ASSESSMENT OF FACTORS INFLUENCING CONTRACT ADMINISTRATION AND MANAGEMENT PRACTICES IN PUBLIC CONSTRUCTION PROJECTS IN RWANDA

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Assessment of Factors Influencing Contract Administration and Management Practices in Public Construction Projects in Rwanda

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DECLARATION

This thesis is my original work and has not been presented for a degree in any other university

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This thesis has been submitted for examination with our approval as the University Supervisors

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DEDICATION

This work is dedicated to all might God, my late parents, my lovely wife Ruth UWAYISABA, my children, my family members, my classmate and team of supervisors who contributed to successful completion of this work.

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ACRONYMS AND ABREVIATIONS

CCA	Construction Contract Administration
CIPS	Chartered Institute of Procurement & Supply
CoK	City of Kigali
EDCL	Energy Development Corporation
EVMS	Earned Value Management System
FAR	Federal Acquisition Regulations
FIDIC	French Initials for International Federation of Consulting Engineers
GCC	General Conditions of Contract
GoR	Government of Rwanda
JBCC	The Joint Building Contracts Committee
M&E	Monitoring and Evaluation
MINECOFIN	Ministry of Finance and Economic Planning
NCC	ZAMBIA National Council for Construction
NCMA	National Contract Management Association
NEC3	New Engineering Contract
OAG	Office of Auditor General of State Finances
PMI	Project Management Institute
RDB	Rwanda Development Board

RHA	Rwanda Housing Authority
RTDA	Rwanda Transport Development Agency
SPSS	Statistical Package for Social Science
USA	United States of America
WASAC	Water and Sanitation Corporation

ABSTRACT

Construction contract administration in Rwanda suffer from various challenges due to factors such as regulatory frameworks, infrastructure development, and economic conditions, shortages of skilled personnel and insufficient resources for project oversight, delayed payments, Cultural diversity and language barriers among stakeholders, Misunderstandings or misinterpretations of contractual terms and specifications. This has been observed in other African Countries because Construction contract administration has been followed from European industries (Rugambwa and Al, 2020) Particularly in Rwanda, Public infrastructure that were aiming at the welfare of the people through providing them with basic infrastructures faced delays in completion while others were abandoned due to lack of proper contract administration and management framework in place. Construction projects in Rwanda is the most competitive and risky business. The money involved in this sector is from public fund, so it becomes very important to see that such projects get successful to avoid any type of blockage of funds. In addition, it is equally important to complete the project in time to avoid obsolescence loss of the product. The aim of this research was to formulate an appropriate contract administration and management framework that can be adopted in public construction projects in Rwanda. Data collection was done using a self-administered structured questionnaire and interview to the public construction projects players. A sample of 100 respondents was selected through a purposive sampling technique, probability sampling and census technique to participate in this study whereby project Engineers, chief budget managers, legal advisors, Procurement officers and contractor's staff, were the respondents in this study. The data provided by the questionnaires was analysed using descriptive statistical methods. The study findings show that the unit price contract is mostly used in public construction project in Rwanda, Value for money, familiarity and previous experience with the contract type, desire to avoid claims and improve working relationship, relative risk aversion of employer and contractor (contractor and employer diversification and size, project size for the contractor) and financial costs are the most important factors affecting the choice of contract type in construction projects in Rwanda among others. Findings show also that Poor contract administration and lack of reporting system are the most important factor that affect performance of public construction project and from which disputes among parties arise. The administration of construction projects in Rwanda should be done through the developed framework because it will help the contract administrator to administer Construction projects in planned manner and develop a better relationship between the owner and the contractor by reducing conflicts. The study recommends that public construction industry players in Rwanda adopt the proposed contract administration and management framework to enhance project performance and finally it recommends that contract management law and existing practices in Rwanda should be revised/changed to create the enabler environment for this framework to operate because introducing a construction project team (project manager, Contract administrator/Formulator, Construction site/Operations Manager and a Contract manager/Implementer, legal in one project would be a paradigm shift from our current practices in Africa.

CHAPTER ONE

INTRODUCTION

1.1 Background of the Study

In many parts of the world especially in USA construction project faced by various challenges like lack of operating capital and cash flow, planning and growth, skilled labor, change in contract clauses in case of pandemic such covid-19 (Adepu, Kermanshachi, Pamidimukkala, & Loganathan, 2023). In 2018, more than 50% of the USA labor force worked in jobs for which education requirement was a high school degree this constitute unskilled labor due to lack of specialization in civil engineering.

In Africa many contract administrations for public construction project built public infrastructure like roads, market, government building, hydroelectric station, model village at high cost and in return these above building is completed with low quality. This were caused by construction supplier's materials and services have monopoly power in other ways enhances inefficiency and lowering quality (Nsanzimana, 2017).

Construction contract administration in countries like Uganda, Kenya, and Rwanda presents various challenges due to factors such as regulatory frameworks, infrastructure development, and economic conditions. Each of these countries has its own legal and regulatory frameworks governing construction contracts. Understanding and complying with these regulations can be complex and time-consuming for both contractors and administrators. Changes in legislation or inconsistencies in interpretation can also pose challenges (Mwenda, 2019; Rugambwa, Nzabanita, & Habiyakare, 2020). Corruption is a significant challenge in some African countries, including Uganda, Kenya, and Rwanda. Construction contract administration can be hindered by demands for bribes or kickbacks, which can lead to delays, cost overruns, and even project failure (Kiggundu, 2017; Kimemia, Nyamu, & Mbugua, 2019). In addition, Limited infrastructure, particularly in remote areas, can hinder effective contract administration. Poor road networks, inadequate access to electricity, and limited internet connectivity may impede communication and project monitoring. Additionally, shortages of skilled personnel and insufficient resources for project

oversight can exacerbate these challenges (Kasera, Ogwang, & Kateregga, 2018; Asiimwe & Kuteesa, 2019). Delayed payments are common in the construction industry across these countries, which can strain cash flow for contractors and subcontractors. Payment disputes may arise due to unclear contract terms, variations, or disagreements over work quality. These issues can lead to project disruptions, disputes, and litigation (Ayieko & Mwijuka, 2017; Otieno & Mbugua, 2018). Political instability and security challenges in the region can disrupt construction projects and contract administration. Civil unrest, ethnic tensions, and terrorism threats may lead to project suspensions, evacuations, or even abandonment, affecting timelines and contractual obligations (Njenga, 2019; Mutesasira & Tindiwensi, 2020). Finally, Cultural diversity and language barriers among stakeholders involved in construction projects can complicate contract administration. Misunderstandings or misinterpretations of contractual terms and specifications may occur, leading to disputes and delays. Effective communication strategies and cultural sensitivity are essential for successful contract administration (Okello, Muwonge, & Onen, 2018; Habiyakare, Sebok, & Mutabazi, 2021).

According to Kigali city statistical abstract (2016/2017), road works in good condition targeted in EDPRS II was 70% while 51% was achieved. The need to conduct study of the influence of contract administration practices on the performance of public construction project in Rwanda.

Contract management and administration involves making decisions and the timely flow of information and decisions to enable completion of the project as required by the contract documents including review and observation of the construction project. This is important to the client, contractor and consultant not only to determine that the work is proceeding in conformity with the contract documents, but also because it allows a final opportunity to detect any inaccuracies, ambiguities or inconsistencies in the design (Zambian National Council for Construction (NCC), 2018). Successful contract management, however, is most effective if upstream or pre-award activities are properly carried out. The construction industry is one of the major industries contributing significantly to the socio-economic development growth (Choge & Muturi, 2014). The expenditure on development projects in Rwanda for year 2014-

2015 was about 784.1 billion Rwanda Francs (784.1 million USD), which was equivalent to 44.7% of total budget. Part of this expenditure was on construction projects as the country rebuilt its basic infrastructure after many years of underdevelopment and the 1994 Genocide. However, the construction industry is plagued by project expenditure exceeding the budget, delays in completing the projects in time and lack of acceptance by the stakeholders or end users at project completion (MINECOFIN, 2014). According to Crown Agents report about the performance and value for money assessment of public procurement system revealed that contracts show a significant delay in all categories of contracts but especially for works. (Agents, 2015).

Once again during the financial year ending 30th June 2015, the Auditor General of State finances reported the status of previous contracts as follows: Sixteen (16) contracts (21%) involving Frw 3,581,716,475 (3,581,716 USD) were completed and final handover done; Thirty-seven (37) contracts (48%) involving Frw 81,769,961,483 (81,769,961 USD) had progressed and provisional handover had been done; and twenty-four (24) contracts (31%) involving Frw 40,701,220,078 (40,701,220 USD) had not been completed as at the time of the audits. During the same year, the Auditor general reported Cases of delayed and abandoned works identified during the year audited amounted to Frw 32,492,344,915 (32,492,345 USD) for 70 contracts. of these, 12 contracts worth 4,370,563,354 Frw (4,370,563 USD) were abandoned (Office of Auditor General of State Finances (OAG), 2014). All of those projects were all aiming at the welfare of the People through providing them with access roads, electricity, clean water, hospitals, schools and other necessary infrastructure. In this case, public funds were spent yet the intended results were not achieved. Therefore, there is a need to examine the influence of contract administration and management practices on the performance of public construction projects in Rwanda.

1.2 Statement of the Problem

Globally especially in Asia construction project suffered with shortages industry infrastructure, lack of enough clients, insufficient consultants, and contractor's incompetence (Kalamagye, 2019). The function of contract administration in a

construction project team is not emphasized well enough to enhance performance in the construction project. Consequently, the contracts are not executed smoothly; projects delays, contractual claims and disputes are the order of the day, particularly in public projects. This situation reflects badly on the organization goal performance of the construction project as a whole (Kabera, 2016).

Construction projects in Rwanda is the most competitive and risky business. The money involved in this sector is from public fund, so it becomes very important to see that such projects get successful to avoid any type of blockage of funds. In addition, it is equally important to complete the project in time to avoid obsolescence loss of the product. In almost all construction projects, there is a contract between owner and contractor for desired product after successful completion of the construction project. Each construction contract is unique and need unique understanding and interpretation as per the contractual requirements. Each contract carries a set of obligations to be performed by the parties involved in the contract, so there is a need of contract administration (The Republic of Rwanda, 2014).

In current time, the projects are becoming big and more complex due to technological development, joint ventures and foreign collaboration, specified needs, time constraints, special infrastructural requirements and parallel involvement of various agencies in project. Today construction working environment involves multiparty participation. Needs and constraints in a multi-party working situation bring complications in project management. These can further develop into conflicts and disputes, which bring cost consequences, direct and indirect, to clients and contractors. Construction project is operating under high level of competition and profitability became the prime concern for all the contracting organizations. The real strength of successful contracting parties lies in cooperation of the owner and contractor as partners of the same team with common goal laying more stress on their mutual trust and understanding. However, their positions are rarely equal, and contracts are left open to multiple interpretations. Contract administration needs to be emphasized in order to achieve smooth execution of the construction work. (Surbhi, 2020).

1.3 Aim and Purpose of the Study

The aim of this research is to establish an appropriate contract administration and management framework that can be adopted in public construction projects in Rwanda.

1.4 Main Objective

The main objective of this research is to assess the factors influencing contract administration and management practices in public construction projects in Rwanda.

1.5 Specific Objectives of the Study

The research study has the following specific objectives:

1. To describe and rank the types of contracts used in public construction Projects in Rwanda.
2. To evaluate the factors that influence the choice of contract type used in public construction projects in Rwanda.
3. To assess contract administration and management problems that affect success of public construction projects in Rwanda.
4. To formulate a project management framework that can enhance contract administration and management in public construction in Rwanda.

1.6 Specific Research Questions

The following questions guided the research: -

1. What are the types of contracts mostly used in public construction projects in Rwanda?
2. What are the factors that lead to the choice of contract type to be used in public construction projects in Rwanda?
3. What the common problems related to contract administration and management that affect the success of public construction project in Rwanda?
4. What is the project management framework that can enhance contract administration and management in public construction in Rwanda?

1.7 Significance of the Study

The results of this research indicated influence between contract administration practices and the construction project performance. A good contract management has the capacity to increase revenue opportunities, decrease costs and enhance service delivery (REALYST, 2015). This ability decreases rapidly as the key players are not managing successfully contracts.

It is expected that these results will inform construction industry professionals and clients in Rwanda on the benefits of contract administration and management on the projects performance. Poor contract management leads to paying for goods and services which do not meet the standards set out in the contract; significantly higher costs; revenue collection delays; customer and supplier dissatisfaction; overcharges by suppliers or underpayments by buyers; erroneous payments; Service delivery issues and Missed savings opportunities. It is expected that the results of this study will inform policy makers and property developers on the benefits of contracting cycle length, consistent quality, schedule adherence and cost effectiveness for project performance.

1.8 Justification of the Study

The construction industry contributes to a nation's socio-economic development by provision of the buildings, roads, water tanks and other infrastructures, which are used in the production of all goods and the provision of services in the economy. The construction industry responds many needs of population that related to daily life, and can stimulate economic activities in these sectors, (Serdar, 2016).

It is believed that the construction industry is one of the major industries contributing significantly to the socio-economic development growth (Choge & Muturi, 2014). According to the report of The Ministry of Finance and Economic the construction sector in Rwanda is a key potential driver of economic growth attract visitors from all over the world especially national park of Virunga hotels. Planning the expenditure on development projects in Rwanda for year 2014-2015, was about 784.1 billion Rwanda Francs, which was equivalent to 44.7% of total budget and a big part of this

expenditure was on construction projects as the country rebuilt its basic infrastructure after many years of underdevelopment and the 1994 Genocide. The construction industry contributes more than seven per cent to the national GDP. Private and public works were growing at 9.4 per cent starting 2014 (RDB, 2014)

Today, Construction projects are becoming very big in size and more complex due to technological development, joint ventures and foreign collaboration, specified needs, time constraints, special infrastructural requirements and parallel involvement of various agencies in project and construction industry is operating under high level of competition and profitability became the prime concern for all the contracting organizations. It is of high importance to continuously assess methods and techniques that might contribute positively to the performance of construction industry. Since some of the studies conducted in previous years on the subject of improving project success did not cover contract administration practice, this research was utmost important as it will deal with factors influencing contract administration efficiency and their relation to construction project success which will thereby contribute to an efficient construction industry in general and to Rwanda in particular (Kamal, 2023).

1.9 Definition of Technical Terms

Administration: act of appointing an administrator to oversee a company's affairs due to cash flow issues or threats from creditors. Administration involves establishing policies, rules, and regulations that guide the actions of employees and ensure organisational efficiency. The role of administration is decisive in nature (Kovač & Jukić, 2018).

Contract: According to English Oxford Living Dictionaries, a contract is a written or spoken agreement, especially one concerning employment, sales, or tenancy that is intended to be enforceable by law.

Contract management sometimes refers to contract administration according to Gutterman, 2023 revealed that contract administration refers to the processes and procedures that companies may implement in order to manage the negotiation,

execution, performance, modification and termination of contracts with various parties including customers, vendors, distribution, contractors, and employees.

Construction contract: is a legally binding agreement between two parties on the details and cost of a construction project based on policies and conditions recorded in document form (Anggraeni, 2019).

Construction project refers to any work carried out in connection with the construction, alteration, conversion, fitting-out, commissioning, renovation, repair, maintenance, refurbishing, and demolition, decommissioning or dismantling of a structure. (Brian , Graham , & Abdul-Majeed , 2021).

Construction site operations management involves overseeing the various activities and resources involved in the construction process to ensure efficient, safe, and timely completion of projects. It encompasses planning, organizing, coordinating, and controlling all aspects of construction site activities, including personnel, materials, equipment, finances, and timelines. Effective operations management in construction aims to optimize productivity, minimize costs, mitigate risks, and maintain quality standards (A Guide to the Project Management Body of Knowledge (PMBOK Guide), 2017).

Construction project management refers to the systematic planning, coordination, and control of resources, activities, and stakeholders to achieve specific objectives within the constraints of time, cost, quality, scope, risk, and other factors inherent in construction projects. It involves overseeing all phases of a construction project, from initial planning and design to procurement, construction, and closeout, to ensure that the project is completed successfully and meets the client's requirements (A Guide to the Project Management Body of Knowledge (PMBOK Guide), 2017).

Framework: According to Cambridge dictionary, a framework is a system of rules, ideas, or beliefs that is used to plan or decide something. in the context of contract administration and management or any other field, a framework, is a structured approach or model that provides guidance, principles, and processes for

achieving specific objectives. It serves as a blueprint or skeleton upon which you can build or organize your activities, strategies, and resources.

Management is a process of strategically planning, organizing resources, coordinating efforts, directing activities and maintaining control within an organization to achieve its intended goals and objectives. Management involves guiding, directing, and leading employees toward achieving organizational goals. The role of management is executive in nature (Maley, 2023).

Project: PMI (2004) defines project as a temporary endeavor undertaken to produce a unique product, service or result.

Project management: 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 participation satisfaction (Hendrickson & Au, 2008)

1.10 Outline of the Study

The outline of the study shows the main areas that the researcher tackled in obtaining meaningful findings that address the subject matter of the research. The research begins by articulating background of the study, the problem statement and research objectives which provide the basis of the buildup for the case.

In chapter one, issue of contract administration is explored and provided with preliminary evidence from credible sources.

Chapter two dealt with related theoretical and empirical literature from which a conceptual framework is developed to bring up the variables to be investigated, their relationships, and possibly other factors also explored.

Chapter three dealt with research design, population samples and the methods that were used to gather data.

Chapter four dealt with compiling data, analysis of compiled data and interpretations

of the findings.

Chapter five deals with the summary of the findings, conclusions and recommendations.

CHAPTER TWO

LITERATURE REVIEW

2.1 Introduction

This chapter emphasized on what scholar and authorities have said or written in respect of the different aspect of the study at hand. It involves theoretical review, empirical review, conceptual framework, and the critiques of the existing literature relevant to the study, research gaps and the summary.

2.2 Theoretical Review

According to English Oxford Living Dictionaries, a **contract** is a written or spoken agreement, especially one concerning employment, sales, or tenancy that is intended to be enforceable by law. The TAMUS Contract Management Handbook defines a **contract** as: "a written agreement (including a purchase order) where a contractor provides goods or services and the member pays for such goods and services in accordance with the established price, terms and conditions".

A construction contract is a legally binding agreement between two parties on the details and cost of a construction project. This type of contract covers very expensive, complex projects and simple renovations. There are two types of clients that use construction contracts: residential and commercial. Each client has different requirements that determine what is included in the contract (Zambian National Council for Construction (NCC), 2018).

A residential construction contract includes three basic elements: project scope, schedule of work and payment details. The project scope is a statement of exactly what construction work is included in the contract. Both parties must agree that this section provides an exact representation of the required work.

The payment details section includes the total project cost and payment dates. All construction projects are paid on a percentage of completion basis. A deposit of no

more than five percent of the total costs is provided at the start of the project. The next payment is made when the predefined section of work is completed.

Contract Administration is a process of carrying out construction work in a planned manner on behalf of the appointee. Construction work include detailed planning, feasibility study from every stage of project. The objective of Contract Administration is developing better relationship between owner and contractor by reducing conflicts (Ganesh , Annie , Shaival , & Prasad , 2016). Contract Management could be defined as a multi-stage process that goes on through the entire duration of the contract and ensures that the parties meet their contractual obligations in order to deliver the specific objectives provided in the contract (Eunice , Gregory , & Noor I, 2020).

According to Grimsey & Lewis (2004) cited by Hotterbeekx,(2013) Contract management can be defined as the processes undertaken to maintain the integrity of the contract, and ensure that the roles and responsibilities contractually demarcated are fully understood and carried out to the contracted standard. Another definition of contract management is the process that ensures that all parties to a contract fully meet their obligations, in order to satisfy the operational objectives of the contract and the strategic business goals of the customer (Puil & Weele, 2014) cited by (Hotterbeekx, 2013).

According to Bhardwaj (2011) contract management is the process that enables both parties to a contract to meet their obligations in order to deliver the objectives required from the contract. It is also involves building a good working relationship between company and contractor. It continues throughout the life of a contract and involves managing proactively to anticipate future needs as well as reacting to situations that rises.

The main purpose of contract management is to make sure that the objectives of the contract are met in a timely fashion and value for money is achieved. In practice, this means optimizing the efficiency of the processes, balancing costs and risks against returns and ideally aiming for a continuous improvement in performance over the life of the contract. Therefore, the ultimate objectives of contract management are effectiveness; the first and foremost condition of successful contract management is

getting the job done**.** This translates in the fact that the ultimate scope/objective of the contract is accomplished, for examples goods are delivered/installed; services are performed and civil works are completed (Zambian National Council for Construction (NCC), 2018).

Achieving efficiency should not be mistaken for an unrealistic chase for cost savings, or unreasonable pressure to squeeze more output from the contractors for less money or less time. These practices frequently backfire and may result in more time and resources being misdirected towards a false objective.

In the building projects, the contractor administrator is the individual responsible for administering the construction standard contracts. They may be the project architect, but could also be leader of consultant, the cost consultant, a specialist consultant, a client representative or employer's agent, the project manager or an engineer (Alzara, Kashiwagi, Kashiwagi, & Al-Ta, 2016).

The contract administrator's role will generally be an agent acting on behalf of the employer ,Advising the Employer, Providing Instructions to the Contractor, provide the necessary documentation to enable the contractor to complete the works, carry out 'efficient administration of the contract so as to achieve speedy and economical completion of the contract, ensuring successful project delivery by delivering the project safely, to the specified quality standards, on time, and within the budgeted costs, monitoring the compliance and advising the contractor on Health and Safety Issues, Achieving Quality Requirements and Achieving Schedule Targets (Tony, 2016).

However, according to Hawaii state procurement office(2018) , the following are the major areas of contract administration problems are too much time in the front and back end of contracts awarding/executing and closeouts, Team members are unclear what are their roles and responsibilities; Contract oversight done by improper or under-trained team members**;** Lack of State oversight of contractor/provider work performance; Untimely payments and contract closeout due to inadequate payment processing.

To guide understanding of the factors influencing contract administration and management practices in public construction projects in Rwanda, this study was based on four underpinning theories, namely: social contract theory, management theory, McGregor's theory x and Y, and the agency theory.

2.2.1 Social Contract Theory

One of the first thinkers to address the concept of the social contract was Jean-Jacques Rousseau. He was interested in the creation of a political community that could balance collective with individual rights and could resist prevarication and exclusion, dominant features of the mercantilist era. A social contract was to be regarded not only as a utilitarian transaction, but also as a conscious effort to achieve an egalitarian governance system, while still respecting and guaranteeing the most fundamental individual freedoms and rights (UNDP, 2016).

The concept of social contract can be traced back to ancient Greece, where philosophers like Plato and Aristotle discussed the relationship between individuals and the state. However, the modern formulation of social contract theory is often attributed to the 17th century philosophers Thomas Hobbes, John Locke, and Jean-Jacques Rousseau.

Thomas Hobbes proposed that a society without rules and laws to govern our actions would be a dreadful place to live especially in construction project should have rules and law to follow so that the employees work under the same conditions, the way to escape the state of nature is to create a social contract where people create a contract by coming together in peace, agreeing to asset of and create a ''sovereign''. Thomas Hobbes, in his book" Leviathan" published in 1651, argued that in a state of nature, life would be "solitary, poor, nasty, brutish and short "he believed that individuals would willingly give up their freedoms to escape this state of constant conflict and ensure their own safety and security this governing authority, or sovereign, is responsible for maintaining order and enforcing the social contract among employee of public construction project. The contract is made among the people to protect themselves from one another (Thomas, 1651).

John Lock, in his book “Two Treatises of government” published in 1689, expanded on Hobbes’ ideas and emphasized the natural rights of individuals, including life, liberty, and property. He argued that individuals enter into a social contract with a government to protect these rights, and if the government fails to do so, the people have the right to rebel.

Jean-Jacques Rousseau, in his book “the social contract” published in 1762, proposed a more democratic version of social contract theory. He believed that individuals should collectively participate in the creation of laws and the functioning of the government, ensuring that the general will of the people is represented.

People live together in society in accordance with an agreement that establishes moral and political rules of behavior. According to Stuart Rachel revealed that molarity is set of rules governing behavior that rational people accept, on the condition of others accept them too. Morally good acts like speak the truth, respect the property of others while morally wrong acts are activities such murder, theft, rape, lying, and breaking promise (Kevin, 2017).

An individual voluntarily enter into social contract to form a society, and that this contract establishes the rights and responsibilities of both the government and the citizens and they have certain natural right, such as the right to life, liberty, and property, which are protected by the government. The government’s authority is derived from the consent of the governed. Social contract theory is the idea that societies and cultures develop based on a usually implicit agreement among individuals about what kind of environment they want to live in.

The applications of social contract theory in contract management and administration of construction projects revolve around understanding the relationship between the parties involved and ensuring fairness, trust, and mutual obligations. Firstly, Social contract theory emphasizes the importance of fairness in contractual relationships. It promotes the idea that contracts should be based on equitable terms, fair allocation of risks, and just distribution of benefits. This principle helps in addressing issues such as payment disputes, change orders, and variations in construction projects (Rawls, 1971).

Secondly Social contract theory highlights the significance of trust in contractual relationships. Contract management can incorporate trust-building mechanisms such as clear and transparent communication, collaboration among stakeholders, and adherence to ethical practices. These mechanisms reinforce trust, minimize conflicts, and enhance project performance (Rousseau, 1762). Thirdly Social contract theory recognizes the significance of long-term relationships between parties in contract management. It suggests that contracts should not be viewed purely as transactional agreements but as ongoing relationships based on shared understanding, cooperation, and continuous improvement. This approach encourages open dialogue, flexibility in contracts, and problem-solving to ensure project success (Williamson, 1985).

2.2.2 Management Theory

Management theory in construction projects can be traced back to the early 20th century when the need for effective company and coordination became apparent due to the complexity and scale of construction projects. Several influential management theories and principles emerged during this time, shaping the field of construction project management. It included Scientific Management Developed by Frederick Taylor in the late 19th and early 20th centuries, it focuses on optimizing work processes and improving worker productivity through systematic observation and analysis. Taylor's book "The Principles of Scientific Management" (1911) provides a comprehensive overview of his theory. In contrast management focuses on optimizing work processes and increasing efficiency. In contract management, this theory can be applied by implementing standardized procedures, streamlining workflows, and utilizing technologies for project monitoring and control (Taylor, 1911).

Administrative Management was developed by Henri Fayol, it emphasizes the importance of top-level management like chief budget manager in coordinating and controlling all aspects of construction industry. Fayol's book "General and Industrial Management" (1916) outlines the fourteen principles of management that are still widely used in construction project management today. It emphasizes on the functions of management, including planning, organizing, commanding, coordinating, and controlling. In contract administration, this theory can be applied by developing a clear

organizational structure, defining roles and responsibilities, establishing communication channels, and ensuring proper coordination among stakeholders with in construction industry. (Fayol, 1916).

Behavioral Management Developed by Elton Mayo and his colleagues at the Hawthorne Works of Western Electric in the 1920s and 1930s, this theory focuses on understanding and improving employee motivation and morale. Mayo's book "The Human Problems of an Industrial Civilization" (1933) offers insights into the behavioral aspects of management.

Systems Management was elaborated by Ludwig von Bertalanffy in the mid-20th century, it focuses on the interrelationships and interactions between various components of an organization. The book "General System Theory: Foundations, Development, Applications" (1968) by Bertalanffy provides a comprehensive overview of this theory.

Project Management Developed and refined over the years, project management theory specifically addresses the unique challenges of managing construction projects. It involves adapting management strategies and approaches based on factors such as the project scale complexity, cultural context, and legal environment. (Burns, 1961).

In conclusion, it is important to note that the specific application and implementation of these management theories may vary based on the unique context and requirements of construction projects in Rwanda. It provides guidelines and best practices for managing projects effectively. It covers various aspects of project management, including contract management, it outlines the key processes, knowledge areas, and principles that project managers should adhere to in order to successfully execute projects. In the context of contract management and administration, it provides insights into the procurement processes, contract administration, and risk management related to contracts in construction projects. It emphasizes the importance of effectively managing contracts, ensuring that project objectives are met, and minimizing potential risks and dispute resolution.

2.2.3 McGregor’s Theory x and Theory Y

McGregor's Theory X and Theory Y are two contrasting management theories proposed by Douglas McGregor in his book "The Human Side of Enterprise" published in 1960. These theories are based on different assumptions about human nature and behavior in the workplace. Theory X assumes that employees are inherently lazy, dislike work, and need to be closely supervised builders and controlled man power with in construction project. According to this theory, employees have little ambition, avoid responsibility, and prefer to be directed by their superiors. McGregor believed that managers who hold Theory X assumptions tend to adopt an authoritarian management style, emphasizing strict rules, punishments, and rewards to motivate employees. (Landy, 2016)

On the other hand, Theory Y assumes that employees are self-motivated, enjoy work, and seek responsibility. According to this theory, employees are capable of self-direction and self-control, and they can be creative and innovative when given the opportunity. Managers who hold Theory Y assumptions tend to adopt a participative management style, encouraging employee involvement, empowerment, and autonomy (Luthans, 1998).

These theories were developed as a response to the prevailing management practices of the time, which often relied on strict control and supervision. McGregor argued that Theory Y assumptions would lead to more effective and satisfying work environments, fostering employee growth and development. (Robbins, 2017)

McGregor work has had a significant impact on the field of management and continues to be influential today.

Chris Argyris: Argyris, a renowned organizational theorist, has made significant contributions to the understanding and application of McGregor's theories. He expanded on McGregor's ideas and developed the concept of "double-loop learning," which emphasizes the importance of questioning underlying assumptions and beliefs in organizations.

Maslow's hierarchy of needs is often discussed in conjunction with Theory Y. Maslow's work on human motivation aligns with the assumptions of Theory Y, which emphasizes the importance of satisfying higher-level needs for employee motivation and engagement.

Herzberg's two-factor theory of motivation is another influential framework that complements McGregor's theories. Herzberg's work focuses on the factors that lead to job satisfaction and dissatisfaction, which aligns with the concepts of Theory X and Theory Y.

Theory X assumes that employees have an inherent dislike for work, lack ambition, and must be closely supervised and controlled to ensure productivity. On the other hand, Theory Y assumes that employees are self-motivated, enjoy work, and can be trusted to take ownership of their tasks. In the context of contract management and administration, Theory X principles may lead to a management style that emphasizes strict control, micromanagement, and detailed contracts with excessive monitoring to ensure compliance. This approach can result in strained relationships, decreased job satisfaction, and low productivity among the contracted parties (McGregor, 1960).

In contrast, Theory Y principles encourage a more collaborative and participative management style. Contracts are developed with a focus on clear communication, trust, and empowerment of the parties involved. There is an emphasis on building relationships and fostering cooperation to achieve project goals. Applying Theory Y principles can lead to improved contractor performance, enhanced teamwork, and higher job satisfaction, which ultimately contributes to successful project outcomes. (Landy, 2016).

2.2.4 Agency Theory

Agency theory in construction originated from the field of economics and organizational theory. It was first introduced by Jensen and Meckling in their seminal paper" Theory of firm: Managerial behavior, Agency costs and ownership structure" in 1976 this theory focuses on the relationship between the principal (The owner) and the agent (the contractor or project manager) in construction project. The principal-

Agent relationship is characterized by information asymmetry and potential conflicts of interest, which can lead to agent problems and affect project performance. (Jensen & Meckling, 1976)

The decision by a client to source work from a contractor that is external to the client organization takes place in many project-based industry sectors as a matter of course. Such projects can be complex and problematic to manage due to the abundant number of boundaries that need overcoming between the different organizations i.e., different organizational cultures, objectives or individual roles. This also creates challenges of managing the client for the contractor and vice versa. One challenge relates to overcoming agency-related problems that arise in situations that involve clients and contractors from different companies. Here a principal-agent relationship exists where the principal (client), typically through a formal contract, engages the agent (contractor) to perform a service on their behalf. In doing so, the principal delegates decision-making authority to the agent (Jensen & Meckling, 1976).

One reason for the presence of dysfunctionality between client and contractor can be the presence of problems associated with the principal/agent relationship that exists between the two parties. Agency theory explains how relationships operate in numerous principal/agent contexts and how to mitigate or manage agency problems (Ling F. N., 2001)

Agency-related issues arise due to the phenomena of adverse selection and moral hazard. The adverse selection problem relates to the fact that there is information asymmetry between the principal and the agent (Akerlof, 1970); There is a level of uncertainty arising from this 6-information asymmetry before a client awards a contract to a contractor that jeopardizes efforts made to establish a functional working relationship between the two parties (Dahlstrom & Ingram, 2003). Information asymmetry can fuel mistrust for the client and generally lead to detrimental behaviors (McCarthy, Silvestre, & Kietzmann, 2013). Moral hazard problems refer to situations where the principal has difficulties directing the agents' actions because the actions are unobservable or cannot form part of the contract (Byford, 2017). Again, information asymmetry is present. This enables the contractor to operate in an

opportunistic way, post-contract award, if they so wish. The contractor has his or her own goals, such as making a profit from undertaking the project and these goals may not align with what the client is expecting the contractor to deliver. Where goals are in conflict the contractor will often act in the interest of their own company at the expense of the project and the client and might act on information that they have not shared with the client in a way that does not benefit the client (Eriksson & Lind, 2016). With levels of information asymmetry high, the contractor knows more than the client about project issues, progress etc. The client can feel that contractor's decisions are not in their best interest and without the means to refute this assertion, a destructive cycle of increasing levels of mistrust, concealment of information and gaming by both parties can form (Turner & Miller, 2004).

Another area where agency problems arise is where uncertainty exists and discussions in the literature highlight that allocating benefits and risks between the two parties is necessary in such situations (Melese, Lumbreras, Ramos, Stikkelman, & Herder, 2017). How this is done can be viewed from two perspectives. Firstly, from the value sharing perspective, which suggests agents cooperate in order to gain value and secondly from the risk sharing perspective, which uses the concept of risk sharing to explain why agents cooperate. The construction of the contract reflects these perspectives on the type of contracts used to address agency problems in collaborative project environments. Uncertainty creates a relational risk, which results from behavior uncertainty of other parties to the project (Zhang & Qian, 2017).

A high perception of relational risk increases the inclination of a contractor to act opportunistically. To mitigate for this the client must continually focus on dealing with relational risks during a project. So, in project environments, agency-related issues related to adverse selection and moral hazard as well as uncertainty span the whole of the project life cycle, encompassing the phases prior to the award of the contract and the phases post-contract when the contractor is tasked with delivering the project. Theorists suggest that well-constructed contracts help avoid potential agency-related problems between client and contractor (Farrell, 2003). Ideally, the parties agree on a contract to enable the agent to maximize their self-interests, whilst at the same time they are working to deliver the project in such a way that the client maximizes their

benefit (Liu, , Wang, & Huang, 2017). One strand of early agency-theory literature considers which type of contract is best suited to different principal/agent contexts (Melnyk, Stewart, & Swink, 2004). Contracts are distinguished between outcome based and behavior-based (Florical & Lampel, 1998), with fixed-priced contracts being outcome based and fee-for-service ones being behavior-based.

Agency theory explains that the contractor will act in the client's best interest when outcome-based contracts are used or where the client has enough information to verify behavior if behavior-based types of contracts are used. There are a number of factors influencing the choice between outcome and behavior-based contracts. These include the character of information systems used, the level of outcome uncertainty, the attitudes towards risk aversion, the level goal conflict, the extent of task programmability, the level of outcome measurability and the length of time that the client and contractor have had a relationship (Eisenhardt, 1989). The last of these factors is a rationale for developing long-term strategic partnerships, with incentivizing contracts that reward certain desirable behaviors by the contractor, such as sharing knowledge or being innovative. When such long-term relationships exist, according to agency theory, the client and the contractor will have learnt about each other and the degree of information available to the client on the contractor's behaviors will be greater than if they had a shorter-term relationship. In such situations, behavior-based contracts become more attractive to clients. Apart from the type of contract it is also suggested to consider the contractual completeness. Contractual completeness is the extent to which the two parties have a contract in place that is fit for purpose (Handley & Benton, 2009). If present, the contract enables effective coordination of resources and allocation of risk. It also addresses potential inter-organizational risks relating to the functioning of the relationship between the client and the contractor.

In the context of construction projects, the principal is typically the project owner or client, and the agent is the contractor or construction manager. It plays crucial such Incentive Alignment, Risk Management, Contractual Design, Information Asymmetry. Agent theory helps in designing contract terms and incentives that align the interests of both the chief budget manager and the engineers. This ensures that the engineer acts in the best interest of the chief budget manager while maximizing their

own utility, Agent theory aids in allocating and managing risks in construction contracts. It helps in determining the responsibilities and liabilities of the agent, setting appropriate performance standards, and outlining mechanisms to mitigate risks, Agent theory provides insights into designing contracts that provide adequate incentives for the agent to perform tasks efficiently. It helps in specifying the performance criteria, monitoring methods, and enforcing mechanisms to ensure accountability, final agent theory addresses the issue of information asymmetry, where the principal may not have complete information about the agent's actions or capabilities. It suggests mechanisms such as performance bonds, progress reports, and audits to alleviate this problem. (Hart, 1995).

2.3 Empirical Review

2.3.1 Influence of Contract Type on Performance of Construction Project

Different contract types, such as lump sum contracts, cost-plus contracts, and design-build contracts, have different implications for construction project performance. Under a Lump Sum or Fixed Price Contract, the contractor agrees to perform the work specified and described in the contract for a fixed price. The price of a fixed contract can only be changed upon the execution of a change order, under which the owner and the contractor either (1) agree for the contractor to perform additional work that falls outside the scope of the original work for an agreed upon extra compensation or (2) agree to remove certain work from the original scope of work and reduce the price of the contract in proportion to the work that the contractor no longer has to perform. These types of contracts are appropriate when a clear scope and a defined schedule have been reviewed and agreed upon. The benefit of using Lump Sum or Fixed Price Contracts is that the owner’s construction costs are more predictable. The owner’s cost has been capped by the contract price, so long as no change orders are issued and no disputes arise on the project. There are not many drawbacks with the use of the Lump Sum or Fixed Price Contract. To ensure that the Lump Sum or Fixed Price Contract fulfils this function, i.e., provides a predictable and accurate cost of construction for the owner, it is very important for the scope of work under the contract to be clearly defined. This will eliminate the owner’s risk of the contractor attempting to increase

the contract price through the issuance of change orders for the performance of additional work that is arguably not part of the original scope of work but should be. Additionally, the schedule should clearly define the work and the deadlines that must be met. This could perhaps be a drawback to the use of the Lump Sum or Fixed Price Contract because it would require additional time and money to clearly define the scope of work and create a detailed schedule.

In addition, other types of contracts, such as Cost Plus Fee or Time and Materials Contracts, could arguably be cheaper if the actual cost of construction were less than the contractor's estimated cost of construction on which the fixed price is based. However, these types of construction contracts could also be more expensive if the actual cost of construction were to exceed the contractor's estimated costs. Therefore, the Lump Sum or Fixed Price Contract is a relatively safe and predictable contract type that could be used on a construction project. For example, a study by Chan and Kumaraswamy (2018) found that lump sum contracts tend to have better cost performance compared to cost-plus contracts (Kumaraswamy & Chan,, 2018).

The Cost Plus with Guaranteed Maximum Price Contract seeks to eliminate some of the risks associated with Cost Plus Contracts in that it caps the owner's overall financial exposure. Thus, while the contract price is to be determined based on the cost of construction and the contractor's fee, owner's costs are capped at a certain amount. These types of Cost-plus Construction Contracts are oftentimes grouped with bonus contracts, built-in contingencies, or cost savings contracts which incentivize the contractor to complete the project with agreed targets regarding schedule, quality, and budget in exchange for additional compensation on the project. On the other hand, a study by Love et al. (2002) found that design-build contracts can lead to better schedule performance compared to traditional design-bid-build contract (Love, Mandal, & Smith, 2002)

Unit Price Contracts are based on anticipated quantities of items, which are counted in the project in addition to their unit prices. The final price of the project depends upon the quantities required to carry out the work. Generally, these types of contracts are suitable only for construction and supplier projects, which involve accurate

identification of different types of items, but not their numbers, in the contract documents. These types of contracts are oftentimes used on excavation projects. Furthermore, the choice of contract type can also affect other aspects of project performance, such as quality, safety, and client satisfaction. For instance, a study by Ling et al. (2014) found that design-build contracts are associated with higher levels of client satisfaction compared to other contract types (Ling F. Y., 2014).

Time and Material Contracts are usually preferred if the project scope is not clear, or has not been defined. The owner and the contractor must establish an agreed hourly or daily rate, including additional expenses that could arise in the construction process. The costs must be classified as direct, indirect, mark-up, and overhead. Sometimes the owner might want to establish a cap or specific project duration to the contractor that must be met, in order to have the owner's risk minimized.

One of the characteristics of construction projects is uniqueness. Every project has its special circumstances, so it is important to select the contract type that suits the project. The owner develops the process of selecting the type of contract. It is usually not easy for any of the parties to know which is the most appropriate contract, because there is uncertainty in the project as to what the actual costs have been (Weitzman, 1980).

However, consciously or not, they select a contract type according to certain criteria. The choice of the share profile should be performed in a way that aligns the motivations of the parties, in order to maximize the likelihood of achieving the project objectives, considering the constraints, risks and opportunities in the project and the strengths and weaknesses of the parties (Broome, 2002). It appears reasonable to assume that similar factors should be taken into account for the choice of contract type. Some selection criteria for contract types have been already identified in construction e.g. (Antoniou, Konstantinidis, & Kaltakako, 2013).

Overall, the influence of contract type on the performance of construction projects is a complex and multifaceted topic, and it is important for project managers to carefully consider the implications of different contract types when planning and executing construction projects in Rwanda.

2.3.2 Influence of Monitoring on Performance of Construction Project

Monitoring plays a crucial role in ensuring that the construction projects are on track and meeting their objectives. It helps identify any deviations from the planned schedule, budget, or quality standards, allowing for timely corrective actions to be taken.

According to Zambian National council for Construction (2010), the conditions of contract are the terms that collectively describe the rights and obligations of contracting parties and the agreed procedures for the administration of their contract. Contract conditions determine the allocation of risk and consequently, price. Typically, these conditions address the following: The parties' main responsibilities e.g., the employer provides the site and the right of access thereto while the contractor provides the works in accordance with the requirements established in the contract; the timing of the works, for example start date, time for completion, period for defects liability; testing and remedying of defects; Payment, such manner in which the works are to be assessed and certified, time for payment and interest on overdue amounts; variations and claims, in the variations to the contract are to be evaluated and paid for and how the costs which result from employer liabilities are assessed and paid for; ownership to objects, materials within the site, Risks and insurances what are the employer's and contractor's risk and what insurances each party will take out. The reasons for termination, the procedures for termination and the payment to be made upon termination; the resolution of disputes by adjudication, mediation, arbitration, litigation.

Conditions of contract can be standardized so that the same conditions of contract can be used on different projects, in which case they are referred to as standard forms of contract. The public sector generally uses one of the following standard forms of contract when engaging main contractors for construction works contracts: French initials for International Federation of Consulting Engineers; General Conditions of Contract for Construction Works; New Engineering Contract.

The construction sector has a wide range of standard forms of contract which are intended to balance the risk of the parties but more importantly, through extensive and

repeated use, give rise to a certainty of meaning. The single most important task in administering a contract is to ensure effective communications with the employer and his representatives. Each form of contract stipulates requirements for communications between the parties of the contract. These usually need to be communicated in a form which can be read, copied and recorded. The contract data associated with a contract also state to whom communications are to be addressed and where certain communications are to be sent the various contracts require: The contractor to provide a programme within a specified time period; the employer to pay the contractor within a specified time period; The employer's representative to provide a decision within a specified period; the contractor to give notice of his intention to declare a matter as being a dispute within a specified time period; the contractor to submit timely request for inspections. Each of these events requires different types of communications between the parties. Effective communications can mean the difference between a problematic contract and a smoothly run one. It is also important for a contractor to communicate effectively with its suppliers, service providers and subcontractors.

At the start of each contract, the contractor is required to prepare a programme and have it agreed to by the employer or his representative. This programme indicates the duration and logic of the sequencing of activities for the project. The employer or his representative will evaluate whether the logic is sound and whether the estimated time frames for completion of the works are reasonable. Some forms of contract require that the contractor submit a claim for an extension of time to the employer within a specified time period of becoming aware of an event that may give rise to such an extension, e.g., abnormal rainfall, failure by the employer to provide access to the site, etc. Failure to do so might result in the forfeiting of the right to an extension of time.

Provisions for penalties or delay damages are contained in most construction contracts. These are imposed where the employer has specific deadlines or other requirements and will experience a loss of revenue, loss of use of the premises if the project is delivered late or have to pay additional supervision and administration costs relating to the late completion. The contract document will specify the value of the penalties per day, per week or per month, or the extent of the penalties should specific requirements not be achieved. Penalties are deducted from interim payment certificates

as soon as they occur and can be objectively quantified. They are based on the difference between the time that the works were actually completed and the time according to the contract when they were supposed to be completed. The contract also identifies which risks the contractor carries and which does the employer carry. Accordingly, should an event occur on the site and the contract states that it is the employer's risk, and then the contractor is entitled to have the contract price adjusted to compensate for the additional costs incurred. An extension to the time for completion may also be due to the contractor.

One study by Liu et al. (2019) examined the impact of monitoring on the performance of construction projects in China. The researchers found that effective monitoring significantly improved project performance in terms of cost control, schedule adherence, and quality management.

Another study by Chan et al. (2018) investigated the relationship between monitoring and project success in the construction industry. The findings showed that projects with a higher level of monitoring had a higher likelihood of achieving their objectives and delivering satisfactory outcomes.

Furthermore, a study by Wang et al. (2017) explored the role of monitoring in reducing construction project risks. The researchers found that proactive monitoring and early detection of potential risks helped mitigate their impact on project performance.

2.3.3 Influence of Management on Performance of Construction Project

Effective management can significantly impact the success of a project by ensuring efficient resource allocation, effective communication, and timely decision-making. According to NCMA (2010), the following tools and techniques are often used to improve contract administration performance results. (National Contract Management Association (NCMA), 2010)

All work to be performed should be appropriately led, planned, scheduled, coordinated, communicated, tracked, evaluated, reported, and corrected, as necessary, using the basic guidelines of the Project Management Institute's Project Management

Body of Knowledge. Before contract award, each party should develop a contract administration plan and assign the responsibility of administering the contract to a contract manager. To whom should the job be assigned? A project manager could do double duty as contract manager. However, in most large companies, contract administration is a specialized function, usually performed by someone in the purchasing, contracting, or subcontract management department because doing the job requires special knowledge and training. Contract administration is an element of both contract management and project management.

Before performance begins, both government and industry should meet (via teleconference, videoconference, Web meeting, or face-to-face meeting) to discuss their joint administration of the contract. The meeting should be formal, the agenda should be distributed in advance, and minutes should be taken and distributed. Each party should appoint a person who have been its organization's official voice during contract performance. At the meeting, the parties should review the contract terms and conditions and discuss each other's roles. The parties should also establish protocols for written and oral communication and progress measurement and reporting. They should also discuss procedures for managing changes and resolving differences. Government and con-tractor managers with performance responsibilities should attend the pre performance conference or at least send a representative. Important subcontractors should also be represented. The meeting should be held shortly after contract award.

During contract performance, the project manager, contract manager, and responsible business managers all must observe performance, collect information, and measure actual contract progress. These activities are essential to effective control. The resources devoted to these tasks and the techniques used to perform them will depend on the nature of the contract work, the size and complexity of the contract, and the resources available. On large, complex contracts, the government will often require the contractor to apply an earned value management system (EVMS).

Every contract must establish an adequate accounting, cost tracking, invoicing, and payment process between the parties. The government agencies and prime contractors

must agree to whom invoices should be sent and what information is required. Prime contractors and their subcontractors must submit proper invoices in a timely manner. Government agencies are then required to pay all properly submitted invoices in a prompt manner.

As a rule, any party that can make a contract can agree to change it. Changes are usually inevitable in contracts for complex undertakings, such as system design and integration.

No one has perfect foresight requirements and circumstances change in unexpected ways and contract terms and conditions must often be changed as a result.

No one should be surprised when, from time to time, contracting parties find themselves in disagreement about the correct interpretation of contract terms and conditions. Such disagreements are typically minor and are resolved without too much difficulty. Occasionally, however, contracting parties may find themselves entangled in a seemingly intractable controversy. Try as they might, they cannot resolve their differences. If the dispute goes unresolved for too long, one or both of the parties may threaten, or even initiate, litigation. Litigation is time consuming, costly, and risky. You can never be entirely sure of its result. Rarely is the outcome a truly satisfactory resolution of a dispute, and it sours business relationships. For these reasons, litigation should be avoided. Thus, it is critical to create a cost-effective dispute resolution process between parties using negotiation, arbitration, facilitation, or mediation methods.

Supply chain management represents the ability of government prime contractors to efficiently and cost-effectively manage their subcontractors and vendors, which comprise their selected supply chain. Applying proven-effective supply chain management best practices is vital to improve performance results, including the appropriate flow-down of mandatory government contract clauses.

The ability of a prime contractor to effectively perform government property management, pursuant to FAR Part 45, and overcome the numerous challenges to

achieve the on-time delivery of quality products, services, and systems, is critical to business success.

Contract closeout refers to verification that all administrative matters are concluded on a contract that is otherwise physically complete. In other words, the contractor has delivered the required supplies or performed the required services and the government has inspected and accepted the supplies or services.

The following output functions result from contract administration: Sellers want their money as quickly as possible. The government should seek product and service discounts for early payments. Likewise, contractors should improve their accounts receivable management and enforce late payment penalties. This last step is the contractor’s actual accomplishment of the government’s requirement for products, services, systems, or solutions.

One study by Liu et al. (2019) found that effective project management practices, such as clear project objectives, proper planning, and effective coordination, positively influenced project performance. Another study by Chan et al. (2018) highlighted the importance of leadership and management skills in improving project outcomes.

In addition, the management team's ability to identify and mitigate risks can greatly impact project performance. A study by Zou et al. (2017) emphasized the importance of risk management in construction projects, as it helps in minimizing delays, cost overruns, and quality issues. This arrangement offers significant advantages to the owner provided the owner is willing and able to stay active in the process and selects a good designer and construction project manager who are willing to work as team players.

This delivery method offers the cost advantages of competitive bidding to the owner as well as the opportunity to phase the project. Real estate developers in the commercial building industry commonly use it. In some cases, the project will start with a construction project management arrangement, and as the design nears completion, the construction manager will negotiate a fixed or guaranteed price with the owner and the project have been come a traditional arrangement

Furthermore, effective management can also enhance the productivity and motivation of the project team. A study by Shen et al. (2018) found that good management practices, such as providing clear goals, adequate resources, and supportive work environments, positively influenced team performance.

Overall, the influence of management on the performance of construction projects is significant. It affects various aspects, including project planning, risk management, team coordination, and overall project outcomes.

2.3.4 Influence of Contract Documentation on Performance of Construction Project

Contract documentation also has a significant influence on the performance of construction projects. It provides a legal framework for the project and helps establish clear expectations and responsibilities for all parties involved. The contract documentation includes various documents such as the contract agreement, specifications, drawings, and any additional terms and conditions. This is essential to provide proof of performance, management of changes, justification for claims, and evidence in the unlikely event of litigation. The most important documentation is the official copy of the contract, contract modifications, and conformed working copies of the contract. Other important forms of documentation include: External and internal correspondence, Meeting minutes, Progress reports, Project diaries, Telephone logs, Photographs, and Videotapes.

Alienate, H. M., Mwakali, J. A., & Hans, R. N. (2014) studied Effect of contract documentation on performance of road construction projects in Uganda. This study investigates the impact of contract documentation on the performance of road construction projects in Uganda. The findings highlight the importance of clear and comprehensive contract documentation in reducing project delays and disputes, improving project quality, and enhancing stakeholder satisfaction (Alinaitwe, Mwakali, & Hans, 2014).

Olawale, Y. A., & Sun, M. (2010) studied Cost and time control of construction projects: Inhibiting factors and mitigating measures in practice. This study explores

the factors influencing cost and time control in construction projects. It emphasizes the significance of detailed contract documentation, including specifications, drawings, and contract terms, in facilitating effective cost and time management and enhancing project performance (Olawale & Sun, 2010). The research of Kong, S. C. W., & Lam, E. W. M. (2013) on Key attributes of construction contract documentation and their impact on project success examined the key attributes of construction contract documentation and their influence on project success factors. The study identifies clear specifications, comprehensive scope of work, and unambiguous contract terms as critical elements of contract documentation that contribute to project success and performance (Kong & Lam, 2013).

The Research by Ji, Y., Liu, S., & Love, P. E. D. (2016) on Critical factors affecting the quality performance of construction projects in China investigated critical factors influencing the quality performance of construction projects in China. It underscores the importance of detailed contract documentation, including specifications and quality requirements, in ensuring compliance with quality standards and achieving satisfactory project outcomes (Ji, Liu, & Love, 2016). The Research by Tunji-Olayeni, P. F., Mosaku, T. O., & Fagbenle, O. I. (2017) on Impact of contractual documentation on project performance in construction industry. This research assesses the impact of contractual documentation on project performance in the construction industry. The study highlights the role of clear and comprehensive contract documentation in mitigating project risks, reducing disputes, and enhancing overall project performance (Tunji-Olayeni, Mosaku, & Fagbenle, 2017).

These empirical studies provide insights into the influence of contract documentation on the performance of construction projects, emphasizing the importance of clear, comprehensive, and well-structured contract documentation in achieving project success.

2.3.5 Influence of Records Keeping on Performance of Construction Project

Record keeping plays a crucial role in the performance of construction projects, impacting various aspects such as project management, accountability, decision-making, and dispute resolution. Effective record keeping ensures that all project-

related documents, including contracts, drawings, specifications, change orders, and correspondence, are accurately recorded and organized. This documentation facilitates project management processes such as scheduling, budgeting, resource allocation, and risk management (Cleland D. I., 2017). Detailed records of inspections, tests, and quality control measures enable project teams to monitor and maintain construction quality standards. Documented evidence of compliance with specifications and regulations helps prevent defects and rework, ultimately improving project outcomes (Watt, 2019). Kumaraswamy and Al. (2018) showed that Accurate record keeping is essential for contract administration, including tracking project progress, verifying work completed, and processing payments. Well-maintained records serve as evidence in case of disputes, facilitating timely resolution and minimizing legal risks (Kumaraswamy & Chan,, 2018). In addition, Documented communication between project stakeholders, including meeting minutes, emails, and reports, enhances transparency and accountability. Clear and comprehensive records promote effective collaboration, reduce misunderstandings, and improve decision-making processes (Gray & Larson, 2020). A study by Chapman and Ward (2016) found that Maintenance of records related to project risks, issues, and mitigation strategies supports proactive risk management. Analyzing historical data and lessons learned helps identify potential risks early, enabling project teams to implement preventive measures and minimize project disruptions (Chapman & Ward, 2016).

In summary, effective record keeping is essential for optimizing the performance of construction projects by supporting project management, quality assurance, contract administration, communication, and risk management processes.

2.3.6 Influence of Management Efficiency on Performance of Construction Project

Management efficiency significantly influences the performance of construction projects, impacting various aspects such as project delivery, cost control, quality management, and stakeholder satisfaction.

Efficient project management practices, including effective planning, scheduling, and coordination of resources, contribute to timely project delivery. Well-defined project

objectives, clear communication channels, and proactive risk management help minimize delays and ensure project milestones are met (Schwalbe, 2015). Effective management of project budgets and expenditures is essential for controlling costs and maximizing value. Efficient cost estimation, monitoring of project expenses, and proactive identification of cost-saving opportunities help ensure projects remain within budget constraints (Fleming & Koppelman, 2016). Management efficiency influences the implementation of quality management processes to meet project requirements and deliver high-quality outcomes. Effective quality planning, inspection, and continuous improvement initiatives enhance construction quality, reduce defects, and increase stakeholder satisfaction (Garvin, 2016). Efficient management practices foster positive stakeholder relationships through transparent communication, active engagement, and responsiveness to stakeholder needs and concerns. Engaged stakeholders are more likely to support project objectives, leading to smoother project execution and enhanced project outcomes (Cleland & Ireland, 2007). Management efficiency influences the identification, assessment, and mitigation of project risks to minimize their impact on project performance. Proactive risk management practices, such as risk identification workshops, risk analysis techniques, and contingency planning, help anticipate and address potential threats (Chapman & Ward, 2016).

In summary, management efficiency plays a critical role in driving the performance of construction projects by ensuring effective project delivery, cost control, quality management, stakeholder engagement, and risk mitigation.

2.4 Conceptual Framework

Conceptual framework is a visual representation in research that helps to illustrate the expected relationship between independent and dependent variables.

This study derives its conceptual framework from the theoretical framework. Accordingly, factors that influence contract administration and management task are: construction contract type, Performance monitoring, Relationship management, contract documentation, records keeping and management efficiency as shown in Figure 2.1. In turn, a Proper administrative framework leads to projects performance.

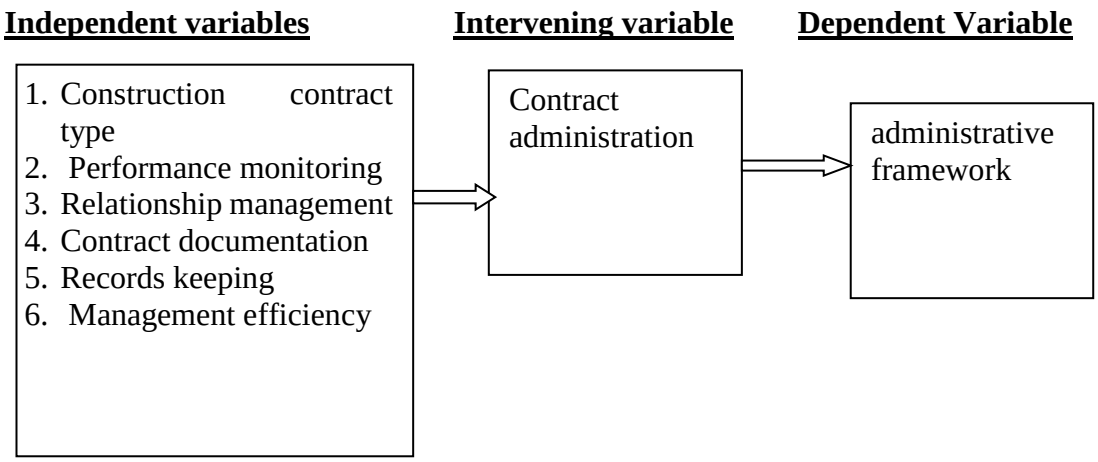

Figure 2.1: Conceptual Framework

Source: (Researcher, 2019)

2.5 Research Gap

Contract administration is a process of ensuring the proper performance of each party in meeting their stipulated contractual obligations until the contract is either closed out or terminated (Ofori, 2014). It can be seen as the necessary paperwork associated with a construction project by a third party assigned with predetermined roles and responsibilities to act on behalf of the employer. It is a key requisite for a successful contract that covering the formal governance of the post-award phase, approvals of changes, overseeing daily construction activities, testing and commissioning, handing over, and defects rectification works (Niraula, Goso, & Kusayanagi, 2008); (Ofori, 2014).

Academia and the construction industry professionals continue to suggest models and frameworks ensuring proper contract administration. For example, Okere (2012) established the association between contract administration practices and performance of the general contractors on governmental infrastructure projects in the United States. The author attempted to correlate the contract administration performance and management attitude towards contract risks, provisions for mitigating contract risks, the stability of scope definition, contract administration infrastructure, resource allocation Critical assessment of construction contract administration (CCA)strategy,

and competency of contract administrators. Joyce (2014), proposed a conceptual framework comprises of 5 dimensions (it means that contractor monitoring and acceptance management, managing the contractor relationship, contract administration, dispute resolution, and contract closure) and the findings of this study indicated that effective contract management has a positive effect on operational performance. While some studies touch upon contract administration practices, there is a lack of comprehensive quantitative analysis assessing the effectiveness of these practices in the Rwandan context. Research could involve surveys or structured interviews with project stakeholders to gather data on contract administration procedures, compliance levels, and their impact on project performance (Mukeshimana & Twarabamenye, 2020). Limited research focuses specifically on identifying the key challenges and barriers to effective contract administration in public construction projects in Rwanda. Investigating factors such as bureaucratic inefficiencies, corruption, and inadequate capacity within government agencies could provide insights into areas needing improvement (Ingabire & Uwamahoro, 2018). While dispute resolution mechanisms are integral to contract administration, there is a gap in research evaluating the effectiveness of these mechanisms in resolving disputes on public construction projects in Rwanda. Comparative studies analyzing different dispute resolution methods and their outcomes could inform best practices (Uwase & Murekezi, 2019). the research by Musabyimana& Rugira (2021) lacks detailed assessment of contract performance metrics specific to public construction projects in Rwanda. Investigating factors such as project completion time, budget adherence, quality standards, and stakeholder satisfaction could provide a comprehensive understanding of project performance (Musabimana & Rugira, 2021). Limited research explores the perspectives and expectations of various stakeholders involved in public construction projects regarding contract administration and management practices. Understanding the viewpoints of contractors, government agencies, consultants, and local communities could facilitate better alignment of practices with stakeholder needs (Mutuyimana & Uwineza, 2020).There is a lack of longitudinal studies tracking contract performance trends over time in public construction projects in Rwanda. Research could involve analyzing historical project data to identify patterns, trends, and areas of improvement in contract administration practices and

project outcomes (Gakwerere & Nzabakurikiza, 2018). Contract administration practices are influenced by various external factors such as legal and regulatory frameworks, market conditions, and industry standards. However, there is a need for more research to understand how these external factors impact contract administration and management practices. However, the current contract administration practices have affected public construction projects during and after project implementation. Therefore, there is need to identify factors that influence contract administration practice that predict public construction projects success/ performance in Rwanda.

Addressing these research gaps will contribute to enhancing the effectiveness and efficiency of contract administration and management practices in public construction projects within the Rwandan construction industry, ultimately leading to improved project performance and delivery.

2.6 Conclusion

This chapter searches and analyzes books, journals, papers, and other related materials. A literature review summarizes current research on a topic, identifies major difficulties and gaps in the literature, and suggests areas for additional study. It examines variables' existing notions and concepts. To improve understanding, it synthesizes information from several sources. This study's theoretical review examines and evaluates the topic's theories and ideas. It involves carefully examining and combining data from several sources to understand a problem. Contract administration and management' effects on project performance in Rwanda are understudied. Contract administration and management have been studied in affluent continent like Europe, Asia, America and Africa but not in Rwanda. This research improved Contract administration and management practices and ensure project success by improving our understanding of factors influencing contract administration and management practices and their impact on Rwandan construction project performance. In this study, a conceptual framework organizes key concepts, variables, and relationships.

CHAPTER THREE

RESEARCH METHODOLOGY

3.1 Introduction

This chapter presented research design, target population, sample size, data collection methods, data collection tools, reliability and validity, data processing analysis and presentation, limitation of the study and ethical consideration of study.

3.2 Research Design

This research used mixed research design to formulate an appropriate contract administration and management framework that can be adopted in public construction projects in Rwanda. Mixed research design is a research approach that combines both quantitative and qualitative research methods (Saraswati, 2021). This approach allowed researcher to obtain a deeper understanding of the research phenomenon by taking into account both the numerical data and the experiences and perspectives of participants.

In this research an extensive literature review was done following which questionnaires were used to conduct a survey to collect data from selected public and private personnel acting in the construction industry. According to Naoum (1998), the approach of using a structured questionnaire to collect data is the most widely used data collection technique for conducting surveys to find out facts, opinions and views (Naoum, 1998). Interviews are also classified according to how they are structured. Thus, in an unstructured or nondirective type of interview, the interviewer asks questions as they come to mind. Whilst in the structured or directive interview the questions are specified in advance (Dessler, 2000)

Agreeing with Thurairajah, Haigh, Amaratunga, & Others we understand that research approach and strategy are about organizing research activity, especially data collection in ways that are most likely to achieve the research aims and objectives. Decisions made with regards to the research approach, strategy and design is therefore fundamental to both the philosophy underpinning the research and the contributions

that the research is likely to make. These decisions will in turn influence the actual research methods that are used to investigate the problem and collect, analyze and interpret data (Thurairajah, Haigh, Amaratunga, & Others, Leadership in construction partnering projects: Research methodological perspective, 2006)

Particularly in this study the researcher selected public institutions that deal with construction and made use of a public institutions and its staff who represents other institutions who are operating in the construction industry. The researcher decided to choose 3 public institutions at Central Government level and 10 districts with 10 contractors in Rwanda in this study because the prevailing situation are almost the same or similar to most of the organizations in the construction industry. The design preferred since was possible to yield maximum information with minimal expenditure of effort, time and money. The data collected were used to test the conceptual framework of the study and show the relationship between the variables.

The research strategy for this study is both qualitative and quantitative. This is a research strategy that employs narrative and quantification in the collection and analysis of data as observed. This strategy was preferred since the aim of the research was to collect information from sampled respondents using questionnaires and later quantitative techniques used in data analysis (Bryman , 2004).

3.3 Target Population

Target population is a group of individuals with the same general characteristics that can be quantified and interested by researcher (Creswell, 2014).For example, study population are the all public construction project located in Rwandan country.

Population is a group of individuals, objects or items from which samples are taken (Kombo, 2006)**.** A population refers to an entire group of persons or elements that have at least one thing in common. The population of the study was the people from the selected institutions, which are major stakeholders on contract management. This is because of easy accessibility and they are the ones, which get involved in managing projects performance throughout the contract period. The study was conducted in public institutions both at central government as well as at local government level

(districts), at central Government level, 4 institutions were targeted (WASAC, RTDA, RHA and EDCL) and at local government level 10 Districts were targeted and Kigali city was also selected as a public entity dealing with big projects in the City of Rwanda. In addition, Contractors who worked with those institutions were targeted.

It is believed that if sample is chosen carefully using the correct procedure, it is then possible to generalize the results to the whole of the research population (Dawson, 2002). The researcher used non-probability sampling method known as Judgement or Purposive-sampling technique to obtain the appropriate respondents, whereby whoever involved with procurement and contract administration in the organization's departments or sections have been considered for sampling. That means procurement department, technical department, legal officer; chief budget managers were sampled.

The researcher distributed questionnaires and conducted interviews with construction projects staff that were believed to yield the most comprehensive understanding of the study including procurement officers, project supervisors/ managers/ engineers, legal advisors/ officers, chief budget managers and contractors. a number of questionnaires were distributed in each institution and were requested to bring back the filled questionnaires.

Table 3.1: Target Population

Public institution	Target population in Rwandan country					Total
	Chief budget manager	procurement	Contractors' staff	Project Engineers	Lawyer	
Central government						
WASAC	1	2	10	5	]	19
RTDA	1	2	3	5	1	12
RHA	1	2	3	5	1	12
EDCL	1	2	11	5	1	20
S/Total						**62**
Local government						
Musanze	1	1	2	3	1	8
Gicumbi	1	1	2	3	1	8
Ngoma	1	1	2	3	1	8
Rwamaga	1	1	2	3	1	8
Nyagatare	1	1	2	3	1	8
Huye	1	1	2	3	1	8
Nyamagabe	1	1	2	3	1	8
Muhanga	1	1	2	3	1	8
Rusizi	1	1	2	3	1	8
Karongi	1	1	2	3	1	8
Rubavu	1	1	2	3	1	8
Kigali city	1	1	2	3	1	8
Sub Total						**88**
Total	**15**	**18**	**49**	**53**	**15**	**150**

3.4 Sample Size

A sample is defined as a set of individuals selected from a population, usually intended to represent the population in a research study (Gravettter, 2017). In addition, sample size is "the number of individuals or objects in the sample" (Peck, Olsen, & Devore, 2009).

In this research a researcher chose to use both probability and non-probability samplings. Probability sampling is where all the items located in sample size have an equal chance for being selected while non-probability sampling is that all item is have no equal chance. Through this research, the sample of project engineers were found using probability sampling method (random sampling technique) because the population size is large and it's impractical or impossible to study the entire population. this method allowed the researcher to select a representative sample from the

population, ensuring generalizability of findings to the larger population. Additionally, the sample for chief budget managers, Legal advisor/officers and Procurement officers were found using Census technique because the population Size was small and manageable and allowed the researcher to studying every member of the population rather than selecting a sample. Finally, the purpose sampling method was used to get the sample of Contractors' staff because it allowed the researcher to target individuals or groups who can provide rich and relevant data and detailed information related to the study objectives and support or refute theoretical propositions that is intended to be built.

The target population was 129 Public Entities in Rwanda but not all deals with construction projects. The researcher identified 15 public entities among 129 dealing with implementation of big or complex construction projects. For calculating a sample size, a research used slovin's formula which is the following

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

Where n stands for sample size, N stands for Total engineers only and e stands for margin error of 5%; it is necessary to compute sample size in order to achieve a certain confidence interval when sampling engineers.

$$\mathbf{n}= = \frac{53}{1.1325} = 46.79$$

In 53 Project managers (engineers), sample population for engineers by using probability sampling researcher found 46 people among engineers . Sample for public construction project find it by using census techniques 15 chief budget manager, 15 legal advisors, and 18 procurement officer. contractors' staff. In 49 contractors' staff, the sample population for contractors' staff by using purposive sampling the researcher found 6 people among contractors' staff.

List of sample size is included in the table 3.2 below:

Table 3.2: Selected Sample Size

Respondents	Rwandan country		Sampling techniques
	Target	Sample	
Chief budget manager	15	15	Census techniques
Legal advisor/officer	15	15	Census techniques
Procurement officer	18	18	Census techniques
Contractors' staff	49	6	purposive sampling techniques
Project Engineers	53	46	Random sampling techniques
Total	**150**	**100**	

Source: (Field Survey, 2019)

3.5 Methods of Data Collection and Research Instruments

Data collection is simply how information is gathered; every researcher has two general approaches to data collection, namely primary and secondary. Axinn and Pearce explain that there are four data collection methods; questionnaires, interviews, observation and focus group discussion. Data were collected from client state entities officials, project managers/supervisors'/consultants and contractors' staff (Pearce & Axinn, 2006).

The data for the study were obtained from both primary and secondary sources. According to (Leed & Ormrod, 2005) data is said to be primary if inquirer collects it firsthand for a determinable purpose. To collect primary data a questionnaire and interviews were used (see Annex 5and annex 6) and were administered to all respondents who filled questionnaires.

Interview: An interview is a special case of social interaction between two persons or more, and as such is subject to the same rules and restrictions as other instances of social interactions. According to Kurnar (2005) interview is a common method of collecting information from individuals. It involves face-to-face interaction between the researcher and the informant (s) aims at understanding perspectives of respondents to a given issue (Kurnar, 2005).

Questionnaires: A questionnaire is a document containing all respondent's answers or reactions. Hernon and Whitman (2001) state that, a questionnaire is a tool designed to ask the same set of questions to several people (Hernon & Whitman, 2001). A questionnaire was developed and distributed to concerned respondent.

A questionnaire is a series of written questions on a topic about which the respondents' opinion are sought (Chandran, 2004), Axin and Pearce argue that questionnaires provide a high degree of data standardization and adoption of generalized information amongst any population (Pearce & Axinn, 2006). Cannoway and Powell (2010) added that questionnaires are advantageous since they are filled up by the respondents in their own comfort and facilitate the collection in large amount of data in a relatively short time (Cannoway & Powell, 2010). According to Kurnar (2005) the questionnaire is less expensive since it saves time as well as human and financial resources. It offers greater anonymity and, in some situations, where sensitive questions are asked, it helps to increase the likelihood of obtaining accurate information (Kurnar, 2005).

3.6 Data analysis Methods: Data Computation

During the analysis of data, mean and weights were calculated. In descriptive research, computing the mean and weights involves analyzing data to understand central tendencies and account for the influence of different variables.

According to Gravetter and Wallnau (2014), the mean is a measure of central tendency that provides a single value representing the average score in a dataset (Gravetter & Wallnau, 2014). The mean, also known as the average, is calculated by summing all values in a dataset and dividing by the total number of observations. Weights are assigned to observations to account for variations in sample sizes or the influence of different variables. Weights are used in descriptive research to assign importance or significance to different observations or groups within a dataset (Hair, Black, Babin, & Anderson, 2010). They allowed the researcher to account for variations in sample sizes or the influence of different variables.

3.7 Data Reliability and Validity

Reliability is an examination of the consistency between a set of independent observations that are interchangeable. Reliability can be defined as the degree to which test scores are free from errors of measurement; measurement error reduces the reliability of the scores obtained for a researcher from a single measurement (Gall, 2007).

Validity refers to the appropriateness, meaningfulness and, usefulness of evidence that is used to support the interpretations. The decisions made and actions taken based on the assessment scores also add to validity (Cooper & Schindler, 2011).

Establishing validity for a survey testing focuses on the use to which the instrument is put, not on the survey itself. Validating the survey entails collecting evidence for the conclusions reached about the effect of project scope management on the project success.

Reliability is the extent to which research instrument can yield same results in different studies. Validity is the accuracy of the results that can be gotten from data collected using the research tools. Thus, the researcher cariie out a pilot study by testing the questionnaires on at least 5 respondents from sample size. Thus, based on the results from the pilot study the researcher got to be sure of the reliability and validity of the data collected using these research instruments.

3.8 Pilot Study

A pilot study was first conducted to test the instrument's reliability and validity, the completeness or responses, and analyze the various measures within the instrument. In a pilot, study participants were invited to participate in filling questionnaire. The identifying factor of good research is the validity of the data and the results. Regardless of the approach, validity serves the purpose of checking the quality of the data and its results. The pilot study helps to check the quality of data that obtained from questionnaire.

The research tool was administered to 10% (10 respondents) of the sample obtained from Central and Local government and who in turn did not take part in the final study to ensure that it was relevant and effective. In quantitative research, this suggests that the researcher can draw meaningful inferences from the results to a population, while Reliability indicates that participant scores are consistent and stable (Wilson, 2008)

3.9 Data Analysis and Processing

Kothari argued that data analysis involves editing, coding, classification, and tabulation of collected data so that it can be analyzed easily. All kind of field data were obtained from questionnaires (Kothari, 2004). The data were subjected to both qualitative and quantitative analysis techniques through use of Statistical Package for Social Science (SPSS) Version 16. The raw data were edited, and then entered in the SPSS computer programme by assigning symbols in a process referred to as coding. Thereafter, generate relevant frequencies, descriptive, charts and graphs. The responses from closed-ended questions were categorized as numerical data and open-ended questions categorized as string (text) data. The descriptive analysis is statistical procedure that is used to describe the population one is studying. The descriptive statistics use graphical and numerical summaries to depict a data set. The importance of descriptive statistics, rest in the utility as tools for interpreting and analyzing the data. Data is presented in form of graphs, tables, and percentages depicting standard deviation, percentages, and frequency count to profile sample characteristics and major patterns emerging from data. This study used descriptive statistics to analyze the closed-ended questionnaires. In this case, the collection and analysis of the data proceeded in tandem, repeatedly referring and constantly comparing the data to see which concepts they best fit with grounded theory (Bryman , 2004).

3.10 Ethical Considerations

Ethical Considerations can be specified as one of the most important parts of the research. According to Mugenda & Mugenda, (2003), ethical considerations are a central part of a research that assures the participants of the genuine in the research and of their dignity and protection. Dissertations may even be doomed to failure if this part is missing (Kothari, 2004). In this study, the respondents were assured of privacy

and confidentiality of the information they provided. Before agreeing to take part, people told everything they need to know about the nature and goal of the study, as well as any risks or benefits. The researcher also thought it was important to treat the respondents with respect and courtesy, while also communicating the purpose of the research. As a result, the information obtained was obtained with the full consent of the respondents, and feedback was provided in accordance with the respondents' will and desire on the subject matter (Mugenda & Mugenda, 2003). Finally, the researcher kept the personal information and data of the participants private.

CHAPTER FOUR

RESULTS AND DISCUSSIONS

4.1 Introduction

This section of the chapter primarily focused on the outcomes of the study and the analysis of gathered data. The results, along with discussions related to the research objectives, were presented using descriptive measures like percentages, means, and weights. These analyses were facilitated through the utilization of the Statistical Package for Social Sciences (SPSS) and MS excel. The survey comprised a sample size of 100 participants, with 56 distributed questionnaires being successfully completed and returned by the respondents.

4.2 Response Rate and Background Information

4.2.1 Response Rate

Response rate is the number of people participating in a survey divided by the number of people who were invited to respond, in the form of a percentage (Rubin & Babbie, 2009).

Table 4.1: Response Rate

	Frequency	**Percentage**
Valid Response	56	56%
Invalid response	7	7%
Did not respond	37	37%
Total	**100**	**100%**

Source: Field Survey, 2019

The questionnaires were distributed to the one hundred (100) respondents in the public and private institution dealing with public construction. Out of this, sixty-three feedbacks were received in which seven (7) feedbacks were identified as invalid due to incomplete or invalid answers. This Represents a valid response rate is 56%, which

according to Rubin and Babbie (2009) is considered adequate for analysis and reporting. Table 4-1 presents this response information.

4.2.2. Background Information of Respondents

The background information sought on the respondents comprised: the position of respondents in the Construction Company or public institution, academic qualification, experience of the respondents and the highest value of construction contract administered are attributes believed to determine their knowledge about pubic construction contract administration thus high reliability of their response. Respondents who are literate; possess professional qualification related to construction; holding either managerial or technical position in the organization and have worked for long in the construction industry and are believed to provide more reliable information relating to pubic construction contract administration

4.2.2.1 Current Position of Respondents in Their Institutions /Company

Table 4-2- presents the frequency and the percentage distribution of the respondents according to their current position in their construction firms or public institutions. The table shows that about 50% and 32 % of the respondents currently are either Project engineer /Architect / quantity surveyor/ Manager or consultants and about 16% of respondents are legal advisors in their construction companies or 2% of respondents are contractors. Number of chief budget manager or procurement officer responded to the questionnaire. These findings indicate Project engineer/Architect / quantity surveyor/ Manager and consultants as the majority groups and are represented in figure 4.1.

Table 4.2: Position of Respondents in Their Institutions /Company

Current position of respondents	Frequency	Percentage
Chief budget manager	0	0%
Contractor	1	2%
Procurement officer/specialist	0	0%
Project engineer/Architect /quantity surveyor/ Manager	28	50%
Consultant	18	32%
Legal advisor	9	16%
Total	**56**	

Source: Field Survey, 2019

4.2.2.2 Academic qualification of respondents

Table 4.3: Academic Qualification of Respondents

Academic qualification of respondent	Frequency	Percentage
PhD	0	0%
Master's degree	20	36%
Bachelor's degree	36	64%
Diploma	0	0%
A2 Certificate	0	0%
No formal education	0	0%
TOTAL	56	

Source: Field Survey, 2019

The distribution of education backgrounds among respondents in table 4.3 reflects a diverse and well-educated sample. With 64% of participants holding a Bachelor's degree (A0) and an additional 36% having a Master's degree, the study benefits from a substantial portion of respondents with higher education qualifications. This majority group brings a wealth of academic knowledge and analytical skills that can enrich the research process and outcomes.

4.2.3 Experience in Construction Contract Administration Practices

In Table 4.4, the distribution of respondents' experience with construction contract administration and management practices in Rwanda and its associated activities is noteworthy. The majority of participants (43%) fall within the experience range of 10

to 15years, followed by 41% having between 6 and 9 years of experience and 16% had experience that is below or equal to 5 years. having a majority of respondents with 6 to 15 years of experience with the Contract management and administration in Rwanda and its associated activities lies in the richness and depth of insights they can provide. With over 83.9 % of participants falling within this experience range, the study benefits from a substantial pool of firsthand knowledge.

Table 4.4: Years of Experience

Years of experience in construction contract administration	Frequency	Percentage
Between 0-5 years	9	16%
Between 6-10 years	23	41%
Between 10-15 years	24	43%
Above15 years	0	0%

Source: Field Survey, 2019

4.2.4 Value of the Ongoing or Completed Construction Contracts Administered

Table 4.5 presents the frequency and the percentage distribution of the respondents according to Value of the ongoing or completed construction contracts administered. Approximately 45% of the respondents had administered or are administering public construction projects which values are above 1 billion, 3% are had administered or are administering public construction projects which values are between 600 million and 1 billion while 52% are/had administering/ administered public construction projects which values are below 500 million.

Table 4.5: Value of the Ongoing or Completed Construction Contracts Administered

Value of the ongoing or completed construction contracts administered	Frequency	Percentage
Below 500 million	29	52%
Between 600 million -1Billion	2	4%
Above 1 billion	25	45%

Source: (Field Survey, 2019)

4.2.5 Summary of Respondents' Information

Majority of respondents had university education level with approximately 64% having bachelor's degree and 34% having master's degree in different fields related to construction contract administration and management.

This indicates that these are people who understand the questions contained in the questionnaire and the Rwandan construction industry.

It is apparent from the findings that majority of respondents were Engineers, Architects, Construction project managers or Architects whom constitute a total of approximately 50% followed by consultants, legal advisor and contractors with 32%, 16% and 2% respectively.

Most of the respondents had sufficient experience in administering and managing construction contract whereby approximately 43% had experience that is between 10 and 15 years, 41% had experience that is between 6-10 years while 16% are still young in the construction industry with 0-5 years' experience in administering and managing construction contracts.

Looking at the value of money of construction contract that respondents are or have deal with, it appears that respondents are dealing with huge contracts amounts whereby 45% deal with construction contract whose value are higher than 1 billion Rwandan Francs, 4% of respondents are dealing with construction contract whose value are between 600 million and one billion while 52% deal with contract whose value are below 500 million Rwandan Francs (equivalent to 500,000 USD).

4.3 Data Presentation of Findings

In this section, the study examines into the utilization of descriptive statistics to provide a clear and concise overview of the various attributes and trends present within the collected data. Through the use of measures such as percentages, means, and weight, we aim to illuminate essential insights that will enable a comprehensive understanding of the research findings.

4.3.1 Construction Contract Type Used in Public Construction Project in Rwanda

The first objective of this study was to identify and rank the types of contracts used in public construction Projects in Rwanda. Table 4.6 illustrates analyses of the various construction contracts using their weight and mean for contract type mostly used in public construction projects in Rwanda and their ranking.

Table 4.6: Construction Contract Type Used in Public Construction Projects in Rwanda

Construction contract type used	Rating					Total	Total weight	Mean	Ranking
	Very low (1)	Low (2)	Neutral (3)	High (4)	Very Highly (5)				
Fixed price contract/lump sum contracts	48	5	0	0	3	56	73	1.30	3
Cost plus contracts	56	0	0	0	0	56	56	1.00	4
Unit price contracts	0	0	3	0	53	56	274	4.89	1
Time and material contracts	31	5	0	20	0	56	121	2.16	2

Source: Field Survey, 2019

The above table presents an in-depth assessment of different Construction contract type used in Rwanda. The Unit price contract is the most used construction contract type in Rwanda with a mean score of 4.89 and total weight of 274. This indicates a generally positive evaluation. Specifically, 53 respondents (94.6%), representing very high satisfaction, while 3 respondents (5.3%) represent a neutral. Time and material contract with mean of 2.16 and total weight of 121 signifying a favorable assessment. Notably, 20 respondents (35.7%), and 5 respondents (38. 8%). Additionally, fixed price contract with mean score of 1.3 and total weight of 73 and finally the cost-plus contracts with mean score of 1.00 and total weight of 56. This multi-dimensional analysis sheds light on the varying perceptions and sentiments of respondents towards the most used construction contract type in Rwanda.

Interviewee stated that "*with admeasurement contract, the unit price is the best contract to use when we want to have accuracy in measurement and accountability on works executed.*"

Unit price contract was identified as the most common form of contract commonly used in public construction project in Rwanda. This is as indicated by a high average of **4.89** even though the literature reviews only revealed that choice of which construction contract to use oftentimes comes down to the owner's risk tolerance and this type of contract is generally based on anticipated quantities of items, which are counted in the project in addition to their unit prices. The final price of the project depends upon the quantities required to carry out the work.

4.3.2 Construction Contract Choice Factors in Public Construction Project in Rwanda

The second objective of the objectives of this study was to investigate the contract type choice factors in public construction projects in Rwanda. In order to know the factors that lead the choice of construction contract type to use in public construction projects in Rwanda, the Factors affecting construction contract type in Rwanda and the extent to which construction contract administration practices influence the success of public construction project have been investigated.

Table 4.7 and table 4.8 illustrate analysis of the various Factors affecting construction contract type in Rwanda and extent to which construction contract administration practices influence the success of public construction project using their weight, mean, and finally were ranked according to the level of importance.

Table 4.7: Factors Affecting Construction Contract Type Choice in Rwanda

S/N	Construction contract type choice factors in Rwanda	Rating					Total	Total weight	Mean	Ranking
		Least significant factor (1)	Significant factor (2)	Least Moderate significant (3)	Moderate significant (4)	Most significant factor (5)				
1	Relative risk aversion of Employer and Contractor (Contractor and Employer diversification and size, project size for the Contractor)	3	0	13	29	11	56	213	3.80	4
2	Public Owner, probably risk neutral, or private (risk averse)	27	0	9	20	0	56	134	2.39	19
3	Relative financial strength of the parties (ability to bear risks if materialized)	17	0	31	0	8	56	150	2.68	16
4	Expected profit by the Contractor in the Project	3	13	11	9	20	56	198	3.54	7
5	Contractor's ability to foresee and control costs	11	13	0	0	32	56	197	3.52	8
6	Value for money	0	0	3	10	43	56	264	4.71	1
7	Schedule criticality	13	20	20	0	3	56	128	2.29	22
8	Quality criticality	13	0	15	5	23	56	193	3.45	9

S/N	Construction contract type choice factors in Rwanda	Rating					Total	Total weight	Mean	Ranking
		Least significant factor (1)	Significant factor (2)	Least Moderate significant (3)	Moderate significant (4)	Most significant factor (5)				
9	Owner in-house capabilities	13	12	31	0	0	56	130	2.32	21
10	Belief by the Employer that the Contractor's Bid price is under/above the future actual costs	3	42	0	0	11	56	142	2.54	18
11	Desire to influence the Contractor's motivation and avoid moral hazard attitudes	31	22	0	0	3	56	90	1.61	26
12	Qualification of the Contractor	3	0	39	9	5	56	181	3.23	10
13	Negotiation power and degree of capacity utilization of the Contractor (if the Contractor has no work, he has to take whatever contract type the Employer proposes)	20	3	22	0	11	56	147	2.63	17
14	Unclear definition of the project scope and methods	23	22	11	0	0	56	100	1.79	25

S/N	Construction contract type choice factors in Rwanda	Rating					Total	Total weight	Mean	Ranking
		Least significant factor (1)	Significant factor (2)	Least Moderate significant (3)	Moderate significant (4)	Most significant factor (5)				
15	Organizational and technical project complexity	0	33	12	0	11	56	157	2.80	13
16	Duration of the project relationship	1	11	10	12	22	56	211	3.77	6
17	Willingness to cooperate	12	1	29	13	1	56	158	2.82	12
18	Desire to avoid claims and improve working relationship	0	9	3	12	32	56	235	4.20	3
19	Prior relationship (trust and commitment)	11	21	21	3	0	56	128	2.29	22
20	Considerations of fairness	11	12	4	29	0	56	163	2.91	11
21	Amount of information asymmetry previous to the	3	32	10	0	11	56	152	2.71	15
22	Familiarity and previous experience with the contract type	3	0	11	10	32	56	236	4.21	2
23	Simplicity to implement contract	14	18	21	3	0	56	125	2.23	24
24	Costs of controlling the project	11	16	28	1	0	56	131	2.34	20

S/N	Construction contract type choice factors in Rwanda	Rating					Total	Total weight	Mean	Ranking
		Least significant factor (1)	Significant factor (2)	Least Moderate significant (3)	Moderate significant (4)	Most significant factor (5)				
	development, monitoring the Contractor' efforts									
25	Financial costs	6	5	3	22	20	56	213	3.80	4
26	Dispute costs	6	16	21	13	0	56	153	2.73	14

Source: Field Survey, 2019

The table 4.7 shows that Value for money with mean score of 4.71 and total weight of 264 was found to be the most important factor affecting construction contract type choice in Rwanda and 76.8% agreed that this is the most significant factor and 17.8% agreed that it is the moderate significant factor. Familiarity and previous experience with the contract type with mean score of 4.21 and total weight of 236 was the second factor. 57.1% of respondents agreed that it is the most significant factor and 17.8% agreed that it is the moderate significant factor. The statement desire to avoid claims and improve working relationship with mean 4.20 and total weight of 235. Similarly, 57.1% of respondents agreed that it is the most significant factor and 21.4 % agreed that it is the moderate significant factor. Financial costs and Relative risk aversion of received a mean score of 3.8 and total weight of 213. The results showed that respondent were in agreement that financial costs and Relative risk aversion of are among most factors affecting the choice of construction contract type in public construction project in Rwanda.

One interviewee stated *"in selecting construction contract to use, we normally base on the value for money and the type of contract that we are familiar with but also the risk to contractor or the employer*"

Those factors are in line with literature highlighted by different researchers such as Antoniou(2013) and Ward (1994) hihgted the value for money, Al-Harbi (1998), Chan (2010) and Calderon, (2017) who talked about relative risk aversion of employer and contractor, Antoniou (2013) and Chan(2010) who highlighted the Familiarity and previous experience with the contract type and desire to avoid claims and improve working relationship and financial costs highlighted by Calderon (2017).

Table 4.8: Extent of Construction Contract Administration and Management Practices Influence on the Success of Public Construction Project

S/N	Extent of construction contract administration and management practices influence on the success of public construction project	Rating					Total	Total weight	Mean	Ranking
		Very (1)	Low (2)	Neutral (3)	High (4)	Very Highly (5)				
1	Construction contract type	0	14	20	11	11	56	187	3.3	5
2	Performance monitoring (Communications, managing time, Penalties for late completion, Change management)	0	0	0	0	56	56	280	5.0	1
3	Relationship management (dispute resolution process)	0	13	2	27	14	56	210	3.8	3
4	Contract documentation (Record Keeping)	0	18	14	1	23	56	197	3.5	4
5	Payment of executed works	13	0	0	9	34	56	219	3.9	2

Source: Field Survey, 2019

The results from table 4.8 show that Performance monitoring (Communications, managing time, Penalties for late completion, change management) influence higher on the success of public construction project in Rwanda followed by the Payment of executed works and Relationship management with 5.0, 3.9, 3.8 of mean respectively. their respective weights are 280,219 and 210 respectively. These results are supported the respondents where 100% agreed that Performance monitoring influence very highly on the success of public construction project, and 60.7% agreed that Payment of executed works influence highly on the success of public construction project and Relationship management highly influence at 25% and had a high influence of 48.2% on the success of public construction project in Rwanda.

The interviewee stated that: "the *performance of construction contract depends on the construction type used, the way the communication was set and implemented and the general reporting system.*"

These results are in line with the literature review provide insights into the influence of various factors on the success of public construction projects, as discussed in the literature by Ogunlana, S. O., Promkuntong, K., & Jearkjirm, V. (1996) and Toor, S. U. R., & Ogunlana, S. O. (2010) on the Construction Contract Type. Hosseini, M. R., Chileshe, N., Rameezdeen, R., & Lehmann, S. (2015) and Loh, P. K., & Low, S. P. (2016) reported the on how Performance Monitoring influence the success of construction project. Additionally, Lee, S., Park, H. S., Kim, J., & Lee, J. (2016) emphasized on role of proper Relationship Management on the success of construction project. Contract Documentation was highlighted by Odeyinka, H. A., & Kaka, A. P. (2017) while Payment of Executed Works was recently highlighted by Ajayi, S. O., & Ogunlana, S. O. (2018) in their research on prompt payment legislations in construction industry: A review of UK and Australian experiences.

From table 4.7, the researcher deducted ten most important factors affecting the choice of construction contract type in public construction project in Rwanda.

Table 4.9: Ten Most Important Factors Affecting the Choice of Construction Contract Type in Public Construction Project in Rwanda

S/N	Construction contract type choice factors in Rwanda	Total weight	Average
1	Value for money	264	4.71
2	Familiarity and previous experience with the contract type	236	4.21
3	Desire to avoid claims and improve working relationship	235	4.20
4	Relative risk aversion of Employer and Contractor (Contractor and Employer diversification and size, project size for the Contractor)	213	3.80
5	Financial costs	213	3.80
6	Duration of the project relationship	211	3.77
7	Expected profit by the Contractor in the Project	198	3.54
8	Contractor's ability to foresee and control costs	197	3.52
9	Quality criticality	193	3.45
10	Qualification of the Contractor	181	3.23

Source: Field Survey, 2019

Integrating various factors into the selection and management of construction contracts requires careful consideration and strategic planning by the contract administrator. The contract administrator should aim to achieve value for money by selecting a contract type and terms that optimize the balance between cost and quality. This may involve conducting cost-benefit analyses and considering long-term implications on project outcomes. Similarly, the contract administrator should assess the contractor's familiarity and past experience with different contract types. Choosing a contract format that both parties are comfortable with can minimize misunderstandings and improve project efficiency. Prioritizing collaborative contract forms such as partnering or alliance contracts can foster better working relationships between the employer and contractor, reducing the likelihood of claims and disputes. The contract administrator should emphasize clear communication, mutual trust, and dispute resolution mechanisms within the contract. Understanding the risk profiles of both parties is crucial. The contract administrator should tailor the contract provisions, risk allocation, and insurance arrangements accordingly. For instance, risk-sharing mechanisms like incentivized target cost contracts can align the interests of the

employer and contractor in managing project risks collaboratively. Additionally, assessing the financial implications of different contract options is essential. The contract administrator should consider factors such as procurement costs, operational costs, and potential cost overruns associated with each contract type. Cost-effective contract administration strategies, such as streamlined processes and resource optimization, should be implemented. Selecting a contract form that aligns with the desired duration of the project relationship is important. Long-term projects may benefit from relational contracts that prioritize ongoing cooperation and flexibility, whereas short-term projects may favor fixed-price or lump-sum contracts with defined deliverables and timelines. Contract terms should be structured to ensure a fair and reasonable profit margin for the contractor while meeting the employer's budget constraints. Transparent pricing mechanisms, performance incentives, and shared savings arrangements can align profit motives with project success. Contract provisions should incentivize cost control and risk management practices by the contractor. Performance-based payment mechanisms, cost-sharing arrangements, and value engineering initiatives can encourage efficiency and innovation while mitigating cost overruns. The contract administrator should evaluate the contractor's qualifications, capabilities, and track record in delivering projects of similar quality standards. Selecting a contract form that emphasizes quality assurance, compliance with specifications, and performance guarantees is essential for achieving desired project outcomes. By carefully considering these factors and integrating them into the contract selection and management process, the contract administrator can enhance project success, mitigate risks, and promote mutually beneficial relationships between the employer and contractor. Effective communication, collaboration, and ongoing evaluation are key to adapting contract strategies to changing project dynamics and stakeholder priorities.

4.3.3 Contract Administration Problems Affecting Success of Public Construction Projects in Rwanda

The third objective of the research was to assess contract administration and management problems that affect success of public construction projects in Rwanda. While assessing contract administration problems that affect success of public

construction projects in Rwanda, respondents agreed that poor contract administration can cause you to violate terms of your contract, which can lead to penalties, fines and a potential lawsuit is the most factor affecting that affect performance of public Construction project, followed by Poor contract administration can cause each side of an agreement to lose track of the contract term.

Table 4.10 below shows various Factors that have a negative effect on performance of building project under implementation in Rwanda using their weight, mean, and finally ranked according to the level of importance.

Table 4.10: Various Contract Administration Problems Affecting on Performance of Building Project under Implementation in Rwanda

S/N	Contract administration and management problems affecting success of public construction projects in Rwanda	Rating					Total	Total weight	Average	Ranking
		1 Strongly Disagree	2 Disagree	3 Neutral	4 Agree	5 Strongly Agree				
1	poor contract administration can cause you to violate terms of your contract, which can lead to penalties, fines and a potential lawsuit	0	13	3	31	9	56	204	3.64	1
2	Poor contract can cause each side of an agreement to lose track of the contract term	5	13	6	20	12	56	189	3.38	2
3	Without reporting system, the two sides have no way of monitoring the benefits of the agreement and developing any changes to make when the agreement comes up for renewal. Effective reporting also keeps track of quantities that helps each side monitor their usage and determine when contract limits may have been met.	0	18	26	9	3	56	165	2.95	3
4	Ambiguous specifications (unclear scope of works) lead to disputes over required performance, acceptance	22	9	0	20	5	56	145	2.59	4
5	Poor contract administration does not offer comprehensive training and can cause some of your purchasing people to buy products at full price rather than the contracted rates	22	5	9	20	0	56	139	2.48	5
6	Delays of Works change in scope of works (additional works, money, time) after contract award	9	33	1	13	0	56	130	2.32	6

S/N	Contract administration and management problems affecting success of public construction projects in Rwanda	Rating					Total	Total weight	Average	Ranking
		1 Strongly Disagree	2 Disagree	3 Neutral	4 Agree	5 Strongly Agree				
7	Increased cost due to the initial design wrongly done	18	13	20	0	5	56	129	2.3	7
8	Personal conflicts between agency project manager or staff and contractor project manager or employees. Disagreement between the parties than cannot be easily resolved May involve scope of work, materials supplied, payment schedules, or any other aspect of the contract	18	18	20	0	0	0	0	114	8
9	The project has a high risk of failure. I.e. New technology, new equipment, new Contractor, Project never been done before. Tight timeline or budget	22	14	20	0	0	56	110	1.96	9
10	Completion of project is delayed due to non-acceptance of final product. Example: difference in either party's definition of what was supposed to be delivered or provided	9	46	1	0	0	56	104	1.86	10

Data analyzed shows that Poor contract administration can cause you to violate terms of your contract, which can lead to penalties, fines and a potential lawsuit. This statement was ranked the first with mean has 3.64 and total weight of 204. This is indicated by 16% of responded strongly agree on the statement, and 55.35% Agree with the statement. Similarly, Poor contract can cause each side of an agreement to lose track of the contract term had mean score of 3.38 while the total weight is 189. It is also shown by 21.43% of respondents who strongly agree with the statement and 35.71% of respondents who agrees with that statement. The statement "Without reporting system, the two sides have no way of monitoring the benefits of the agreement and developing any changes to make when the agreement comes up for renewal. Effective reporting also keeps track of quantities that helps each side monitor their usage and determine when contract limits may have been met." received a mean score of 2.95 with a total weight of 165. Additionally, the statement "Ambiguous specifications (unclear scope of works) lead to disputes over required performance, acceptance" had a mean score of 2.59 and the total weight of 145. The statement "Poor contract administration does not offer comprehensive training and can cause some of your purchasing people to buy products at full price rather than the contracted rates" had a mean score of 2.48 and total weight of 139. The statement is supported by 35.71% of the respondents who agreed with the statement. Similarly, Delays of Works change in scope of works (additional works, money, time) after contract award received a mean score of 2.32 and the total weight of 130. The statement "Increased cost due to the initial design wrongly done" received a mean score of 2.3 and a total weight of 129. the statement "Personal conflicts between agency project manager or staff and contractor project manager or employees. Disagreement between the parties than cannot be easily resolved May involve scope of work, materials supplied, payment schedules, or any other aspect of the contract" received a mean score of 2.04 and a total weight of 114. Additionally, the statement "The project has a high risk of failure. I.e. New technology, new equipment, new Contractor, Project never been done before. Tight timeline or budget" received a mean score of 1.96 and a total weight of 110. Finally, the statement "Completion of project is delayed due to non-acceptance of final product. Example: difference in either party's definition of what was supposed to be delivered or provided" received a mean score of 1.86 and total weight of 104.

An interviewee stated: "*most of the problems such as violation contract terms, improper reporting system, loose of track on contract terms, ambiguous specifications, delays in contract execution, project cost over runs, personal conflict among other come from the poor contract administration and management. Contract administrators should overlook on such legal terms to overcome such problems and conflicts."*

Literature provide insights into various issues related to poor contract administration and management, along with their causes and effects as highlighted by different researchers such as Alaghbari, W., & Hammad, A. (2016) in their research on Causes and effects of construction delays: Evidence from Saudi Arabia and Odeyinka, H. A., & Kaka, A. P. (2017) in their research on Causes of delay in construction industry: Evidence from Nigerian construction professionals hihgted violation of contract terms; Assaf, S. A., & Al-Khalil, M. (2006) in their study on Causes of delay in large construction and Cao, D. T., & Huynh, T. T. (2017) in their study on the Causes of project delay in construction industry in Vietnam talked about Improper Reporting System. Loss of Track on Contract Terms were highlighted by Ogunlana, S. O., Promkuntong, K., & Jearkjirm, V. (1996) and Arain, F. M., Pheng, L. S., & Mustafa, A. M. (2018). Ambiguous Specifications were highlighted by Hussin, M. W., & Majid, M. Z. A. (2011). Additionally, Delays in Contract Execution were highlighted by Choudhury, I. (2014) in his research on the Causes of delay in construction projects in Afghanistan, Project Cost Overruns which in turn were highlighted by Kaliba, C., Muya, M., & Mumba, K. (2009) in their research on the Cost escalation and schedule delays in road construction projects in Zambia and finally, Personal Conflict Among Other which was recently highlighted by Lim, C. S., Kamaruzzaman, S. N., Wong, S. L., & Abdullah, A. (2011) in their research on Causes of disputes in construction industry in Malaysia.

4.3.4 Public Construction Industry Views by Respondents

The aim of objective five was to seek the views of the public construction industry players regarding what can be done to improve contract administration system in public construction project in Rwanda.

The views of respondents are summarized below according to the phases of construction projects

4.3.5 Planning Phase

1. Establish a legal and regulatory framework to ensure proper coordination, reporting and regular M&E
2. Conduct pre-feasibility and full feasibility studies for public construction projects using reliable “companies” with professional capacities (human and material resources) to make sure that all design gaps and unforeseen topographic features are avoided.
3. Technical specifications of the supervising consultant should be drafted with utmost care and make sure all the aspects of the assignment are well understood and captured (scope, time inputs of the consultant, qualification and experience of the key staff)

4.3.6 Implementation phase:

1. To provide capacity building especially in construction project management
2. To respect all terms of contract during project implementation.
3. Payment of executed works on time
4. Establish regular and strong communication channels between all actors to the public construction project for update and on time “Situation Report”
5. During contract implementation, the client should make sure that all key staff of the consultant are actually performing the assignment on field as per the contract;
6. Before the contractor can start works, it is normally advisable to do a design review by the Supervisor and contractor and see if all is in order to enable the starting of the project and smooth implementation of the project;
7. Regarding the hiring of the contractor, the client should make sure that the best contractor is hired, to this end, a careful due diligence should be conducted by the public tender committee/Internal tender committee before awarding the tender, to make sure that all the information presented by bidders is genuine.

8. The client should make sure the contract manager/ contract administrator is well experienced and well conversant with contract management of construction projects.

From the expert/respondents views, the implication is to do a skillful integration of related distinct functions in the construction project activity, namely: (1) construction project planning, (2) Contract administration, (3) Construction project control, (4) contract management, and (5) Conflict management. Ideally, while Construction project planning and Contract administration are sequential, Construction project control, contract management and Conflict management are simultaneous in a project. This implies that a complex construction project should have the following 4 non-conventional professionals: (1) Construction Project manager for construction project planning, Construction project control and Conflict management, (2) Contract administrator for Contract administration, (3) Construction Site/ Operations manager for Construction project control, real time production onsite and offsite and (4) Contract manager for contract management and Conflict management who have not been the contract administrator.

4.3.7 Formulation of Contract Administration and Management Framework

Based on the views of respondents and the experience of the researcher, the following model is formulated to improve contract administration practices in Rwanda

1. Appoint an experienced contract administrator to be supported by a contract management committee composed by a multidisciplinary team (finance, Legal advisor, engineers, architects, procurement officers)
2. Develop technical specifications of the consultants to ensure all aspects of the assignment are well understood during the project planning (project scope, deliverables, consultants' qualification and staff)
3. Conduct a due diligence of the contractor before awarding the tender to ensure that all the information presented by bidders is genuine
4. Develop a proper coordination and reporting framework
5. Conduct the study review directly after the signature of the contract before starting works

6. To monitor the contractors' personnel to ensure that those submitted in the bids are those who are implementing the project
7. Comply with all contract terms and conditions
8. Develop a clear channel of communication between parties
9. Manage all contract changes with a proactive change management approach
10. Develop a dispute resolution framework
11. Develop a work breakdown structure
12. Track and report regularly the project performance
13. Conduct site meetings regularly with the contractors to review the progress, discuss problems and consider necessary changes preferably on weekly basis
14. Provide copies of the contract to all actors in the project
15. Keep all documents related to the contract under implementation
16. Establish a clear payment strategy so that all executed works are timely paid.

This framework can be synthetized into the four distinct professionals and 5 functions highlighted which capture well all the 16 managerial and contractual activities stated by the expert respondents, as panacea to the contract administration and management inefficiency in Rwanda.

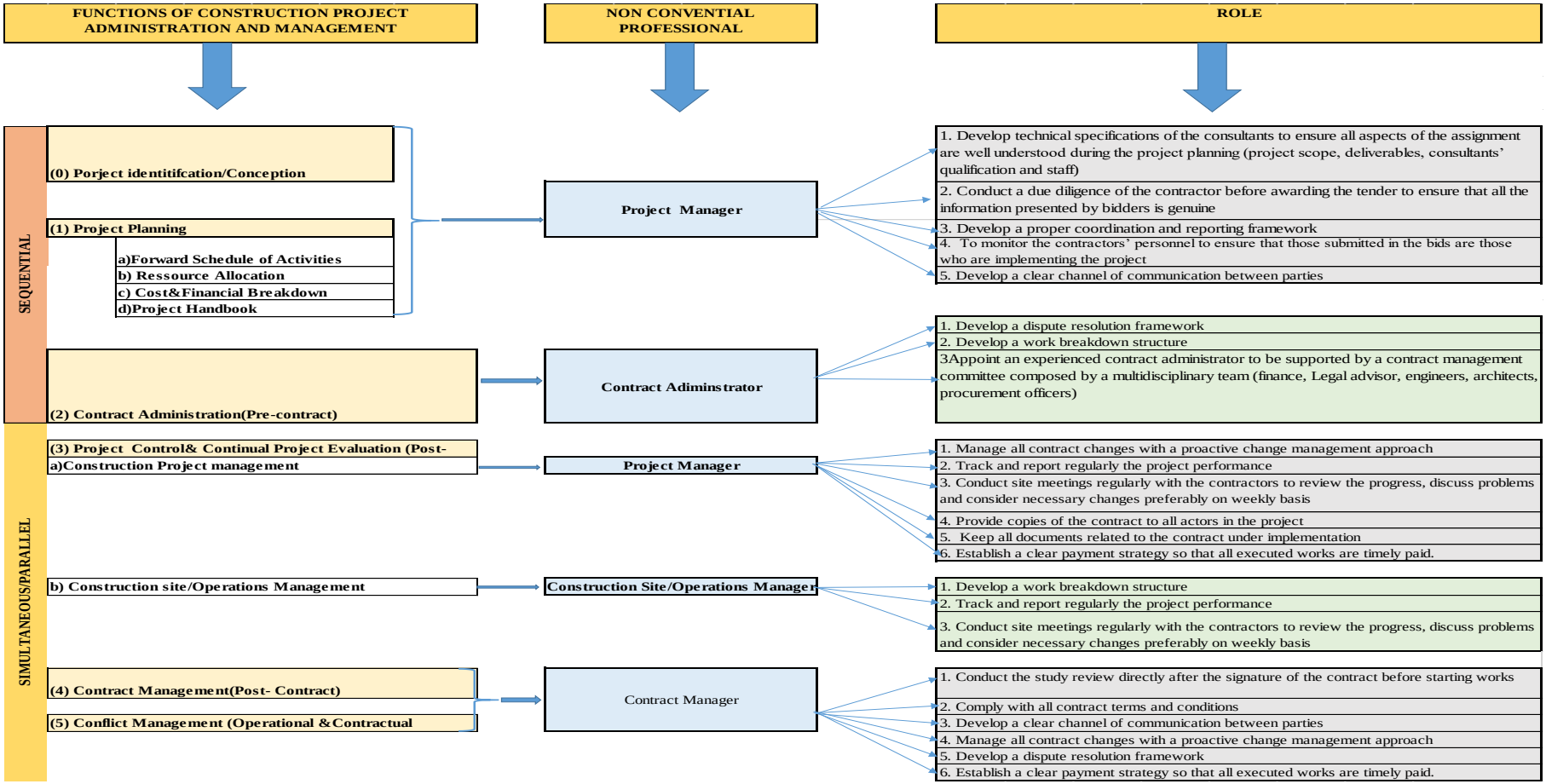

Figure 4.1: Formulated Public Construction Contract Administration and Management Framework in Rwanda

This research established a systematic, operational, and multidimensional contract administration performance framework that combines the global view of construction contract administration activities, the worldwide best practices, the success factors, the operational procedures, the provisions of the professional service agreements and the conditions of contract in one database. In practice, the contract administration framework can be used as a qualitative tool or guideline for establishment of construction contract administration management system, audit checklist for service compliance, and a vehicle to initiate an improvement project. Also, Contract administration and management framework can be used quantitatively as a performance measurement tool in order to capture the overall service performance, benchmark the service level, and capture the performance level of individuals. Contract administration framework will provide a reliable tool that will help to increase operational efficiency and effectiveness, minimize contractual problems, improve project control, and trace staff performance at the successive stages of post awarding phase through improved compliance, awareness, visibility, monitoring, and control over the contract administration and management activities. Therefore, management control of these activities would reduce problems in construction contract administration and management and decrease disputes that may be generated from the improper performance of those activities. Yet, it should be noted that establishing contract administration and management framework is the first step toward performance measurement of contract administration; Construction industry in Rwanda will be able to use the proposed framework as a baseline for further research. Therefore, further research in this area is required.

CHAPTER FIVE

SUMMARY, CONCLUSIONS AND RECOMMENDATIONS

5.1 Introduction

This Chapter comprises the conclusions and recommendations of this study based on the analysis of data collected. The chapter starts with giving a summary of the findings for each of the study objectives separately. Finally, areas for further study are stated.

5.2 Summary of Findings

5.2.1 Types of Contracts Used in Public Construction Projects in Rwanda

Findings showed that the means for different contract type used in construction industry were 4.89; 2.16; 1.30 and 1.00 respectively. This means that the Unit price contract is the most used construction contract type in public construction projects in Rwanda followed by Time and material contract, fixed price contract and finally the cost-plus contracts is the least used contract type in public construction projects in Rwanda.

These results were obtained from well-educated respondents, well-experienced respondents in the field since 64 percent of respondents had bachelor's degree, and 34 % had master's degree in different fields related to construction contract administration. Also 50% of respondents were Engineers, Architects, Construction project managers or Architects while 32% were consultants and 16% of respondents were legal advisors. This means that the respondents were the most people who deals with the construction contract administration. Looking at they experience, it clear that 43% of respondents had experience that is between 10 and 15 years, 41% had experience that is between 6-10 years while 16% are still young in the construction industry with 0-5 years' experience in administering construction contracts.

Looking at the amount of money that respondents deal with, it was observed that respondents managed different types of projects with different size. 45% of respondents dealt with construction contract whose value were higher than 1 billion

Rwandan Francs (1,000,000 USD), 4% of respondents dealt with construction contract whose value were between 600 million (600,000 USD) and one billion (100,000 USD) while 52% deal with contract whose value are below 500 million Rwandan Francs (500,000 USD).

By conclusion, the Unit price contract is the most used type in public construction project in Rwanda.

5.2.2 Factors Influencing the Choice of Contract Type Used in Public Construction Projects in Rwanda

The respondents were asked to identify the most important factors that lead to the choice of a construction contract type. From the response got, it was observed that, the five most important factors affecting the choice of construction contract type to be used in public construction project in Rwanda were Value for money, Familiarity and previous experience with the contract type and Desire to avoid claims and improve working relationship, financial costs and Relative risk aversion of Employer and Contractor with 4.71, 4.21, 4.20, 3.80 of mean respectively.

1. From this study, a list of ten most important factors affecting the choice of construction contract type in public construction project in Rwanda was establish. this comprises of:
2. Value for money with mean 4.71
3. Familiarity and previous experience with the contract type with mean 4.21
4. Desire to avoid claims and improve working relationship with mean 4.20
5. Relative risk aversion of Employer and Contractor (Contractor and Employer diversification and size, project size for the Contractor) with mean 3.80
6. Financial costs with mean 3.80
7. Duration of the project relationship with mean 3.77
8. Expected profit by the Contractor in the Project with mean 3.54
9. Contractor's ability to foresee and control costs with mean 3.52
10. Quality criticality with mean 3.45
11. Qualification of the Contractor with mean 3.23

When respondents were asked to rate the extent to which construction contract administration practices influence on the success of public construction project, performance monitoring (communications, managing time, penalties for late completion, change management) influence higher on the success of public construction project in Rwanda followed by the Payment of executed works and Relationship management with 5.0, 3.9, 3.8 of mean respectively.

By conclusion, value for money, familiarity and previous experience with the contract type, desire to avoid claims and improve working relationship relative risk aversion of Employer and Contractor are the most important factors affecting the choice of construction contract type in public construction project in Rwanda.

5.2.3 Contract Administration Problems Affecting Success of Public Construction Projects in Rwanda

While assessing contract administration problems that affect success of public construction projects in Rwanda, respondents agreed that **poor contract administration** can cause you to **violate terms of your contract**, which can lead to penalties, fines and a potential lawsuit is the most factor that affect performance of public Construction project, Poor contract administration can also cause each side of an agreement to **lose track of the contract term**. Another important problem that affects success of public construction projects in Rwanda is **lack of reporting system.**

By conclusion, poor contract administration in Rwanda causes the violation of terms of your contract, loss of track of the contract term and lack of reporting system**.**

5.2.4 A Suitable Management Framework for Enhancing Contract Administration

Finally, a management framework was proposed to enhance contract administration and management in public construction in Rwanda. The implication is to do a skillful integration of related distinct functions in the construction project activity, namely: (1) construction project planning, (2) Contract administration, (3) Construction project control, (4) contract management, and (5) Conflict management. Ideally, while

Construction project planning and Contract administration are sequential, Construction project control, contract management and Conflict management are simultaneous in a project. This implies that a complex construction project should have the following 4 non-conventional professionals: (1) Construction Project manager for construction project planning, Construction project control and Conflict management, (2) Contract administrator for Contract administration, (3) Construction Site/ Operations manager for Construction project control, real time production onsite and offsite and (4) Contract manager for contract management and Conflict management who have not been the contract administrator. This framework comprises a list of activities that can be undertaken by different professionals at different stage as part of construction project administration and management functions by public institution while dealing with public construction contracts.

The following figure shows important variables to be considered in contracts formulations.

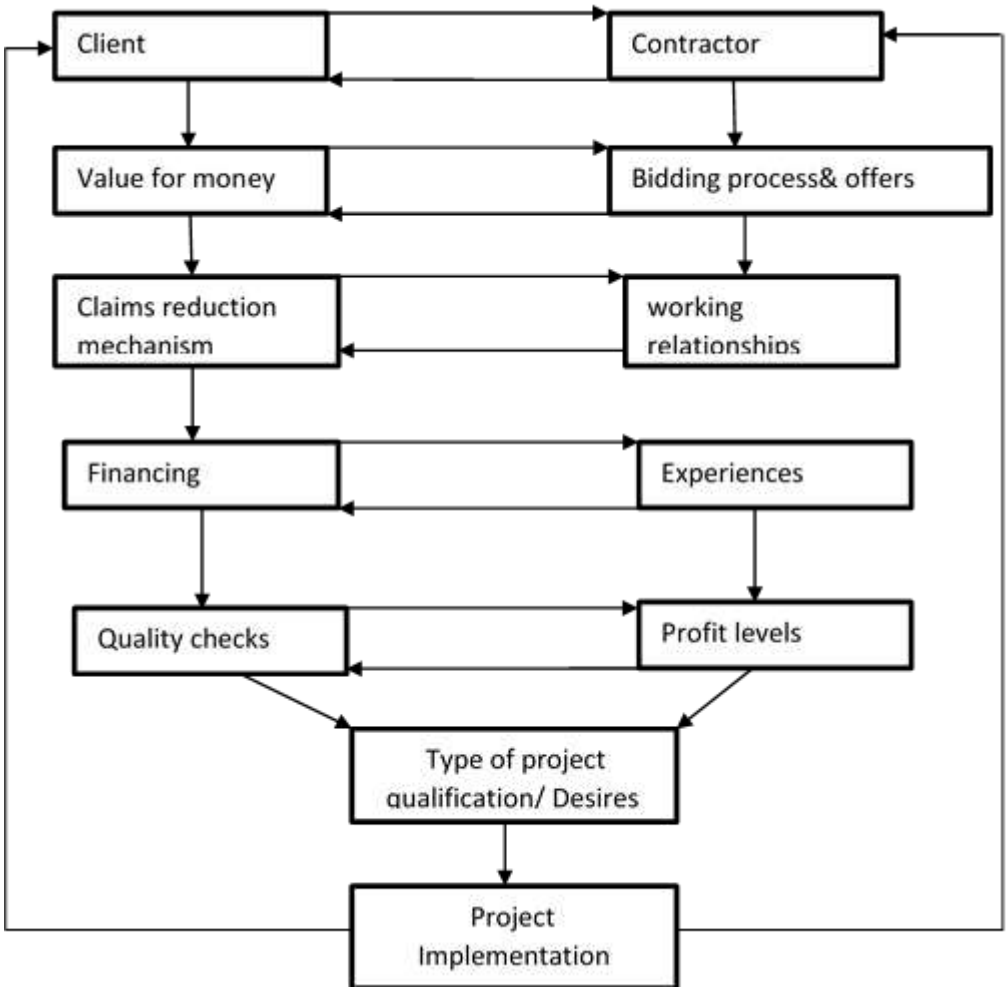

Figure 5.1: A Framework of Contract Management and Administration

5.2 Conclusions

The following general conclusions were made from the summary of findings: The unit price contract is mostly used in public construction project in Rwanda. Additionally, Value for money, familiarity and previous experience with the contract type, desire to avoid claims and improve working relationship, relative risk aversion of employer and contractor (contractor and employer diversification and size, project size for the contractor) and financial costs are the most factors affecting the choice of contract type in construction projects in Rwanda among others. in addition, Poor contract administration and lack of reporting system are the most important factor that affect performance of public construction project and from which disputes among parties arise

The administration of construction projects in Rwanda should be done through the developed framework because it will help the contract administrator to administer Construction projects in planned manner and develop a better relationship between the owner and the contractor by reducing conflicts. This is supported by Ganesh and Al (2016).

5.4 Recommendations of the Study

The following recommendations were made:

1. Contracts should be clear, detailed, and include all necessary clauses to protect all parties involved. This includes clear definitions of scope, timeline, payment terms, dispute resolution mechanisms, etc.
2. Conduct regular reviews and audits of the contract management and administration practices. This research will help in identifying any issues or areas of improvement.
3. Public construction industry players in Rwanda are recommended to adopt the proposed contract administration and management framework to enhance project performance.
4. Contract management law and existing practices in Rwanda should be revised/changed to create the enabler environment for this framework to operate because introducing a construction project team (project manager, Contract administrator/Formulator, Construction site/Operations Manager and a Contract manager/Implementer, legal in one project would be a paradigm shift from our current practices in Africa.

5.5 Areas for Further Research

In the course of undertaking this research work, the researcher came across areas which

He felt no academic work had been provided by researchers. the research therefore recommends the following future studies in Rwandan Public construction industry:

1. Comparative Analysis: A comparative study of contract management practices across different countries or regions could provide insights into the most effective strategies and common pitfalls.
2. Role of Legislation: An analysis of the impact of different legislative frameworks on contract management could be insightful. This could include a study of how changes in legislation affect contract management practices.
3. Training and Skill Development: Research could be conducted on the role of training and skill development in improving contract management practices. This could include a study of the most effective training methods and the skills that are most important for effective contract management.
4. Risk Management: Further research could be conducted on how risk management practices influence contract management and administration in public construction projects.
5. Stakeholder Management: Research could be conducted on the role of stakeholder management in contract administration. This could include a study of how effective stakeholder management can improve the outcomes of public construction projects.
6. Sustainability: An investigation into how sustainability considerations are influencing contract management and administration practices in public construction projects could be conducted.

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APPENDICES

Appendix I: List of Public Budget Agencies in Rwanda

S/N	Name of the Institution
1	PRESIREP
2	NATIONAL COMMISSION FOR UNITY AND RECONCILIATION(NURC)
3	GENERAL SECRETARIAT NISS
4	OMBUDSMAN OFFICE
5	RWANDA DEVELOPMENT BOARD (RDB)
6	RWANDA ELDERS ADVISORY FORUM
7	NATIONAL COMMISSION FOR SCIENCE AND TECHNOLOGY(NCST)
8	RWANDA MINES, PETROLEUM AND GAS BOARD
9	RWANDA GOVERNANCE BOARD (RGB)
10	SENATE
11	CHAMBER OF DEPUTIES
12	OFFICE OF THE AUDITOR GENERA (OAG)
13	PUBLIC SERVICE COMMISSION (PSC)
14	NATIONAL HUMAN RIGHTS COMMISSION (NHRC)
15	PRIMATURE
16	GENDER MONITORING OFFICE (GMO)
17	SUPREME COURT
18	MINADEF
19	RWANDA MILITARY HOSPITAL (RMH)
20	MINAFFET
21	OFFICE OF THE GOVERNMENT SPOKESPERSON(OGS)
22	MINAGRI
23	RWANDA AGRICULTURAL BOARD (RAB)
24	NATIONAL AGRICULTURAL EXPORT DEVELOPMENT BOARD (NAEB)
25	MINICOM
26	RWANDA STANDARDS BOARD (RSB)
27	RWANDA COOPERATIVES AGENCY (RCA)
28	NATIONAL INDUSTRIAL RESEARCH AND DEVELOPMENT AGENCY (NIRDA)
29	RWANDA INSPECTORATE AND COMPETITION AUTHORITY (RICA)
30	MINECOFIN
31	NATIONAL INSTITUTE OF STATISTICS OF RWANDA (NISR)
32	RWANDA REVENUE AUTHORITY(RRA)
33	RWANDA PUBLIC PROCUREMENT AUTHORITY (RPPA)

34	CAPITAL MARKETS AUTHORITY (CMA)
35	RWANDA NATIONAL POLICE (RNP)
36	RWANDA CORRECTIONAL SERVICE(RCS)
37	MINIJUST
38	INSTITUTE OF LEGAL PRACTICE AND DEVELOPMENT (ILPD)
39	RWANDA LAW REFORM COMMISSION (RLRC)
40	KIGALI FORENSIC LABORATORY (KFL)
41	MINEDUC
42	HIGHER EDUCATION COUNCIL (HEC)
43	WORKFORCE DEVELOPMENT AUTHORITY(WDA)
44	RWANDA EDUCATION BOARD (REB)
45	UNIVERSITY OF RWANDA
46	RWANDA POLYTECHNIC (RP)
47	MINISPOC
48	NATIONAL COMMISSION FOR THE FIGHT AGAINST GENOCIDE(CNLG)
49	RWANDA NATIONAL MUSEUM
50	CHANCELLERY FOR HEROS, NATIONAL ORDERS AND DECORATION OF HONOURS
51	RWANDA ACADEMY OF LANGUAGE AND CULTURE
52	RWANDA ARCHIVE AND LIBRARY SERVICES AUTHORITY (RALSA)
53	MINISANTE
54	CENTRAL UNIVERSITY HOSPITAL OF KIGALI (CHUK)
55	CENTRAL UNIVERSITY HOSPITAL OF BUTARE (CHUB)
56	NEURO PSYCHIATRIC HOSPITAL OF NDERA (HNN)
57	RWANDA BIO-MEDICAL CENTER(RBC)
58	NATIONAL PUBLIC PROSECUTION AUTHORITY (NPPA)
59	MININFRA
60	ROAD MAINTENACE FUND (RMF)
61	RWANDA TRANSPORT DEVELOPMENTAGENCY (RTDA)
62	RWANDA HOUSING AUTHORITY(RHA)
63	ENERGY DEVELOPMENT CORPORATION (EDCL)
64	WATER AND SANITATION CORPORATION (WASAC)
65	MIFOTRA
66	RWANDA MANAGEMENT INSTITUTE (RMI)
67	MINIRENA
68	MINALOC
69	NATIONAL ELECTORAL COMMISSION (NEC)
70	SUPPORT FUNDS TO GENOCIDE SURVIVORS(FARG)
71	LOCAL DEVELOPMENT AGENCY (LODA)
72	NATIONAL COMMISION FOR DEMOBILISATIO AND REINTEGRATION (NCDR)
73	EASTERN PROVINCE

74	SOUTHERN PROVINCE
75	WESTERN PROVINCE
76	NORTHERN PROVINCE
77	CITY OF KIGALI(CoK)
78	NATIONAL IDENTIFICATION AGENCY(NIDA)
79	NATIONAL COUNCIL OF PERSONS WITH DISABILITIES (NCPD)
80	RWANDA BROADCASTING AGENCY
81	MEDIA HIGH COUNCIL
82	NATIONAL ITORERO COMMISSION
83	NATIONAL REHABILITATION SERVICE
84	MIDIMAR
85	MIGEPROF
86	NATIONAL WOMEN COUNCIL(NWC)
87	NATIONAL COMMISSION FOR CHILDREN (ZAMBIA NCC)
88	NATIONAL EARLY CHILDHOOD DEVELOPMENT PROGRAM (NECDP)
89	NATIONAL YOUTH COUNCIL (NYC)
90	MINIYOUTH
91	RWANDA INFORMATION SOCIETY AUTHORITY (RISA)
92	MITEC
93	RWANDA ENVIRONMENT MANAGEMENT AUTHORITY (REMA)
94	RWANDA METEOROLOGY AGENCY (METEO RWANDA)
95	MINISTRY OF ENVIRONMENT (MOE)
96	FONERWA
97	RWANDA LAND MANAGEMENT AND USE AUTHORITY
98	RWANDA WATER AND FORESTRY AUTHORITY
99	MINILAF
100	GASABO DISTRICT
101	NYARUGENGE DSITRICT
102	KICUKIRO DISTRICT
103	MUSANZE DISTRICT
104	GAKENKE DISTRICT
105	BURERA DISTRICT
106	RULINDO DISTRICT
107	GICUMBI DISTRICT
108	RUSIZI DISTRICT
109	NYAMASHEKE DISTRICT
110	KARONGI DISTRICT
111	RUTSIRO DISTRICT
112	NGORORERO DISTRICT
113	NYABIHU DISTRICT
114	RUBAVU DISTRICT
115	NYAMAGABE DISTRICT

116	NYARUGURU DISTRICT
117	HUYE DISTRICT
118	NYANZA DISTRICT
119	NYANZA DISTRICT
120	RUHANGO DISTRICT
121	MUHANGA DISTRICT
122	KAMONYI DISTRICT
123	NYAGATARE DISTRICT
124	GATSIBO DISTRICT
124	KAYONZA DISTRICT
126	RWAMAGANA DISTRICT
127	BUGESERA DISTRICT
127	NGOMA DISTRICT
129	KIREHE DISTRICT

Source: Ministry of Finance, Planning and Budget call circular II, 2018- 2019

Appendix II: Sample Population

1. Rwanda Housing Authority (RHA)
2. Rwanda Transport Development Agency (RTDA)
3. Energy Development Corporation (EDCL)
4. Water and Sanitation Corporation (WASAC)
5. City of Kigali (CoK)
6. Musanze District in Northern province
7. Burera District in Northern province
8. Rubavu District in Western Province
9. Karongi in Western Province
10. Huye District in southern District
11. Nyanza District in southern District
12. Ngoma District in Eastern Province
13. Nyagatare District in Eastern Province
14. Gasabo District in Kigali city

Appendix III: Introduction Letter to Respondents

NTAWINIGA K. Michel (AB343-C010/6413/2015)

Cell phone: +250 788 521 185

Email: ntawiniga.michel@gmail.com

January 2019

INTRODUCTION TO QUESTIONNAIRE RESPONDENTS

Dear sir/ Madam,

My Name is **NTAWINIGA K. Michel**; I am a student at JOMO KENYATTA UNIVERSITY OF AGRICULTURE AND TECHNOLOGY-Kigali Campus (JKUAT) currently undertaking Masters of Science Degree in Construction Project Management. As a course requirement, I am undertaking a study on **"Assessment of factors influencing contract administration and management practices in public construction projects in Rwanda".**

The objectives of this research study are to:

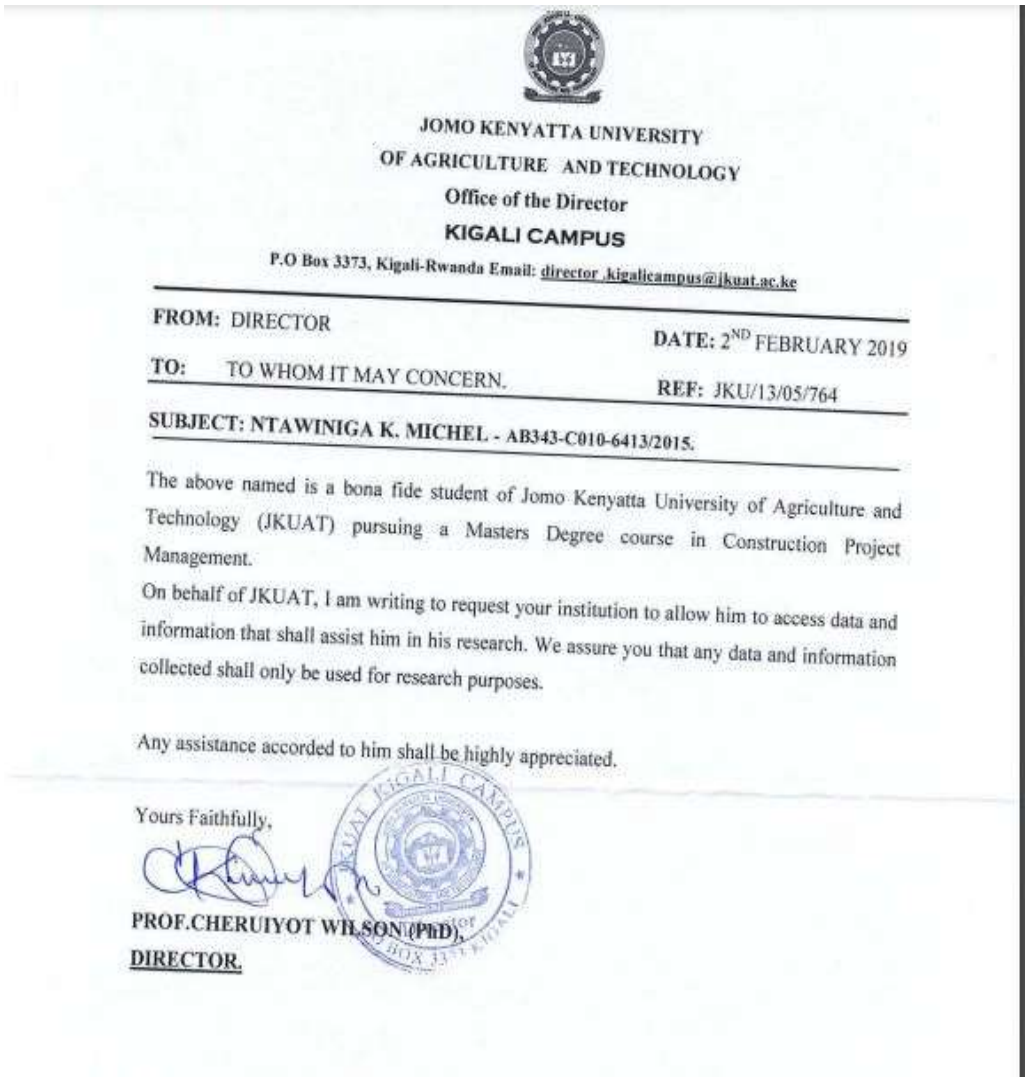
1. To describe and rank the types of contracts used in public construction Projects in Rwanda.
2. To evaluate the factors that influence the choice of contract type in public construction projects in Rwanda.
3. To assess contract administration and management problems that affect success of public construction projects in Rwanda.
4. To formulate a project management framework that can enhance contract administration and management in public construction in Rwanda

The researcher reassures respondents that all the information given will be treated with a lot of confidentiality and no information collected in this study will be used for any other purpose than stated above.

Thank you for your cooperation.

NTAWINIGA K. Michel

Appendix IV: Researcher Letter from the University



JOMO KENYATTA UNIVERSITY
OF AGRICULTURE AND TECHNOLOGY
Office of the Director
KIGALI CAMPUS
P.O Box 3373, Kigali-Rwanda Email: director .kigalicampus@jkuat.ac.ke

FROM: DIRECTOR **DATE:** 2ND FEBRUARY 2019

TO: TO WHOM IT MAY CONCERN. **REF:** JKU/13/05/764

SUBJECT: NTAWINIGA K. MICHEL - AB343-C010-6413/2015.

The above named is a bona fide student of Jomo Kenyatta University of Agriculture and Technology (JKUAT) pursuing a Masters Degree course in Construction Project Management.

On behalf of JKUAT, I am writing to request your institution to allow him to access data and information that shall assist him in his research. We assure you that any data and information collected shall only be used for research purposes.

Any assistance accorded to him shall be highly appreciated.

Yours Faithfully,

PROF.CHERUIYOT WILSON (PhD).
DIRECTOR.

Appendix V: Research Questionnaire

This questionnaire is divided into A, B, C, D, E& F, please respond as accurately and as honestly as possible to all questions by either using a tick [√] in the box that closely match your view or write it on the space provided.

PART A: General Information

1. What is your current position in your institution /company?

(i) Chief budget manager	
(ii) Contractor	
(iii) Procurement officer/specialist	
(iv) Project engineer/Architect / quantity surveyor/ Manager	
(v) Consultant	
(vi) legal advisor	

2. What is your Academic qualification?

Phd	
Master's Degree	
Bachelor's degree	
Diploma	
A2 Certificate	
No formal Education	

3. Please indicate your years of experience in construction contract administration practices

Between 0-5 years	
Between 6-10 years	
Between 10-15 years	
Above15 years	

4. What is the highest value of the ongoing or completed construction project in Frw that you are dealing with?

Below 500 million	
Between 600 million -1Billion	
Above 1 billion	

PART B: Construction contract type

5. What is the contract type mostly used in public construction projects that you are involved in? Mark the "box" that best describe your response use the rating 1-5**,** whereas **1-Very Low, 2-Low, 3-Neutral, 4-High,** and **5-Very Highly**

Type of contract/ Rating	**1**	**2**	**3**	**4**	**5**
Fixed price contract/lump sum contracts					
Cost plus contracts					
Unit price contracts					
Time and material contracts					

PART C: Construction contract choice factors

6. The following are factors, which have significant influence towards the choice of contract type in public building projects during implementation. You are being asked to identify and score all the factors in order of their importance towards project performance during implementation (the factors refer to the construction project you are involved in): Use the Rating 1-5 whereas, **5-Most significant factor, 4, 3, 2** and **1-Least significant factor**

No	**Factors that have significance influence towards the choice of contract type in Public construction project/ Rating**	**1**	**2**	**3**	**4**	**5**
1	Relative risk aversion of Employer and Contractor (Contractor and Employer diversification and size, project size for the Contractor)					
2	Public Owner, probably risk neutral, or private (risk averse)					
3	Relative financial strength of the parties (ability to bear risks if materialized)					
4	Expected profit by the Contractor in the Project					
5	Contractor's ability to foresee and control costs					

6	Value for money					
7	Schedule criticality					
8	Quality criticality					
9	Owner in-house capabilities					
10	Belief by the Employer that the Contractor's Bid price is under/above the future actual costs					
11	Desire to influence the Contractor's motivation and avoid moral hazard attitudes					
12	Qualification of the Contractor					
13	Negotiation power and degree of capacity utilization of the Contractor (if the Contractor has no work, he has to take whatever contract type the Employer proposes)					
14	Unclear definition of the project scope and methods					
15	Organizational and technical project complexity					
16	Duration of the project relationship					
17	Willingness to cooperate					
18	Desire to avoid claims and improve working relationship					
19	Prior relationship (trust and commitment)					
20	Considerations of fairness					
21	Amount of information asymmetry previous to the					
22	Familiarity and previous experience with the contract type					
23	Simplicity to implement contract					
24	Costs of controlling the project development, monitoring the Contractor' efforts					
25	Financial costs					
26	Dispute costs					
27	**Please, indicate other factors that have an influence on contract type selection that have not been listed above and score them accordingly.**					

7. What is the extent of construction contract administration practices influence on the success of public construction project you are involved in? Mark the "box" that

best describe your response use the rating 1-5**,** whereas **1-Very Low, 2-Low, 3-Neutral, 4-High,** and **5-Very Highly**

Type of contract/ Rating	**1**	**2**	**3**	**4**	**5**
Construction contract type					
Performance monitoring (Communications, managing time, Penalties for late completion, Change management)					
Relationship management (dispute resolution process)					
Contract documentation (Record Keeping)					
Payment of executed works					
others, please specify					

PART D: Contract administration problems affecting success of public construction projects

8. Below are contract administration problems that affect performance of public Construction projects. You are being asked to indicate your level of agreement or disagreement with each statement by indicating whether you: **Strongly Agree (1); Agree (2); Neutral (3); Disagree (4); Strongly Disagree (5).**

No	**Factors which have an effect on performance of building project under implementation**	**Levels of effect**				
		1	**2**	**3**	**4**	**5**
1	Ambiguous specifications (unclear scope of works) lead to disputes over required performance, acceptance					
2	Increased cost due to the initial design wrongly done					
3	Delays of Works change in scope of works (additional works, money, time) after contract award					
5	Personal conflicts between agency project manager or staff and contractor project manager or employees. Disagreement between the parties than cannot be easily resolved May involve scope of work, materials supplied, payment schedules, or any other aspect of the contract					
6	Completion of project is delayed due to non-acceptance of final product. Example:					

	difference in either party's definition of what was supposed to be delivered or provided					
7	The project has a high risk of failure. I.e. New technology, new equipment, new Contractor, Project never been done before. Tight timeline or budget					
8	poor contract administration can cause you to violate terms of your contract, which can lead to penalties, fines and a potential lawsuit					
9	Poor contract administration does not offer comprehensive training and can cause some of your purchasing people to buy products at full price rather than the contracted rates					
10	Without reporting system, the two sides have no way of monitoring the benefits of the agreement and developing any changes to make when the agreement comes up for renewal. Effective reporting also keeps track of quantities that helps each side monitor their usage and determine when contract limits may have been met.					
11	Poor contract administration can cause each side of an agreement to lose track of the contract term					
12	Companies can be caught up in the daily routine of doing business and lose sight of contract renewal dates. Contract renewals are a time when both sides can examine the results of working under the contract and make any changes that can benefit both parties. With a relaxed contract management system, companies could be operating under expired contracts and not realize it					
13	**Please, indicate other effects of contract management on public construction project that you are involved in that have not been listed above and agree or disagree with each statement accordingly.**					

Appendix VI: Interview Guide

In your own opinion, what would you recommend to be done to improve contract administration system in public construction project in Rwanda?

Thank you so much for taking your time to fill out this questionnaire and answering the interview questions.