, 2005 created the Public Procurement Oversight Authority (PPOA), Public Procurement Advisory Board (PPAB) and the continuance of the Public Procurement Complaints, Review and Appeals Board as a Public Procurement Administrative Review Board (PPARB). The PPAB and PPARB are autonomous bodies (Manasse, 2020). This Act has now been entrenched in the New Constitution of Kenya that was promulgated in 2010. This is under Section 227(1) and (2) on procurement of public goods and services (Kenya, 2010).

The PPD Act 2005 clearly establishes the procurement methods to be applied and all relevant procedure for procurement (OECD-DAC & Bank, 2007). Additionally, the law covers construction works and services for all procurement using national funds. In section 9(c) (i), of the legal framework, the PPOA is mandated to assist in the implementation and operation of the public procurement system (Republic of Kenya, 2005). In endeavor to fulfill this mandate, as far as public building projects implementation is concerned it has prepared manuals and standard tender documents to be used in connection with procurement by public entities.

The enactment of the Public Procurement and Asset Disposal Act Revised Edition 2016, has put in place a sound and comprehensive legal framework for public construction procurement process with clear hierarchical distinction (PPRA, 2019). The act, clearly established the procurement methods for public building works, ranging from open tendering to alternative procurement procedures and how they would be applied. Steps involved in public procurement process include procurement planning, needs identification, budgeting and fund sourcing strategy (PPRA, 2019). Public sector procurement in Kenya can be broken down into two categories: project

specific procurement and general consumable procurement. In project specific procurement, goods, works or services are sought for a particular initiative for instance a new road, hospital, plant and equipment, whereas general consumable procurement relates to items that are required for a ministry or authority to perform its duties (Kiremu, 2020). The types of public procurements tenders include open (Phakedi, 2019), restricted open, selective and negotiated (Somba, 2017). Steps in procurement are as described in figure 2.1 below.

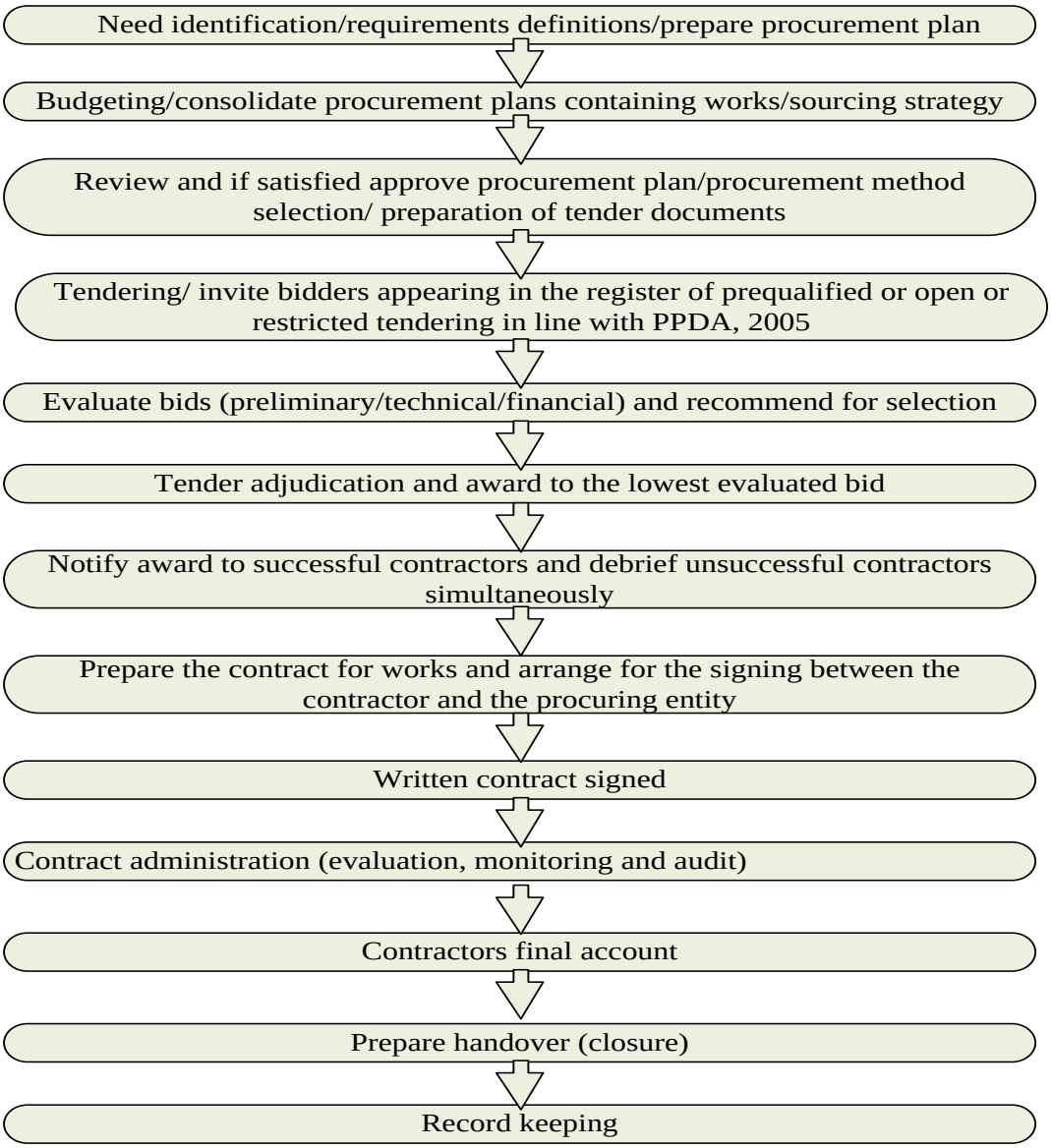

Figure 2.1: Steps in Public Procurement Process

Source: Derived from Public Procurement and Asset Disposal Procurement Manual for works (2020)

2.3 Project Management Body of Knowledge

Project Management Body of Knowledge (PMBOK) is a collection of processes and knowledge areas accepted as best practice for the project management profession (Pastor, Olaso & Fuente, 2018). It provides the fundamentals of project management, irrespective of the type of project be it construction, software, engineering,

automotive. PMBOK recognizes five basic process groups and ten knowledge areas typical of almost all projects.

2.3.1 Basic Knowledge Areas in the PMBOK

The basic concepts are applicable to projects, programmes and operations. The five basic process groups are Initiating, Planning, Executing, Monitoring and Controlling and Closing (Kerzner & Kerzner, 2017).

(a) Project Initiation

This process includes the basic groundwork necessary to create the project and define the guidelines and criteria under which it will operate (Kliem & Ludin, 2019). Authorizations from the performing organization are given and funding is put in place. An initial scope statement can be made because executives generally have an idea what the project should accomplish when they authorize it. Any initial project boundaries are determined and stakeholders identified. All this information gets placed into a document called a project charter. The purpose of this document is to commission the project and authorize the project manager to initiate the project.

(b) Project Planning

Upon authorization of the project, the project must be planned. This phase produces a document called a project management plan. Master planning document which establishes stakeholder expectations and makes it clear how the project will be managed. In the PMBOK, all ten knowledge areas are covered within the planning phase (Rosenberger & Tick, 2018). It should outline the project's scope, cost, deadlines, milestones, communication needs and anything else that shows the stakeholders how the project will be managed. It is highly specific to individual industries and organizations. The project should be distributed to major project stakeholders, including the project sponsor. This phase is usually the most underrated and underutilized. Planning is the most intense part of the project management process, because a lack of planning can result in cost and schedule overruns as well as other project changes which look bad on the project manager and sponsor (Simonette,

Magalhaes & Spina, 2016). Because of the potential problems in project execution, it is important that the project manager carefully follows each item in the knowledge areas throughout the project planning phase.

(c) Project Execution

This phase is where the project technical work takes place. The project team is assembled and put to work and production of project deliverables are put into motion (Fridgeirsson, Ingason, Jonasson & Jonsdottir, 2021). Execution of project requires coordination of human resources, managing stakeholder expectations, and dealing with project changes. The project manager must be on top of issues that arise, as well as making regular forecasts of future schedule and cost problems to deal with changes as far in advance as possible (Kerzner & Kerzner, 2017). Change requests must be handled and documented throughout this phase and stakeholders must be kept informed. Status updates and other project communication are sent to the relevant stakeholders according to the project management plan. Documents are stored and archived and stakeholders are managed according to the plan.

(d) Monitoring and Controlling

Throughout the project, the project manager must monitor and control the project work to ensure that project deliverables are on time, budget and of acceptable quality (Abyad, 2018). Also, stakeholders must be kept satisfied and the project team must be kept motivated and coherent. Monitoring and Controlling the project work occurs concurrently to execution phase, therefore the two Process Groups occur in parallel. Tracking of time and cost are most commonly done via earned value analysis, which provides a strong early warning of deviations in those areas (Alwaly & Alawi, 2020). Quality of deliverables, stakeholder communication and high-risk potential problems are other areas of regular monitoring. At any time, monitoring can result in changes to the project. If changes are required to any part of the project as documented in project management plan, they need to be documented and result in an updated plan. This includes changes to deadlines, costs, deliverables and any other change to the project as envisioned.

(e) Project Closing

There are almost always a handful of tasks involved in closing the project and moving on and they are usually high on the visibility scale to executives and project sponsors (Khalilzadeh & Alikhani, 2020). Contractual obligations must be completed and contracts closed, final details submitted and funding requirements finalized. This process might include delivering the project, hosting a post-mortem or lessons learned meeting, archiving project records, celebrating or acknowledging the achievement, officially disbanding or releasing the team. Processes overlap and interact throughout a project or phase and are described in terms of inputs, tools, techniques and outputs (Pastor, Olaso & Fuente, 2018).

2.3.2 Project Procurement Management

Project Procurement Management includes processes required to acquire goods and services from outside the organization, to attain project objective, the constructed facilities. It involves capital projects development whether it is in the form of a new grass-root facility, expansion, renovation, improvement or in some cases disposition of facilities (Kerzner & Kerzner, 2017). PMBOK® Guide - 2000 provides for the following major procurement processes: Procurement planning, solicitation planning, solicitation, source selection, contract administration and contract closeout.

(a) Procurement planning

Procurement planning is the process of identifying which project needs can be best met by procuring products or services outside the organization and should be accomplished during the scope definition effort (Huda, Soepriyono & Azizah, 2019). It involves consideration of whether to procure, how to procure, what to procure, how much to procure, and when to procure. Procurement planning decisions normally questions whether it is better for an organization to perform the work internally or to buy it from the others; the buy or make decision (Richardson & Jackson, 2018). These decisions have a profound impact on project success or failure and are normally tied up more to organizational strategic planning decisions rather than the project management domain. Thus, a project procurement strategy is an important aspect of

the planning process. The project procurement strategy addresses the scope of work to be procured, the way the work is to be broken down into discrete packages, identify major types of project stakeholders and timing of their participation (Meredith, Shafer, & Mantel, 2017). The project procurement plan is a critical aspect of the project plan that has a profound influence over how project controls of cost, schedule, quality and functions will be exercised. It reflects senior management aptitude for risk taking and identifies major categories of risks and their allocation. Procurement planning process as explained in figure 2.2 below.

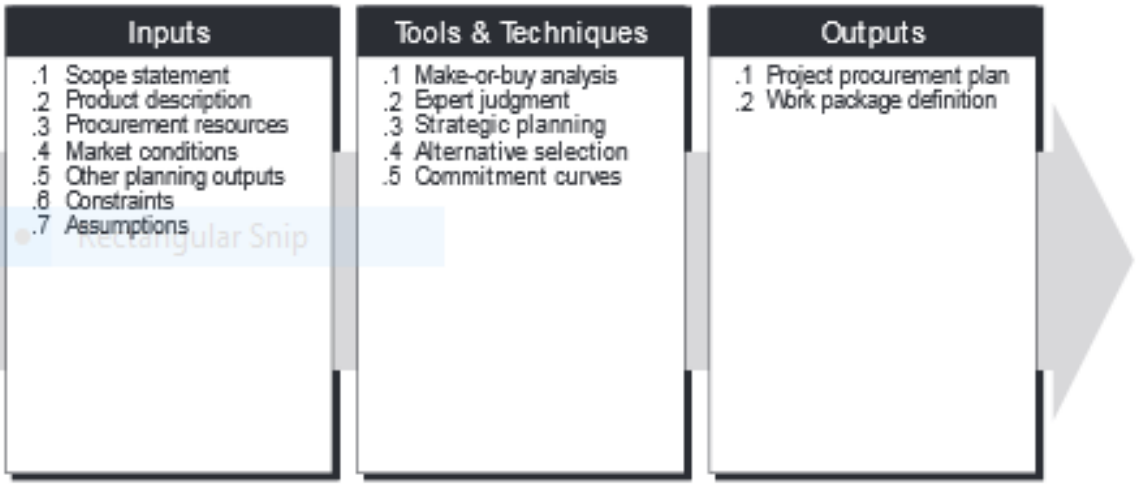

Figure 2.2: Overview of inputs, tools, techniques and outputs of procurement planning (Rustamova, 2021)

(b) Solicitation planning

Solicitation planning involves preparing the documents needed to support solicitation (Richardson & Jackson, 2018). Solicitation involves obtaining responses (bids and proposals) from prospective bidders on how owner's requirements can be met as explained in figure 2.3 below. Most of the actual effort in this process is expended by the bidders, normally at no cost to the project.

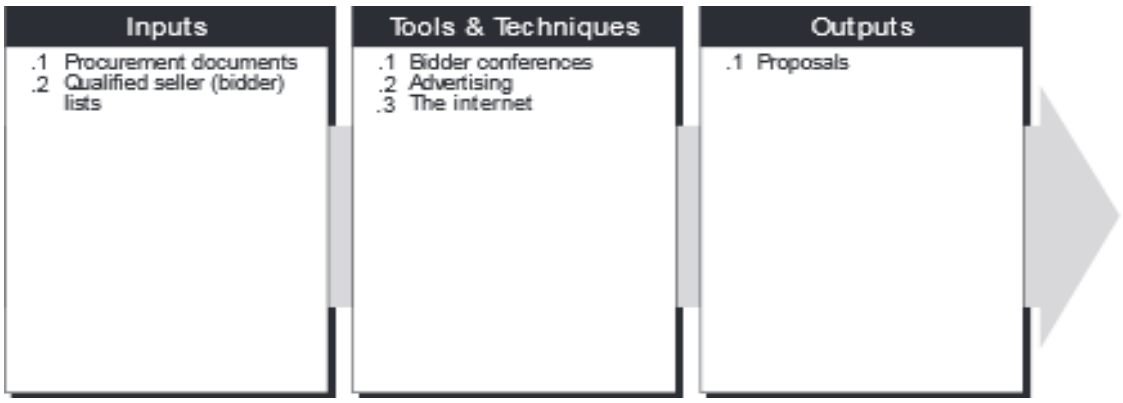

Figure 2.3: Overview of inputs, tools, techniques and outputs of solicitation (Frederico, 2021)

(c)Source selection

Source selection involves receipt of bids or proposals and application of evaluation criteria to select a provider as explained in figure 2.4 below. Many factors aside from cost or price may need to be evaluated in the source selection decision process.

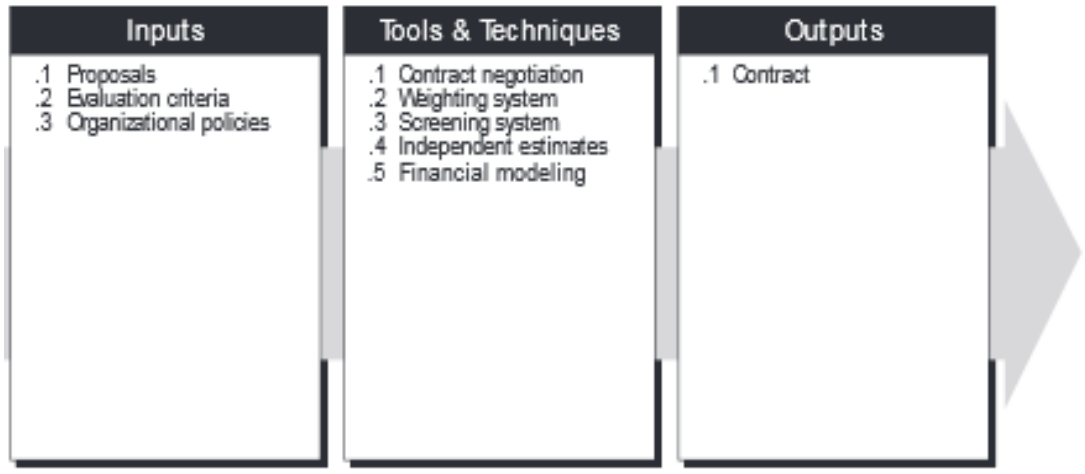

Figure 2.4: Overview of inputs, tools, techniques and outputs of source selection (Al-Kuhail, Hamoud, Tarek & Abdulwahad, 2021)

(c) Contract administration

Contract administration is the process of ensuring that contractors performance meet contractual requirements. On larger projects with multiple work packages and contractors, a key aspect of contract administration is managing the interfaces among the various providers. The legal nature of contractual relationship makes it imperative that the project team be acutely aware of the legal implications of actions taken when administering the contract. Contract administration also has a financial management component. Payment terms should be defined within the contract and must involve a specific linkage between the contractor's progress made and the contractors compensation paid. Contracts also dictate many contractor project management work processes as explained in figure 2.5 below.

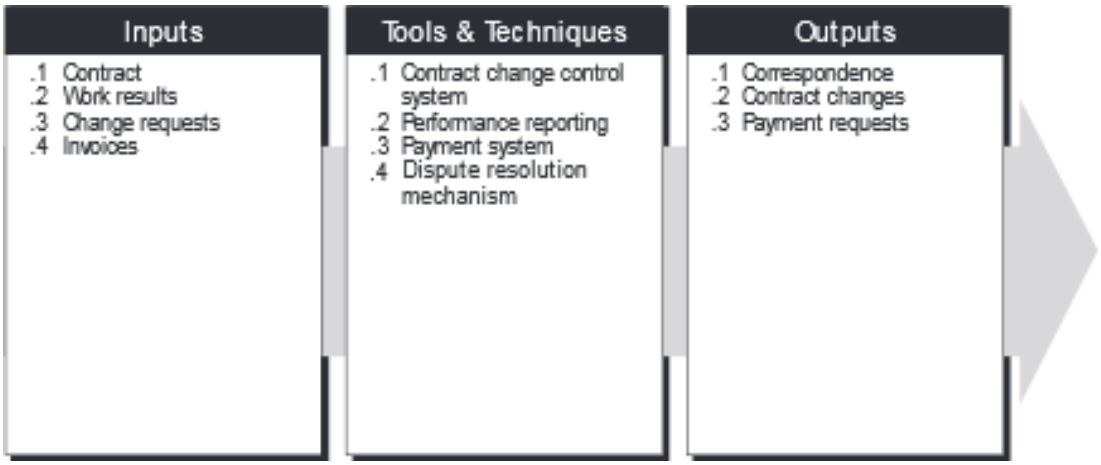

Figure 2.5: Overview of inputs, tools, techniques and outputs of contract administration (Papajohn, 2019)

(e) Contract closeout

Contract closeout is similar to administrative closure in that it involves both product verification and administrative closeout. Contract terms and conditions may prescribe specific procedures for contract closeout. Early termination of a contract is a special case of contract closeout as illustrated in fig 2.6 below.

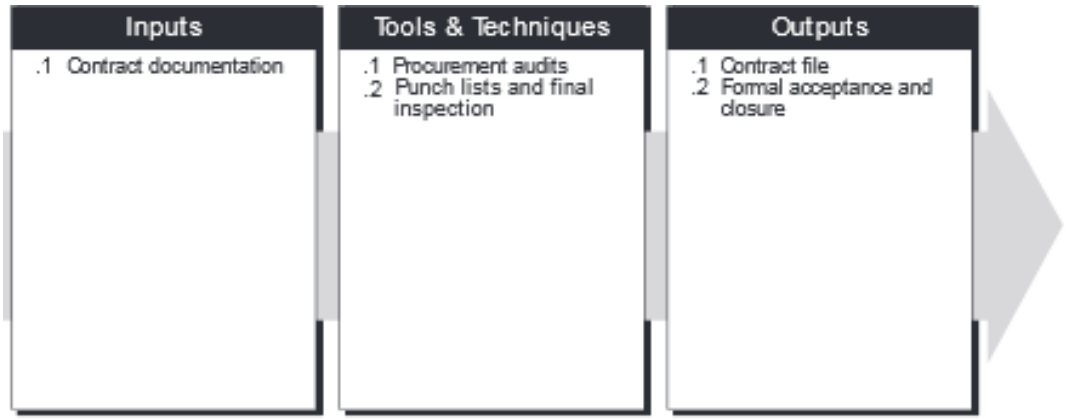

Figure 2.6: Overview of inputs, tools, techniques and outputs of contract closeout (Li, Greenwood, & Kassem, 2019)

2.4 Construction Project Delivery System

The stages are shown in Figure 2.7 of the PMBOK® Guide - 2020 Edition. However, there are variations as there are differences in the project delivery system. There are two primary delivery systems, namely design-bid-build (DBB) and design-build. In design-bid-build, the owner or owner's agent produces a set of plans and specifications in sufficient detail that all competent contractors will have a good understanding of what is required (Arshad, Thaheem, Nasir & Malik, 2019). A contract is awarded to the lowest cost qualified bidder. In design-build, the owner or owner's agent produces a partial design and or a set of functional specifications and then hires a contractor to complete the design and construct the resulting project (Calahorra-Jimenez, Alarcon, Torres-Machi, Chamorro & Molenaar, 2020). Much of the design is performed while construction is in progress. Further variations include build-operate-transfer (BOT), design-build-operate-maintain (DBOM) and other similar combinations.

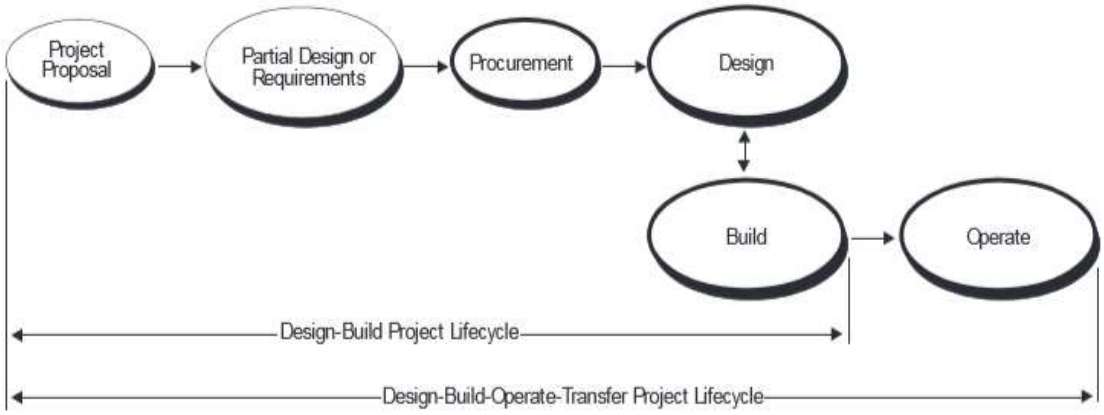

Figure 2.7: Typical Design-Builds and Design-Build-Operate-Transfer Project (Viljoen, 2019)

2.4.1 Design-Build

Design-build is a project delivery system used in the construction industry. It is a method to deliver a project in which the design and construction services are contracted by a single entity known as the design-builder or design-build contractor (Papajohn, El Asmar, Molenaar & Alleman, 2020). Traditional approach for construction projects consists of the appointment of a designer on one side and the appointment of a contractor on the other side. The design-build procurement route changes the traditional sequence of work (Hasanzadeh, Esmaeili, Gad & Gransberg, 2018). It answers the client's wishes for a single point of responsibility to reduce risks and overall costs. It is now commonly used in many countries and forms of contracts that are widely available in figure 2.8 and 2.9 below.

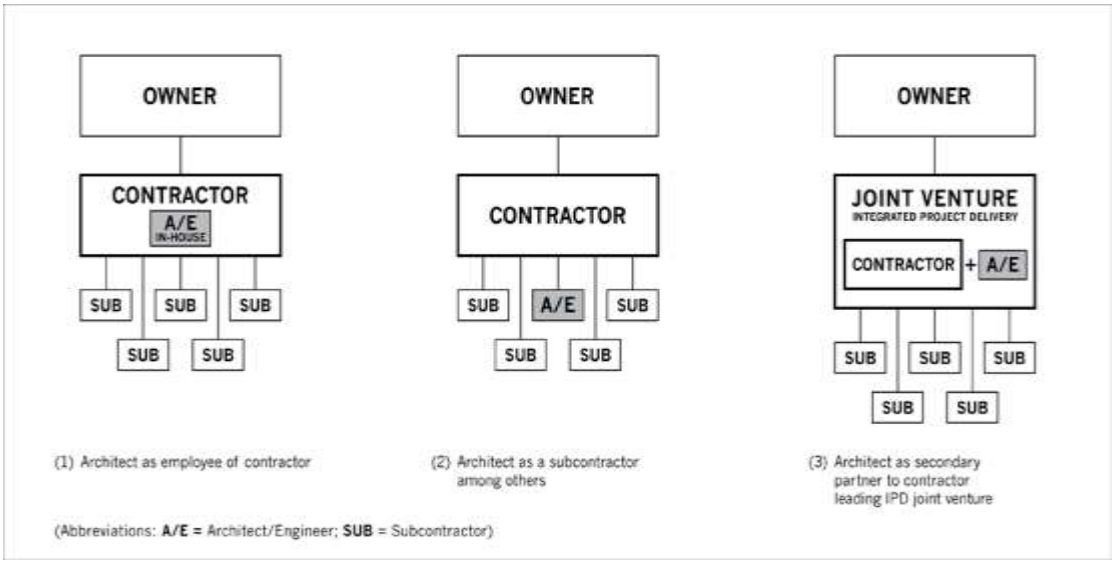

Figure 2.8: Three models of contractor-led design–build (Moon, et al., 2020)

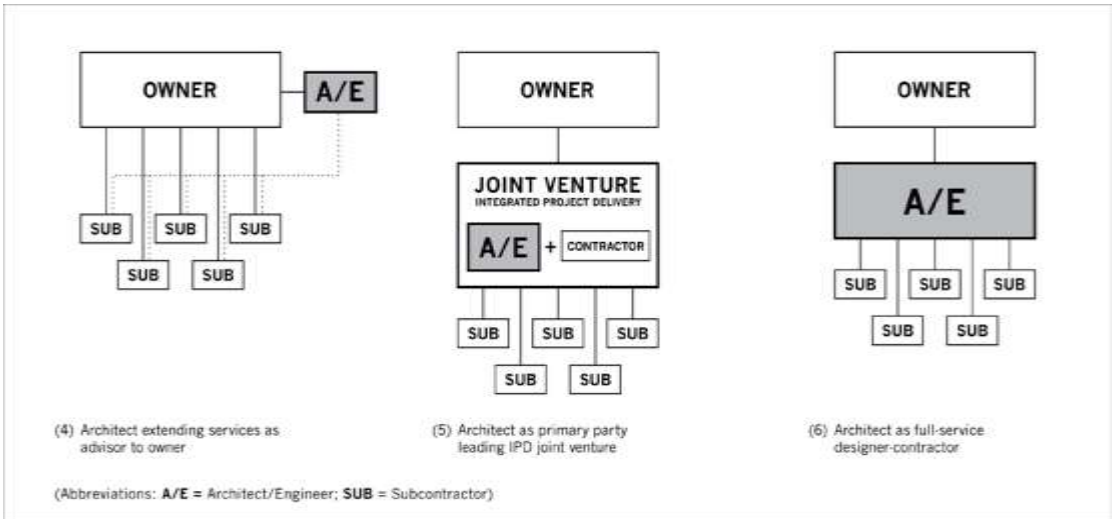

Figure 2.9: Three models of architecture -led design–build (Moon, et al., 2020)

2.4.2 Design-Bid-Build (DBB)

Design-bid-build also known as design-tender traditional method or hard bid is a project delivery method that agencies or owners contract with separate entities for design and construction of projects (Prasad, Vasugi, Venkatesan & Bhat, 2019). Design-bid-build is the traditional method for project delivery and differs in several substantial aspects from design-build. There are three main sequential phases to the

design-bid-build delivery method, which include design phase, bidding (or tender) and construction (Abou & Ashi, 2019).

In the design phase, the owner retains an architect to design and produce bid documents including construction drawings and technical specifications on which various general contractors will in turn bid to construct the project (Gransberg & Maraqa, 2021). For building projects, the architect will work with the owner to identify the owner's needs, develop a written program documenting those needs and then produce a conceptual and/or schematic design. This early design is then developed and the architect will usually bring in other design professionals including structural, civil, mechanical, electrical, plumbing and fire protection engineers as well as landscape architect to help complete the construction drawings and technical specifications (Halpin, Lucko & Senior, 2017). The finished bid documents are coordinated by architect and owner for issuance to general contractors during the bid phase.

Bidding can be "open", in which any qualified bidder may participate, or "select", in which a limited number of pre-selected contractors are invited to bid (Andary, Abi Shdid, Chowdhury & Ahmad, 2019). The various general contractors bidding on the project obtain copies of the bid (or tender) documents, and then put them out to multiple sub-contractors for bids on sub-components of the project. Sub-components include items such as the concrete work, structural steel frame, electrical systems, HVAC, and landscaping. Questions may arise during the bid (or tender) period and the architect will typically issue clarifications or corrections to the bid documents in the form of addenda (Sopic, VuNomanovic & Car-Pusic, 2019). From these elements, the contractor compiles a complete bid for submission by the established closing date and time.

Bids can be based on quantities of materials in the completed construction, operations needed to build it or simply as a lump sum cost. However, these bid requirements are elucidated within the bid documents. Once bids are received, the architect typically reviews the bids, seeks any clarifications required of bidders, investigates contractor qualifications, ensures all documentation is in order and advises the owner as to the

ranking of the bids (Andary, Abi Shdid, Chowdhury & Ahmad, 2019). If the bids fall in a range acceptable to the owner, the owner and architect discuss the suitability of various bidders and their proposals. The owner is not obligated to accept the lowest bid and it is customary for other factors including past performance and quality of other work to influence the selection process. However, the project is typically awarded to the general contractor with the lowest bid.

Once the construction of the project has been awarded to the contractor, the bid documents may not be altered (Eriksson, 2017). The necessary permits must be achieved from all jurisdictional authorities in order for the construction process to begin. Should design changes be necessary during construction, whether initiated by the contractor, owner or as discovered by architect, architect may issue sketches or written clarifications. The contractor may be required to document conditions to the owner (Andary, Abi Shdid, Chowdhury & Ahmad, 2019). In most instances, nearly every component of a project is supplied and installed by sub-contractors. The general contractor may provide work with its own forces, but it is common for a general contractor to limit its role primarily to managing construction process and daily activity on a construction site (Andary, Abi Shdid, Chowdhury & Ahmad, 2019). During the construction phase the architect also acts as the owner's agent to review the progress of the work as it relates to pay requests from the contractor and to issue site instructions, change orders or other documentation necessary to facilitate the construction process and certify that the project is built to the approved construction drawings.

2.4.3 Build-Operate-Transfer (BOT)

Build-operate-transfer (BOT) or build-own-operate-transfer (BOOT) is a form of project financing, wherein a private entity receives a concession from the private or public sector to finance, design, construct, own, and operate a facility stated in the concession contract (Sopic, Vunomanovic & Car-Pusic, 2019). This enables project proponent to recover its investment, operating and maintenance expenses in the project. Due to the long-term nature of the arrangement, the fees are usually raised during the concession period. The rate of increase is often tied to a combination of

internal and external variables allowing the proponent to reach satisfactory internal rate of return for investment. Examples of countries using BOT are Pakistan, Thailand, Turkey, Taiwan, Bahrain, Saudi Arabia, Israel, India, Iran, Croatia, Japan, China, Vietnam, Malaysia, Philippines, Egypt, Myanmar and a few US states such as California, Florida, Indiana, Texas and Virginia (Halpin, Lucko & Senior, 2017). However, in some countries, such as Canada, Australia, New Zealand and Nepal the term used is build-own-operate-transfer (BOOT). The first BOT was for the China Hotel, built in 1979 by the Hong Kong listed conglomerate Hopewell Holdings Ltd (Gael, Zhang, Miao & Gong, 2017).

2.4.4 Design-Build-Operate-Maintain (DBOM)

Design-build-operate-maintain contract is where a single contractor or entity is vested with the responsibility for designing, constructing a facility, and operating and maintaining it for a specified period prior to handing it over to the client or principal (Brady, Jonas & Goetz, 2019). Design-build-operate-maintain (DBOM) model is an integrated procurement model that combines the design and construction responsibilities of design-build procurements with operations and maintenance. These project components are procured from the private sector in a single contract with financing independently secured by the public sector project sponsor. This project delivery approach is also known by several different names, including "turnkey" procurement and build-operate-transfer (Halpin, Lucko & Senior, 2017).

Design, construction, operations and maintenance of the building are all combined under one contract forming a DBOM contracting team. The four typical phases of a project (planning, design, build, operation and maintenance) are now completed by one entity (Okhade & Ejohwomu, 2018). This contracting arrangement varies greatly from DB and DBB as one entity is contracted in place of three separate entities incorporating all of the project contracts into one DBOM contract means the owner has a single point of contact and the project team can communicate and coordinate more effectively, as they are all working under the same contract. Most importantly, the DBOM contract provides incentive for the contractor to design and construct the facility to minimize operational and maintenance costs.

Upon award of the DBOM contract, the owner negotiates both a project cost and an annual O & M cost for the specified contract period. If the actual costs to operate and maintain the facility exceed that of the fee, the contractor pays out of their own pocket, if the actual costs are less than the fee, the difference is pure profit for the contractor. Other penalties and awards can be defined within the contract to provide further incentives to the project team. Build-Operate-Transfer (BOT) is a similar contract structure but has some key differences. BOT projects incorporate the design, construction, O & M of the facility by project team, called the concession. A major difference between BOT and DBOM, is that BOT normally includes financing of project by concessionaire that necessitates involvement of a financial institution.

2.5 Performance Criteria as an Indicator for Project Completion

Usually, scholars and organizations focus on the three project performance criteria of cost, time and quality (Ahmad, Aibinu, Stephan & Chan, 2019). According to Noorzai and Golabchi (2020), other performance aspects include health and safety, customer satisfaction, environmental performance and innovation (Noorzai & Golabchi, 2020).

(e) Economic performance

The overall cost incurred by the project from inception to completion is of major interest as it shows resource usage in economic terms. Another important aspect regarding cost is predictability, which is whether the final overall cost is in line with the initial cost estimate (Ahmad, Aibinu, Stephan & Chan, 2019). Cost overruns can be a source of problems for an otherwise successful project as contractors are frequently criticized for common occurrence of cost overruns sometimes labeled as cost growth in construction projects (Osei-Kyei, Chan, Javed & Ameyaw, 2017).

The increasing importance of time in our globalized society has affected the construction industry in form of shortened project schedules. Project duration is simply the number of days/weeks/months from start to completion of the project (Noorzai & Golabchi, 2020). Since time can be a critical issue for many clients, project duration is often of prime interest. However, schedule overruns may be an even more important issue. Completing projects in a predictable manner on time (within schedule) is an important indicator of project success and the construction industry is frequently criticized for project delays (Osei-Kyei, Chan, Javed &Ameyaw, 2017). Schedule overruns (sometimes labeled time growth) are often extremely negative since they hinder the client to start using the product as planned.

(f) Quality Satisfaction

Time and cost performances are of little value if the project delivers inferior quality. The concept of quality is closely related to customer satisfaction, which has gradually been elevated in importance in the construction industry (Osei-Kyei, Chan, Javed & Ameyaw, 2017). Improving quality and customer satisfaction has received considerable attention in recent years. Public customers are found to be less satisfied with the contractor's performance than private customers. For a contractor, the main benefit of high customer satisfaction is the opportunity to remain a customer's potential partner in the future (El-khalek, Aziz & Morgan, 2019). Customer satisfaction in construction is a complex phenomenon in which various factors have a different impact on the quality as perceived by the customer. Management and factors related to skills have a different impact on the factors describing the results and methods of the project. The contractor's ability to cooperate is divided into two directions, which include managing changes and communication (El-khalek, Aziz & Morgan, 2019). Complete customer satisfaction is key to securing customer loyalty and generating superior long-term financial performance. Customer satisfaction also appears to have a stronger and more consistent effect on purchase intentions than service quality (Dash, Kiefer & Paul, 2021).

(c) Environmental performance

Environmental management in construction has become a critical issue in recent decades since the actors start to acknowledge that the construction industry is one of the major contributors to environmental problems (Crane, Matten, Glozer & Spence, 2019). Environmental impact is affected by both the activities performed during the construction process and the material and technical solutions incorporated in the end product (Sabini, Muzio & Alderman, 2019). Furthermore, environmental performance depends not only on choices made but also how these choices are executed. Construction has been accused of causing environmental problems ranging from excessive consumption of global resources both in terms of construction and building operation to pollution of surrounding environment and research on green building design and use of building materials to minimize environmental impact (Larsson & Larsson, 2020). However, relying on the design of a project to achieve the goal of sustainable development or to minimize impacts through appropriate management on site, it is not sufficient to handle the current problem.

First, it is in what degree the construction actors make environmentally friendly choices of material and processes for example in the planning and procurement choose those material and those methods that will leave the least environmental footprint over the construction's life span. Second, it is about how the material and processes are used during construction for example environmentally friendly use of material and processes. With little concern over environmental impacts, excess loss of material and improper waste treatment is always common in construction industry (Sabini, Muzio & Alderman, 2019). Whilst, implementation of environmental management in construction has a direct contribution to environmental protection, it involves allocating a variety of resources for practicing various environmental management methods such as noise control, treatment of polluted water, waste recycling and reusing (Larsson & Larsson, 2020).

(d) Innovation

Traditionally, the construction sector has been a low-tech industry, with little innovation compared to other industries (Parmentola, Ferretti & Panetti, 2021). During recent years, innovation in construction has received increasing interest in an explicit manner, both among practitioners and academics. Thus, innovation seems to be a success criterion to be reckoned with. There are two aspects of innovation. First, product innovation implies innovation in the final construction, for instance in terms of innovative architecture or innovative features in other aspects of the building. Second, process innovation, is about novel ways to work with the actual construction phase. It can comprise new ways to organize the work, new construction methods (Foss & Saebi, 2017).

2.6 Empirical Review

2.6.1 Effect of Government Policies on Procurement

Procurement policies regulate the way in which the government purchases from suppliers in the private and not-for-profit sectors (Granof, Khumawala & Calabrese, 2021). Policies provide direction on key aspects of purchasing goods and services. Government procurement policies are regulations that provide rules for procurement of goods, services and works above certain financial thresholds as explained in public procurement and disposal act of 2020. Public procurement in most countries have been granted constitutional status and is recognized as a means of addressing past discriminatory policies and practices (Thobakgale & Mokgopo, 2018). Public entities successfully adopt public procurement process while others fail. The mere adoption of public procurement process as enshrined in the government policy does not ensure superior performance of such organizations because of various challenges of translating public procurement process into a collaborative and integrative process capability (Sebastian, 2020).

Public procurement activities must be integrated into annual sector expenditure programs to enhance financial predictability (PPOA, 2009) and Public Procurement and Disposal General Manual. Section 26 (3) of the Act and Regulations 20 and 21

make procurement planning mandatory. Within the context of public procurement section 26(3) of the Public Procurement and Disposal Act 2015 and Regulation 20 of Public Procurement and Disposal Regulations 2015 provide for an elaborate structured mechanism for procurement for public entities (Kiremu, 2020). Of major significance is the requirement for the procurement policies is to implement projects and contain, among other things, a detailed breakdown of goods, works, or services required as schedule of planned delivery, implementation or completion dates for all goods, works or services required, an indication and justification for whether it shall be procurement within a single year period or under a multi-year arrangement, an estimate of the value of each package of goods, works or services required, available budget, source of funding and appropriate procurement method for each procurement requirement (Uyarra, Zabala-Iturriagagoitia, Flanagan & Magro, 2020). Procurement policies significantly influence the success of construction projects since they are designed to provide solutions to specific project needs or conditions (Ladi, Muhammad & Adamu, 2015).

Gavurova, Belas, Rowland and Kubak (2021) examined the factors influencing the public procurement system in the health sector as well as the causal relationships that would provide a valuable platform for evaluation mechanisms aimed at effectiveness of planned purchases. The aim of the study was to clarify, whether the use of Government Procurement Agreement (GPA) impact the occurrence of savings within the public procurement process and if application of GPA induces the competition among tenders, thus whether the use of GPA increases number of offers. The findings suggested that the use of Agreement on Government Procurement induce emergence of savings in public procurement and increases the level of competition. However, the study was not conducted in the construction industry in Kenyan context limiting the generalization of the findings to the Kenyan context.

Wijewardana, Jayasena and Ranadewa (2013) noted that even though there are number of different procurement methods subsist in the industry, traditional procurement methods and design and build procurement methods are dominate the Sri Lankan construction industry where some conventional procurement methods have numerous inefficiencies inherently or arising from specific contexts of application.

With the development in construction industry the number of projects that tend to achieve sustainability where it is difficult to adopt traditional procurement methods. However, a general reluctance to adopt alternative procurement methods fueled by the government policies has previously been observed

Ladi, Muhammad and Adamu (2015) appraised construction project procurement policies in Nigeria. The Nigerian construction industry was analyzed with particular emphasis on public sector procurement. The general performance of public sector projects in Nigeria was broadly assessed and quite unfortunately the literature review criticized public sector procurement in Nigeria of being inefficient in project delivery. Equally the respondents to the survey data obtained from the questionnaire distributed and oral interview conducted suggested that projects are affected by procurement strategy adopted for delivery. A significant number of the respondents believe that performance of projects could be improved by using alternative or hybrid procurement strategies. However, the study was conducted in the Nigerian context limiting its generalization to the Kenyan context.

Shitseswa and Odero (2017) established the effect of procurement practices on procurement performance of public sugar manufacturing firms in Western Kenya. The specific objectives of the study were to establish the effect of procurement planning and staff competence on procurement performance of public sugar manufacturing firms in western Kenya. The study employed a descriptive survey research design. Primary data was collected using questionnaires targeting employees in the procurement department. A census was done for all the respondents. The study achieved 72% response rate since forty five (45) out of 62 questionnaires administered were filled and returned. The study population comprised of two public sugar manufacturing firms in Kenya operating in Western Kenya. The study findings revealed that procurement planning had a positive and insignificant impact on procurement performance whereas staff competence had a strong positive and significant impact on procurement performance of sugar manufacturing firms in Western Kenya. However the study was not conducted in the construction industry thus the findings cannot be generalized to the construction industry. Besides the

sample size used in the study was low thus compromising on the reliability of the findings.

Jeptepkeny (2015) studied the effects of procurement procedures on project performance: a case study of Light Construction Projects at Kenya Ports Authority, Mombasa. The study examined the effect of bid invitation, specification, contract negotiation and bid evaluation on project performance. The study adopted a descriptive research design. The study employed purposive sampling with a sample size of 24 project management officers. Structured questionnaire was used as a data collection instrument. Data was analyzed using descriptive and inferential statistics. The analysis revealed that the four independent variables significantly affects project performance. However, the sample size used in the study was low which is critical for reliable, reproducible and valid results.

Munywoki (2016) established the effects of implementation of public procurement regulations and procurement performance in County Governments. The study adopted a descriptive survey research design with a targeted population of 44 respondents. Data was collected using questionnaires and the findings indicated that level of awareness contributes to 97.5% compliance to public procurement legislation in the public sector. Staff training contributes 95.9% while top management commitment contributes to 92.1%. ICT and information systems contributes to 92% in public procurement legislation compliance. However, the study did not focus on construction contract procurement process besides having a low sample size limiting the reliability of the findings.

Stephen (2014) determined the factors that influence timely completion of power projects within Thika region. These factors were assessed from various project levels, ranging from formulation of project plans, execution, monitoring and evaluation and closure. Descriptive and exploratory research designs were adopted. The target population was project engineers, supervisors and technical staff working in projects. The information pertaining to monitoring and evaluation came from representatives of project financiers who included the Kenya Power and Lighting Company (KPLC) staff and other reliable stakeholders. Simple random sampling was employed to

identify the key informants who were grouped based on common characteristics. Questionnaires, interviews and observation check lists were used to collect data from various respondents based on their suitability. Measures of central tendency and correlation analysis were used to establish an interaction between the independent and dependent variables. Procurement delays, timely availability of funds and climatic factors were observed to be the main factors that influence timely completion of KPLC projects in the studied area. Procurement procedure have moderately strong positive correlation with project completion. However the study was not conducted in the construction industry.

The significance of procurement policies to the construction industry stems from two aspects (Shurrab, Hussain & Khan, 2019). Firstly, it involves a series of interrelated and sequential processes and the effectiveness and efficiency of these processes have a considerable impact on the success or failure of a project. Secondly, there are several procurement methods available for a developer to adopt when procuring a project. The construction industry is a project-based industry that relies on triads of clients, consultants and contractors to attain its aim (Wipulanusat, Panuwatwanich, Stewart & Sunkpho, 2019). Contemporary construction procurement business demands more from contractors beyond their earlier role as integrators in a design-bid-build procurement route a much more complex role in either management oriented contracts, integrated contracts or discretionary contracts (Ozcekici, 2021). The procurement policies identify and define the items to be procured, the types of contracts to be used in support of this project, the contract approval process and decision criteria. The importance of coordinating procurement activities, establishing firm contract deliverables and metrics in measuring procurement activities is included. Other items included in the procurement management policies include procurement risks and procurement risk management considerations. How costs will be determined, how standard procurement documentation will be used and procurement constraints. A procurement route should be selected that best suits the needs of the project, balancing time, cost and quality. The responsibilities for project delivery and risks lie differently according to the route selected. Construction industry has developed a vast array of different procurement routes for carrying out

construction works. The procurement strategy developed should balance risks against project objectives at an early stage (Grace, 2019).

2.6.2 Effect of Resources Dedicated to Procurement

According to resource dependence theory (RDT), organizations seek to reduce uncertainty and manage dependence by purposely structuring their exchange relationships, establishing formal and semiformal linkages with other firms. Through interdependence, organizations can synergistically combine their own resource sets with the complementary resources of their partners and thus develop a resource bundle that is unique and hard to imitate (Soda & Furlotti, 2017). Organizations must cope with limited capital funds allocated to their procurement departments which has a negative effect on their performance (Harrison & Lock, 2017). However, weak project planning in the developing countries, characterized by limited capacity to identify technically feasible and economically viable programs and projects remain among the greatest challenge to securing private funding.

The public procurement process has been known to engage a large amount of public funds which are sourced from different sources including taxes, grants from partners and World Bank loans meant for certain government projects (Plantinga, Voordijk & Doree, 2020). According to Hamza, Gerbi and Ali (2017) many organizations do not have staff with the right competence critical to good procurement process management. As a result, considerable and continuous investment is incurred in training and development. There is a need for extensive external training for human resources to be able to improve and contribute to the efficiency of organizations (Karttunen, 2018). Moreover, Morishima (2017) advises that multi-skilling offers employees with a variety of skills and should be developed extensively. Hence, all employees need broad and continuous education and training. Most of the public entities lack clear accountability on how the resources provided impact on their performance, therefore going against the fundamental principles of public procurement.

Public procurement professionals must endeavor to achieve ethical behaviour both in their actions and associations to ensure that organizational purchasing and supplies processes are efficient and successful. The avoidance of unethical and uncouth procurement practices ensures that organizational purchasing needs are properly addressed. Besides, efficiency and cost savings are attained through the elimination of ghost procurement transactions. The adoption of ethical behaviour during tasks execution ensures that firms obtain value for their money, economy, efficiency and effectiveness during goods and services replenishment (Wamba-Taguimdje, Wamba, Kamdjoug & Wanko, 2020). For organizations to enhance optimal productivity of their procurement function, they need to proactively adopt and vigorously implement codes of conduct. The presence of unethical procurement behaviour poses great and constant risks for organizations procurement.

According to Kerzner (2017) employees need to have job competencies so that they can meet complex organizational procurement process demands successfully. This will also enable them to carry out assigned purchasing tasks diligently by exercising due care and skill. In addition, they will be more likely to adopt purchasing moral code of conduct in carrying out assigned tasks thus leading to better purchasing and supply performance. Employees carry out procurement tasks by adhering to various procurement codes of conduct practices necessary to attain desired performance (Tukamuhabwa, 2012). The adoption of ethical practices will enhance the attainment of specific procurement goals as well as employee behaviour will be oriented towards the attainment of business environment. Deva raj, Vaidya Nathan and Mishra (2012) concluded that the presence of poor contract management that is characterized by payments delays to suppliers obstructs greatly their ability to offer timely service delivery leading to delays that derails organizational procurement timelines and schedules. The presence of high frequency of procurement plans formulation and evaluation contributes to organizational procurement performance.

2.6.3 Effect of Planning on Procurement

Procurement planning is the purchasing function through which organizations obtain products and services from external suppliers (Schiele, 2019). A procurement plan

defines and documents the details of purchases from suppliers needed for a particular department (Hamza, Gerbi & Ali, 2017). Mwau (2017) procurement planning is a major function that sets the stage for successive procurement activities. Likewise, Benton (2020) describes that the principles of planning can be implemented in an atmosphere of complete harmony. He further states that, as a function, procurement planning endeavors to answer the questions as to what one wants to procure, when to procure it, where to procure them from, when the resources be available, the methods of procurement to be used, how timely procurement or failure will affect the user of the items, the procuring and disposing entity, efficiency in the procurement process and the people to be involved in the procurement. Hamza, Gerbi and Ali (2017) states that good procurement plan should describe the process in detail to appoint pertinent suppliers contractually. At the beginning, the items needed to be procured are defined, then the process for acquiring those items is expounded in detail. Finally, the timeframe for delivery is scheduled. According to Meredith, Shafer and Mantel (2017) procurement planning is important due to the following reasons: it helps to decide what to buy, when and from what sources, it allows planners to determine if expectations are realistic, particularly the expectations of the requesting entities that usually expect their requirements met on short notice than the application of corresponding procurement method allows. Therefore, an opportunity for all stakeholders involved in the processes to meet in order to discuss particular procurement requirements.

According to Chepngetich (2018) procurement planning and adoption of sound procurement policies lead to consistently better value for money, higher quality project and service delivery and reduced risks to the agency. Procurement planning policies involves consulting key stakeholders to define requirements, analyzing how the supply market works, assessing risks and ultimately defining the best procurement strategy to meet the agency's business needs (Thai, 2017). Generally, procurement planning enables organizations to among other things, determine performance standards, establish overall direction, anticipate and avoid future problems and reduce the risks of uncertainty, identify and commit resources towards the achievement of

goals determine and develop performance standards and effectively coordinate various activities in the organization (Steiss, 2019).

Cherotich (2018) indicated that a procurement plan has the potential of cutting costs, shortening timescales and enhancing stakeholder relationships, reducing risks and improving overall performance. In corroboration, Rushton, Croucher and Baker (2022) found procurement planning to be a prerequisite for subsequent procurement activities as a mistake in procurement planning had wide implications for procurement performance/diverse implications for procurement performance. Mutembei (2019) posited that good procurement planning policies lead to effectiveness and efficiency and thus attainment of projected results. In order to procure right quality goods, detailed specification is necessary as it assists in identifying what's required from the contractor who is expected to bid against the specifications that have been given in the bid document. Specifications, whether simple or complex, depends on the nature of procurement (Roehrich, Davies, Frederiksen & Sergeeeva, 2019).

According to Brown, Hyer and Ettenson (2017) planning also encompasses the aspects of forecasting techniques to help in the process of predicting costs and cash flows (financial disbursements). The other critical element of project procurement policies is deciding on the organization structure and the way it relates to project implementation. The structure is normally affected by strategic choices in relation to competitive advantage and competitive scope which affects project implementation. Aspects of functional specialization and balance between centralization and decentralization of procurement activities need to be reflected in decisions to improve project implementation.

Salim and Kitheka (2019), studied the effect of procurement planning on procurement performance of state corporations in Mombasa County, Kenya. The study employed a descriptive design and stratified random sampling technique to select a representative sample. The target population was 204 employees of middle and senior level cadre selected from 34 state corporations in Mombasa County with a sample size of 135 employees. Questionnaires were used to collect primary data and analyzed

descriptively using multivariate regression. It was concluded that procurement need identification greatly had effects on the procurement performance of state corporations. However, the study was not conducted in the construction industry limiting the generalization of the findings.

Hamza, Gerbi and Ali (2017) assessed factors affecting procurement performance in Awassa Textile Share Company. The study was conducted to examine the impacts of staff competency, procurement procedure and resource allocation on procurement performance. Descriptive research design was used in executing the study. A targeted group of top level managers, middle level managers and procurement staffs who are pertinent to the process, function and decision making of procurement formed the interest group for study consisting 40 employees. Primary data was collected using questionnaires. Descriptive and inferential data analysis methods were used. From the findings there was a positive relationship between procurement planning and procurement performance. However, the study was conducted in the textile and not construction industry.

Chepkesis, Keitany and Kiplel (2018) studied the effect of procurement planning on suppliers' performance in Moi University. The study adopted an explanatory research design with a target population of 119 pre-qualified suppliers. The study adopted census for to collect data from suppliers using self-administered questionnaires and interviews schedule. Data was analyzed using descriptive statistics. The findings indicated that planning enhance value for money, quality, proper utilization of resources, quick decision making and innovations. However the study was not conducted in the construction industry and did not focus on the construction contract procurement process.

Aimable, Osunsan, Florence, Comet and Sarah (2019) investigated the effect of procurement planning on value for money among selected districts in Southern Province, Rwanda. The study was limited to determine the effect of procurement packaging, procurement method and procurement scheduling on value for money among selected Districts in Southern Province, Rwanda. The study used descriptive survey design with a target population of 191 procurement officers and a sample size

of 129 respondents was obtained using Slovene's formula. The main research instrument was questionnaires. The study revealed that procurement packaging, procurement method and procurement scheduling all significantly affects value for money. The study concluded procurement planning affects value for money.

2.7 Review of Related Theories

This study was grounded by Goal-setting theory by Edwin Locke 1960, theory of project management by Turner, (1993), and theory of temporary organization Lundin and Soderholm (1995).

2.7.1 Goal-setting theory

Goal-setting theory by Edwin Locke in the late 1960s is most relevant to the construction industry, as it is widely accepted and applied to worker' productivity which can guarantee project success. Edwin Locke proposed that people are motivated to work when they have a goal (Locke & Latham, 2019). Goal Setting Theory explains the importance of the clarity, challenge and attainability of goals, emphasizing the importance of proper feedback and differentiates between varying types of goals. In this regard, the Goal Setting Theory can be used to understand how to set goals that will yield a successful outcome, how and when to provide proper feedback. Goals are set to provide guidance and direction, facilitate planning and help organizations evaluate and control performance that remain salient in attaining project success (Anjani, Raharjo, Hardian & Suhanto, 2021).

Just like goal setting facilitates planning and helps organizations to evaluate and control performance. The object of Public Procurement and Disposal Act, 2015 is to provide procedures for efficient public procurement and assets disposal by public entities, for procurement of public projects. Projects are undertaken to create a unique product or service which is their goal that gives credence in the use of goal setting theory in construction project management. For instance, project procurement is very much concerned with the organized methods or process and procedure of obtaining or acquiring a construction product such as a house, shopping complex or road and jetty.

Furthermore, goal setting can function as a contract between the client and other project team members, creating greater opportunities for accountability and growth (Donald, Koolwal, Annan, Falb & Goldstein, 2020). Therefore, in the construction industry the client is under obligation to set goals for all aspects of organizational life, reviewing goals regularly and putting systems in place to reach the desired goals.

2.7.2 Theory of Project Management

Theory of project management was proposed by Turner (1993) is a set of models and techniques for planning and control of complex undertakings. The theory reveals how actions contribute to the goals set (Svejvig, 2021). Project Management is the art of directing and coordinating human and material resources throughout the life of a project by using modern management techniques to achieve predetermined objectives of scope, cost, time, quality and participants satisfaction (Safder & Yousaf, 2018). According to Mainga (2017) the theory of project management has two components that include scope management and planning process. The execution of the plan indicates the efficiency of the process involved in project implementation. The underlying theory of execution provides the interface between planning and project implementation.

2.7.3 Theory of Temporary Organization

The theory of temporary organization was proposed by Lundin and Soderholm (1995). The theory of temporary organization which is based on the notion that action has a leading role. An empirical reason for adopting action as a primary concept in a theory of temporary organizations is that temporary organizations are almost always motivated by a need to perform specific actions to achieve immediate goals. The project as a whole is seen as temporary organization to mean that a project has a definite beginning and definite end (Ansell & Trondal, 2018). The end of a project is reached when the project objectives have been attained or when it becomes clear that the projects objectives cannot be met or will not be achieved and the project is terminated. A good deal of the basic project management theories sees project management as being primarily about controlling, planning, scheduling and often

assumes that the project work takes place within the boundaries of one organization (Meredith, Shafer, Mantel & Sutton, 2020). Thus, according to traditional theories, projects are carried out under conditions of almost complete rationality (Safder & Yousaf, 2018). But the fact of the matter is that majority of projects are carried out under conditions of limited rationality and are not repetitive, stable and linear. There is thus apart from core constraints of time, scope and finance, several other factors that influence the implementation and management of these projects such as stakeholders' participation, planning and monitoring.

2.8 Knowledge Gap

Procurement factors influences the execution of building projects. Based on the theories adopted by this studies construction projects have goals whose attainment are guided by planning and control of its complex undertakings. An increased understanding of how different procurement process factors influence execution of public building projects remains vital to enhance successful project completion. Ladi, Muhammad and Adamu (2015); Shurrab, Hussain and Khan (2019); Wipulanusat, Panuwatwanich, Stewart and Sunkpho (2019) studied effect of procurement systems on project performance which is occasioned by succesfull completion of construction projects. These studies appreciate the essence of procurement in guaranteeing succesfull execution of public building projects. However, there is a variable gap in terms of investigating the effectiveness of construction contract procurement processes in public projects in Kenya.

Jeptepkeny (2015) in her study on the effects of procurement procedures (specification definition, bid invitation, bid evaluation and contract negotiation) on project performance at Kenya Ports Authority, Mombasa, concluded that procurement processes have a strong and positive correlation with successful project completion. Stephen (2014) opines that procurement processes have moderately positive influence on successful completion of projects. The mixed results in these studies together with the recommendations by Jeptepkeny (2015) that further research be undertaken to investigate the effect of procurement processes on execution of public building projects. This is to ascertain how other factors affecting procurement processes

contribute to execution of public building projects in public procurement entities. Besides, the low number of respondents used in that study compromises on its generalization to other public entities. In addition, the studies were conducted on the effect of procurement procedures on successful completion of projects with limitations and recommendations that guarantees the need to fill the existing gaps in literature. Therefore, this study looked at effectiveness of construction contract procurement processes in public projects in Kenya to fill the gap in literature.

2.9 Conceptual Framework

According to Pheng and Hou (2019) a conceptual framework is a visual or written product that explains, either graphically or in narrative form, the main concepts or variables to be studied and their presumed relationships. The independent variable of the study is factors influencing the execution of public building projects and the dependent variable is the effectiveness of the procurement process. The study focused on factors that influence the execution of public building projects such as government policies, resources dedicated to procurement and nature of the project. Execution of public building projects was measured in terms of time, cost and performance adopted from (Kerzner & Kerzner, 2017).

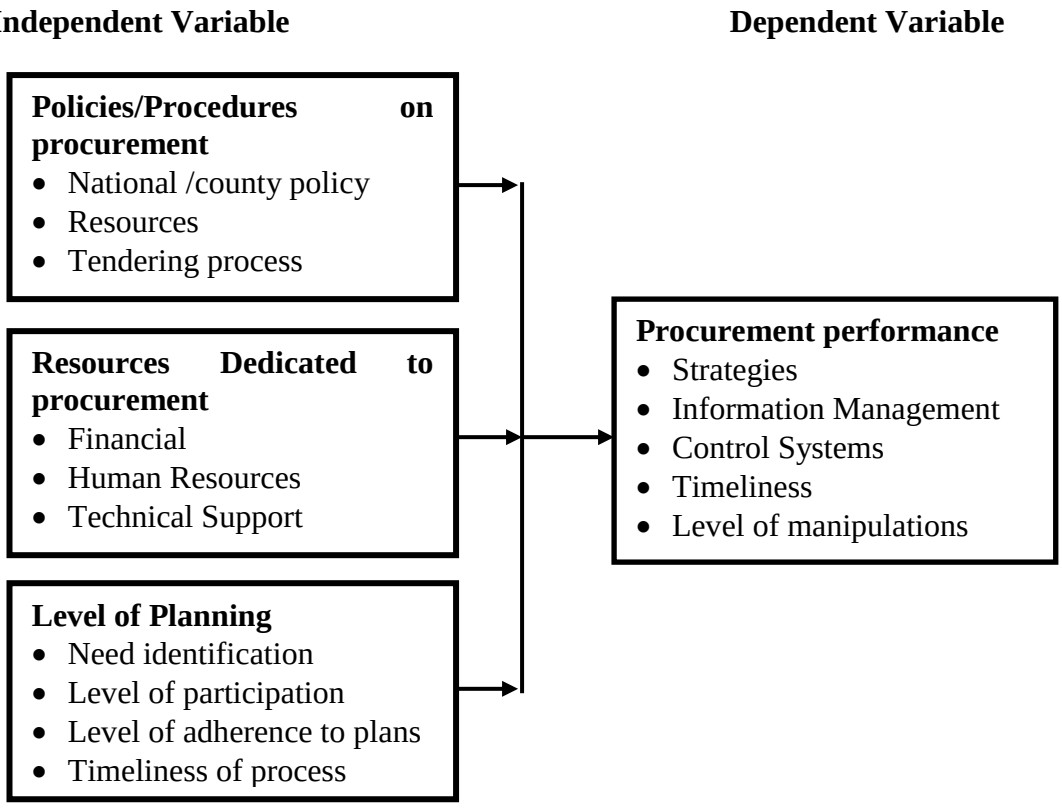

Figure 2.10: Conceptual Framework

2.10 Summary

This chapter reviewed the theoretical literature, the empirical works and conceptual framework relevant to this study. The theories reviewed included the Goal-setting theory, which was proposed by Edwin Locke in the late 1960s. This theory is the most relevant to the construction industry, as it is widely accepted and applied to worker 'productivity which can guarantee project success. The theory of project management described a set of models and techniques for the planning and control of complex undertakings. Theory of the temporary organization is based on the notion that action has a leading role. An empirical reason for adopting action as a primary concept in the theory of temporary organizations that temporary organizations are almost always motivated by a need to perform specific actions to achieve immediate goals. The project on the whole is seen as the temporary organization (Ansell & Trondal, 2018).

The empirical literature navigated, proves that there is a positive relationship between procurement process and project success. All these studies avow that the construction industry should embrace effective construction contract procurement process for satisfactory end results that will satisfy the project sponsor, users and stakeholders. The conceptualized constructs are based on empirical literature. Thus, conceptual framework then shows the linkage for testing causation between factors that influence the effectiveness of construction contract procurement process and procurement performance for execution of public projects in Counties in Kenya.

CHAPTER THREE

RESEARCH METHODOLOGY

3.1. Introduction

This chapter covered the research design, study area, target population, sampling and sample size, data collection, pilot study, reliability and validity, data processing and analysis and ethical consideration.

3.2 Research Design

The study adopted an explanatory research design that according to Pandey and Pandey (2021), is ideal when determining the degree at which variables are associated and making predictions regarding the occurrence of social or physical phenomena. Explanatory research design implies that the research in question was intended to explain, rather than simply describe the phenomena under study (Kumar, 2018). According to Cain, Zhang and Yuan, (2017) explanatory research focuses on ‘why’ questions. In answering the `why' questions, the study developed explanations. The explanations argue that phenomenon Y (effectiveness of construction contract procurement process) is affected by variable X (factors affecting effectiveness of construction constructs procurement processes) and even showed the extent of effect. This design was chosen because it applies closely to the research objectives of the study and practical in testing the study research questions.

3.4.1 Sample Size

A sample size of 124 was drawn from a total population of 179 respondents to represent the whole population. From the target population of 179, Taro Yamane cited in Olonite, (2021) sample size formula modified by Kent and Myers (2008), was used to select a sample size of 124 employees as shown below

$$n = \frac{N}{1 + Ne^2}$$

Where:

n = Sample size

N = Population size

e = the error of Sampling

This study allowed the error of sampling of 0.05. Thus, sample size was as follows:

$$n = \frac{179}{1 + 179x0.05^2}$$

= 124

The proportionate stratified random sample was obtained by use this formula (sample size/population size) x stratum size as represented in table 3.1

Table 3.2: Target Population

Respondents category	**Target population**	**Sample Size**
Contractors	82	57
Procurement team	97	67
Total	**179**	**124**

Source: Counties Integrated Development Plans, 2018 – 2020

3.3 Study Area

The study area was 10 Counties selected amongst the 47 Counties in Kenya. A random selection of 10 Counties formed the geographical scope of the study. The 10 Counties include Nairobi, Nakuru, Nandi, Narok, Machakos, Nyeri, Uasin Gishu, Kisumu, Bungoma and Kisii Counties.

3.4 Population, Sample and Sampling Procedure

In this study the target population consisted of all projects that have been undertaken by the County governments in Kenya in the last three years. The respondents for this study consisted of the members of procurement departments and contractors who have procured projects with respective Counties in the last 3 years.

Table 3.1: Target Population

Respondents category	Target population
Contractors	82
Procurement team	97
Total	**179**

Source: Counties Integrated Development Plans, 2018 - 2020

3.4.2 Sampling Techniques

Stratified random sampling technique was used to select the various respondents for the study within the procurement teams in the Counties and contractors who have undertaken projects within 3 years period. Three years period was selected because it was assumed that project data could easily be accessed considering the change of regime in the Counties after every five years. This sampling technique aimed at selecting groups that displayed variation on a particular phenomenon (Lune & Berg, 2017). In this case, procurement teams and constructors served as stratas. The size of each group was determined through proportional allocation, which involved selecting at random from a list of the population (a sampling frame) the required number of participants (McEwan, 2020). Therefore, 124 respondents was selected as the sample for this study.

3.5 Data Collection

Quantitative primary data was gathered by use of questionnaire with closed ended questions organized using a 5 point Likert scale commonly used in social sciences to measure perceptions, attitudes, values and behaviour (Alexandrovsky, et al., 2020). The items adopted a 5 - Point Likert scale of 1 - Very Small Extent (VSE), 2 - Small

Extent (SE), 3 - Moderate Extent (ME), 4 - Great Extent (GE) and 5 - Very Great Extent (VGE) based on the variables of the study.

3.6 Pilot Study

Piloting was conducted in Trans-Nzoia County focusing on on-going construction works funded by the County government. This was to ensure the goodness of study design, guide the main study, test the research instruments and check statistical and analytical procedures, likely risks and research economy as addressed by Malmqvist, Hellberg, Mollas, Rose and Shevlin (2018).

3.6.1 Validity of the Research Instrument

To ascertain the construct validity of the instrument, the researcher first gave the operational definition of terms used in the study. Internal validity was used to show the extent to which collection, analysis and interpretation of data was related to the research variables. Content validity was achieved by ensuring relevance of research results with theoretical approaches and literature reviews (Benova, et al., 2020).

3.6.2 Reliability of the Research Instrument

Reliability of the instrument was tested using Cronbach's alpha test that is a measure of internal consistency. Unlike test-retest method that frustrates respondents by repeat test, Cronbach's Alpha does not require subjecting the respondents to the same questionnaire twice or having two forms of the test (Chan & Idris, 2017). Cronbach's alpha addresses itself to internal consistency, that is; the degree of interrelatedness among the items and where multiple summated scales are used like in this study (Cain, et al., 2018).

The value one gets for α usually indicates the percentage of the reliable variance. For instance, if one gets a value of 0.7, it means that 70% of the variance in the scores is reliable variance, which means that 30% is error variance (McEwan., 2020; Cronbach, 1951). A general accepted rule is that α of 0.7 indicates an acceptable level of reliability and 0.8 or greater a very good level. However, values higher than 0.95 are

not necessarily good, since they might be an indication of redundancy (Taber, 2018). The overall reliability co-efficient of the improved instrument after the pilot survey yielded the following results: government policies alpha was 0.74, level of planning which alpha was 0.72, resources whose alpha was 0.71 and procurement performance whose alpha was 0.85.

3.7 Data Collection Procedure

Data collection procedure shows the outline to be followed when administering the research instrument that in this case is a questionnaire. Questionnaire was introduced to respondents by explaining the purpose of the survey. There were two sets of questionnaires whereby one set was administered on the procurement staff at the Counties while the other set of questionnaire was administered on the contractors who have executed projects in the respective Counties in the last 3 years. Questionnaires were administered through drop and pick later method. Follow ups and reminders was done through telephone calls and personal visits by research assistants. This improved the response rate and increased reliability.

3.7.1 Primary Data

Primary data are original in nature and causally related to the issue or problem and current data. Primary data are the data which the researcher collects through various methods like interviews, surveys and questionnaires (Andrew, Pedersen & McEvoy, 2018). In other words, primary data are information that a study must gather because no one has compiled and published the information in a forum accessible to the public. A researcher generally takes time and allocates resources required to gather primary data (Kothari, 2017). This occurs when a question, issue or problem that is sufficiently important or unique presents itself. In this study the researcher used a close-ended questionnaire to collect primary data.

3.7.2 Secondary Data

Secondary data was used to gain initial insight into the research problem. Secondary data is classified in terms of its source either internal or external (Hair, Page &

Brunsveld, 2019). In-house secondary information was acquired within Counties where research was being carried out. External secondary data was obtained from outside sources. The researcher used books, published journals and other written materials to gather secondary data and information.

3.8 Data Processing and Analysis

The data collected was checked for completeness and consistency. The data was fed into SPSS version 25.0 software for analysis. The data analysis included both descriptive and inferential statistics for quantitative analysis while thematic analysis was applied for the qualitative data. Pearson product moment coefficient correlation was used to test the relationship between the independent and dependent variables. This parametric test is performed on data that is normally distributed, having been obtained from a random sample of a population. This test was used to establish the relationship between the effectiveness of construction contract procurement process and its explanatory variables and to determine whether a group of independent variables as determinant factors of effectiveness of contraction process procurement predict dependent variable (Heeringa, West & Berglund, 2017). Beta (β) coefficients for each independent variable were generated from the model.

Analysis of variance (ANOVA) was used to test the hypothesis. This test is used to test for differences among means of populations by examining the amount of variation within each of these samples relative to the amounts of variation between samples. Results have been presented on frequency tables and graphs. The regression model which was used takes the form as below.

$$y = \beta 0 + \beta_1 X_1 + \beta_2 X_2 + \beta_3 X_3 + \varepsilon \ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots 1$$

Equation 1 shows the relationship between the ordinary predictors X_1 to X_3 which the three determinant factors are influencing effectiveness of construction contract procurement process.

Where, Y = Effectiveness of the construction projects procurement

β_0 = Constant (Value. of change in y when x = 0)

$\beta_1 \ldots \beta_3$= Representing degree of change in independent variable by one-unit variable.

X_1 Represent government policies/procedures

X_2 Represents resources

X_3 Represents level of planning

ε Error term (the residual error, which is an unmeasured variable)

3.8.1 Assumptions of Multiple Regression

The study tested for linear relationship, normality, multicollinearity and autocorrelation assumptions (Ong & Puteh, 2017).

Normality: Regression assumes that variables have normal distributions. Non-normality distributed variables (highly skewed or kurtosis variables or variables with substantial outliers) can distort relationships and significance tests. In this study the assumption was tested by use of skewness and kurtosis (Abulela & Harwell, 2020). The values of skewness and Kurtosis should be zero in normal distribution statistics (Mohammed, Adam, Ali & Zulkafli, 2020). Mishra, et al., (2019) indicate that data skewness values must fall within +1 and -1 and kurtosis values must be in the range of +3 and -3.

Linearity: Pearson correlation coefficient was used to test for linearity. The Pearson correlation coefficient *r* can take on values between -1 and 1. The further away *r* is from zero, the stronger the linear relationship between the two variables. The sign of *r* corresponds to the direction of the relationship. If *r* is positive, then as one variable increases, the other tends to increase. If *r* is negative, then as one variable increases, the other tends to decrease. A perfect linear relationship (r=-1 or r=1) means that one of the variables can be perfectly explained by a linear function of the other (Spivak, 2018).

Multicollinearity: Multicollinearity was tested with three central criteria namely Correlation, Tolerance and Variance Inflation Factor (Abulela & Harwell, 2020). VIF value should be ≤ 10 VIF exceeding 10 indicates the presence of multicollinearity, Tolerance should be between 0 -1 (Spivak, 2018). The correlation coefficient between a factor and itself is always 1, hence the principal diagonal of the correlation matrix contains 1's. This therefore means it is an identity matrix hence no multicollinearity (Akoglu, 2018).

Autocorrelation: The linear regression model was tested for autocorrelation using Durbin-Watson test. Durbin Watson can assume values between 0 and 4, values around 2 indicate no autocorrelation. As a rule of thumb values of >1.5 and < 2.5 show that there is no auto-correlation in the data (Abdulhafedh, 2017).

Homoscedasticity: Homoscedasticity describes a situation in which the error term (that is, "noise" or random disturbance in the relationship between the independent variables and the dependent variable) is the same across all values of the independent variables. Heteroscedasticity (the violation of homoscedasticity) is present when size of error term differs across values of independent variable (McDonald, 2017). This assumption was tested through visual inspection of scatter plots (Abdulhafedh, 2017).

3.9 Ethical considerations

Ethical considerations in research help to determine the difference between acceptable and unacceptable behaviours. Ethical considerations as important in research as they prevent against the fabrication or falsifying of data and therefore, promote the pursuit of knowledge and truth which is the primary goal of research. Bell and Waters (2018) insist that researchers should consider possible ethical concerns their study might face before carrying out a research project. Research authorization was obtained from the National Commission for Science, Technology and Innovation (NACOSTI), subject to authority from Commissioners and Directors of Education from specific Counties in Kenya, respectively. Prior to administering the questionnaire, a letter stating the purpose of the study and how the researcher maintained privacy, anonymity and consent form for participants to sign before they engage in the research as suggested

by Sim and Waterfield (2019) was attached. This form ensured that the participants' rights were protected during data collection. Equally, the researcher ensured tolerance, honesty and patience with respondents while getting information from the respondents.

CHAPTER FOUR

RESULTS AND DISCUSSIONS

4.1 Introduction

This chapter presents results from the analyses of data. From the descriptive statistics, demographic variables analyzed included the respondents' years of experience in the construction industry, project types undertaken by the company, classes of companies based on the criteria of National Construction Authority classification, how long the companies have been in operation and roles of respondent in the project. The purpose of the study was to investigate the effectiveness of construction contract procurement processes in public projects in Kenya. The determinants of the effectiveness of construction contract procurement process were analyzed in terms of government policies, nature of project and resources.

4.2 Response Rate and Background Information

4.2.1 Response Rate

The study targeted 5 projects in each of the 10 Counties which were selected. The study consisted of two sets of questionnaires where one set was administered to the procurement team while the other was administered to contractors. A total of 124 questionnaires were sent to the respondent where 57 were sent to contractors and 67 to the procurement team. The teams returned 48 and 49 questionnaires respectively, represented 78.2% response rate as indicated in table 4.1. According to Kennedy et al. (2019) any response of 50% and above is adequate for analysis thus 78.2% is far much better.

Table 4.1: Response Rate

Respondent	Questionnaires Administered	Questionnaires Returned	Percentage Returned
Contractors	57	48	38.7%
Procurement Team	67	49	39.5%
Cumulative	**124**	**97**	**78.2%**

4.2.2 Composition of Respondents in Procurement Team

According to table 4.2, exactly 26.5% of the respondents were members of the procurement team from tender opening committee, 36.7% from tender evaluation committee and 32.7% from the inspectorate committee while 4.1% were County staff not necessarily in procurement department. Majority of respondents in procurement departments were from the tender evaluation committee. Therefore, the information they gave was reliable for the study in terms of construction contract procurement process. The number of respondents from procurement department was representative in terms of their roles.

Table 4.2: Composition of Respondents in Procurement Team

Procurement Team	Frequency	Percent
Tender Opening Committee	13	26.5
Tender Evaluation Commiittee	18	36.7
Inspection & Acceptance Committee	16	32.7
Others	2	4.1
Total	**49**	**100.0**

4.2.3 Experience of the Respondents on Procurement

The research sort to establish the professional experience of respondents on matters procurement. According to table 4.3, accurately 6.1% had 11-15 years' experience, 12.2% had 6-10 years of experience and 38.8% had an exposure of 1-5 years while 42.9% had 1 year and below in experience on procurement. Therefore, majority of the respondents had more than one year experience to provide reliable information.

Table 4.3: Experience of Procurement Respondents

Experience	Frequency	Valid Percent
Less than 1 Year	21	42.9
1-5 Years	19	38.8
6-10 Years	6	12.2
11-15 Years	3	6.1
Total	**49**	**100.0**

4.2.4 Highest Qualification Attained

From the findings in table 4.4 majority of the respondents had diploma level of qualification attained with the least being certificate. This implies that a majority of the respondents could understand what was being required by the study.

Table 4.4: Highest Qualification attained

Highest Qualification attained	Frequency	Valid Percent
Certificate	8	16.7
Diploma	17	35.4
Degree	16	33.3
Masters	4	8.3
Others	3	6.3
Total	**48**	**100.0**

4.2.5 Level of Understanding of Procurement Process

The validity of the research findings is highly dependent on the level of understanding of the procurement process by the respondents in the study. According to table 4.5, the researcher established that more than 90% of the contractors and members of the procurement team had a good understanding of the procurement processes and therefore the quality of the feedback is valid.

Table 4.5: Level of Understanding of Procurement Process

Respondent	Level of understanding of procurement process	Frequency	Percent
Contractors	Fair	2	4.2
	Good	19	39.6
	Very Good	20	41.7
	Excellent	7	14.6
Total		**48**	**100**
Procurement Team	Fair	3	6.1
	Good	18	36.7
	Very Good	20	40.8
	Excellent	8	16.3
Total		**49**	**100**

4.2.6 Types of Projects undertaken by Counties

The unit of analysis for the study were the various projects that have been undertaken by the County government in the last 3 financial years and therefore it was important for the study to find out the specific type of projects as per table 4.6. Exactly 52.1% were the building projects, 35.4% were the road projects, 8.3% consisted of the hospitality projects while other projects not classified accounted for only 4% as indicated in the table below.

Table 4.6: Types of projects undertaken by Counties

Types of projects undertaken by Counties	Frequency	Valid Percent
Building Projects	25	52.1
Road Projects	17	35.4
Hospitality Projects	4	8.3
Others	2	4.2
Total	**48**	**100.0**

4.2.6 Existence of the Construction Firms

Majority of the sampled firms have existed for over 5 years. Perfectly, 12.5% had practiced for over 15 years, 18.8% for 10-15 years, and 33.3% for 6-10 years accounting for over 60% of the firms selected for the study. 29.2% and 6.2% of the firms had practiced for 1-5 years and less than 1 year, respectively as per table 4.7 below.

Table 4.7: Firm's Years of Experience

	Years of Experience	Frequency	Valid Percent
Valid	Less than 1 Year	3	6.2
	1-5 Years	14	29.2
	6-10 Years	16	33.3
	10-15 Years	9	18.8
	Over 15 Years	6	12.5
Total		48	100.0

4.2.7 NCA Classes of the Firm

The research sort to establish if the contractors who are executing projects at the Counties are duly registered by the regulator which is the National Construction Authority. The results show that 4.2% have NCA 1 category, NCA 2 at 12.5%, NCA 3 at 8.3%, NCA 4 at 18.8%, NCA 5 at 22.9%, NCA 6 at 16.7%, NCA 7 at 2.1% and NCA 8 at 14.6%. The results show that most of the projects undertaken by the County governments are relatively of low contract sums as per table 4.8 below.

Table 4.8: Classes of NCA by Contractors

NCA Classes	Frequency	Valid Percent
NCA 1	2	4.2
NCA 2	6	12.5
NCA 3	4	8.3
NCA 4	9	18.8
NCA 5	11	22.9
NCA 6	8	16.7
NCA 7	1	2.1
NCA 8	7	14.6
Total	**48**	**100.0**

4.3 Factors Affecting Construction Contract Procurement Process

The research had three predictor variables that is government policies, procurement resources and level of procurement planning and one dependent variable which was the effectiveness of construction contract procurement process at Counties. Variables were measured in a scale of 1 to 5 where 1 represents very poor, 2 represents poor, 3 represents fair, 4 represents good while 5 represents excellent.

4.3.1 Government Policies Attributes

The measures of dispersion entailed the minimum and maximum tests, the test for mean, relative importance indexes (RII) and variance. The findings in table 4.9 shows that the strictness to adherence to government policies for procurement are considered in some Counties while other Counties hardly observe the guidelines as portrayed by the minimum score of 1.00 and a maximum score of 5.00. In most cases, the project budget is according to the projected contract sum with a mean score of 3.4468 and that there is evidence to show that the procurement committee members considered the best value for money during the tender evaluation process with a mean score of 3.3404. The Public Procurement Act requires that the tender be awarded to the lowest bidder without compromising on the quality of the project.

The Public Procurement Oversite Authority stresses on the importance of ethical considerations during the tendering process. The findings shows that the procurement team fairly takes into consideration the ethical practices during tendering and bidding process with a mean score of 3.3404 and that there is some level of adherence to the procurement legal framework with a mean score of 3.2979. Nonetheless, the results also show that the County procurement team uses appropriate contractor procurement method with a mean score of 3.2128, as stipulated in the PPOA. However, the decision making before awarding of the tenders at times takes longer, pointing out to various bureaucracies in government institutions. The study also proved the assertions that some procurement members are corrupt and therefore occasionally compromise on the outcome of tendering process.

Variance tests shows that the level of adherence to government policies in most of the Counties under study is similar. The variance ranges from 0.940 to 1.838 pointing out to some harmony in running of procurement departments in most of Counties. Literature showed that most of the procurement staff in various Counties in Kenya were seconded from the national governments when devolution was rolled out after the first election under the promulgated constitution in 2010. The RII showed that there is strong adherence to project budget at rank 1 while the unethical behaviour of procurement staff is wanting across most of the Counties at rank 12. The application

and adherence to government policies governing the procurement processes at the Counties scored a mean value of 2.975 which is a moderate extent. The results show that the Counties are either not adhering to the procurement guidelines as set out in the PPOA.

Table 4.9: Measures of Dispersion for Government Policy attributes

Government Policy attributes	Min	Max	Mean	RII	Variance
Project budget is according to the contract	1.00	5.00	3.4468	1	1.513
The committee considered the value of money during the evaluation process	1.00	5.00	3.3404	2	1.838
Ethical practices are observed in the procurement department	1.00	5.00	3.3404	3	1.621
Adherence to the procurement legal framework is time consuming	2.00	4.00	3.2979	4	.431
The County procurement team uses appropriate contractor procurement methods	1.00	5.00	3.2128	5	1.258
Procurement procedures enhances transparency	1.00	5.00	3.1702	6	2.101
Procurement procedures have caused delays in decision making	1.00	5.00	3.0426	7	1.433
The policies promote competition in public procurement	1.00	5.00	3.0000	8	1.696
Procurement was efficient with little or no delay	1.00	4.00	2.8085	9	1.376
Tender bids evaluation takes longer than expected.	1.00	4.00	2.7021	10	.822
The prevailing procurement legal framework is too bureaucratic and encourages corrupt practices	1.00	4.00	2.2128	11	1.215
The procurement officials make improper use of their position	1.00	4.00	2.1277	12	.940
Government Policy attributes			**2.975**		**1.354**

4.3.2 Procurement Resources

Literature has shown that procurement resources are very key in ensuring the success of a procurement system. The test for the mean, RII and variance were used to check on the resources allocated for procurement in the Counties in Kenya. The results in table 4.10 shows a wanting state of the resources dedicated for procurement process with a mean of 2.526. The County procurement teams rely heavily on the traditional approaches for procurement at a mean score of 3.00, there are little or no laid down guidelines on staff training on matters procurement at a mean score of 2.98 and that the finances allocated for procurement is very inadequate as depicted by the low mean score of 2.96. The findings also show that the technical support provided is only based on a need assessment of the projects with a mean score of 2.68.

Previously, studies have shown that the productivity can be improved if the staff are motivated. The findings in table 4.10 shows that the procurement staff at the Counties are not motivated, the staff salaries and the site visit allowances are either delayed or are never paid to a moderate extent thus staff are not well motivated. This has greatly affected the productivity of the procurement staff thereby compromising on the outcome of the tendering processes. Hiring competent staff is also key to the success of any system. The results show that some of the hired staff in the procurement team are qualified to small extent as depicted in table 4.10 with a mean score of 2.10 and therefore the outcome of the procurement process is greatly affected.

Relative Importance Index (RII) was used to identify the key factors that the Counties must address with speed as a step in improving the efficacy of the procurement process. The results show that the over reliance on traditional methods, guidelines on staff training, allocation of adequate finances for procurement, setting up of a technical support team at the Counties and motivating the procurement staff are very key and that it must be addressed with speed to ensure the success of the procurement processes at the Counties.

Table 4.10: Measures of Dispersion for Procurement Resources attributes

Procurement Resources attributes	Min	Max	Mean	RII	Variance
There is over reliance of traditional methods in procurement resource	1.00	5.00	3.0000	1	1.261
There are laid down guidelines on staff training on procurement practices by the County	1.00	4.00	2.9787	2	1.282
The financial resources are adequate for the procurement process	1.00	4.00	2.9574	3	1.476
Technical support is based on needs assessment of the project	1.00	5.00	2.6809	4	1.135
Technical support was provided for during the procurement process	1.00	4.00	2.6596	5	1.273
The procurement team are well motivated by the County	1.00	4.00	2.5319	6	.820
Procurement of contractor is within the resource limits	1.00	4.00	2.2553	7	1.238
The financial resources are allocated based on need assessment	1.00	4.00	2.1915	8	1.158
Procurement of staff were professionally qualified and experienced	1.00	4.00	2.1064	9	.749
The County procurement team identifies sources of funding	1.00	3.00	1.8936	10	.706
Procurement Resources attributes			**2.526**		**1.110**

4.3.3 Level of Procurement Planning

The research sought to establish the levels of procurement planning at the Counties. The results in table 4.11 shows the minimum and maximum levels, mean, relative importance index rankings and the variances. Poor planning practice that leads to budget deficits during the actual project execution stages was ranked No. 1 as the major problems with procurement planning at Counties with a mean score of 2.91 and a minimum level of 1.00. The research results also showed that procurement planning being carried out by Counties hardly helps in estimation of projects duration that significantly affect financing of projects since Counties are funded based on financial year by National government.

Nevertheless, the level of communication that is key for success of any procurement plan is also poorly done as was revealed by low mean score of 2.36 and a minimum value of 1.00 and maximum value of 3.00. The procurement planning is not done as per PPOA guidelines as evident by low mean score of 2.09, minimum and maximum values of 1.00 and 3.00, respectively. The results also show that procurement teams do not carry out proper consultations among key procurement committees and that the team hardly have a concrete plan that is key to implementation of the projects.

The variance results show that the level of planning across all Counties selected for the study are poor with variance ranging from 0.463 to 1.384. The level of compliance and adherence to procurement plans had the biggest variance score of 1.646 pointing out to lack of harmonization on the process across most of the Counties in Kenya. Poor planning had the second biggest variance of score of 1.384 which confirms the lack in harmony in procurement process.

Table 4.11: Measures of Dispersion for Procurement Planning attributes

Procurement Planning attributes	Mini.	Maxi.	Mean	RII	Variance
Poor planning leads to big budget deficits for the projects	1.00	5.00	2.9149	1	1.384
The procurement planning helps in estimating the time required to complete the projects	1.00	4.00	2.7021	2	1.301
The procurement plan helps in allocating funds for the various projects	1.00	4.00	2.5106	3	1.081
The procurement planning results to compliance to the County's set procurement procedures	1.00	5.00	2.4681	4	1.646
There is effective communication of the tender results to the contractors by the evaluation committee	1.00	3.00	2.3617	5	.453
The procurement plan helps in determining the total value of the anticipated costs of the projects	1.00	4.00	2.2340	6	1.183
The procurement is carried out as per the set procedures and guidelines in PPOA	1.00	3.00	2.0851	7	.732
There are proper consultations among the key procurement committees in the County	1.00	4.00	2.0851	8	.732
The procurement plan is key in deciding when to implement the projects	1.00	4.00	2.0213	9	1.065
The procurement plan identifies the projects as per the County needs	1.00	3.00	1.4043	10	.463
Procurement Planning attributes			**2.070**		**1.000**

4.3.4 Effectiveness of the Procurement Process

The main objective of this study was to investigate the effectiveness of procurement process being carried out in various Counties in Kenya. The results of the descriptive statistics presented in table 4.12 below shows the minimum and maximum values of efficacy of the procurement process, mean values, RII's and variance. Operational scale ranging from 1 to 5 was used in the interpretation of the results where '1' represented less severe case and '5' representing very severe situation. The results ranked the delays in tendering process as the most severe with a mean of 3.60 and a variance of 0.857. The less variance shows that the condition is unique across most of Counties selected for this study. Political interference was ranked last with a mean

score of 3.10 implying that respondents agree to moderate extent that there was no political interference or manipulation during the tendering process.

Table 4.12: Measures of Dispersion for Performance of Procurement Process Attributes

Procurement Process Attributes	Mini.	Max.	Mean	RII	Variance
There was no delay during the tendering process	2.00	5.00	3.6000	1	.857
The procurement team had an effective control of the procurement process	2.00	5.00	3.4000	2	.857
Contractors were given a fair evaluation during the bidding process	2.00	5.00	3.3000	3	1.031
There were clear and precise guidelines during the bidding process	2.00	5.00	3.3000	4	.827
There was effective management of the information during the bidding process	2.00	5.00	3.3000	5	.827
The procurement process was conducted with professionalism by the procurement team	2.00	5.00	3.2000	6	1.184
There was no political interference or manipulation during the tendering process	1.00	5.00	3.1000	7	1.316
Performance of Procurement			**3.314**		**0.986**

4.4 The relationship between Variables of Effectiveness of Construction Contract Procurement Process

The study sought to establish the relationship between predictor variables and dependent variable. Correlation and regression analysis were used to establish the relationship between predictor variables; government policies (X1), procurement resources (X2) and levels of planning (X3) and dependent variable, effectiveness of construction contracts procurement process. Pearson's correlation coefficients was used to test for the magnitude and direction of the relationships between predictor variables and dependent variable. The purpose of using correlation was to establish the relationship between factors affecting effectiveness of construction contract procurement process. The inter-correlations among variables are shown in table 4.13

below. From the results, correlations among factors was significant. Correlations between and where (government policies r= .717**, procurement resources r=.644** and levels of planning r=.643** respectively were positively significant with a P<0.01 as provided in table 4.13. Procurement policies regulate the way in which government purchases from suppliers in private and not-for-profit sectors (Granof, Khumawala & Calabrese, 2021). From the findings, there is a significant and positive correlation between government policies r= .717** and effectiveness of construction contract procurement process. These findings support the argument of Sultan and Alaghbari, (2014) and Rezende, et al. (2014) that government policies provide direction on key aspects of purchasing goods and services.

From the findings, there is a greater significant and positive link between resources and execution of public building projects r=.644**. These findings are supported by Colonnelli and Ntungire (2018) and Shwarka and Anigbogu, 2012 who noted that procurement resources significantly affects effectivenes of construction contract procurement process. This implies that Counties should mobilize adequate procurement resources for execution of public building projects. From the findings, levels of planning significantly and positively affects effectiveness of construction contract procurement process r=.643**. These findings are supported by Kiage (2013) who found that procurement planning positively affect procurement performance which affects the effectiveness of the contract procurement process. Planning ensures that available resources are utilized to execution of public building projects. Liu, Wang and Wilkinson (2016), Hamza, Gerbi and Ali (2017) and Chepngetich (2018) adds that Procurement planning and adoption of sound procurement policies lead to consistently better value for money; higher quality project and service delivery and reduced risks to the agency essential to execution of public building projects.

Table 4.13: Pearson Correlation Results

	Procurement Resources	Government policies	Level of Procurement Planning	effectiveness of construction contract Procurement Process
Procurement Resources	1	.660**	.453**	.644**
Government policies	.660**	1	.719**	.717**
Level of Procurement Planning	.453**	.719**	1	.643**
effectiveness of construction contract Procurement Process	.644**	.717**	.643**	1

**. Correlation is significant at the 0.01 level (2-tailed).

4.5 Assumptions of Regression Analysis

4.5.1 Normality Tests

Normality of data was assessed using skewness and kurtosis statistics (Cain, Zhang & Yuan, 2017). Mishra, et al. (2019) indicated that data skewness values must fall within +1 and -1 and kurtosis values must be in the range of +3 and -3. If both tests have been fulfilled, then the data can be considered as normally distributed and no skewed distribution. Results presented in Table 4.14 reveal that normality assumption was supported. None of the Skewness and Kurtosis values fell outside the stated ranges.

Table 4.14: Normality Test Results

	Mean	Skewness		Kurtosis	
	Statistic	**Statistic**	**Std. Error**	**Statistic**	**Std. Error**
Government Policies	3.314	-.283	.245	-1.262	.485
Procurement resources	2.925	-.051	.245	-.636	.485
Procurement Planning	2.526	-.136	.245	-.745	.485
Effectiveness of Procurement Process	2.070	.042	.245	-1.003	.485

4.5.2 Multicollinearity Test

First correlation matrix was obtained for all the factors and scrutinized for chances of multicollinearity. Correlation matrix gives the correlation coefficients between a single factor and every other factor in the investigation. The correlation coefficient between a factor and itself is always 1; hence the principal diagonal of the correlation matrix in table 4.13 contains 1s. This therefore means it is an identity matrix therefore there was no multicollinearity (Kothari 2009). The Variance Inflation Factor (VIF) measures the impact of collinearity among the variables in a regression model. Values of VIF that exceed 10 are often regarded as indicating multicollinearity (Ong & Puteh, 2017). All variables involved in the linear relationship will have a small tolerance. Some suggest that a tolerance value less than or equal to 1 (Abulela & Harwell, 2020). According to table 4.15 Variance Inflation Factor (VIF), Tolerance are within the threshold ranges hence no multicollinearity.

Table 4.15: Collinearity Statistics

	Tolerance	Variance Inflation Factor
Procurement Resources	.343	2.919
Government policies	.564	1.773
Level of Procurement Planning	.482	2.076

4.5.3 Autocorrelation

Linear regression analysis requires that there be little or no autocorrelation in the data. Autocorrelation occurs when residuals are not independent from each other (Ong & Puteh, 2017). Linear regression model was tested for autocorrelation using Durbin-Watson test. As a rule of thumb values of $1.5 < d < 2.5$ shows that there is no autocorrelation in the data. According to table 4.16 below the Durbin-Watson was 1.604 which was within the range hence there was no autocorrelation.

4.6 Regression Results

Multiple regression analysis was used to test the formulated research questions. The model establish the strength of conceptualized relationship between predictor variables; government policies (X1), procurement resources (X2) and levels of Planning (X3) with the independent variable which is the effectiveness of the procurement process. Results presented reveal that the predictor variables account for 60.3% of the changes in dependent variable ($R^2 = 0.603$). Therefore, the remainder 39.7% is explained by other factors not considered in the study.

Table 4.16: Multiple Regression Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Durbin-Watson
1	.776[a]	.603	.590	.370	1.604

a. Predictors: (Constant), Government Policies on Procurement, Procurement Resources, Levels of Planning
b. Dependent Variable: Effectiveness of construction contract procurement process

Second, the ANOVA output was examined to check whether the proposed model was viable. Results shown in Table 4.17 reveal that the F-statistic was highly significant ($F= 47.004$ $p<0.01$), this shows that the model was valid.

Table 4.17: ANOVA Test Result

Model		Sum of Squares	Df	Mean Square	F	Sig.
1	Regression	19.262	3	6.421	47.004	.000[a]
	Residual	12.704	93	.137		
	Total	31.965	96			

a. Predictors: (Constant), Procurement Resources, Government Policies and level of procurement planning
b. Dependent Variable: Effectiveness of construction contract procurement process

The model significantly improved the ability to predict effectiveness of the construction contract procurement process. Thus, the model was significant answering the research question.

Based on regression coefficients it was revealed that government policies, procurement resources and level of procurement planning to a constant zero, effectiveness of construction contract procurement process would be at .644 as presented in table 4.18. A unit increase in government policies would lead to an increase in effectiveness of construction contract procuremet process by a factor of 0.295 (B=0.295, P<0.05), a unit increase in procurement resources would lead to an increase in effectiveness of construction contract procurement process by a factor of 0.292 (B=0.292, P<0.05) and a unit increase in procurement planning would lead to increase in effectiveness of the construction contract procurement process by a factor of 0.218 (B=0.218, P<0.05). Therefore there is a significant relationships between all the independent variables (factors affecting contract procurement process) and the dependent variable (effectiveness of the construction contract procurement process) since all the P values a less than 0.05.

Therefore the model adopted was:

$$Y = .644 + 0.295X_1 + 0.292\ X_2 + 0.218\ X_3. + \varepsilon$$

Where Y=effectiveness of the construction contract procurement process

X_1= Govt Policies

X_2 = Procurement Resources

X_3= Procurement Planning

Table 4.18: List of Coefficientsa

Model		Unstandardized Coefficients		Standardized Coefficients			Collinearity Statistics	
		B	Std. Error	Beta	T	Sig.	Tolerance	VIF
1	(Constant)	.644	.281		2.297	.024		
	Govt Policies	.295	.106	.311	2.785	.006	.343	2.919
	Resources	.292	.081	.313	3.594	.001	.564	1.773
	Planning	.218	.074	.277	2.943	.004	.482	2.076

a. Dependent Variable: Effectiveness of Procurement

CHAPTER FIVE

CONCLUSIONS AND RECOMMENDATIONS

5.1 Introduction

This chapter presents the summary, conclusions and recommendations of the study. The main objective was to investigate the effectiveness of construction contract procurement processes of public projects in Kenya. This chapter therefore presents the summary of research work, conclusions drawn from the study, recommendations and areas of further research in relation to data analyses.

5.2 Conclusion

In view of statistical results government policy was found to have a positive and significant relationship with effectiveness of construction contract procurement process. Thus, an adherence to the government policies increases efficiency of execution of public building projects. The implications of these results is that County government many acquire better results for execution of public building projects through the adherence to the government policies.

Effective execution of public building projects is linked to resources. Resource availability and adequacy ensures that execution of public building projects is also up to date. From the findings, resources was found to be significantly and positively related to execution of public building projects in County governments. These results imply that though resources should be adequate to engender effective execution of construction contract procurement process. There is need to further mobilize resources to enhance execution of construction contract procurement process. Procurement planning impacts on execution of construction contract procurement process. Level of planning is often determined by the key objectives and constraints of the project. The findings of this study was that level of planning significantly had a positive and significant correlation with of construction contract procurement process.

Thus, level of procurement planning significantly affect construction contract procurement process.

5.3 Recommendations

Therefore, the formulation and promotion of government policy attributes, procurement resources, level of procurement using policies and focusing them on effectiveness of construction contract procurement process. In consequence, the management of these factors would become ingrained in management and operations of County governments to achieve optimal procurement process effectiveness to guarantee effective execution of building project success.

There is need for strictness to adherence to the government policies on procurement amongst the County governments. Procurement ethics should be focused on during tendering process for effectiveness of construction contract procurement process. There is need for County governments to invest on staff training on procurement process amongst contractors and County government staff involved in construction contract procurement process. Procurement planning efficiency should be more potentiated to reduce challenges of budget deficits during the actual project execution stages.

5.3.1 Areas for Further Research

Arising from some of the implications and limitations of the study, recommendations for further research are made. While this study successfully examined the conceptual framework, it also presented a rich prospect for other areas to be researched on in future. In terms of industry, the study was only confined to the public sector. It would however be useful to carry out similar study in the private sector and look at additional factors affecting execution of building projects success.

REFERENCES

Abdulhafedh, A. (2017). How to detect and remove temporal autocorrelation in vehicular crash data. *Journal of transportation technologies*, *7*(2), 133-147.

Abou, C., & Ashi, A. (2019). Comparative analysis of design/build and design/bid/build project delivery systems in Lebanon. *Journal of Industrial Engineering International*, *15*(1), 147-152.

Abulela, M. A., & Harwell, M. M. (2020). Data Analysis: Strengthening Inferences in Quantitative Education Studies Conducted by Novice Researchers. *Educational Sciences: Theory and Practice*, *20*(1), 59-78.

Abyad, A. (2018). Project management, motivation theories and process management. *Middle East Journal of Business*, *13*(4), 18-22.

Ahmad, T., Aibinu, A. A., Stephan, A., & Chan, A. P. (2019). Investigating associations among performance criteria in Green Building projects. *Journal of Cleaner Production*, *232*(2), 1348-1370.

Aimable, N., Osunsan, O. K., Florence, I., Comet, K. F., & Sarah, N. (2019). Procurement planning on value for money among selected districts in Southern Province, Rwanda. *Journal of Research in Business and Management*, *7*(1), 34-40.

Akoglu, H. (2018). User's guide to correlation coefficients. *Turkish journal of emergency medicine*, *18*(3), 91-93.

Alexandrovsky, D., Putze, S., Bonfert, M., Höffner, S., Michelmann, P., Wenig, D., & Smeddinck, J. D. (2020). Examining design choices of questionnaires in vr user studies. In *Proceedings of the 2020 CHI Conference on Human Factors in Computing*, (pp. 1-21).

Al-Kuhail, M., Hamoud, A. A., T. A., & Abdulwahad, A. (2021). Developing a Diamond Framework Model Based on “Integration” of Project Success

Measures for Construction Project Management in Yemen. *Pertanika Journal of Science & Technology, 29*(3),124-144.

Alwaly, K. A., & Alawi, N. A. (2020). Factors Affecting the Application of Project Management Knowledge Guide (PMBOK® GUIDE) in Construction Projects in Yemen. *International Journal of Construction Engineering and Management, 9*(3), 81-91.

Aminu, A., Ibrahim, Y. M., Ibrahim, A. D., Bala, K., Abdullahi, B., Abdullahi, M., & Yamusa, M. A. (2020). Developing conceptual process models for the nigerian manual based procurement process towards digitization. Confluence of Research, Theory and . *Confluence of Research, Theory and Practice in the Built Environment*.

Andary, E. G., Abi Shdid, C., Chowdhury, A., & Ahmad, I. (2019). Integrated project delivery implementation framework for water and wastewater treatment plant projects. *Engineering, Construction and Architectural Management, 24*(2),133-148.

Andrew, D. P., Pedersen, P. M., & McEvoy, C. D. (2018). *Research methods and design in sport management.* London: SAGE.

Anjani, R. F., Raharjo, T., Hardian, B., & Suhanto, A. (2021). Measuring the relationship between organizational culture and project success: A survey of Agile software development teams. In *2021 International Conference on Advanced Computer Scie.*

Ansell, C., & Trondal, J. (2018). Governing turbulence: An organizational-institutional agenda. *Perspectives on public management and governance, 1*(1), 43-57.

Arshad, M. F., Thaheem, M. J., Nasir, A. R., & Malik, M. S. (2019). Contractual risks of building information modeling: Toward a standardized legal framework for

design-bid-build projects. *Journal of Construction Engineering and Management, 145*(4), 040.

Babu, O., Gwaya, O. A., & Masu, S. (2019). Appraising the Performance of Construction Projects during Implementation in Kenya, 1963-2018: A Literature Review Perspective. *Journal of Construction Engineering and Project Management*, 1-24.

Bajjou, M. S., & Chafi, A. (2020). Empirical study of schedule delay in Moroccan construction projects. *International Journal of Construction Management*, *20*(7), 783-800. Retrieved from https://www.researchgate.net/publication assesed on 11 march 2021

Bell, J., & Waters, S. (2018). *Ebook: Doing Your Research Project: A Guide For First-Time Researchers*. McGraw-Hill Education (UK).

Benova, L., Moller, A. B., Hill, K., Vaz, L. M., Morgan, A., Hanson, C., & Moran, A. C. (2020). What is meant by validity in maternal and newborn health measurement? A conceptual framework for understanding indicator validation. *PloS one*, *15*(5), e0233.

Benton Jr, W. C. (2020). *Purchasing and supply chain management*. SAGE Publications.

Brady, S., Jonas, A. E., & Goetz, A. R. (2019). The global infrastructure public-private partnership and the extra-territorial politics of collective provision: The case of regional rail transit in Denver, USA. . *Urban Studies*, *56*(7), 1426-1447.

Brown, K. A., Hyer, N. L., & Ettenson, R. (2017). Protect your project from escalating doubts. . *MIT Sloan Management Review*, *58*(3), 79-101.

Cain, K. L., Geremia, C. M., Conway, T. L., Frank, L. D., Chapman, J. E., Fox, E. H., & Sallis, J. F. (2018). Development and reliability of a streetscape observation

instrument for international use: MAPS-global. *international journal of behavioural* , *15*(1), 1-11.

Cain, M. K., Zhang, Z., & Yuan, K. H. (2017). Univariate and multivariate skewness and kurtosis for measuring nonnormality: Prevalence, influence and estimation. *Behaviour research methods*, *49*(5), 1716-1735.

Calahorra-Jimenez, M., Alarcón, L. F., Torres-Machi, C., Chamorro, A., & Molenaar, K. (2020). Improving cost performance in design-bid-build road projects by mapping the reasons for cost overruns into the project phases. *Revista de la construcción*, *19*(2),112-125.

Chan, L. L., & Idris, N. (2017). Validity and reliability of the instrument using exploratory factor analysis and Cronbach's alpha. *International Journal of Academic Research in Business and Social Sciences*, *7*(10), 400-410.

Chang, Y., Tambe, A. A., Maeda, Y., Wada, M., & Gonda, T. (2018). Finite element analysis of dental implants with validation: to what extent can we expect the model to predict biological phenomena? A literature review and proposal for classification of a of a validation process . *International journal of implant dentistry*, *4*(1), 1-14.

Chepkesis, K., Keitany, P., & Kiplel, M. (2018). Effect of Procurement Planning on Suppliers Performance in Public Institutions: A Case of Moi University. *Europeans Journal of Logistics, Purchasing and Supply Chain Management*, *6*(2), 1-9.

Chepngetich, J. (2018). *The relationship between procurement planning practices on service delivery among county governments in kenya. A case of kericho county government* . Doctoral dissertation, Kisii university.

Cherotich, C. (2018). *The effectiveness of procurement practices on performance of county governments in Kenya: a study of Kericho County Government* . Doctoral dissertation, Kisii University.

Crane, A., Matten, D., Glozer, S., & Spence, L. (2019). *Business ethics: Managing corporate citizenship and sustainability in the age of globalization.* USA: Oxford University Press.

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

Dash, G., Kiefer, K., & Paul, J. (2021). Marketing-to-Millennials: Marketing 4.0, customer satisfaction and purchase intention. *Journal of Business Research*, *122*(1), 608-620.

Deva raj, S., Vaidya Nathan, G., & Mishra, A. N. (2012). Effect of Purchase Volume Flexibility and Purchase Mix Flexibility on E-Procurement Performance: An Analysis of Two Perspectives. *Journal of Operations Management*, *30*(7), 509-520.

Donald, A., Koolwal, G., Annan, J., Falb, K., & Goldstein, M. (2020). Measuring women's agency. *Feminist Economics*, 26(3), 200-226. Retrieved from http://www.oracle.com on 20/03/2021.

El-khalek, H. A., Aziz, R. F., & Morgan, E. S. (2019). Identification of construction subcontractor prequalification evaluation criteria and their impact on project success. *Alexandria Engineering Journal,*, *58*(1), 217-223.

Erikson, P., & Kovalainen, A. (2008). *Qualitative methods in business research.* London, UK: Sage.

Foss, N. J., & Saebi, T. (2017). Fifteen years of research on business model innovation: How far have we come, and where should we go? *Journal of management*, *43*(1), 200-227.

Frederico, G. F. (2021). Project Management for Supply Chains 4.0: A conceptual framework proposal based on PMBOK methodology. *Operations Management Research, 14*(3), 434-450.

Fridgeirsson, T. V., Ingason, H. T., Jonasson, H. I., & Jonsdottir, H. (2021). An Authoritative Study on the Near Future Effect of Artificial Intelligence on Project Management Knowledge Areas. *Sustainability*, *13*(4), 2345-2358.

Gael, A., Zhang, Z., Miao, H., & GONG, L. (2017). Application of BOT Model in Highway Construction Management in Benin. In *2017 5th International Conference on Mechatronics, Materials, Chemistry and Computer Engineering (ICMMCCE 2017) (pp. 475-483).* Atlantis Press.

Gavurova, B., Belás, J., Rowland, Z., & Kubák, M. (2021). The impact of agreement on government procurement use on the competition in Slovak healthcare sector. *Administratie si Management Public*.

Grace. (2019). The Unique Challenges of Procurement Planning for Construction Companies.

Granof, M. H., Khumawala, S. B., & Calabrese, T. D. (2021). *Government and not-for-profit accounting: Concepts and practices.* John Wiley & Sons.

Gransberg, N. J., & Maraqa, S. (2021). Leveraging the Value of Project Scope Growth through Construction Manager-at-Risk Delivery of Public University Capital Improvement Projects. *Journal of Legal Affairs and Dispute Resolution in Engineering and Construction*.

Hair, J. F., Page, M., & Brunsveld, N. (2019). *Essentials of business research methods.* Routledge. Retrieved from http://scholarcommons.usf.edu

Halpin, D. W., Lucko, G., & Senior, B. A. (2017). *Construction management.* John Wiley & Sons.

Hamza, S. B., Gerbi, A., & Ali, S. H. (2017). Factors affecting procurement performance in the case of awassa textile share company. *Global Journal of Management and Business Research*.

Harris, F., McCaffer, R., Baldwin, A., & Edum-Fotwe, F. (2021). *Modern construction management.* John Wiley & Sons.

Harrison, F., & Lock, D. (2017). *Advanced project management: a structured approach.* Routledge.

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), 451-476.

Heeringa, S. G., West, B. T., & Berglund, P. A. (2017). *Applied survey data analysis*. chapman and hall/CRC.

Hofstadler, C., & Kummer, M. (2021). Chances and Risks in Construction Management and Economics: A Systemic Approach to Dealing with Models and Uncertainties. *Springer Nature, 29*(2), 197-208.

Hossain, N. (2019). *Procurement management practices in the public sector in Bangladesh: A case study on IDCOL.*

Huda, M., Soepriyono, S., & Azizah, S. (2019). Implementation of PMBOK 5th standard to improve the performance and competitiveness of contractor companies. *In ICASI 2019: Proceedings of The 2nd International Conference On Advance And Scientific.*

Ismail, N., Kinchin, G., & Edwards, J. A. (2018). Pilot study, does it really matter? Learning lessons from conducting a pilot study for a qualitative PhD thesis. *International Journal of Social Science Research*, *6*(1), 1-17.

Jeptepkeny, P. (2015). Effects of procurement procedures on project performance: a case study of light construction projects at Kenya Ports Authority, Mombasa. *European Journal of Logistics Purchasing and Supply Chain Management*, *3*(1)1-11.

Jordan, K. (2018). Validity, reliability, and the case for participant-centered research: Reflections on a multi-platform social media study. *International Journal of Human–Computer Interaction*, *34*(10), 913-921.

Kafile, M. (2018). Effects of procurement processes on project execution in a project management company in Cape Town, South Africa. *International Journal of Business and Administrative Studies*, *4*(4), 176-186.

Kagume, J., & Wamalwa, N. (2018). *Public Procurement in Kenya: Analysis of the Auditor General's Reports.* Institute of Economic Affairs, .

Kakwezi, P., & Nyeko, S. (2019). Procurement processes and performance: Efficiency and effectiveness of the procurement function. *International Journal of Social Sciences Management and Entrepreneurship (IJSSME)*, , *3*(1),45-67.

Karttunen, E. (2018). Purchasing and supply management skills revisited: an extensive literature review. Benchmarking. *An International Journal*, *25*(9),3906-3934.

Kennedy, L. G., Kichler, E. J., Seabrook, J. A., Matthews, J. I., & Dworatzek, P. D. (2019). Validity and reliability of a food skills questionnaire. *Journal of nutrition education and behaviour*, *51*(7), 857-864.

Kerzner, H. (2017). Project management: a systems approach to planning, scheduling, and controlling. *John Wiley & Sons*, *1*(1),451-477.

Kerzner, H. (2022). *Project management case studies.* John Wiley & Sons.

Kerzner, H., & Kerzner, H. R. (2017). *Project management: a systems approach to planning, scheduling, and controlling.* John Wiley & Sons.

Khalilzadeh, M., & Alikhani, A. M. (2020). The Effects of PMBOK Knowledge Areas on the Phases of ERP Implementation. *Industrial Engineering & Management Systems*, *19*(1), 242-253.

Kiremu, C. M. (2020). Assessing the Enablers in the Implementation of Public Procurement Laws in Kenya. A Case of Meru County, Kenya. *Social Sciences, 10*(12), 638-661.

Kliem, R. L., & Ludin, I. S. (2019). Reducing project risk. *Routledge*.

Kothari, C. (2017). research methodology methods and techniques . Published by New Age International (P) Ltd., Publishers, 91. Retrieved from http://methods.sagepub.com

Koutsogiannis, A. (2019). *Construction project management processes: Everything you need to know*. Retrieved from www.letsbuild.com

Kumar, R. (2018). *Research methodology: A step-by-step guide for beginners.* Sage. Retrieved from http://methods.sagepub.com.

Ladi, B. D., Muhammad, B. A., & Adamu, T. (2015). Appraisal of construction project procurement policies in Nigeria. *American Journal of Engineering Research, 4*(3), 19-24.

Larsson, J., & Larsson, L. (2020). Integration, application and importance of collaboration in sustainable project management. *Sustainability, 12*(2), 585-597.

Le, P. L., Elmughrabi, W., Dao, T. M., & Chaabane, A. (2020). Present focuses and future directions of decision-making in construction supply chain management: a systematic review. *International Journal of Construction Management*, 20(5), 490-509.

Li, J., Greenwood, D., & Kassem, M. (2019). Blockchain in the built environment and construction industry: A systematic review, conceptual models and practical use cases. *Automation in Construction, 102*(3), 288-307.

Liu, J., Hua, Z., Pang, Y., & Wang, X. (2022). Risk sharing for PPP project in construction waste recycling industry in China. *Environmental Science and Pollution Research*, *29*(9), 12614-12628.

Locke, E. A., & Latham, G. P. (2019). The development of goal setting theory: A half century retrospective. *Motivation Science*, 5(2), 93.

Lundin, R. A., & Söderholm, A. (1995). A theory of the temporary organization. *Scandinavian Journal of management*, *11*(4), 437-455.

Lune, H., & Berg, B. L. (2017). *Qualitative research methods for the social sciences.* Pearson. Retrieved from http://www.tools4dev.org. on 14/04/2022.

Mainga, W. (2017). Examining project learning, project management competencies, and project efficiency in project-based firms (PBFs). *International Journal of Managing Projects in Business*, *10*(3), 454-504.

Malmqvist, J., Hellberg, K., Möllås, G., Rose, R., & Shevlin, M. (2018). Conducting the pilot study: A neglected part of the research process? Methodological findings supporting the importance of piloting in qualitative research studies. *International Journal of Qualitative Methods*, *18*,

Manasse, A. G. (2020). Effects of the Public Procurement And Disposal Act Of 2015 on the Financial Management of The State Corporations In Kenya: A Case Study of Agriculture And Food Authority. *Young African Leaders Journal of Development*, *175*.

McDonald, J. H. (2017). *Homoscedasticity and Heteroscedasticity*. Retrieved 07 11, 2018, from https://stats.libretexts.org.

McEwan, B. (2020). Sampling and validity. *Annals of the International Communication Association*, *44*(3), 235-247.

Meredith, J. R., Shafer, S. M., & Mantel Jr, S. J. (2017). *Project management: a strategic managerial approach.* John Wiley & Sons.

Meredith, J. R., Shafer, S. M., Mantel, S. J., & Sutton, M. M. (2020). *Project management in practice*. John Wiley & Sons.

Milner, H. V. (2021). *Resisting protectionism: Global industries and the politics of international trade.* Princeton University Press.

Mishra, P., Pandey, C. M., Singh, U., Gupta, A., Sahu, C., & Keshri, A. (2019). Descriptive statistics and normality tests for statistical data. *Annals of cardiac anaesthesia*, 22(1), 67.

Mohammed, M. B., Adam, M. B., Ali, N., & Zulkafli, H. S. (2020). *Improved frequency table's measures of skewness and kurtosis with application to weather data. Communications in Statistics-Theory and Methods, 1-18.*

Mols, R. W. (2021). *Examination of the Relationship between External Environmental Conditions and Construction Project Failures in Countries of Northern Africa.*

Moon, H., Kim, K., Lee, H. S., Park, M., Williams, T. P., Son, B., & Chun, J. Y. (2020). Cost performance comparison of design-build and design-bid-build for building and civil projects using mediation analysis. *Journal of Construction Engineering and Management*, *146*(9), 04020113.

Morishima, M. (2017). The Japanese human resource management system: A learning bureaucracy. In d. Gruyter., *Human resource management on the Pacific Rim* (pp. 119-150).

Morledge, R., Smith, A. J., & Appiah, S. Y. (2021). *Building procurement*. John Wiley & Sons.

Msanga, R. H. (2020). *Effect of Procurement Procedures on Performance of Public Projects: The Case of Road Construction in Temeke Municipality in Tanzania.* Doctoral dissertation, The Open University of Tanzania.

Muhammad, Z., & Johar, F. (2019). Critical success factors of public–private partnership projects: a comparative analysis of the housing sector between Malaysia and Nigeria. *International Journal of Construction Management*, *19*(3), 257-269.

Muhwezi, L., Musiime, F. T., & Onyutha, C. (2020). Assessment of the Effects of Procurement Planning Processes on Performance of Construction Contracts in Local Governments in Uganda. *Journal of Civil, Construction and Environmental Engineering*, *5*(6), 151-152.

Mulligan, D. K., & Bamberger, K. A. (2019). Procurement as policy: Administrative process for machine learning. *Berkeley Tech. , LJ*, *34*, 773.

Munywoki, M. (2016). Public procurement regulations and procurement performance in Nairobi County . *Doctoral dissertation, University of Nairobi*.

Mutangili, S. K. (2019). Influence of Strategic Procurement Policies on Supply Chain Performance of County Governments in Kenya; A case of Nairobi County . *Journal of Procurement & Supply Chain*, *3*(3), 1-20.

Mutembei, J. K. (2019). Strategic Procurement Practices And Service Delivery In The Ministry Of National Treasury And Planning . *Doctoral dissertation, UoN*.

Mwau, F. (2017). Effects of Procurement Planning on Organizational Growth and Development. . *In International Conference on Information Technology and Business (ICITB) (pp. 90-95).*

Mwelu, N., Davis, P. R., Ke, Y., & Watundu, S. (2020). Compliance mediating role within road construction regulatory framework. *Journal of Public Procurement*.

Nicholas, J. M., & Steyn, H. (2020). *Project management for engineering, business and technology*. Routledge.

Noorzai, E., & Golabchi, M. (2020). Selecting a proper construction system in small and medium mass housing projects, considering success criteria and construction volume and height. *Journal of Engineering, Design and Technology*.

Olonite, O. A. (2021). Olonite Sampling Technique and Taro Yamane Sampling Method: The Paradigm Shift. Available at SSRN. *14*(2), 76-84.

Ong, M. H., & Puteh, F. (2017). Quantitative data analysis: Choosing between SPSS, PLS, and AMOS in social science research. *International Interdisciplinary Journal of Scientific Research*, *3*(1), 14-25.

Ong'ondo, C. B., Gwaya, A. O., & Masu, S. (2019). Appraising the Performance of Construction Projects during Implementation in Kenya, 1963-2018: A Literature Review Perspective. *Journal of Construction Engineering and Project Management*, *9*(2), 1-24.

Osei-Kyei, R., Chan, A. P., Javed, A. A., & Ameyaw, E. E. (2017). Critical success criteria for public-private partnership projects: international experts' opinion. *International Journal of Strategic Property Management*, *21*(1), 87-100.

Ozcekici Olcar, C. (2021). A model for exploring evolution of strategic alliances in project-based industries-The case of construction industry. *Izmir Institute of Technology thesis* .

Pandey, P., & Pandey, M. M. (2021). *Research Methodology Tools and Techniques.*

Papajohn, D. (2019). Contract Administration Functions and Tools for Design-Build and Construction Manager/General Contractor Project Delivery in US Highway Construction . *Doctoral dissertation, Arizona State University*.

Papajohn, D., El Asmar, M., Molenaar, K. R., & Alleman, D. (2020). Comparing contract administration functions for alternative and traditional delivery of highway projects. *Journal of Management in Engineering*, *36*(1), 04019038.

Parmentola, A., Ferretti, M., & Panetti, E. (2021). Exploring the university-industry cooperation in a low innovative region. What differences between low tech and high tech industries?. *International Entrepreneurship and Management Journal,, 17*(3), 1469-1.

Pastor, I. G., Olaso, J. R., & Fuente, F. S. (2018). Unveiling the Opportunities of Using Blockchain in Project Management. *Research and Education in Project Management (Bilbao, 2018), 22.* Retrieved from http://www.projectsmart.co.uk/pmbok.php

Phakedi, F. T. (2019). Evaluation of political influence in Public Procurement system, a case study of the Department of Public Works and Roads and the Department of Community Safety and Transport Management in the North West Province . *Doctoral dissertation*.

Pheng, L. S., & Hou, L. S. (2019). *The Conceptual Frameworks. In Construction Quality and the Economy (pp. 85-88)* . Springer, Singapore.

Plantinga, H., Voordijk, H., & Dorée, A. (2020). Clarifying strategic alignment in the public procurement process. *International Journal of Public Sector Management, 9*(3), 97-108.

PPOA. (2009). Manual for Procurement and Management of Manual for Procurement and Management of Manual for Procurement and Management of Manual for Procurement and Management of Projects Projects Projects Projects .

PPRA. (2019). The Public Procurement and Asset Disposal Act, 2015.

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.*

Prior, D. D., Mudiyanselage, L. K., & Hussain, O. K. (2021). Does formalization or centralization mitigate uncertainty in knowledge-intensive procurement? *Journal of Business & Industrial Marketing, 37*(2),433-446.

Qiu, Y., Chen, H., Sheng, Z., & Cheng, S. (2019). Governance of institutional complexity in megaproject organizations. *International journal of project management*, *37*(3), 425-443.

Rafindadi, A. D., Napiah, M., Othman, I., Mikić, M., & Al-Ashmori, Y. Y. (2020). Rate of occurrence of fatal accidents in Malaysian construction industry after BIM implementation. *International Journal of Engineering and Management Research*, e-ISSN, 22.

Rezende, D. A., dos Santos Madeira, G., de Souza Mendes, L., Breda, G. D., Zarpelão, B. B., & de Carvalho Figueiredo, F. (2014). Information and telecommunications project for a digital city: A brazilian case study. *Telematics and Informatics*, *31*(1), 98-120.

Richardson, G. L., & Jackson, B. M. (2018). *Project management theory and practice.* Auerbach Publications.

Roehrich, J. K., Davies, A., Frederiksen, L., & Sergeeeva, N. (2019). Management innovation in complex products and systems: The case of integrated project teams. *Industrial Marketing Management*, *79*, 84-93.

ROK. (2010). *The Transformative and Effective Infrastructure Conference Report.* KICC – Nairobi: Government Printer.

Rosenberger, P., & Tick, J. (2018). Suitability of PMBOK 6 th edition for agile-developed IT Projects. In 2018 IEEE 18th International Symposium on Computational Intelligence and Informatics (CINTI) (pp. 000241-000246). *IEEE*.

Rushton, A., Croucher, P., & Baker, P. (2022). The handbook of logistics and distribution management: Understanding the supply chain. *Kogan Page Publishers.*, 2(2),191-209.

Rustamova, S. (2021). Application of PMI PMBOK standard in the development of the Construction cost management projects plan. *Internationaljournal of trends in business administration*, *11*(1), 242-262.

Sabini, L., Muzio, D., & Alderman, N. (2019). 25 years of 'sustainable projects'. What we know and what the literature says. *International Journal of Project Management*, *37*(6), 820-838.

Safder, A., & Yousaf, S. (2018). Influence of ISO 9001 certification on project management performance in software industry. *European Online Journal of Natural and Social Sciences: Proceedings*, 7(3),19.

Salim, A. S., & Kitheka, S. (2019). *County Effect of procurement planning on procurement performance of state corporations in Mombasa*, Kenya. *Technical University of Mombasa* .

Salome, O. L. (2018). *Contract Management Practices and Performance of Housing Construction Projects In Nairobi City County, Kenya: A Case of National Construction Authority*. Doctoral Dissertation, Kenyatta University.

Schiele, H. (2019). Purchasing and supply management. In Operations, logistics and supply chain management (pp. 45-73). Springer, Cham.

Sebastian, K. (2020). Sustainability indicators of corporate communications: translated into public procurement and the implications of their digitalization. *Doctoral dissertation, Università della Svizzera italiana*, *13*(2),25-29.

Sepasgozar, S. M., Karimi, R., Shirowzhan, S., Mojtahedi, M., Ebrahimzadeh, S., & McCarthy, D. (2019). Delay causes and emerging digital tools: A novel model of delay analysis, including integrated project delivery and PMBOK. *Buildings*, *9*(9),19-21

Shitseswa, E. A., & Odero, J. (2017). Effect of Procurement Practices on Procurement Performance Of Public Sugar Manufacturing Firms In Western Kenya. *International Journal of Management Research & Review*, 7(4),521-535.

Shurrab, J., Hussain, M., & Khan, M. (2019). Green and sustainable practices in the construction industry: a confirmatory factor analysis approach. *Engineering, Construction and Architectural Management*.

Sim, J., & Waterfield, J. (2019). Focus group methodology: some ethical challenges. *Quality & Quantity*, *53*(6), 3003-3022.

Simonette, M. J., Magalhães, M. E., & Spina, E. (2016). Pmbok five process groups and essence standard: Perfect partners?. *In 2016 4th International Conference in Software Engineering Research and Innovation (CONISOFT) IEEE.*, (pp. 53-58).

Singh, S. (2021). Stakeholder management within BIM implemented projects in the UK construction industry.

Soda, G., & Furlotti, M. (2017). Bringing tasks back in: An organizational theory of resource complementarity and partner selection. *Journal of Management*, *43*(2), 348-375.

Somba, M. (2017). Role of Procurement Practices on the Performance of Projects Funded by Constituency Development Fund in Kenya. *PhD diss., COHRED-JKUAT*.

Sopic, M., VuNomanović, M., & Car-Pušić, D. (2019). RisN and Opportunities of TaNing Different Procurement Routes in Construction Projects in Croatia. *In 14th International Conference Organization, Technology And Management In Construction.*

Spivak, M. (2018). *Calculus on manifolds: a modern approach to classical theorems of advanced calculus.* CRC press.

Steiss, A. W. (2019). Strategic management for public and nonprofit organizations. . *Routledge.*

Stephen, M. (2014). Determinants of Timely Completion of Projects in Kenya: A Case of Kenya Power and Lighting Company, Thika. *ABC Journal of Advanced Research, 3* (2),345-367.

Sultan, B., & Alaghbari, W. E. (2014). Incompetent construction technologies and resources in the construction industry of Yemen. *Journal of Construction Engineering and Project Management*, 4(1), 8-14.

Svejvig, P. (2021). A Meta-theoretical framework for theory building in project management. *International Journal of Project Management*, *39*(8), 849-872.

Taber, K. S. (2018). The use of Cronbach's alpha when developing and reporting research instruments in science education. *Research in science education*, *48*(6), 1273-1296.

Thai, K. V. (2017). *International handbook of public procurement.* Routledge.

Thobakgale, M. P., & Mokgopo, T. I. (2018). Public procurement and South Africa's 1996 constitution: panacea for combating corruption? *Journal of Public Administration and Development Alternatives (JPADA)*, *3*(1), 41-54.

Townsend, R., & Gershon, M. (2020). Attaining successful construction project execution through personnel and communication. *Journal of Construction Engineering and Management*, *146*(9), 04020101.

Tukamuhabwa,B.R.(2012).Antecedents and Consequences of Public Procurement NonCompliance Behaviour. *Journal of Economics and Behavioural Studies*, *4*(1), 34-46.

Turner, J. R., & Cochrane, R. A. (1993). Goals-and-methods matrix: coping with projects with ill defined goals and/or methods of achieving them. *International Journal of project management*, *11*(2), 93-102.

Uyarra, E., Zabala-Iturriagagoitia, J. M., Flanagan, K., & Magro, E. (2020). Public procurement, innovation and industrial policy: Rationales, roles, capabilities and implementation. *Research Policy*, *49*(1), 103844.

Van Merriënboer, J. J., & Kirschner, P. A. (2017). *Ten steps to complex learning: A systematic approach to four-component instructional design.* Routledge. Retrieved from https://relivingmbadays.wordpress.com.

Viljoen, G. (2019). Factors limiting public-private partnerships in South Africa's water sector . *Doctoral dissertation, University of Pretoria*.

Wamba-Taguimdje, S. L., Wamba, S. F., Kamdjoug, J. R., & Wanko, C. E. (2020). Influence of artificial intelligence (AI) on firm performance: the business value of AI-based transformation projects. *Business Process Management Journal*, *26*(7), 1893-1924.

Ward, G. G. (2018). *Effective Project Management: Guidance and Checklists for Engineering and Construction.* John Wiley & Sons.

Wijewardana, C., Jayasena, H. S., & Ranadewa, K. A. (2013). Impact of government policies and regulations when adopting alternative procurement methods. In Proceeding of The Second World Construction Symposium 2013 . *Socio-Economic Sustainability* .

Wipulanusat, W., Panuwatwanich, K., Stewart, R. A., & Sunkpho, J. (2019). Innovation diffusion process in the Australian construction industry. *In IOP Conference Series: Materials Science and Engineering* , *652*(1), 321-346.

APPENDICES

Appendix I: Introduction letter

JOMO KENYATTA UNIVERSITY OF AGRICULTURE AND TECHNOLOGY

SCHOOL OF ARCHITECTURE AND BUILDING SCIENCES (SABS)

JKUAT – MAIN CAMPUS

Dear Respondent

I am a student at Jomo Kenyatta University of Agriculture and technology pursuing a master's degree in Construction Project Management. My research topic *is "**Effectiveness of Construction Contract Procurement Processes in Public Projects in Kenya; A survey of County Government Funded Projects**"*

Am assuring you that the information you give will be handled with total confidence and at no time will you be required to identify yourself by name. For you to participate you must be an employee of this organization. Kindly answer all questions as clearly as possible to the best of your knowledge

Yours faithfully,

OWITI JACOB OMONDI

AB343-3457/2015

Appendix II: Questionnaire

QUESTIONNAIRE FOR THE PROCUREMENT DEPARTMENTS

This study focuses on the access the ***Effectiveness of Construction Contract Procurement Processes in Public Projects in Kenya; A survey of County Government Funded Projects***. Please note that your responses are confidential and anonymous as you are not required to indicate your name. The questionnaire will be purely for academic purposes. Kindly answer all questions to the best of your knowledge.

SECTION A: DEMOGRAPHIC INFORMATION

Please tick or fill in the blanks to the question below;

1.) What is your role?

[ ] Tender opening committee member

[ ] Tender Evaluation committee member

[ ] Inspection & Acceptance committee member

[ ] Other (Specify)……..….

2.) For how long have you been in this position?

1-5 years [ ] 6-10 years [ ] 11-15 years Over 15 years [ ]

3.) What is the highest Qualification attained?

Certificate [ ] Diploma [ ] Degree [ ] Masters [ ] other [specify]……..

4.) Kindly rate your level of understanding of the procurement process at the County on a scale of 1-5 where 1 represents poor while 5 represents Excellent?

Poor [ ] Fair [ ] Good [ ] Very Good [ ] Excellent [ ]

SECTION B: INSTRUCTIONS

PART I: GOVERNMENT POLICIES/PROCEDURES ON PROCUREMENT

Please indicate the extent to which you agree or disagree with each statement by placing a tick where appropriate using the following 5-Point Likert scale: In Parts **I, II**, **III** and **IV**

5 = Very Great Extent (VGE) 4 = Great Extent (GE) 3 = Moderate Extent (ME) 2 = Small Extent (SE) 1 = Very Small Extent (VSE)

POLICIES/PROCEDURES ON PROCUREMENT	**1**	**2**	**3**	**4**	**5**
Project budget is according to the contract					
The committee considered the value of money during the evaluation process					
Ethical practices are observed in the procurement department					
Adherence to the procurement legal framework is time consuming					
The County procurement team uses appropriate contractor procurement methods					
Procurement procedures enhances transparency					
Procurement procedures have caused delays in decision making					
The policies promote competition in public procurement					
Procurement was efficient with little or no delay					
Tender bids evaluation takes longer than expected.					
The prevailing procurement legal framework is too bureaucratic and encourages corrupt practices					
The procurement officials make improper use of their position					

PART II: RESOURCES

Please indicate the extent to which you agree or disagree with each statement by placing a tick where appropriate using the following 5-Point Likert scale: In Parts **I, II**, **III** and **IV**

5 = Very Great Extent (VGE) 4 = Great Extent (GE) 3 = Moderate Extent (ME) 2 = Small Extent (SE) 1 = Very Small Extent (VSE)

RESOURCES	**1**	**2**	**3**	**4**	**5**
There is over reliance of traditional methods in procurement resource					
There are laid down guidelines on staff training on procurement practices by the County					
The financial resources are adequate for the procurement process					
Technical support is based on needs assessment of the project					
Technical support was provided for during the procurement process					
The procurement team are well motivated by the County					
Procurement of contractor is within the resource limits					
The financial resources are allocated based on need assessment					
Procurement of staff were professionally qualified and experienced					
The County procurement team identifies sources of					

funding					

PART III: LEVELS OF PLANNING

Please indicate the extent to which you agree or disagree with each statement by placing a tick where appropriate using the following 5-Point Likert scale: In Parts **I, II**, **III** and **IV**

5 = Very Great Extent (VGE) 4 = Great Extent (GE) 3 = Moderate Extent (ME) 2 = Small Extent (SE) 1 = Very Small Extent (VSE)

LEVELS OF PLANNING	**1**	**2**	**3**	**4**	**5**
Poor planning leads to big budget deficits for the projects					
The procurement planning helps in estimating the time required to complete the projects					
The procurement plan helps in allocating funds for the various projects					
The procurement planning results to compliance to the County's set procurement procedures					
There is effective communication of the tender results to the contractors by the evaluation committee					
The procurement plan helps in determining the total value of the anticipated costs of the projects					
The procurement is carried out as per the set procedures and guidelines in PPOA					
There are proper consultations among the key procurement committees in the County					
The procurement plan is key in deciding when to implement the projects					
The procurement plan identifies the projects as per the County needs					

PART IV: EXPERT VIEW FOR ENHANCING PROCUREMENT PROCESS

Kindly give your suggestions on ways of improving the process and the results of the procurement process for construction contracts for Counties in Kenya

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QUESTIONNAIRE FOR CONTRACTORS

This study focuses on the access the ***Effectiveness of Construction Contract Procurement Processes in Public Projects in Kenya; A survey of County Government Funded Projects***. Please note that your responses are confidential and anonymous as you are not required to indicate your name.

SECTION A: DEMOGRAPHIC INFORMATION

Please tick or fill in the blanks to the question below;

1.) Indicate the type of Construction your firm has undertaken with the County?

[ ] Building Projects

[ ] Roads Projects

[ ] Hospitality projects

[ ] Other (Specify)…….

2.) Indicate the NCA class of your firm?

NCA 1 [ ] NCA 2 [ ] NCA 3NCA 4 [ ] NCA5 [ ] NCA 6 [ ] NCA 7 [ ] NCA 8 [ ]

3.) For how long has your firm been in operation?

Less than 1 Year [ ] 1-5 Years [ ] 6-10 Years [ ] 10-15 Years [ ] Over 15 Years [ ]

4.) Kindly rate your level of understanding of the procurement process at the County on a scale of 1-5 where 1 represents poor while 5 represents Excellent?

Poor [ ] Fair [ ] Good [ ] Very Good [ ] Excellent [ ]

PART I: PERFORMANCE OF PROCUREMENT PROCESS

Please indicate the extent to which you agree or disagree with each statement by placing a tick where appropriate using the following 5-Point Likert scale: In Parts **I, II**, **III** and **IV**

5 = Very Great Extent (VGE) 4 = Great Extent (GE) 3 = Moderate Extent (ME) 2 = Small Extent (SE) 1 = Very Small Extent (VSE)

PERFORMANCE OF PROCUREMENT PROCESS	**1**	**2**	**3**	**4**	**5**
There was no delay during the tendering process					
The procurement team had an effective control of the procurement process					
Contractors were given a fair evaluation during the bidding process					
There were clear and precise guidelines during the bidding process					
There was effective management of the information during the bidding process					
The procurement process was conducted with professionalism by the procurement team					
There was no political interference or manipulation during the tendering process					

PART II: EXPERT VIEW FOR ENHANCING PROCUREMENT PROCESS

Kindly give your suggestions on ways of improving the process and the results of the procurement process for construction contractors for County projects in Kenya

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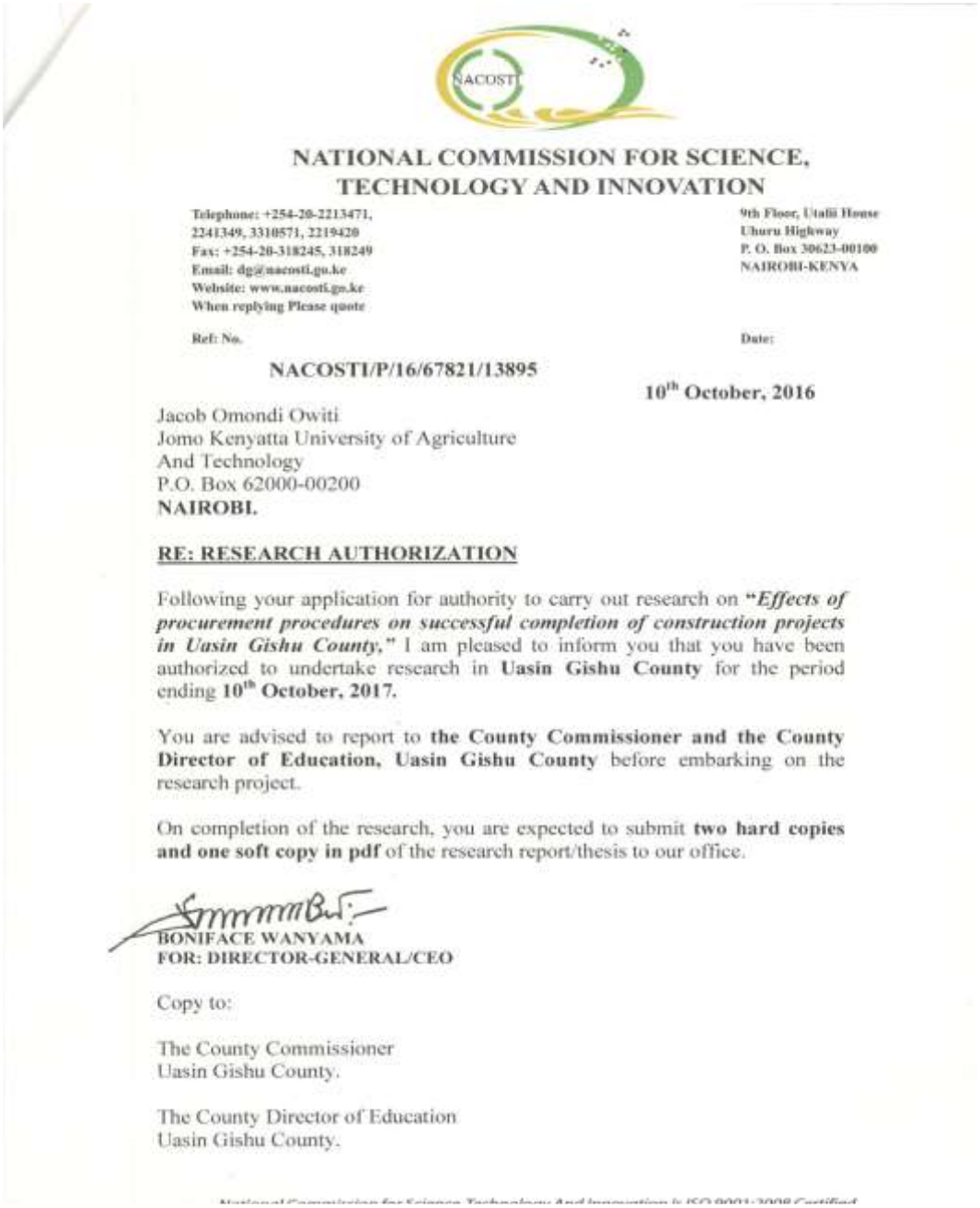
Appendix III: Research authorization



NATIONAL COMMISSION FOR SCIENCE, TECHNOLOGY AND INNOVATION

Telephone: +254-20-2213471, 2241349, 3310571, 2219420
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Email: dg@nacosti.go.ke
Website: www.nacosti.go.ke
When replying Please quote

9th Floor, Utalii House
Uhuru Highway
P. O. Box 30623-00100
NAIROBI-KENYA

Ref: No. NACOSTI/P/16/67821/13895

Date: 10th October, 2016

Jacob Omondi Owiti
Jomo Kenyatta University of Agriculture
And Technology
P.O. Box 62000-00200
NAIROBI.

RE: RESEARCH AUTHORIZATION

Following your application for authority to carry out research on ***"Effects of procurement procedures on successful completion of construction projects in Uasin Gishu County,"*** I am pleased to inform you that you have been authorized to undertake research in **Uasin Gishu County** for the period ending **10th October, 2017.**

You are advised to report to **the County Commissioner and the County Director of Education, Uasin Gishu County** before embarking on the research project.

On completion of the research, you are expected to submit **two hard copies and one soft copy in pdf** of the research report/thesis to our office.

BONIFACE WANYAMA
FOR: DIRECTOR-GENERAL/CEO

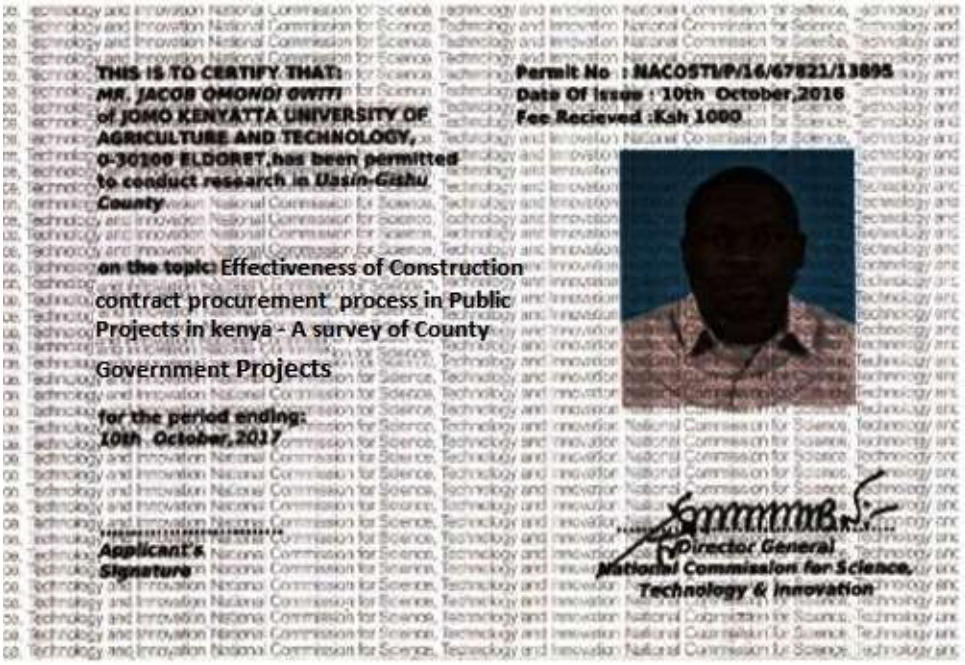
Copy to:

The County Commissioner
Uasin Gishu County.

The County Director of Education
Uasin Gishu County.

National Commission for Science, Technology And Innovation is ISO 9001:2008 Certified

Appendix IV: Research permit



THIS IS TO CERTIFY THAT:
MR. JACOB OMONDI OWITI
of JOMO KENYATTA UNIVERSITY OF AGRICULTURE AND TECHNOLOGY, 0-30100 ELDORET,has been permitted to conduct research in Uasin-Gishu County

Permit No : NACOSTI/P/16/67821/13895
Date Of Issue : 10th October,2016
Fee Recieved :Ksh 1000

on the topic: Effectiveness of Construction contract procurement process in Public Projects in kenya - A survey of County Government Projects

for the period ending:
10th October,2017

.....
Applicant's Signature

.....
Director General
National Commission for Science, Technology & Innovation

CONDITIONS

1. You must report to the County Commissioner and the County Education Officer of the area before embarking on your research. Failure to do that may lead to the cancellation of your permit.
2. Government Officer will not be interviewed without prior appointment.
3. No questionaire will be used unless it has been approved.
4. Excavation, filming and collection of biological specimens are subject to further permission from the relevant Government Ministries.
5. You are required to submit at least two(2) hard copies and one (1) soft copy of your final report.
6. The Government of Kenya reserves the right to modify the conditions of this permit including its cancellation without notice

REPUBLIC OF KENYA

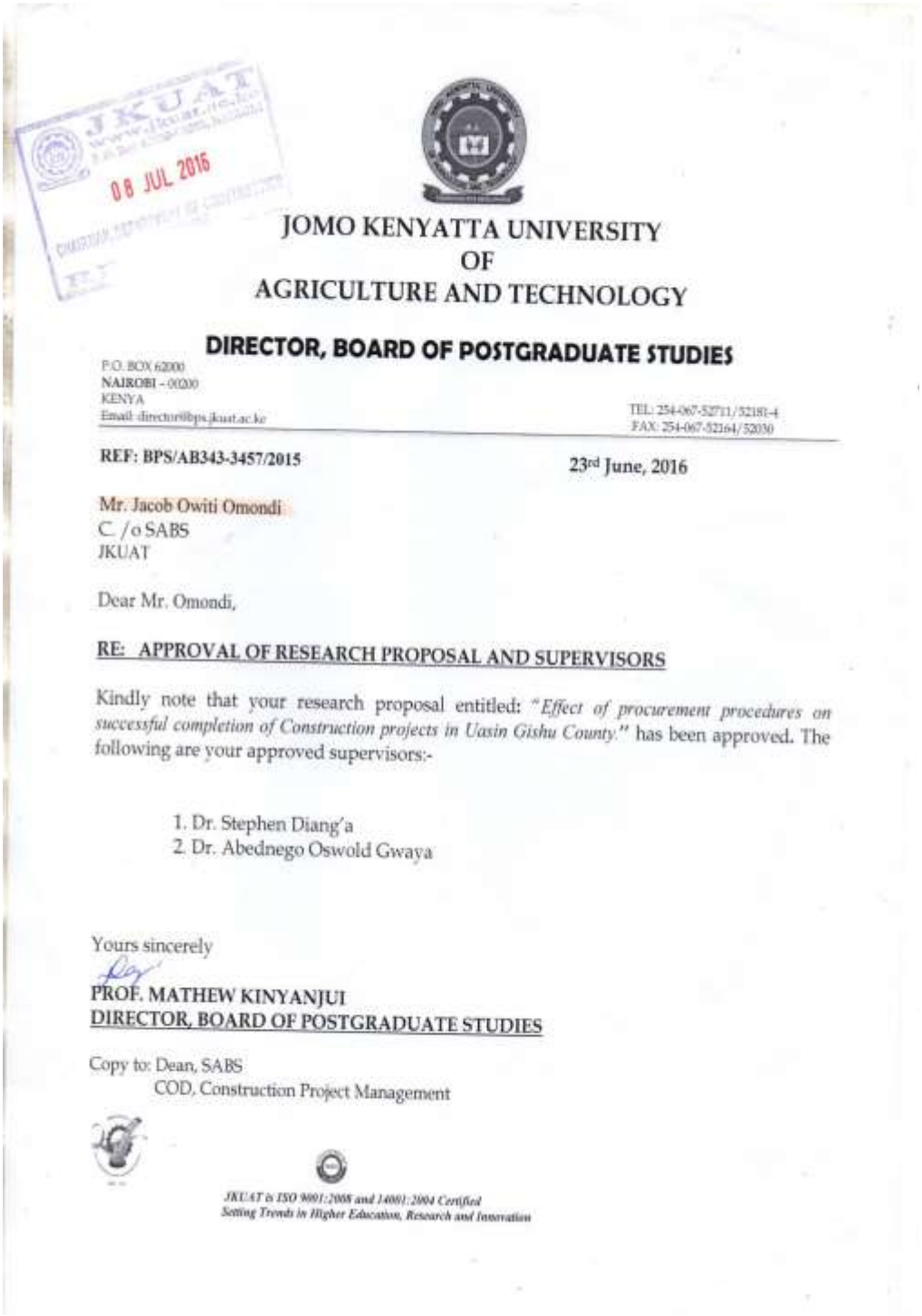
National Commission for Science, Technology and Innovation

RESEACH CLEARANCE PERMIT

Serial No.A 11222

CONDITIONS: see back page

Appendix V: Research approval letter



JKUAT
06 JUL 2016

JOMO KENYATTA UNIVERSITY
OF
AGRICULTURE AND TECHNOLOGY

DIRECTOR, BOARD OF POSTGRADUATE STUDIES

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REF: BPS/AB343-3457/2015

23rd June, 2016

Mr. Jacob Owiti Omondi
C /o SABS
JKUAT

Dear Mr. Omondi,

RE: APPROVAL OF RESEARCH PROPOSAL AND SUPERVISORS

Kindly note that your research proposal entitled: *"Effect of procurement procedures on successful completion of Construction projects in Uasin Gishu County."* has been approved. The following are your approved supervisors:-

1. Dr. Stephen Diang'a
2. Dr. Abednego Oswold Gwaya

Yours sincerely

PROF. MATHEW KINYANJUI
DIRECTOR, BOARD OF POSTGRADUATE STUDIES

Copy to: Dean, SABS
COD, Construction Project Management

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