

ADDIS COLLEGE
SCHOOL OF POSTGRADUATE STUDIES
CONSTRUCTION TECHNOLOGY AND
MANAGEMENT DEPARTMENT

**ASSESSMENT OF CONSTRUCTION CONTRACT MANAGEMENT
PRACTICES IN PUBLIC BUILDING PROJECTS IN ADDIS ABABA,
ETHIOPIA**

BY

HABTAMU MEKURIAW

*A Thesis Submitted to Addis College School of Postgraduate for Partial
Fulfillment of the Requirements for the Award of the Degree of Master of
Science in Construction Technology and Management*

October, 2021
Addis Ababa, Ethiopia

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Advisor: Dr. Werku K. Heraru (Ph.D)

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DECLARATION

I, the undersigned, hereby declare that this thesis entitled “assessment of construction contract management practice in the public projects in Addis Ababa, Ethiopia” is my original work and that all sources of materials used for this study have been identified and acknowledge as complete references. This research study has not been previously submitted in full or partial fulfillment for a degree in this or any other recognized educational institution. This research study is being submitted in partial fulfillment of the requirement for a master of science in construction technology and management.

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THESIS APPROVAL SHEET

APPROVED BY BOARD OF EXAMINERS

This is to certify that the thesis paper entitled, “Assessment of Construction Contact Management Practices in Public Building Projects in Addis Ababa, Ethiopia”, is carried out by Habtamu Mekuriaw Tadesse, MSc Student at Addis College, with ID No GSR/008/2011

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ABSTRACT

The construction industry is the largest, most complex and fragmented industry because owners, designers, contractors, field managers, supervisors, and craftsmen engaged during the construction industry with their interest and experience. The industry is critical to the country's social, economic, and political development. Contract management is one of the most important occupations in the construction industry.

The objective of this study was to assess construction contract management practice in the public building project in Addis Ababa. Questionnaires and semi structured interviews were used to collect the data. The quantitative and qualitative data were collected from a total of 104 participants (at 90.4% response rate) that were sampled from contractors, owners and consulting offices. Descriptive statistics in the form Percentage, frequencies, mean and standard deviation were used to analyze the quantitative data by using IBM SPSS version 26 software.

The practices of construction contract management in the public building projects constrained by lack of experienced claim experts and contract administrators, poor implementation of health and safety management, poor time and cost management, lack of training for the employees, poor and inadequate supervision and controlling system on the projects by the regulatory bodies, resultant substantial delays to complete projects within the contract period and high wastages of resources. The findings of the study imply urgent needs for improvements in contract preparation and contract management practices, and the commitment of the regulatory wing towards efficient and timely delivery of public construction projects without compromising quality.

Keywords: Construction Contract, Contract Management, Public Projects, Addis Ababa

Table of Contents	Page
DECLARATION	i
THESIS APPROVAL SHEET	ii
ACKNOWLEDGMENTS	iii
ABSTRACT.....	iv
LIST OF TABLES	vii
LIST OF FIGURES	viii
ACRONYMS.....	ix
CHAPTER ONE.....	1
1. INTRODUCTION.....	1
1.1 Background of the study	1
1.2. Statement of the problem	2
1.3. Objective of the study	3
1.3.1. General Objective	3
1.3.1. Specific Objectives	3
1.4. Research questions	3
1.5. Significance of the study	3
1.6. Scope of the study	4
1.7. Limitation of the study	4
1.8. Organization of the thesis document	4
CHAPTER TWO	5
2. LITERATURE REVIEW	5
2.1 Introduction	5
2.2. Conceptual and Theoretical Literature	5
2.2.1 Contract	5
2.2.3 Types of Construction Contract.....	6
2.3 Empirical Literature Review	6
2.3.1 Contract management practices.....	6
2.3.2 practices of the three constraints of construction	11
2.3.4 Roles and Responsibilities of parties of a Construction Contract	15
2.3.5 Project Delivery Methods	16
2.4 Summary of Research gaps	17
CHAPTER- THREE.....	18
RESEARCH METHODOLOGY.....	18
3.1 Introduction	18
3.2 Research design.....	18
3.3 Study Area.....	18

3.4	Data Types.....	20
3.5	Data Sources and Data Collection Techniques	20
3.6	The study population and sample size.....	20
3.7	Sampling techniques	21
3.8	Data Analysis Methods	21
3.9	Data Presentation Methods.....	21
3.10	Validity and Reliability of the research.....	21
3.11	Ethical Consideration	22
CHAPTER FOUR.....		23
DATA ANALYSIS AND DISCUSSION		23
4.1	Introduction	23
4.2.	The response rate.....	23
4.3.	Background information about the respondents.....	24
4.4.	Research Variable-Related Responses and Result.....	25
4.4.1.	Types of Contract	25
4.4.2.	Contract Management Principles.....	25
4.4.3.	Quality management practices.....	30
4.4.4	Payment management.....	32
4.4.5	Time management practices	32
4.4.6	Roles and responsibilities of the three parties	35
4.4.7	project delivery systems	37
4.4.8	Qualitative results	39
4.5	Discussions of the findings	41
CHAPTER FIVE		42
5. Conclusions and Recommendations		42
5.1	Conclusions	42
5.2	Recommendations	44
5.3	Future research directions	45
REFERENCES		46
APPENDIXES		48

LIST OF TABLES

Table 1 Shows the distributed and returned Questionnaires..... 20

Table 2 Shows the reliability of research..... 22

Table 3 Summery of data response rate 23

Table 4 Summery of General information of the participant..... 24

Table 5: Shows the change management practices 29

Table 6 Shows the result of quality management practice 30

Table 7 shows the result of quality Assurance and Control practices 31

Table 8 Shows the result of time management practice 33

Table 9 Shows the results of how the owner practices their role and responsibility 35

Table 10 Shows the results of how the contractor practices their role and responsibility..... 36

Table 11 Shows the result of the participants for consultants' role and responsibility 37

LIST OF FIGURES

Figure 1: Shows the study area of the research.....	19
Figure 2: Shows the types of contract that practiced in building public projects	25
Figure 3: Shows the result of respondents about contract management principles	25
Figure 4: Shows the result of respondents about risk management practice	26
Figure 5: Shows the result of respondents about the practice of communication management	27
Figure 6: Shows the method of communication management used in the project	28
Figure 7: Shows the practiced claim resolution method in the project.....	29
Figure 8: Shows the result of the participants for the practice of payment management.....	32
Figure 9: Shows the result of respondents that the projects complete within the contract.....	34
Figure 10: Shows the knowledge of the organization about the project delivery system.....	37
Figure 11: Shows the most commonly used delivery system in public projects	38

ACRONYMS

CM - Contract Management

PMBOK - Project management body of knowledge

PPA - Public Procurement Agency

FIDIC - Fédération Internationale des Ingénieurs-Conseils

SDB - Standard Bid Document

MOWUD - ministry of Water and Urban Development

QA - Quality Assurance

QC - Quality Control

GDP - Gross Domestic Product

GMP - Guaranteed Maximum Price

LADs - Liquidated and Ascertained Damages

PCO - Proposed Change Order

DBOM - BOOT -Build-Own-Operate-Transfer

BOOT - Build-Own-Operate-Transfer

BOT - Build, Operate, and Transfer

CHAPTER ONE

1. INTRODUCTION

1.1 Background of the study

According to Habenom Gebru (2017), the construction sector is the largest, most complicated, and fragmented industry due to the involvement of owners, designers, contractors, field managers, supervisors, and artisans with their knowledge and experience. A country's social, economic, and political development is heavily influenced by the construction sector. The construction sector contributes a significant to the national economy of any country including Ethiopia. In a developing country, the Growth Domestic Program (GDP) depends on the construction industry.

According to PPA (2011) clause 7 sub-clause 7.4, a contract is the document that contains the entire agreement between the public body and the contractor, and it replaces all past interactions, negotiations, and agreements (whether written or oral) between the parties. No agent or representative of either Party has the authority to make any statement, representation, promise, or agreement that is not expressly stated herein, and the Parties will not be bound or liable for any such statement, representation, promise, or agreement.

According to FIDIC (2006), a contract is a contract agreement that includes these terms and conditions, as well as the acceptance letter and tender letter, specification, drawing, schedules, and other documents.

Martha Teshome (2019). construction project is a unique and it needs individual arrangement of processes that involves various participants with different tasks and interests who are constrained by various factors, hazards and related risks Because of this reasons every bussines needs the contract and its management.

According to the contract management guidance note on procurement (2018) definition contract management is monitoring and control of contractor performance to ensure optional outcomes from the contract by establishing communication pathways, monitoring progress, and managing payments control variations measuring contractors' performance, and closing out the contract.

According to the World Bank (2017), Effective contract management is essential for ensuring that the contracting parties adhere to their contractual obligations in terms of time, cost, quality, and other agreed-upon issues, as well as that any issues are addressed and resolved quickly. To ensure that both parties meet

their contractual duties, it necessitates systematic and efficient planning, execution, monitoring, and evaluation. However, the government permits to construct the construction for public service that transfers with reasonable cost, for commercial services and free from any returns for the consumption of Social benefits to the end-users. Most of these government construction projects are not completed within the signed contract. So, this study will try to capture the practice of construction contract management in public projects in Addis Ababa. By taking the condominium projects that are found in Addis Ababa into considerations, the study will try to make an in-depth assessment of construction contract management practice in public projects in Addis Ababa.

1.2. Statement of the problem

Contract management is the process of ensuring that all contract parties fully fulfill their responsibilities in order to meet the contract's operational objectives as well as the customer's strategic business goals.

Many studies have been undertaken in the construction business, and the results indicate that efficiency, quality, and productivity difficulties exist. In practice, Ethiopian construction industries suffers a number of contractual challenges, including schedule delays, quality, and cost overruns from the project's original contract. The construction industry's low adoption of construction contract management procedures is the source of such contractual difficulties. So, The consequent section of this study assesses construction contract management practices in public building projects to illustrate and improve ideal literature about public projects and to minimize the reality of public projects practiced beyond the contracts in Addis Ababa. It will attempt to give detailed recommendations based on the final findings of the investigation.

1.3. Objective of the study

1.3.1. General Objective

- ❖ The general objective of this paper were assessing construction contract management practice in the public building project in Addis Ababa.

1.3.1. Specific Objectives

- To assess practices of construction management in public building projects in Addis Ababa.
- To assess construction contract management practices about three constraints: cost, time, and quality of work during contract execution of public projects;
- To examine the project participants' roles, responsibilities, and obligations in implementing construction contract management in public projects; and
- To examine the type of delivery systems used in public projects in Addis Ababa.

1.4. Research questions

The following research questions will be addressed to all specific objectives of the study.

1. How do the construction contract management practices looks like in the public building projects in Addis Ababa?
2. How do they practice construction contract management practices about three constraints: cost, time, and quality of work during contract execution of public building projects?
3. What looks like the project participants' roles, responsibilities, and obligations and how they implement the construction contract management in the public building project in Addis Ababa?
4. What type of delivery system is mostly used in public projects in Addis Ababa?

1.5. Significance of the study

The aim of this study is to assess practical construction contract management of public projects in Addis Ababa and to be the reference for future action by:

- Giving better insight into the construction contract management practices.
- Presenting a relevant suggestion on any gap observed for the practice of construction contract management.

- It creates further awareness to the concerned body about the good practice of construction contract management.
- In addition, the study will give information for other researchers to deal more about the assessment of construction contract management practices for the future.

1.6. Scope of the study

The research focuses on the assessment of construction contract management practice in public building projects in Addis Ababa. In order to get relevant and consistent data, the scope of this study were cover some of the purposely selected contractors, consultants, and clients who participate in the public building project in Addis Ababa. The reason behind purposely selected method were the current stuation of political issue and inflation of the material cost. Due to this reason most of the public building projects are active during the time of data collection.

1.7. Limitation of the study

Due to the limitation of the time of the study, current stuation of the country, financial and other resource the research focus only on 13 different contractors,consulting and Owners firm that engaged in the public building projects. This is the major weakness of the study, by giving the necessary depth for the study, the researcher has made the necessary effort to curb the limitations.

1.8. Organization of the thesis document

This thesis paper contains five chapters. Chapter one gives the background information and statement of the problem, the objective of the study i.e. general objective and specific objective, research questions, the scope of the study, and organization of the paper Chapter two discusses the key concepts that are used in the paper to place the problem in a broader perspective of literature. Chapter three presents methods of the data, type of source, sampling techniques, and collection and analysis techniques. Chapter four presents data analysis. Finally, Chapter five presents the conclusion and recommendation of the findings.

CHAPTER TWO

2. LITERATURE REVIEW

2.1 Introduction

This chapter reviews the literature related to construction contract management practice in public projects in Addis Ababa. The chapter includes reviews of various related conceptual, theoretical and empirical literature that helped the researcher in both understanding and properly answering the stated research questions and objectives. Research gaps were identified and used to justify the relevance of the study.

2.2. Conceptual and Theoretical Literature

2.2.1 Contract

Construction contract is conceptualized differently by different scholars and institutions. On article 3244 sub-article 1, the Ethiopian Civil Code (1960) states that a contract for public works is a contract in which a person, or the contractor, offers to build, maintain, or repair a public work in exchange for a fee to an administrative authority. Hirut (2017) elaborates that each party to a contract gains rights and responsibilities in relation to the rights and responsibilities of the other party.

A contract includes general conditions and clauses that establish how the project should and intended to be managed. In the Ethiopian context, Public Procurement Agency (PPA) (2011) condition of the contract defines the contract as the basic rights, responsibilities, and relationships of the parties involved or the rules which each party must comply. "Condition of contract mostly consists of general condition and supplementary conditions". Thus, in the context of this study, construction contract and conditions of contract are used as they are conceptualized by the Civil Code (1960), Hirut (2017) and PPA (2011).

2.2.1.1 Essential Elements of a Valid Contract

Martha (2019) noted seven essential elements that are required for a valid contract to be formed. Those are: a) agreement between the two parties, b) Acceptance of the offer c) The parties must provide consideration, d) Intentions to form a legal partnership, e) The parties' genuine agreement, f) The parties' legal power to engage into a contract, and g) The contract's legality. As construction contracts are used by different firms and entities, we have different types of contracts.

2.2.3 Types of Construction Contract

Hirut (2017) notes that there are many different sorts of building contract forms for project management. She summarises that in Ethiopia's construction business, the following contract types are regularly utilized.

2.2.2.1 Lump Sum (turnkey) Contract: A lump sum contract, which is also known as stipulated sum, is the most basic form of agreement between a contractor and a owners. Hirut, (2017) further indicates that a lump sum contract is appropriate if the project's scope and timeline are sufficiently established for the contractor to accurately predict project expenses.

2.2.2.2 Unit Price (Measurable) Contract: in this type of contract, Hirut emphasizes that the job to be performed is divided into numerous pieces, usually by construction trade and it is based on predicted item quantities and unit pricing, both of which are counted in the project.

2.2.2.3 Cost plus Contract: cost plus contract is an agreement in which the buyer agrees to pay the whole cost of material and labor, as well as the contractor's overhead and profit. Three key types of cost plus contracts are: Cost + Fixed percentage Contract, Cost + Fixed Fee Contract, and Cost + Fixed Fee Contract with Guaranteed Maximum Price - Compensation is based on a certain amount of money.

2.2.2.4. Incentive Contracts: Compensation is determined by contracting performance in relation to a predetermined goal-budget, schedule, and/or quality. There are two types of incentive contracts: Fixed Price Incentive Contracts, and Reimbursement of expenses Contracts with Bonuses.

2.2.2.5 Guaranteed Maximum Price (GMP) Contract: it is a form of cost-type contract in which the contractor gets paid for actual costs plus a fixed fee that is subject to a ceiling price.

2.3 Empirical Literature Review

2.3.1 Contract management practices

Contract management is conceptualised as the process of systematically and efficiently managing contract creation, execution, and analysis for the purpose of maximizing financial operational performance and minimizing risks by demanding all parties to a contract to fully meet their obligations, in order to satisfy the operational objectives of the contract and the strategic business goals of the customer (Banyenzaki 2016; International Journal of Latest Engineering and Management Research (IJLEMR) 2018).

IJLEMR (2018) indicate that to be effective, contract management should have the followings in place: recruit staff with relevant skills; provide training to address skill gap; have monitoring plans or checklists in place; ensure all staff understood their responsibilities in relation to performance management; establish and maintain a sound relationship with the contractor; hold regular meetings with the contractor to discuss the progress and any problem; identify any problem at early stage; make payment only for satisfactory performance; review the need to end the contract for any breach of conditions or non-performance; and seek advice on when a contract variation is necessary.

2.3.1.1 Risk Management

In the context of construction project management, risk management refers to a thorough and systematic approach to detecting, analyzing, and responding to risks in order to meet project goals by dealing with the possibility of positive and negative events arising from design to construction process (Banyenzaki 2016, Sileshi Chemere 2018). According to PMBOK Guide (2016) project risk management includes: risk management planning, risk identification, qualitative risk analysis, quantitative risk analysis, risk response planning, and risk monitoring and control. Thus, risk management is an essential process that determines success or otherwise in construction contract management.

2.3.1.2 Change Management

establishing a formal and documented change management process; having appropriate forms and clear procedures for requesting a change; clarify who is responsible for what during change management and ensure that individuals have clear delegated authority to act; ensuring timely communication of change information to the relevant people; keep records of all change orders including the reasons; and at contract close-out, evaluate the changes and their impacts on time, cost and performance for future use as lessons learned are Good practice of change management in the projects (world bank 2017)

2.3.1.2.1 General Change Process Model

Change management seeks to forecast possible changes; identify changes that have already occurred, plan preventive measures and coordinate changes across the entire project However, a change with high impacts either reworks or a change order requires the following formal process of change management.

- a) **Identify changes** used to develop the relationship between the needs, symptoms, malfunctions, and various other aspects of changes, an effective change management system is required.

- b) **Evaluate and propose changes** the evaluation module assesses all possible time and cost consequences that an identified change can have on other processes and team members based on criteria and options. The evaluation results in a proposed change order (PCO), which details the change and its effects, as well as a new updated action plan, cost, and schedule.
- c) **Approve changes** means the identified change needs to go through a formal approval process. There are a set of predefined approval processes for different types of changes and construction contracts. Firstly, all the parties involved must agree on the proposed change of work described in the PCO. This is done through a change review process. Next, the approval of the client is required for the PCO to be finalized. This may involve decision making on acceptance, improvement, or rejection of changes.
- d) **Implement changes:** To develop a case base for future use, the change management process model requires all parties involved to preserve records of all essential information on change cases..
- e) **Analyze changes** The data collected during the change implementation phase is used to evaluate the change analysis and system performance.

2.3.1.3 Communication Management

According to PMI construction extension to PMBOK guide (2016) Through the creation of artifacts and the implementation of actions aimed at achieving effective information interchange, project communication management encompasses the processes required to ensure that the project's and stakeholders' information demands are addressed. Daily report is one part of communication management. The daily construction reports are daily records of actual Information regarding the worksite conditions and events which includes: Project activity; Weather and site conditions; Workmen that contractor and subcontractor personnel employed; Equipment arrival, departure and downtime; Progress of work; Resources used to complete activities; Significant communications, orders, directives and documents; Safety and environmental accidents, breakdowns, injuries, delays, damages, and Other unusual events; and Tests and inspections

2.3.1.3.1 Project communication management processes

PMI construction extension to PMBOK guide (2016) states there are three types of communication management processes. These are listed below.

- Plan Communications Management is the process of determining the best approach and plan for project communication activities based on each stakeholder's or group's information demands, organizational assets, and project requirements.

- Manage Communication is the process of collecting, creating, distributing, storing, managing, and monitoring information in a timely and suitable manner.
- Monitor communication is the process of ensuring that the project's and stakeholders' information demands are satisfied.

There are several methods of communication that are used to share information among project stakeholders. These methods are broadly classified as follows:

- Interactive communication. between two or more parties performing a multidirectional exchange of information in real time. It employs communications artifacts such as meetings, phone calls instant messaging, some forms of social media and videoconferencing.
- Push communication is Sent or distributed directly to specific recipients who need to receive the information. It include letters, memos, reports, emails, faxes, voice mails, blogs, and press releases.
- Pull communication is Used for large complex information sets, or for large audiences, and requires the recipients to access content at their own discretion subject to security procedures. These methods include web portals, intranet sites, e-learning, lessons learned databases, or knowledge repositories.

2.3.1.4 Claim Management

Chaitanya Khakale and Nityanand Futane (2015) Claim is defined as a demand or request for something, which one has a right to have. Claims in construction are associated with cost overruns, mismanaged jobs, legal entanglements and wrong practices on part of various contractors. They are often viewed by owners and engineers as the contractor's strategy to cover bidding errors or omissions. Construction claims can be classified into three groups based on their legal bases:

- i) Contractual Claim:** Contractual claims are those that come under the contract's specific provisions. Ground conditions, value, changes, late release of information, and delay in inspecting completed work are all clauses in well-accepted standard contracts that enable both the contractors and the employers to claim the proper compensation.
- ii) Extra-contractual Claim:** This type of claim has no particular contractual basis, but arises from a violation of contract, either express or implicit, such as the extra effort incurred as a result of the client's faulty material.

iii) Ex-Gratia Claim: Ex-gratia claims are the claims that there is no ground existing in the contract or the law, but the contractor believes that he has the rights on the moral grounds.

iv) Extension of Time Claim: Each construction contract clearly stipulates the date (or period) for the contractor to complete work.

2.3.1.4 .1 Mechanisms of Dispute Resolution

Chaitanya Khekale and Nityanand Futane (2015) Dispute resolution mechanisms Aside from the traditional legal process, the focus here is on the alternative dispute resolution processes that are commonly found in construction contracts. Negotiation, mediation, conciliation, and arbitration are examples of such methods.

2.3.1.5 Provisions on, and practices relating to, Health and Safety Management

In order to ensure job site safety in the construction environment, effective, safe work practices and procedures are required, with a focus on high-impact, high-risk activities: to reduce the possibility of danger Personal protective equipment is checked and validated to ensure that it is appropriate and in good working condition for the activity at hand. Among other things, hazard analysis, permits, site familiarization, and continual hazard labeling Ongoing training, traffic management, safeguards verification, periodic tool and equipment inspections, standard operating procedures, and risk recognition and assessments (PMBOK guide 2016).

According to international labor offices a healthy workplace is one in which workers and managers collaborate to use a continuous improvement practice to protect and promote employees' health, safety, and well-being, as well as the workplace's sustainability, by taking into account the physical work environment, health, safety, and well-being concerns in the psychosocial work environment, such as work organization and workplace culture, and personal responsibilities. A good management technique for increasing workplace safety is to use communication equipment between management, supervisors, and employees regarding safety concerns haslinda A. et al. (2016).

Article 45 of the PPA (2011) discusses health and safety on construction sites, with sub-articles focusing on these topics. The contractor shall have the right to refuse access to the site to anyone who is not involved in the performance of the contract, shall ensure and be responsible for the safety on sites during the entire period of execution, shall be responsible for providing and maintaining at his expense all lighting, protection, fencing, and security equipment that proves necessary, and shall be responsible for providing and maintaining at his expense all lighting, protection, fencing, and security equipment that proves necessary. During the execution of the tasks, the engineer shall give the contractor formal notice to do

what is necessary; the contractor shall comply with and ensure that its employees comply with the requirements of relevant health and safety and other relevant legislation; the contractor shall nominate a health and safety representative to liaise with the engineer for all health and safety; the contractor's staff shall comply with the requirements of relevant health and safety and other relevant legislations.

To cite some empirical evidence on health and safety practices in Ethiopia, Selamawit (2019), for example, studied on occupational health and safety management practices in Bole-Lemi Industrial Parks. According to the findings, the organization has a written policy and plan in place for employee occupational health and safety, even though it is not adequately communicated, and there are no health and safety management procedures in place in the projects. She discovered that the company's challenges for implementing the OHS system in the project include a lack of knowledge, a lack of particular legislation, a lack of educated human resource characteristics of workers, a poor work environment, and a lack of budget.

2.3.2 practices of the three constraints of construction

2.3.2.1 Quality management practices

Yahanns Kefyalew (2020) quoted that on quality management practice in construction companies in Ethiopia in the case of Addis Ababa and he states that quality management is not a big deal to the contractors. But Quality of construction is a key component of perceived value for both clients and contractors.

“Lack of quality in construction manifests itself in poor or non-sustainable craftsmanship, and hazardous structures; as well as delays, cost overruns, and construction contract disputes,” as a result, one of the most important characteristics in building is quality, which applies to all parts of the completed project. Most deliverables for components are visible at some point and should be approved (FIDIC 2006).

According to Akhar Surahyo (2018), quality management encompasses all operations carried out to guarantee that the project meets the needs for which it was created. Quality management in construction has a number of advantages, including helping to eliminate defects and rework, reducing project waste, lowering costs, providing more confidence of project success, increasing productivity, and improving customer loyalty and satisfaction. In order to attain quality on construction sites, the following tests must be carried either on-site or by sending a sample to a laboratory for analysis. These are soil compaction test, slump test of concrete, concrete cube test, test for coarse and fine aggregates, conduct a water test to

determine whether the water is pure or not, Fill material test and pressure test of drainage or sewage system.

2.3.2.1.1 Quality Awareness and Implementation

Quality awareness is one of the major issues in all industries working hard to cope with the quality challenges irrespective of their working nature.

The quality awareness and implementation in the companies have been identified by the following items.

1. Availability of Quality planning, control and assurance methodology in the company.
2. On-site quality following.
3. Familiarity and application of quality management tools and techniques.
4. Trainings and inductions regarding quality management.
5. Aim towards acquiring international quality certifications.

2.3.2.1.2 Quality Assurance (QA)

According to Surahyo, (2018) Quality assurance is a method for the regular monitoring and evaluation of the various aspects of a project to ensure that standards of quality are being met. In order to practice this process of quality in construction; the following points should be considered before starting the project:

- i. Appoint the project management/quality assurance team early with clearly defined responsibilities.
- ii. Develop a QA system for the project and which section of the QA team shall develop the QA plan and QA programs at various stages of planning, design, and selection of materials, construction supervision, and material testing.
- iii. Select the people who are qualified for the particular tasks and train the personnel in their responsibilities.
- iv. Conduct preconstruction meetings to ensure that everyone understands his contract responsibilities and all necessary activities. A preconstruction meeting is important for both the QC and QA programs for smooth running of the project.

2.3.2.1.3 Quality control

Akahr Surahyo (2018) defines the quality control in construction is the product resultant from successful executions by using operational techniques and activities by the contractor satisfying that the required standards. The primary function of QC is the successful execution of realistic plan to ensure the required standards of quality construction will be achieved.

For effective quality control, the Contractor defines procedures to manage and control his own forces, his subcontractors, and his supplier's activities so that the completed project complies with all contract requirements.

According to PPA (2011), the engineer is responsible for inspecting the contractor's work and notifying the contractor of any problems discovered. If a contractor fails to remedy a problem within the time frame provided in the engineer's notice, the engineer will estimate the cost of correcting the defect, and the contractor will pay this amount.

2.3.2.2 Payment management

Contract management guidance note on procurement (2018) defines managing of payment is not only making payments as and when required under the contract but also monitoring against planned payments.

In PPA 2011 article 59 sub-article 59.1-59.9 states about payments how to pay the payment to the contractor. Payments shall be made in currency as specified in the SCC. Payments due by the Public Body shall be made to the bank account mentioned on the Bidder Certification of Compliance form completed by the Contractor, Payments to the Contractor of the amounts under each of the interim payment certificates and the final statement of account issued by the Engineer shall be made by the Public Body within 90 days of such certificate of statement being delivered to the Public Body. Interim payment certificates or final statement of account must be accompanied with copies of invoices and other appropriate supporting materials of the amounts payable.

2.3.2.3 Time Management

PMBOK (2016) defines a project as a temporary endeavor undertaken to create a unique product, service or results. So, any project must have starting and ending time and it must have a deliverable product, services or results by its own uniqueness. That is way the time management concept and practice is needed for any construction projects. As the result of utilizing this limited project duration there need to be in depth planning and scheduling for the activities time. The following points are important for time management.

2.3.2.3.1 Project Schedule Management Monitoring and Controlling Schedule

Project schedule management, monitoring and control is the process of monitoring the status of the project activities to update project progress and manage changes to the schedule baseline in order to achieve the planned project completion date. Progress monitoring is the evaluation of the actual project progress compared to the baseline in order to take preventive or corrective action. The evaluation includes examining the activities involved, the actual start and finish dates for the project activities from the basis of the schedule, the actual progress calculations and other documents as schedule information. Schedule components that require progress monitoring are the critical activities (critical path), the near critical path and noncritical path activities. If the critical path activities delays they will immediately cause project delay (PMBOK, 2016).

2.3.2.3.2 Project Completion Time

In the construction contract, the significance of time is vital. In FIDIC as well as other conditions of contract for construction works states that the contractor shall complete the work within time for completion for the works. The contracts strictly specify the quantity of representing time for completion, which may extend according to the conditions in the contracts.

2.3.2.3.3 Delays in Construction Projects

According to Yegetahun Agegnehu (2018) studies with the practice of Time management in construction projects and he states Delays on the delivery of construction projects are seen as one of the most frequent problems in the construction industry. The outcome of delays affects all people and organizations involved in the projects. This is especially true for the owner's business since delaying the start-up of the project will obstruct obtaining for the expected project revenue and will increase financial costs. In addition, the owner may face several other difficulties resulting from the commitments assumed based on the delivery date established in the contract. On the other hand, the project execution time usually results in contractors to deal with cost overruns due to the following causes mostly extra expenses on management personnel, cost escalation of materials, increase of financial costs and paying contract penalties.

2.3.2.3.4 Delay/Liquidated Damages

In PPA (2011) The compensation mentioned in the contract as being payable by the contractor to the public body for failing to complete the contract is known as liquidated damages. If no time limit is specified, the law implies that the contractor must perform the work in a reasonable amount of time. As a result, the existence of an agreed-upon time is critical for the employer. The major objective of LADs

is to specify the employer's right to damages if the contractor fails to complete the project by the agreed-upon deadline. In PPA (2011) Clause 27 sub clause 27.1 states that except as provided under GCC clause 18, if the contractor fails to carry out any or all of the works within the period specified in the contract, the public body may without prejudice to all its other remedies under the contract, deducts from the contract price as liquidated damages as follows

- a) a penalty of 0.1% or 1/1000 of the value of undelivered service for each day of delays until actual delivery or performance,
- b) the cumulative penalty to be paid by the contractor shall not exceed 10% of the contract price.

Sub clause 27.2 also states if the delay in performing the contract affects its activities, the public body may terminate the contract by giving advance notice to the contractor pursuant to GCC clause 21 without any obligation to wait until the penalty reaches 10% of the value of the contract.

And sub clause 27.3 states If the Intended Completion Date is extended after liquidated damages have been paid, the Engineer shall correct any overpayment of liquidated damages by the Contractor by adjusting the next payment certificate.

2.3.4 Roles and Responsibilities of parties of a Construction Contract

The roles and responsibilities of parties of a construction contract are different. So the roles of each party are listed below.

2.3.4.1 The Employer

PPA (2011), in alignment with (FIDIC 2006), outlines the employer's role as the initiator of the project and the end-user of the completed works. Under PPA (2011) the main role and responsibilities of employers are: appoint the Engineer (consultant), select the contractor, ensure that the site is available for the contractor, to pay the contractor payment, and agree any changes to the contract that becomes necessary.

2.3.4.2 The contractor

The contractor's role is to execute and complete the works, as well as to remedy any defects, in accordance with the construction contract. The contractor must fulfill any of the contract's requirements to the satisfaction of the engineer (Consultant), and he must provide all supervision, labor, materials, and other services required to carry out and complete the project. The contractor is exclusively responsible for all site operations and construction processes. Even if the engineer (Consultant) approves the design, the

contractor is liable for it if the construction contract requires him to do so. The contractor is responsible for any safety and health issue through the whole period of projects until the project is close out.

Under PPA (2011) the role and responsibility of Contractor's are: Supply and provide labor, material, and equipment as necessary to perform the works within the contract period; Provide competent, experienced management and supervision for performance of the work; Comply with all statutory laws and regulations during execution of the works and ensure that all who are employed on the site abide by these conditions; Select and provide the means, methods, techniques, sequences, and procedures of construction; Initiate, maintain, and supervise all safety precautions and programs for all personnel on site and the general public who may be affected by the works and the Contractor shall ensure that all personnel on site are adequately trained and observe safe working procedures; Implementation of quality control systems for aspects of the works as specified; Schedule and coordinate the work with other groups like suppliers, subcontractors, etc.

2.3.4.3 The Engineer (Consultant)

In FIDIC forms of construction contract, the Engineer (Consultant) is appointed and paid by the employer. When a consulting firm is selected, the Engineer will act as a supervisor for the construction phase; possibly the firm may also have been the designer of the project. On some projects that are funded by international funding agencies, the two roles are separated, and a separate consultant is retained for the supervision.

2.3.5 Project Delivery Methods

Akahr Surahyo, (2018) A project delivery method is a system that an agency or the Owner uses to organize and finance design, construction, and all related services for a facility through a contract with one or more parties. Design-bid-build (conventional technique), design-build, and public-private partnership with many variations are the three basic and most widely used concepts.

2.3.5.1 Design-Bid-Build (DBB) Method

Akahr Surahyo, (2018) Defines DBB method is also known as traditional delivery method and it is the most popular and widely used construction method in our country Ethiopia. With this type of delivery method, construction project have separated parties and the Contractor has no responsibility for design. The Owner/Client hires consulting firm to designs the project, as well as develops precise drawings, specifications and bill of quantities with the help of numerous professionals.

2.3.5.2 The Design and Build Method

Using the design and build method, the owner awards an entire project to a single entity that accepts sole responsibility for both the design and building of the project. The owner establishes project requirements by providing an owner's statement of needs. Because the design-builder is generally responsible for the division of responsibilities between the design and construction teams, the design-accountability builder's reduces administration claims and litigation difficulties between them. The design-build joint venture is the second design-build organizational format. The Designer and the General Contractor form a joint enterprise for the duration of the project under this organizational structure Akahr Surahyo, (2018).

2.3.5.3 public-private partnership (PPP) method

Akahr Surahyo, (2018) defines PPP method is a form of alliance or partnership and best used when owner financing is limited or sometimes none existent. It is a means of funding and managing the end to end life of the delivery and /or ownership of the project. It can provide new sources of financial support for the construction and maintenance of public infrastructure by combining the resources of public and private sectors. Stakeholders from a hybrid joint venture entity with a contractor who may provide expertise in a variety of roles including the design/engineering lead, owner's representative, construction contractor, consultant or even equity partner. The PPP approach can also incorporate delivery methods of DBOM, DBO, BOT and BOOT. A BOOT project model is often seen as a way to develop a large public infrastructure project with most if not all private funding.

2.4 Summary of Research gaps

A lot of researchers have done on contract management and they have been reviewed in relation to construction contract management. But many of the researchers explains on the process of contract management with limited study areas and analyzing the independent variables that are risk management practices, the practice of time management, and the practice of quality management in specific company, some of the researcher studies on assessment the practice of construction contract administration in specific company. The researcher conclude about contract management practice by considering a single company contract management practices as the whole. But, This study was tried to assess thirteen different consulting offices, contractor firms and owners that engaged in public projects as sample to address how the three party practices construction contracts management.

CHAPTER- THREE

RESEARCH METHODOLOGY

3.1 Introduction

Research is the systematic method consisting of enunciating the problem, collecting the data, analyzing the collected data and reaching certain conclusions towards the concerned problem. Therefore, research methodology is a way which brings all the research processes together and leads the researcher to accomplish the objectives of the study. Accordingly, the purpose of this section is to present research methodology which will be followed to accomplish the objectives of the research which is specified at the research questions. In order to accomplish this objectives the choice of the research method, determination of the sample size and sampling technique and the systems of data collection and analysis are justified and well described.

3.2 Research design

Research design is the general plan of how the study will be going to answer the research questions. The appropriate methods and techniques should be chosen to answer the basic research questions described in the first chapter of this study with related the construction contract management of public building projects. This study used both qualitative and quantitative research approach to achieve the research objectives and answer the stated research questions. The research used a cross-sectional approach to collect data and used both qualitative and quantitative methods. In this study the research was presented by descriptive type. The main tool of this study was a questionnaires and semi-structured interviews related to the construction contract management practice in public building projects. The survey sample included contractors, consultants and owners that participates in the public building projects in addis Ababa.

3.3 Study Area

The study was carried out on the construction contract management practice in public projects that are found in Addis Ababa. The study was conducted on public building projects. The following picture shows the study area of this research.

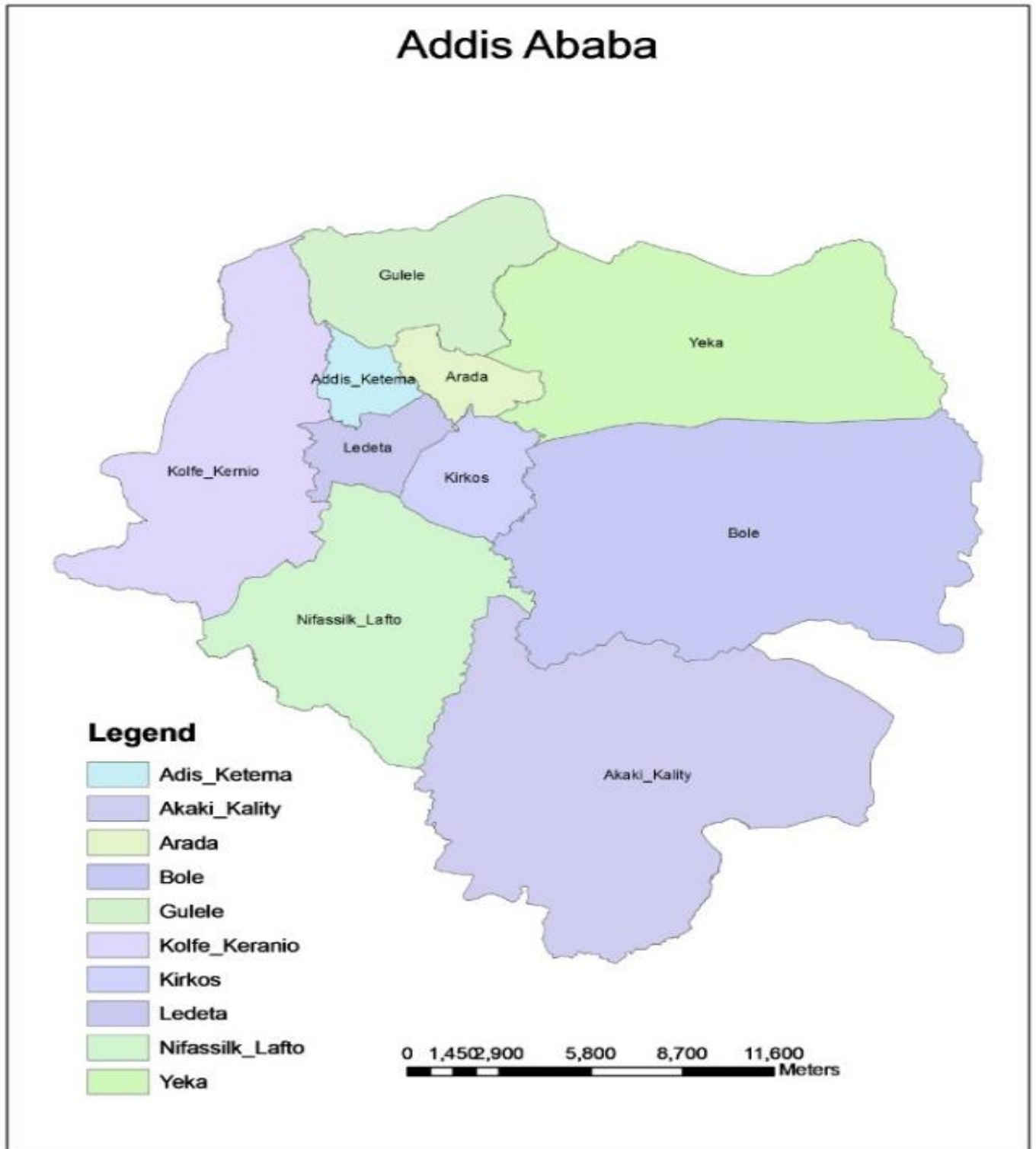


Figure 1: Shows the study area of the research

Source: google map of Addis Ababa

3.4 Data Types

The type of data that used in this paper was qualitative and quantitative data. And those data were collected by using questionnaires, interviews and through observation . Quantitative data was the data that expresses a certain quantity, amount, or range.

3.5 Data Sources and Data Collection Techniques

The study used formal and informal data sources of a primary and secondary source and it was conducted through questioners, interviews with written documents for the concerned body for the fulfillment of the study. The construction team that were employed on-site and in the office for the public project were the major source of primary data collection and some interviews would conduct for the visual observation. The reason for being selected the interview method was because the number of professionals staff engaged in the project is few and to obtain the most accurate answers based on the interviewees’ opinion and experience based on their exposure to planning, scheduling, and controlling of the public projects. Secondary sources of data collection mechanism had been obtained from literature review including books, articles, and reports as well as the project reports and documents, academic journals, and other related publications on the practices of construction contract managements. Given the fact that the objective of this research was to explore and evaluate the practice of construction contract management in the public project in Addis Ababa.

3.6 The study population and sample size

The population of this study was 115 employees of different contractors, consultants and owners of that engaged in the public building projects that founds in Addis Ababa. Due to the limitation of the length of the study period, financial and other resource the researcher was forced to base the study 13 construction firms. The 104 responses were gathered from the companies depending on the availability of the proffesionals that engaged in the public projects. For detail see table-1 below.

Table 1 Shows the distributed and returned Questionnaires

no	Category	Distributed questionnaires	Returned questionnaires	Returned questionnaires in %
1	Contractor firm	70	59	84.28%
2	Consultant firm	22	22	100%
3	owners	23	23	100%

3.7 Sampling techniques

The study uses purposely sampling techniques to collect the necessary information because most of the public building projects were not in progress due to the current political situation and inflation of material costs. In this particular study, the three different target groups of contractors, owners, and consulting offices were addressed. The total population size 115 were selected purposely that represents the population to fill out the questionnaires according to the objective. With the aim of getting a variety of professional views, the papered questionnaire were given to all professionals of the project owner, contractor, and consulting offices by using the quantitative and qualitative data collection technique. The total sample size of the respondents that distributed 104 respondents responds by filling all the questionnaires.

3.8 Data Analysis Methods

Firstly, the study used an examination of documents and archives of the projects as its main source of data which was supported by the data obtained from questionnaires and interviews. Therefore the records of the projects were assessed and studied followed by an analysis of the collected data. IBM SPSS version 26 software was used for analyzing the data. Descriptive statistics in the form Percentage, frequencies, mean and standard deviation were used to analyze the quantitative data and interview data were noted precisely and analyzed qualitatively to verify the facts associated with construction contract management practices in public projects in Addis Ababa.

3.9 Data Presentation Methods

The collected data were analyzed and presented in tabular form, in the chart, and percentage form for each question. And finally, the findings are discussed, concluded according to the literature reviews and research questions. Based on the findings and conclusions recommendations are suggested.

3.10 Validity and Reliability of the research

3.10.1 Validity of the research

A number of questions have been included to ensure that all the research questions were exhausted and the objectives of the research adequately addressed. The research questionnaires were made sure to study construction contract management practices in public projects of contractors, consultants and owners staff members. Furthermore, the researcher set out with his expectations of the outcomes of the result of the study. The validity of the research questions was tested to see if the responses indicate evident theoretical

ideas such as inadequate construction contract management practices that contributed to project cost and time overruns.

3.10.2 Reliability of the research

The term reliability is used to describe the ability of measures given to the same people at different times. Cronbach’s alpha coefficient is used to measure the reliability of a single test in terms of internal consistency, and the reliability coefficient ranges from 0 to 1. IBM SPSS version 26 software was used for analyzing the data. Internal consistency of the responses of 60 items were checked. The analyzed results of Cronbach’s alpha is shown in table 2 below.

Table 2 Shows the reliability of research

Reliability Statistics		
Cronbach's Alpha	Cronbach's Alpha Based on Standardized Items	N of Items
0.72	0.56	60

Source: survey output, (2021)

3.11 Ethical Consideration

Letter of permission was obtained from the school of postgraduate studies office of Addis College for the organization. The respondents were informed about the purpose of the study questionnaires. The information gained during the data collection were kept confidential and Personal identification was not used to keep the privacy of the respondents.

CHAPTER FOUR

DATA ANALYSIS AND DISCUSSION

4.1 Introduction

The data analyses and the findings of the study are presented in this chapter, following the study's objectives and the study questions which were used to assess construction contract management practices in public projects in Addis Ababa. Specifically, the study aimed to assess construction contract management practices in relation to three constraints: cost, time, and quality of work during contract execution of public projects; to examine the project participants' roles, responsibilities, and obligations in implementing construction contract management in public projects; and to examine the type of delivery systems used in public projects in Addis Ababa. The data were collected from consultants, contractors, and public project initiators in Addis Ababa and analyzed using descriptive statistics of frequencies, mean and standard deviation analysis method by IBM SPSS version 26 software.

4.2. The response rate

The study was targeted a sample size of 115 respondents working in 13 public construction projects and it managed to collect survey data from 104 respondents. Out of the 104 respondents, 10 also participated in interviewee by providing information related to the project. Qualitative discussion guide/questions were crafted on the spot based on observation on-site during questionnaire distribution. The total percentage of response rate was 90.4%. for detail see table-3 below.

Table 3 Summery of data response rate

Organization	Returned data	Collected data for each company in %
Contractor firm	59	84.28%
Consultant firm	22	100%
owners	23	100%
Total	104	90.4%

Source: survey data, (2021)

4.3. Background information about the respondents

The respondents were asked about their sex, level of education, positions in the organization and years of experience in the industry. Near to a three-fourth of the participants were males and the female accounted for the remaining one fourth. The majority (viz. 87.5%) of the respondents were with bachelor’s degree. Contract Administrators and Resident Engineers constituted 10.6% each. About 57% were Site Engineers and Office Engineers. The majority (about 82.7%) of the study participants had below 10 years of experience in the construction industry, with 44.2% of them having below five years of experience. The remaining 16.3 % of the respondents have above 10 years work experience. For further details, see data in Table 4 below.

Table 4 Summary of General information of the participant

Gender of the respondent		Frequency	Percent	Valid Percent
Valid	Male	77	74.0	74.0
	Female	27	26.0	26.0
	Total	104	100.0	100.0
Educational background				
Valid	Diploma	4	3.8	3.8
	Degree	91	87.5	87.5
	Master's degree	9	8.7	8.7
	Total	104	100.0	100.0
Position of the respondent				
Valid	project manager	6	5.8	5.8
	Construction Engineer	7	6.7	6.7
	Site Engineer	22	21.2	21.2
	Office Engineer	37	35.6	35.6
	Contract administer	11	10.6	10.6
	Residence Engineer	11	10.6	10.6
	Others	10	9.6	9.6
	Total	104	100.0	100.0
year of experience				
Valid	0-5 years	46	44.2	44.2
	5-10 years	40	38.5	38.5
	10-15years	15	14.4	14.4
	Above 15 years	3	2.9	2.9
	Total	104	100.0	100.0

Source survey output (2021)

4.4. Research Variable-Related Responses and Result

Research question 1: How do the construction contract management practices look like in the public projects in Addis Ababa?

4.4.1. Types of Contract

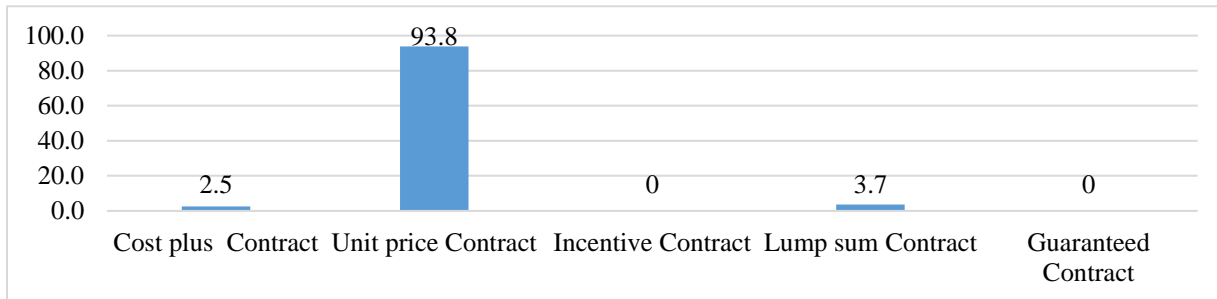


Figure 2: Shows the types of contract that practiced in building public projects

Source survey output (2021)

As shown in above Figure 2, the vast majority (i.e. 93.8%) of the study participants indicated that most of the construction projects were under Unit Price (Measurable) Contract arrangements. The rest 2.5% of the participants indicated cost-plus contracts and 3.7% of the participant indicated lump sum contracts.

4.4.2. Contract Management Principles

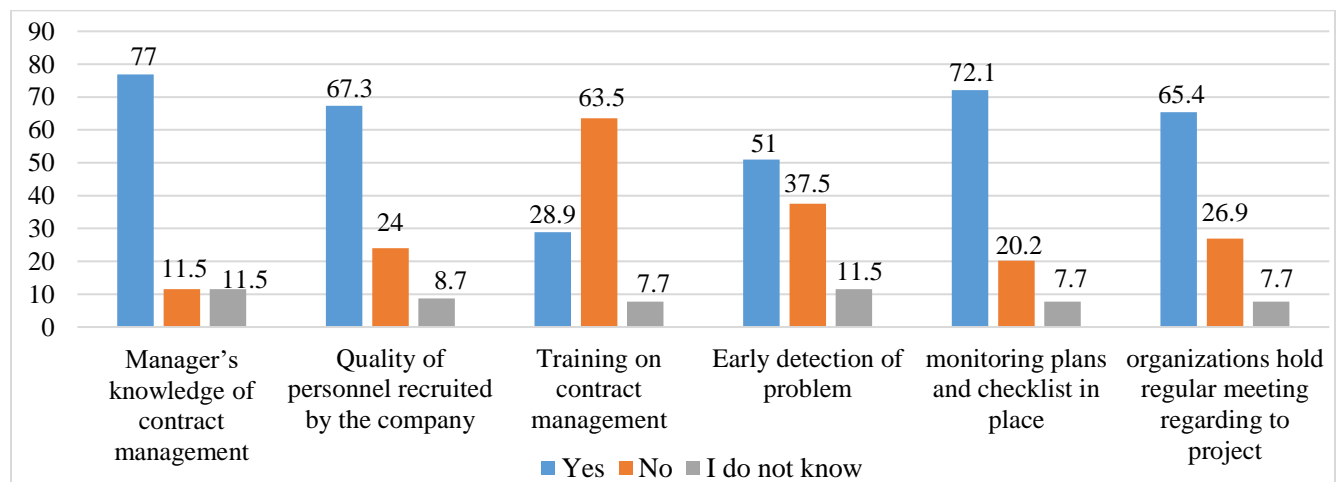


Figure 3: Shows the result of respondents about contract management principles

Source survey output (2021)

In the above figure 3, the vast majority (77%) of participants’ responses the project managers that engaged in the project have knowledge about contract management, 11.5 % of the participants’ responses the manager have no knowledge about the contract management, and the rest 11.5 % of the participants did not have an idea whether the manager have knowledge or not. About selection and recruitment 67.3% of respondents responds that the organization recruits qualified personnel for the projects, 24% of the company did not recruit the qualified person on the project and 8.7% of the respondents have no idea whether the company recruits the qualified personnel for the project or not.

Regarding to training the majority (63.5%) of the participants responds that the organization did not give training about contract management for their employees, 28.8% responds the organization gives training for their employees on how to manage contracts in the project, and the rest 7.7% respondents did not know. 51% of the participants respond the company identifies the problem at an early stage if it has happened, 37.5% responds they did not identify the problem at an early stage and 11.5% of the respondents have no idea whether the company identify the problem at an early stage or not. The majority (72.1%) of the participants indicated that the company has monitoring plans and checklists in place to perform the contract, 20.2% of respondents are the company monitoring plans and checklists, and the rest 7.7% did not know whether the company has monitoring plans and checklists or not.

Regarding to regular meeting most (65.4%) of the study participants indicated that the organization practices a regular meeting regarding the projects, 26.9% of the participants indicates regular meetings were not practiced and 7.7% did not know whether there regular meeting practice or not.

4.4.2.1 Risk management practices

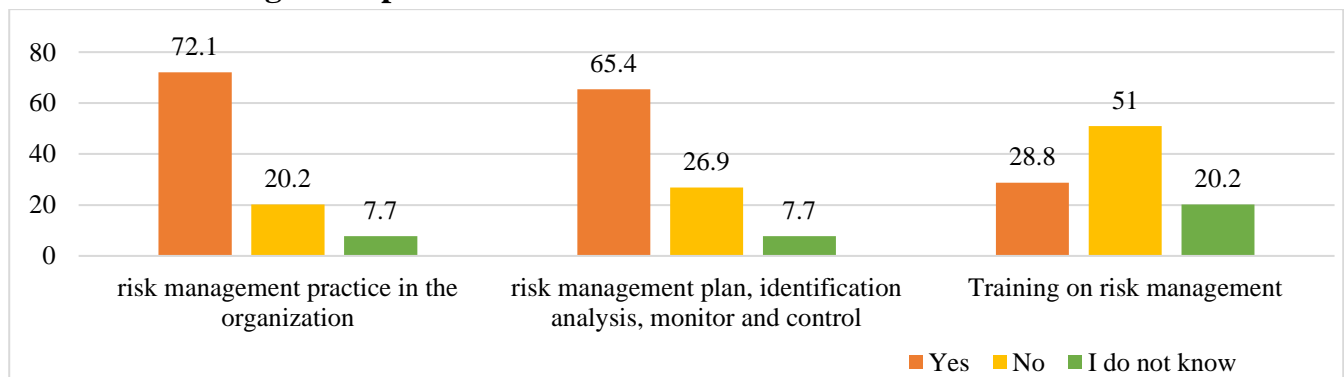


Figure 4: Shows the result of respondents about risk management practice

Source survey output (2021)

In the above figure 4, about 72.1% of the respondents indicated there is risk management practice in public projects, 20.2% indicated there is no risk management practice and the rest 7.7% have no idea whether it is practiced or not. Most (61.5%) respondents respond the organization follows the risk management process, 26.9% of the respondent the organization did not follow the risk management process and 7.7% have no idea. About training 28.8% of the respondent responds that the organization gives training about risk management, 51% of the respondent responds that the organization did not give training about risk management for their employees, and the rest 20.2% indicated they do not know. Generally, the organization practices risk management and its process in public projects but they did not give training about risk management for their employee on how to manage risks.

4.4.2.2. Communication management practices

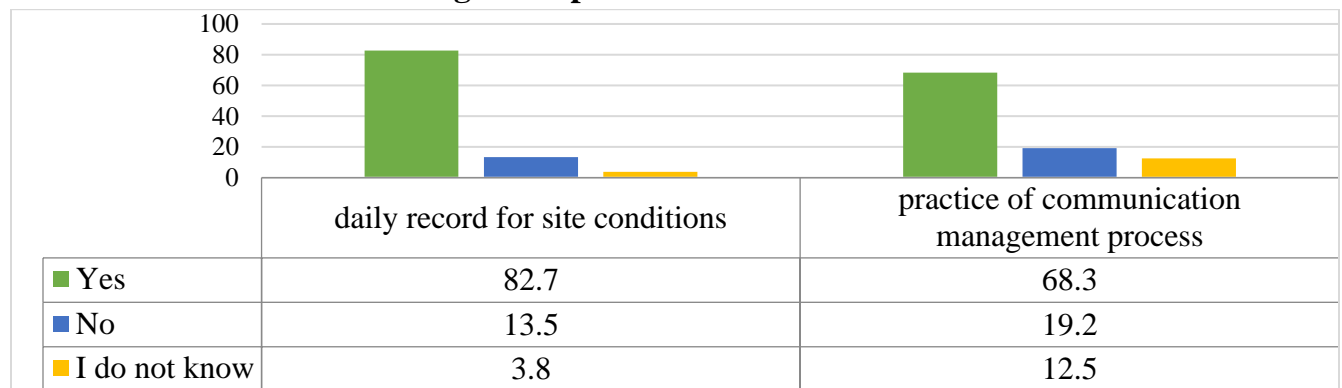


Figure 5: Shows the result of respondents about the practice of communication management

Source survey data (2021)

In the above figure 5, the majority (82.7%) of the respondents the organization practices daily record of the actual project conditions, 13.5% of the respondents respond there is no practice of daily records and 3.8% of the respondent have no idea whether the organization practices daily record of the project information or not.

Regarding to communication management process, Most (68.3%) of the respondents responds that there is the practice of communication management planning, managing, and monitoring in the projects, 19.2 % respond there is no practice of communication management process in projects, and the rest 12.5% do not know whether it is practiced or not.

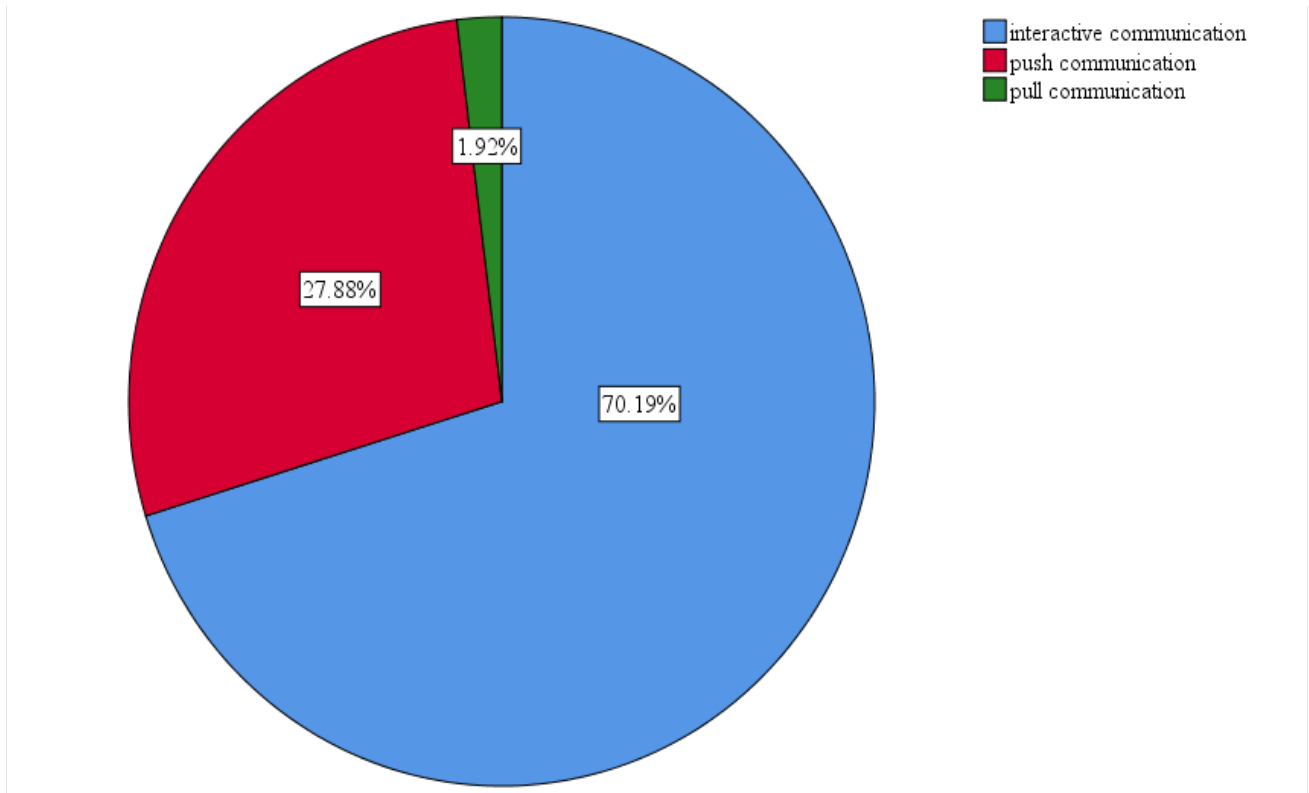


Figure 6: Shows the method of communication management used in the project

Source survey output (2021)

In the above figure 6, about 70.2% of the respondent responds the organization uses the interactive communication method to manage the project, 27.9% respond the organization uses push communication methods and 1.9% respond the organization uses the pull communication method to manage the information of the project. The result shows that there is good practice of communication method.

4.4.2.3. Change management practices

The mean score of 3.98 with standard deviation indicates that resident Engineer gives written order if any change happens in the project. The mean score of 2.91 shows that the concerned body did not approve a change on time according to the contract. The mean score of 3.79 shows that there is a practice of change management process in the organization and review changes following this process on site. The mean score of 3.72 with standard deviation of 1 indicates that the study participant agrees with the practices of change management in the public project. The mean score of 3.87 indicates that the project manager report the changes to the right person for the right time. For further information, see table 5 below.

Table 5: Shows the change management practices

Descriptive Statistics			
Variables	N	Mean	Std. Deviation
The organization practices Change management in the public project.	104	3.72	1
Change management follows the following change process such as identifying, evaluating, approve, implement and review changes the organization follow this process on site.	104	3.79	0.821
Site inspector or Resident Engineer gives written order if any change happens	104	3.98	0.892
The concerned body approves the changes on time.	104	2.91	1.167
The manager report changes on time for the right person.	104	3.87	1.005
Valid N (listwise)	104		

Source survey output (2021)

4.4.2.4 Claim management practices

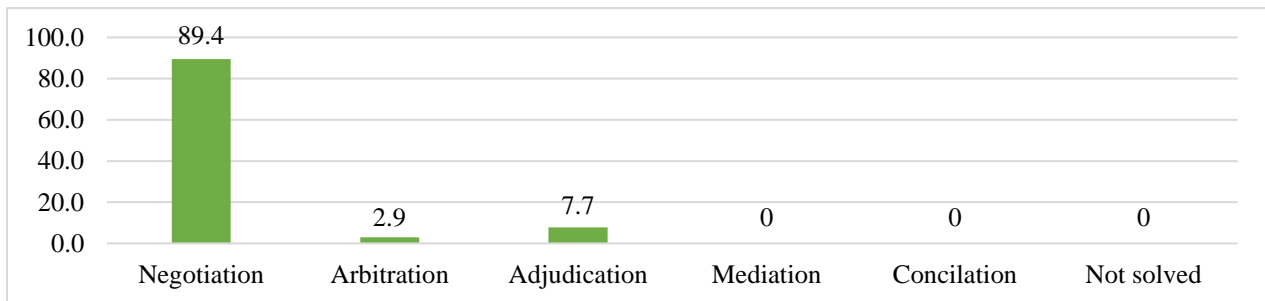


Figure 7: Shows the practiced claim resolution method in the project

Source survey output (2021)

As shown in Figure 7, the majority (i.e. 89.4%) of the study participants indicated that most of the construction projects claim was resolved with negotiation, 2.9% of the participants indicate the claim is resolved by arbitration and the rest 2.9% of the participants indicate the claim is resolved by adjudication. So, if the claim is resolved with negotiation it uses to save time and money for the contracting parties. On the other hand, this method leads the people to exercise corruption in the construction industry. From the qualitative data, the majority of the study participants responded that the contractors request the only extension of time claims. The vast majority of the respondents indicate that the company has no well-experienced claim experts and contract to administer.

Research Question 2: How they practice construction contract management practices in relation to three constraints: cost, time, and quality of work during contract execution of public projects?

4.4.3. Quality management practices

The mean of 4.38 indicated that the organization have the knoweldege about quality management of the project. The mean of 4.18 shows that the study participants agree for the company conducts a test before use to check the quality of material. The mean of 3.86 indicate that the respondents agree with the company practices quality management on the project site. The mean of 3.58 indicates that the organization regularly updates the quality management plan and control mechanism. The mean of 3.56 indicates that the company adopts the quality documentation and records on-site. The mean of 3.68 indicates that the company has quality management planning, controlling, and assurance methodology as guiding document. The mean of 3.18 indicates that the company did not give trainings for the staff regarding to quality management practices on the project. For further detail see Table 6 below.

Table 6 Shows the result of quality management practice

Descriptive Statistics			
Variables	N	Mean	Std. Deviation
Quality management is one of the key critical success indicators for the firm and the Company implements quality management.	104	4.38	1.063
The company updates quality management planning and control Regularly.	104	3.58	1.021
The company adopting quality documentations and records on site.	104	3.56	1.131
Materials that are used for construction activity are tested before use for the conformation of standards and specifications.	104	4.18	1.022
The company has quality planning, control and assurance methodology as a guiding document?	104	3.68	1.007
The company practices quality management on the project site.	104	3.86	0.960
The company gives trainings for the staff regarding how to quality management practices on the project?	104	3.18	1.156
Continuous trainings for employees on quality management practice are important to improve the attitude towards waste management?	104	3.23	1.331
Valid N (listwise)	104		

Source survey output (2021)

4.4.3.1 Quality assurance and control practice

As shown in the table below, the organization did not appoint the quality assurance team with clear responsibility and the remaining. the company does not select and recruit a qualified person for the particular tasks and train the personnel in their responsibilities. The mean of 1.53 indicates that company did not use a pre-construction meeting before the project activity starts. Generally the result shows that there is no practice of quality Assurance and Control in the public projects because the mean value is below the average mean. For further detail table-7 below.

Table 7 shows the result of quality Assurance and Control practices

Descriptive Statistics			
Quality AC and QC Practice Variables	N	Mean	Std. Deviation
Does the organization appoint quality Assurance team with clear responsibilities?	104	1.69	0.725
Does the organization select the people who are qualified for the particular tasks and train the personnel in their responsibilities?	104	1.45	0.652
Does the company use Pre-construction meeting to ensure that everyone understands his contract responsibilities and all necessary activities on site?	104	1.53	0.710
Does the engineer check the contractor’s work and notify the contractor of any defects that found on the project.	104	1.17	0.548
Have you conduct any test on site before use to control the quality of work?	104	1.33	0.660
Do the regulatory body checks quality of work on site?	104	1.58	0.634
Valid N (listwise)	104		

Source survey output (2021)

4.4.4 Payment management

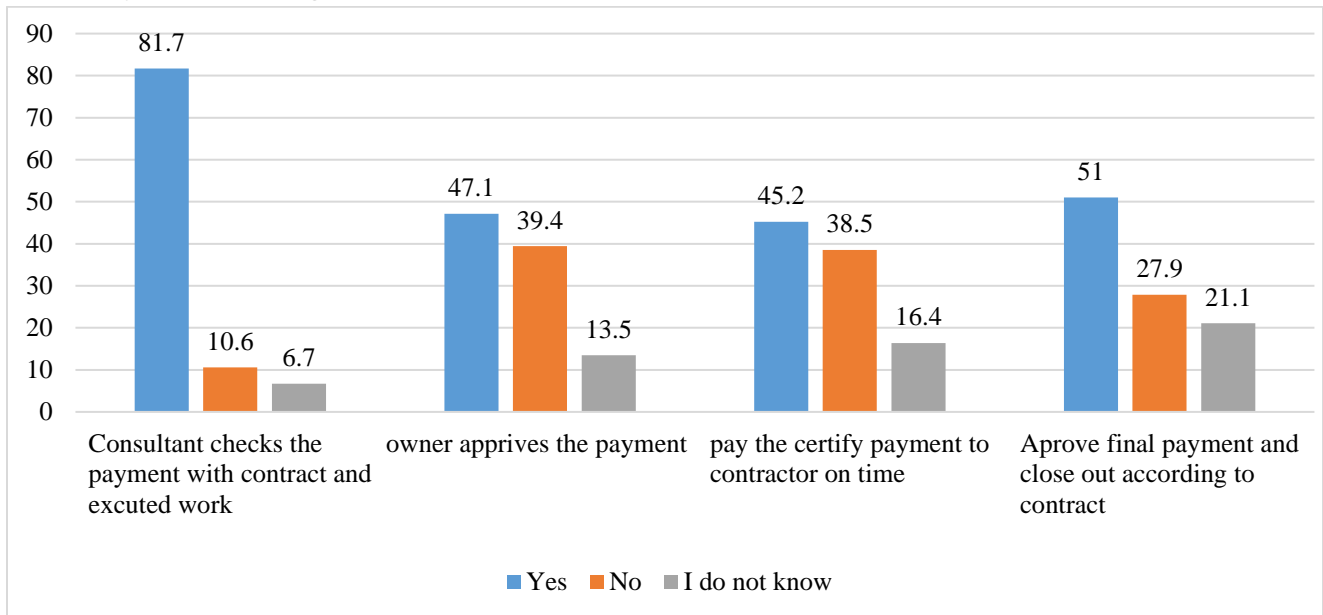


Figure 8: Shows the result of the participants for the practice of payment management

Source survey output (2021)

In the above Figure 8, The vast majority (81.7%) of the study participants indicated that the consultant checks the payment within the contract and executed work and the remaining 10.6% of the study participants indicate the consultant did not check the payment according to the contract and executed work. 47.1% of the study participants indicate the owner approves the requested payment within the contract, 39.4% of the study participants responds the owner did not approves the requested payment within the contract. About 45.2% of the study participants respond the owner pay the certified payment to the contractor on time, 38.5 % of the study participants respond the company did not pay the certified payment on time. 51% of the study participants indicated that the final payment and project closeout is done according to the contract, 27.9% of the study participants were respond there is no approval of final payment and close out the project according to the contract and the remaining 21.1% have no idea whether the final payment and closeout of the project follows the contract or not.

4.4.5 Time management practices

The mean value 2.05 with standard deviation of 0.53 indicated that the project did not complete within the contract period. The mean value of 2.05 with 0.702 of standard deviation indicated that the company did not implement the liquidated damage on the delayed project. The mean of 1.55 indicates that the company did not give a focus for practicing time management in the organization. The mean value of 1.52

indicates that the company did not have standard delay analysis techniques in reviewing extension of time in the project and the company has no determination of concurrent delay. The mean value of 1.2 indicated that the company has not an awareness about time management. The mean value of 1.46 indicated that the organization did not prepare an appropriate schedule for the project within the contract time and updates according to the contract. The mean value of the variable is below the average mean this indicates that there is no practice of time management in public building projects. For further detail see table 8 below.

Table 8 Shows the result of time management practice

Descriptive Statistics			
Time management practices Variables	N	Mean	Std. Deviation
Does the company have an awareness time management	104	1.2	0.546
Time management is one of the three constraints does your company give a focus for practicing time management?	104	1.55	0.749
Do you have standard delay analysis techniques in reviewing extension of time in the project?	104	1.52	0.724
Is there a procedure for the determination of concurrent delay and its effect on entitlement to extension of time?	104	1.52	0.776
Does the project complete with in the contract period?	104	2.05	0.528
Does the company implement the liquidated damage on the delayed project?	104	2.05	0.702
Does the organization prepare appropriate schedule for the project with in the contract time.	104	1.46	0.637
Valid N (listwise)	104		

Source survey output (2021)

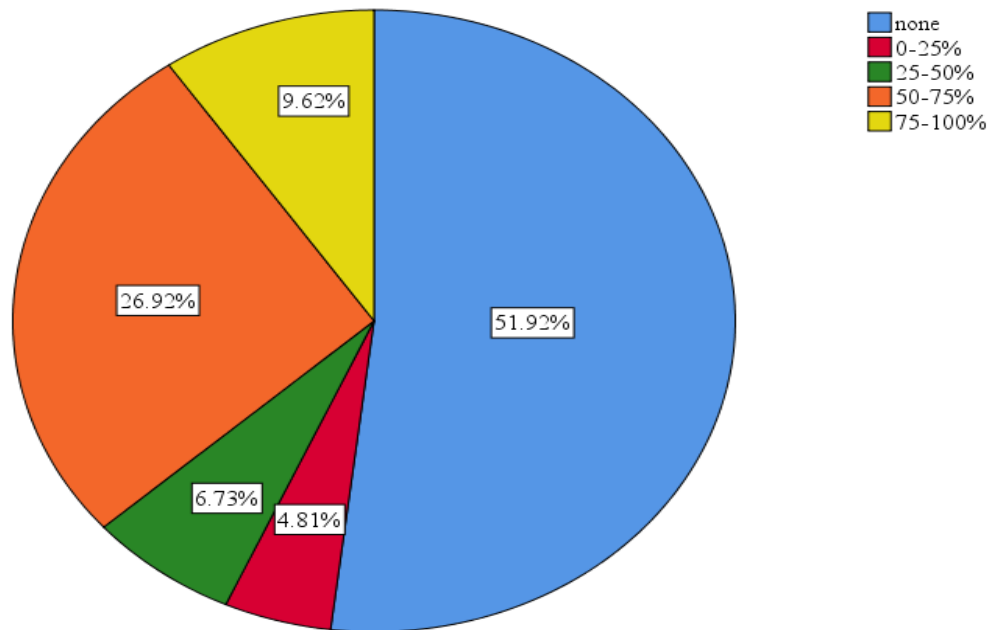


Figure 9: Shows the result of respondents that the projects complete within the contract
Source survey output (2021)

As shown the above figure 9, The majority (51.9%) of the respondents indicates that the project did not complete within the contract time, 4.81% of the study participant responds that 25% of the project was completed on time, 6.7% of the study participants indicates that 25-50% of the project completed on the contract time, 26.9% of the respondent indicated that 50-75% of the project is completed on time and the rest 9.6% of the projects completed on time. From this result, most of the public building projects did not complete within the contact period. Due to this the cost of the project increases from the initial estimated project cost and the owner is entitled to pay unexpected costs. The reason behind these delays was conducted on the qualitative survey and the participant’s hinted several reasons for the delay of the projects. These are design change by architects or owners, political issues, market inflation, an unexpected weather condition that affect the critical activity of the project, lack of experience during the preparation of the bill of quantity, sometimes the actual characteristics of the soil are differ from that of investigated soil results during the design phase due to lack of experience of the professionals or owners’.

Research Question # 3 What looks like the project participants’ roles, responsibilities, and obligations and how they implement the construction contract management in the public project in Addis Ababa?

4.4.6 Roles and responsibilities of the three parties

4.4.6.1 owners

The roles and responsibilities of the owners were asked for the study participants. The mean score of 3.6 and standard deviation of 1.09 shows the owner approve the changes within the limits of the contract. The mean score of 3.70 indicates the owner handovers the site and available to the contractor on time. The with mean score of 2.91 with standard deviation of 1.12 indicates that there is the owners’ interference on the project activity after the . For detailed information see table-9 below.

Table 9 Shows the results of how the owner practices their role and responsibility

Descriptive Statistics			
Variables	N	Mean	Std. Deviation
The owner hand over the site and is available to the contractor on time.	104	3.66	1.094
The owners agree to any changes within the limit of the contract (up to 25% of the contract amount).	104	3.70	1.032
The owner pays payment on time that is approved by the concerned person.	104	3.38	1.081
The owner did not regularly interfere with the project activity after they hand over.	104	2.91	1.124
Valid N (listwise)	104		

Source survey output (2021)

4.4.6.2 Contractors

The roles and responsibilities of the contractor were asked for the study participants. The e mean score of 3.98 shows that the contractor gives Warrant and guarantees that all work is done in accordance with the Contract documents. The second mean score of 3.59 indicates that the contractor Selects and provides the means, methods, techniques, sequences, and procedures of construction. The mean score of 3.24 with standard deviation of 1.20 indicetes that the contractor did not Initiates, maintains, and supervises all

safety precautions and programs for all personnel on-site. The contractor is the most responsible from the contracting parties. For detailed information see table 10 below.

Table 10 Shows the results of how the contractor practices their role and responsibility

Descriptive Statistics			
Variables	N	Mean	Std. Deviation
The contractor Supply and provide labor, material, and equipment as necessary to perform the works within the contract period.	104	3.54	1.222
The contractor Implements quality control systems for aspects of the works as specified.	104	3.56	1.069
The contractor gives Warrant and guarantee that all work done in accordance with the Contract documents.	104	3.98	1.052
The contractor Initiates maintains, and supervises all safety precautions and programs for all personnel on-site.	104	3.24	1.203
The contractor Selects and provides the means, methods, techniques, sequences, and procedures of construction.	104	3.59	1.020
Valid N (listwise)	104		

Source survey output (2021)

4.4.6.3 Consultants

The roles and responsibilities of the consultants were asked for the study participants. The first mean score of 4.01 with 1.029 standard deviation indicates that the consultant supervises the quality of work on time when the contractor requests. The second mean score of 3.95 also indicates that the consultant advises about the contract for contractors and owners on time during construction of the project. The mean score of 3.88 the study participants agree that the consultant gives a written notice for any defects and changes based on the contracts. The fourth mean score 3.66 with 1.094 standard deviation indicates that the consultant approves any claim on time. For detailed see table-10.

Table 11 Shows the result of the participants for consultants' role and responsibility

Descriptive Statistics			
Variables	N	Mean	Std. Deviation
The consultant supervises the quality of work on time when requested by the contractor.	104	4.01	1.029
The consultant advises the contractor and owner regularly regarding to the contract.	104	3.88	1.027
The consultant gives written notice for any defects and changes that happened on-site during the construction period.	104	3.95	0.999
The consultant approves any claim on time according to the contract	104	3.66	1.094
Valid N (listwise)	104		

Source survey output (2021)

Research Question #4 What type of delivery system is mostly used in public projects in Addis Ababa?

4.4.7 project delivery systems

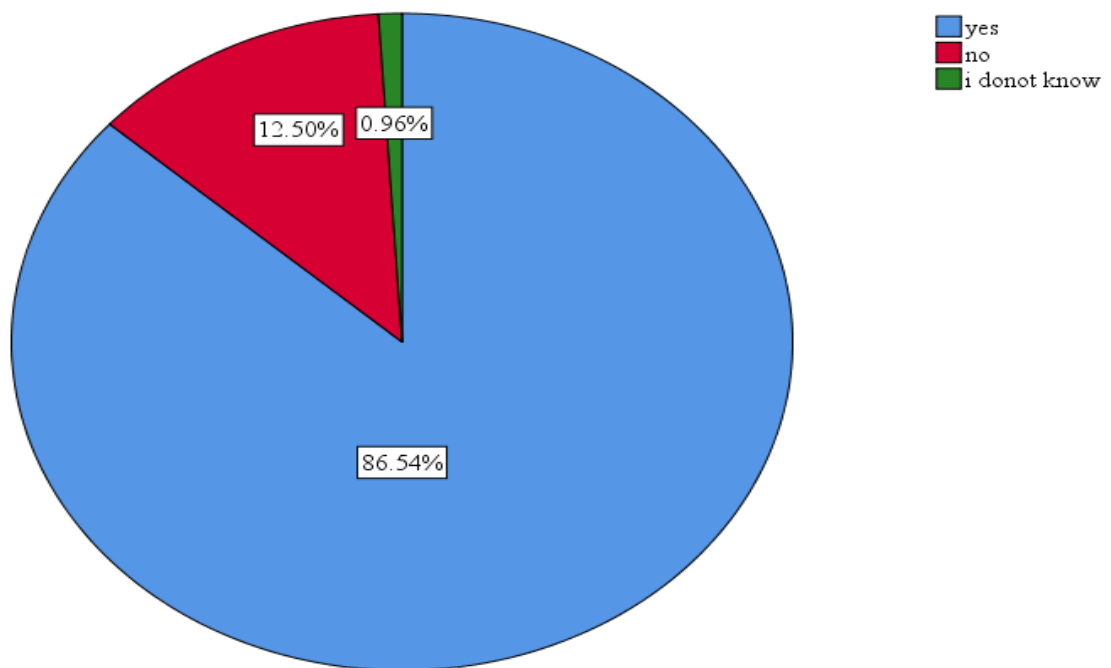


Figure 10: Shows the knowledge of the organization about the project delivery system

Source: survey output (2021)

In the above figure 10, the vast majority (86.54%) of the study participants responded the organization have the knowledge about the project delivery system and the remaining 13.46% of the participants responds the organization did not have the knowledge about project delivery system.

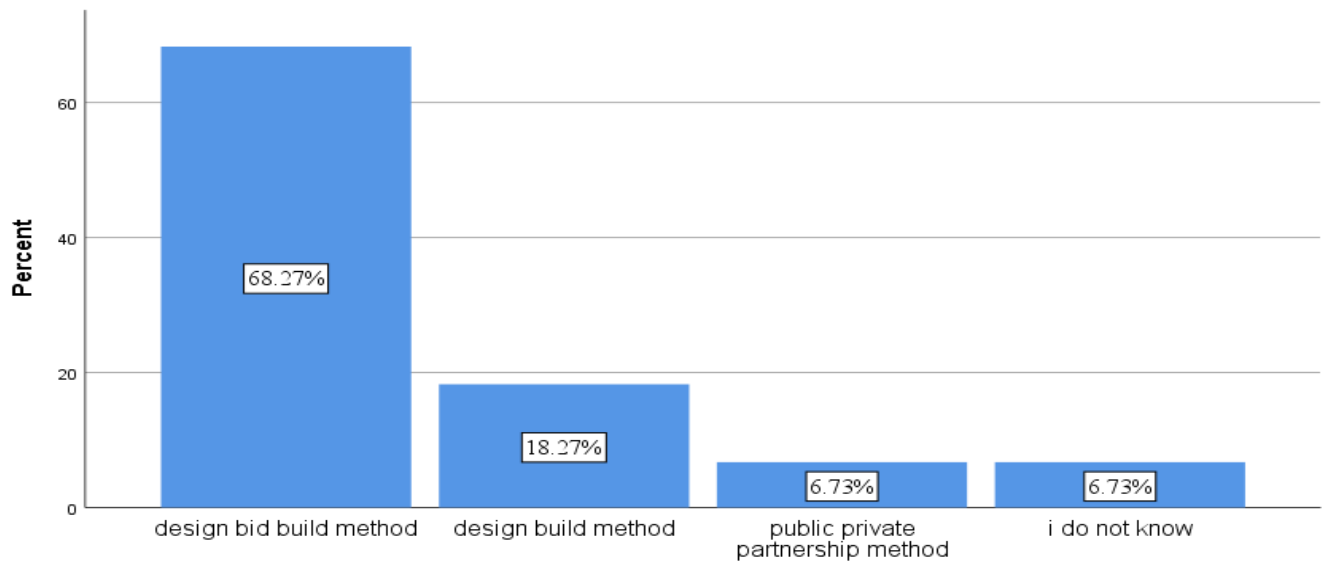


Figure 11: Shows the most commonly used delivery system in public projects

Source: survey output (2021)

In the above figure 11, the vast majority (68.27%) of the respondents responds the most commonly used type of project delivery system is DBB methods, 18.27% of the respondents the organization uses DB methods that used by the organizations.

4.4.8 Qualitative results

Regarding to the research, the response of the study participants collected through face to face interview was presented below. The interview was conducted with 10 purposely selected professionals that engaged in the project site. With respect to the participants, most of them have more than 10 years of working experience.

Regarding to health and safety training most of the study participant indicated that the company did not give any training on health and safety for their employees when they start a new job.

Regarding employees' rights and obligations, the vast majority of the study participants responds the employees did not know their rights and obligations related to OHS that is why the people who work in the project did not wear any safety precautions and they have not awareness on work-related injury compensation.

For regarding health and safety manuals and orientation program, most of the respondents indicate the company workers have no a copy of health and safety manual and orientation programs that provide by the organization in the projects.

Regarding to first aid kits, half of the study participants indicates that the company provides first aid kits and other appropriate tools and equipment on site but they did not follow whether it is used properly or not by their employees.

The respondents were asked the company workers use safety precautions properly and the respondents responded the workers did not use safety precautions properly in order to protect themselves from any accident and injury on site.

Regarding to incentives or punishment, the majority of the study participants indicates that the company did not provide the certain incentive to an employee for implementing company's safety management or punishment to the employee that did not implement the company's safety management.

Regarding to supervision and control, the respondents responds the company did not supervise and controls how to implement safety precautions on the project site.

Regarding consulting employees, the study participants indicates there is consulting of employees about their health and safety concerns on the project for the employees.

Regarding to temporary protection work on the project site, the respondents responds the company did not work temporary protection around the external side of the building and at the opening part to protect fulling and injuries. The majority of the study participants indicate that the regulatory body did not enforce the company to implement OHS management on the project site.

Regarding to safety signs and facilities the respondents indicates that the contractor did not use safety sign and did not fulfil the engineering facilities on the projects site.

Regarding to the delivery method of the project the respondent's experience the DBB or traditional project delivery method is time-consuming, has a high cost, and did not manage easily because it is open for variation works that run cost but DB and PPP are effectively managing costs and time and very easy to manage the projects. The result shows that adopting DB and PPP project delivery methods is advantageous than DBB project delivery methods for public projects.

4.5 Discussions of the findings

In this section of research researcher stipulate the finding of the study in line with it objectives.

For practice of contract management the result shows that there is the practice of construction contract management in public projects but even if there is practiced contract management in the public building project there were also have lack of health and safety management, lack of training for the employees, lack of supervision, and controlling system on the projects by the regulatory bodies.

Regarding to the three constraints, the finding of the result shows that the company has an awareness about time management but they did not complete the project within the contract period the reason this was the schedule that prepares for the project was not well prepared and they did not apply liquidated damage on the delayed project. About the quality management, the study result shows that the public projects practices quality management but there is poor quality assurance and quality control practices because of poor selection and recruit a qualified person for the particular tasks and train the personnel in their responsibilities, lack of training about quality, lack of continuous employees training to improve wastage management, and poor supervision of the regulatory body in the public projects.

The study result shows that the public projects were under DBB or traditional project delivery method and this delivery method consumes time and cost, and did not manage easily because it is open for variation of works but DB and PPP are effectively managing costs and times and very easy to manage the projects. So, adopting another delivery system for public projects is advantageous than DBB project delivery methods.

Generally regarding to specific objective one there is a practice of contract management but, there is no health and safety management, lack of training for the employees, lack of supervision, and controlling system on the projects by the regulatory bodies in the public building projects practices.

Regarding to specific objective two, there is practice of quality management but there is poor practice of time and cost management in the public building projects.

Regarding to specific objective three there is practice of role and responsibilities of the contracting partices.

Regarding to specific objective four the public building projects were under design bid build delivery method but this delivery method consumes time and cost, and did not manage easily because it is open for variation of works

CHAPTER FIVE

5. Conclusions and Recommendations

5.1 Conclusions

Based on the analysis most of the public construction projects were under Unit Price contract arrangements. About contract management the study participants indicate that the managers have knowledge about contract management. the organization recruits qualified personnel for the projects. Regarding to training the result shows that the organization did not give any training about contract management for their employees. Half of the study participant result shows that the company identifies the problem at an early stage. Regarding to monitoring and check list the result shows that the company has monitoring plans and checklists in place to perform the contract. the participants indicated that the organization practices a regular meeting regarding the projects. So, generally the there is contract management practices

Regarding risk management practices, the organization practices risk management and its process in public building projects but they did not give training about risk management for their employee on how to manage risks in the projects.

Regarding to communication management the result shows that the organization practice the communication management in the public building project and they mostly use interactive communication management type of communication management to manage the project. About change management, the respondents indicates that the organization practices change management in the public projects but the concerned body did not approve the changes on time.

Regarding claim management, the result shows that most of the public building projects were resolve any claim with negotiation because it save time, it is cost-effective to resolve it, the most requested type of claims was only time and the company did not have wel-experienced claim experts and contract to administer. sometimes negotiation type of claim resolution method is one way of exercising corruption in the construction industry.

Regarding to quality management practice the study result shows quality management practice and there is a practice of quality assurance and controls in the public project. Even those they practiced quality management there was poor selection and recruitment of personnel for the specific tasks, lack of training

about quality, lack of continuous employees trainings to improve wastage management and poor supervision of the regulatory body on the public project. Regarding to Payment management, the finding shows that the consultant checks the requested payment according to the contract and excuted work but the owner did not approve and pay the payment on time this leads to the projects delays. For time management, most of the public building projects did not complete within the contract time, the time schedule that was prepared for the project was not properly planned and the company did not start the liquidated damage for the delay of the project. Generally there is practice of quality payment management but there is no practice of time management in the public building projects.

Regarding to the roles and responsibilities of the owners the study participants indicate that the owners exercise their role and responsibilities in the public building projects but they regularly interfere after land aquisition. For the contractors roles and responsibilities the result shows that the contractors exercise their role and responsibilities in the public building projects. For the consultants roles and responsibilities the study participant indicates that the consultants exercise their role and responsibilities in the public building projects. Generally the three parties practices their role and responsibilities in the projects.

Regarding to health and safety management, the result shows that there is no health and safety management practices in the public projects. the result shows there is lack of trained human resource, lack of employee's awareness, lack of supervision and control for proper usage of the safety precautions by the workers, the company did not give the copy of health and safety manual and did not give any orientation about health and safety on the project site, the contractor did not work temporary protection around the building and at opening part to protect from fulling during the construction time, there is no any incentives or punishments to employees who did or did not apply health and safety in the project site and the regulatory body and the consultant did not enforce the contractor to carry out all safety precaution for their employees during the construction period.

Regarding the project delivery method, the result shows that the organization know about project delivery method. Even if they know about project delivery method still know mostly of the project is under design bid build (traditional) delivery system. This DBB or traditional project delivery method is time-consuming, has a high cost, and did not manage easily because it is open for variation works that run cost but DB and PPP are effectively managing costs and time and very easy to manage the projects.

5.2 Recommendations

Based on the findings and conclusions the following recommendations are provided to improve the level of construction contract management systems in public building projects.

- The organization must be given training for their employees to improve quality and wastage management.
- The project participants shall focus on the three constraints time, quality and cost management of the projects.
- The owner must be approve and pay the payment according to the signed contract to avoid delays in the project.
- The result shows that the project did not complete on time so, contractors, consultants, and owners must apply the liquidated damage on the delayed project according to their contracts.
- The regulatory body, consultant and FDRE labor organization must be enforce the contractors to implement the health and safety management, to work temporary protection, supervise and control for proper usage of the safety precautions by the workers during the construction time.
- The contractor must give focus on the training and create awareness for their employees on how to apply health and safety to the project.
- The contractor practices to give an incentive for their employees that applies health and safety management on the project and punishment that does not apply it.
- The contractor must give more focuses on selection and recruit of right person for the position.
- The regulatory body and the consultant enforce the contractor to put the safety signs on the project site.
- The contract administrator must be wel-experienced when they prepare the bill of quantity and time schedule.
- The owner exercises a traditional project delivery system and it is own drawback so, be familiar with design-build delivery method to minimize risks and changes and the contractors must change their attitude towards design-build and update the capacity of employees to apply DB delivery system in the public projects.
- To achieve the project goals, the company must select and recruit experienced claim experts and contract administrators who interpret and apply the project contracts properly.
- To achieve the projects objective the contractor must give special attention to the professional facility on site.

5.3 Future research directions

The study's findings contribute significantly to raising awareness and emphasizing the necessity of Construction contract management in public building construction businesses. It has also added to existing information by comparing the construction contract management systems of Addis Ababa's public projects. It was also advised that the contractor that participates in public projects improve their competitive advantages by trying to adopt a construction contract management system.

Future research can be done by following the leads of this research and changing the situation. Future studies on various schemes of construction, such as road, bridge, or waterworks construction, might be undertaken in the context of this research, which is directed at the public building construction sector. Another modification in context may be to move the research to a different site and compare building contracts. Another modification in context may be to relocate the study and compare the construction contract management procedures of public building constructions in Addis Ababa to those in other Ethiopian cities.

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APPENDIXES

Research questionnaire

Dear Respondents,

My name is Habtamu Mekuriaw and I am a master's student in Construction Technology and Management at Addis College. This is a questionnaire survey I have developed to gather the necessary data for the fulfillment of my master's thesis in **Assessment of Construction Contract Management Practice in public Building Projects in Addis Ababa, Ethiopia.**

First of all, I would like to thank you for sharing the time to answer the questionnaire survey. Please be informed that this survey will strictly be used for only academic purposes to Assessment of Construction Contract Management practices in public Projects of various construction companies in Addis Ababa, Ethiopia.

Furthermore, your genuine response will play a crucial role in attaining a precise understanding on the construction practices in relation to contract management. Finally, I kindly ask you to truthfully provide the required information and return it as soon as possible.

Student

Advisor

Habtamu Mekuriaw
Addis College
School of postgraduate studies
Department of Construction Technology and
Management

Advisor

Worku Koshe (PHD)
Assistant Professor, School of Civil and
Architecture

Part I. General Information

Please place a “✓” mark to all your responses in the box provided besides each statement.

1. Name of the organization _____
2. Gender of the respondent
 Male Female
3. Educational Background the respondent’s
 College Diploma Bachelor’s Degree Master’s degree
 Above Master’s degree
4. Position of the respondent in the organization?
 Project Manager Construction Engineer Site Engineer Office Engineer
 Contract Administer Resident Engineer Other (Please specify _____)
5. Years of work experience?
 0-5 years 5-10 years 10-15 years above 15 years

Part II. Research related Questions

1. What type of contract is used during contracting the contract of the public project?
 Cost plus contract unit price (measurable) contract incentive contract
 Lump sum (turnkey) contract guaranteed maximum contract
2. in your experience by what method claim or disputed resolved
 Negotiation Arbitration Adjudication not resolved
 Mediation Conciliation
3. In your experience, how many projects have been finished to the agreed completion date?
 None 0-25% 25-50% 50-75% 75-100%

item	Contract Management	Yes	No	I do not know
4	Does the project manager have the knowledge about contract management?			
5	Does the company recruits the right person for the right place?			
6	Does the organization give any relevant training regarding to contract management to fill skill gap?			
7	Does your company identify the problem at early stage if it is happened?			
8	Have you monitoring plans and checklists in place to perform the contract?			
9	Does the organization hold regular meeting to discuss the project progress and any problem?			
	Risk management			
10	Is there risk management practice in your organization?			
11	Do you Have risk management plan, risk identification, risk analysis and risk monitor and control?			
12	Does the organization give the training for their employees regarding to risk management?			
	Communication Management			
13	Daily Construction Reports recordings are important for communication management. Does your company practices daily record of actual information on worksite?			
14	Types of communication management process are planning, managing and monitoring. Is the organization practice this process for communication management?			

15 Which type of communication method used by your company?

Interactive communication Push communication Pull communication

Please tick your answer on the space according to the following description of rating scale. 5=Strongly Agree, 4= Agree, 3= Neutral, 2= Disagree, 1= Strongly Disagree.

item	Change Management	1	2	3	4	5
16	The organization practices Change management in the public project.					
17	Change management follows the following change process such as identifying, evaluating, approve, implement and review changes the organization follow this process on site.					
18	Site inspector or Resident Engineer gives written order if any change happens					
19	The concerned body approves the changes on time.					
20	The manager report changes on time for the right person.					
	Quality Management					
21	Quality management is one of the key critical success indicators for the firm and the Company implements quality management.					
22	The company updates quality management planning and control Regularly.					
23	The company adopting quality documentations and records on site.					
24	Materials that are used for construction activity are tested before use for the conformation of standards and specifications.					
25	The company has quality planning, control and assurance methodology as a guiding document?					
26	The company practices quality management on the project site.					
27	The company gives trainings for the staff regarding how to quality management practices on the project?					
28	Continuous trainings for employees on quality management practice are important to improve the attitude towards waste management?					

item	Quality Assurance and Control	Yes	No	I don't know
29	Does the organization appoint quality Assurance team with clear responsibilities?			
30	Does the organization select the people who are qualified for the particular tasks and train the personnel in their responsibilities?			
31	Does the company use Pre-construction meeting to ensure that everyone understands his contract responsibilities and all necessary activities on site?			
32	Does the engineer check the contractor's work and notify the contractor of any defects that found on the project.			
33	Have you conduct any test on site before use to control the quality of work?			
34	Do the regulatory body checks quality of work on site?			
	Payment management			
35	Does the owner certify the payment according to the contract agreement?			
36	Does the consultant check the requested interim payment according to the execute work and the contract.			
37	Does the owner pay the approved interim payment to contractor with in the specified time in the contract?			
38	Do the owner and consultant approve final payment and close out the project according to the signed document?			
	Time management			
39	Does the company have an awareness time management			
40	Time management is one of the three constraints does your company give a focus for practicing time management?			
41	Do you have standard delay analysis techniques in reviewing extension of time in the project?			
42	Is there a procedure for the determination of concurrent delay and its effect on entitlement to extension of time?			
43	Does the project complete with in the contract period?			
44	Does the company implements the liquidated damage on the delayed project?			
45	Does the organization prepare appropriate schedule for the project with in the contract time.			

Please tick your answer on the space according to the following description of rating scale. 5=Strongly Agree, 4= Agree, 3= Neutral, 2= Disagree, 1= Strongly Disagree.

item	Role and Responsibilities of parties	1	2	3	4	5
46	The owner hand over the site and is available to the contractor on time.					
47	The owners agree to any changes within the limit of the contract (up to 25% of the contract amount).					
48	The owner pays payment on time that is approved by the concerned person.					
49	The owner did not regularly interfere with the project activity after they hand over.					
50	The contractor Supply and provide labor, material, and equipment as necessary to perform the works within the contract period.					
51	The contractor Implements quality control systems for aspects of the works as specified.					
52	The contractor gives Warrant and guarantee that all work done in accordance with the Contract documents.					
53	The contractor Initiates maintains, and supervises all safety precautions and programs for all personnel on-site.					
54	The contractor Selects and provides the means, methods, techniques, sequences, and procedures of construction.					
55	The consultant supervises the quality of work on time when requested by the contractor.					
56	The consultant advises the contractor and owner regularly regarding to the contract.					
57	The consultant gives written notice for any defects and changes that happened on-site during the construction period.					
58	The consultant approves any claim on time according to the contract					

59. Do you have knowledge about the project delivery method? Yes No

60. Which type of project delivery method is mostly used to insure all construction-related services?
 Design - bid-build method Design- Build method Public Private Partnership method
 Other (Please specify) _____

THANK YOU!!!

Interview questionnaires

1. Is there health and safety training provided by the company to all employees prior to starting a new job?
2. Do Employees Know their rights and obligations related to OHS and do they have awareness on work-related injury compensation?
3. Do the Company workers have a copy of the health and safety manual and orientation programs provided by the organization in the project?
4. Does your company provide first aid kits and other appropriate tools and equipment and supervise whether it is used properly or not on the project site?
5. Do the company workers use safety precautions properly to protect them from any accident and injury?
6. Does your company provide a certain incentive or punishment or not to employees implementing the company's Safety Management?
7. Does your company provide training on how to implement safety precautions on the project site?
8. Do you consult employees about their health and safety concerns on the project?
9. Does the company work temporary protection on external part and at opening part to protect falling and injuries?
10. Does the regulatory body enforce your company to implement OHS management on the project site?
11. Some projects are not completed within the contract periods what are the reason of these delays?
12. In your experience which type of project delivery method is important for public projects?
13. In your experience what type of claim is requested by the company for approval?
14. Does the company have an experienced claim expert or contract administrator?

THANK YOU!!!