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Assessment of contract administration practices of Hydropower Projects in Ethiopian Electric Power: A case study in Gibe III Hydro power Project.

A Research Project Work for the partial fulfillment of Master's Degree in Project Management



By

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Declaration

I the undersigned declared that this project work is my work & all sources of materials used have been dully acknowledged.

Title: Assessment of contract administration practice of Hydropower projects in Ethiopian Electric Power: The case study in Gibe III Hydro Power Project.

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Endorsement

This project work has been submitted to Addis Ababa University, School of Commerce for Examination with my Approval as a University Advisor and Examiner.

Advisor

Signature and Date

Name of External examiner

Signature, Date

Name of Internal examiner

Signature, Date

Acronyms

- CA – Contract Administrator
- EEP- Ethiopian Electric Power
- EEPKO – Ethiopian Electric Power Corporation
- EGRD – Ethiopian Grand Rainsence Dam
- EPC- Engineering Procurement Contract
- FIDIC- Fédération Internationale des Ingénieurs-Conseils (International Councils of Engineers).
- GIII HPP- Gibe III Hydro Power Project.
- HPP- Hydro Power Project
- (IPPs)- Independent Power Projects
- MW – Megawatt
- GWH- Giga Watt Hour

Abstract

The purpose of this paper is to assess the contract administration practice of EEP in GIBE III Project. Questionnaires and Interview are primary data collection instruments which were distributed to the contract administration officers and the management members of EEP Gibe III Hydro Power Project equalling to 12 staffs and followed by descriptive and exploratory research design and Secondary data's were collected from the reports and contract agreements from the Ethiopian Electric Power, Gibe III HPP office. SPSS 20 software was used for the analyses of data collected. The result of this project work indicates that, the project was not effective in schedule management, in giving contract administration training to the contract administration staffs and in the availability of resources, which finally leads the project for suspension of work backed by delay, unnecessary interest payment and claim issues. Besides, the major challenges of the project which hinders the contract administration practice are reworks due to errors during construction, shortage of resources, design change during the project execution time for the power intake structure, Poor schedule management, poor feasibility study, delay in payments for the completed activities, the unforeseen geological condition at the base of the main am foundation level which lead the project to invest more additional time and incur additional cost. Based on the findings the researcher recommended, giving training to the concerned personnel on a contract administration practices, securing enough resources before the start of the execution of the project, developing a master schedules and work breakdown structures by incorporating important dates and milestones in the contract, securing enough resources before the start of the project and lesson learning from the previous successfully completed project.

Key Words: Contract Administration, Effective contract administration, EPC (Turnkey) contract, FIDIC, Hydro power project, Milestone.

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Chapter One:

Introduction

1.1. Background of the study

FIDIC (1999), states that “Contract” as the Contract Agreement Conditions, the Employers requirements, the tender, and the further documents (if any) which are listed in the Contract Agreements. The Ethiopian Civil code Article 2610 explained a construction contract as a contract of work and labor is a contract whereby one a party, the contractor, undertakes to produce a given result, under his own responsibility, in consideration of a remuneration that the other party, the client, undertakes to pay him, and Article 2876 further argues that a contract whereby one of the parties undertakes to deliver to the other party a house, a flat or another building which does not yet exist, is a contract of work and labor relating to immovable.

According to University of Texas, (2017), Contract Administration is referred as the processes that occur after a contract is signed and it includes seven (7) general processes:, planning, monitoring performance, change management, payment approval, dispute resolution ,termination, contract close-out. The primary tasks of contract administration include: Verifying contractor performance for purposes of payment; Identifying any material breaches of the contract by assessing the difference between contractor’s actual performance and contract requirements; determining if corrective action is necessary and taking action, if required; and developing a completion plan for contractor exit requirements, including acceptance of the goods/services, final payment, and contract close-out.

Effectiveness of contract management is about ensuring the meetings of agreed terms of the contract. Contracts fail due to misunderstandings, misinterpretations, accountability, responsibility and failure to accurately describe the contract scope. So, effective contract administration exists when the arrangements for service delivery continue to be satisfactory to both employer and contractor, expected business benefits and value for money are being realized, the employer is co-operative and responsive, the contractor knows its obligations under the contract, disputes are rare and there are no surprises for either party . ANAO, (2007).

Alemu (2016) cited Tekalign (2014) in his research states that 79.1 % of the construction project in Ethiopia failed to meet their objectives and if completed, it is with an average cost overrun of more than 26.2%. This indicates the construction industry in general and the building construction in particular in Ethiopia suffered from poor construction management with the highlights given above. Project failures have significant effect on economic as well as the political issues. If projects took longer time than agreed, they required additional resources and budgets for labor, material, machinery and equipment. This affects the budget of other projects and the economy of the country and results in dissatisfaction of the society at large. Thus Projects have to be completed within the time frame, cost and desired quality so that to achieve their objective and satisfy stakeholders and users as well. In other word they need to have strong contract administration.

According to the study made by the Ministry of water of Ethiopia, (2015), the government of Ethiopia, under its latest Growth and Transformation Plan (GTP II), envisions transitioning from a developing country to a middle-income country by 2025. Ethiopia's ability to achieve this ambitious goal in such key sectors as agriculture and industry is significantly constrained by current challenges in the power sector. Although Ethiopia is endowed with abundant renewable energy resources and has a potential to generate over 60,000 megawatts(MW) of electric power from hydroelectric, wind, solar and geothermal sources, currently it only has approximately 4,238.07 MW of installed generation capacity to serve a population of over 100 million people. The current GTP has a new target to increase generation capacity to over 17,000 MW by 2020, with an overall potential of 35,000 MW by 2037, which would help sustain Ethiopia's continued economic growth and enable it to become a regional renewable energy hub in East Africa. The Government of Ethiopia has determined that private sector investment is critical to achieve these aggressive power generation targets, but acknowledges that it lacks sufficient experience with Independent Power Projects (IPPs).

According to African development Bank (2008), Gibe III is one of the projects that are implemented by EEP and funded mainly by own resources (85%) and partially by the loan secured from Chinese government (15%). The purpose of the projects is to upgrade the electricity power generation capacity of the country and thereby to add its own contribution to the economic development of the country.

The aim of this study thus to assess the contract administration practice, to assess their effectiveness and to explore the factors that affect the contract administration practice in the

context of EEP comparing with the international contract standards (FIDIC) and to forward recommendations

1.2. Profile of the organization

EEP was established in 2013 by the council of ministers regulation no. 302/2013 as a result of restructuring the earlier Ethiopian Electric Power Corporation in to 2 different companies. Currently the company engaged with the production and transmission of electric power throughout the country and to some east African countries. It has a vision to be the first class providing quality electric power to the country and regional interconnected as competitive export industry there by realize reliable power infrastructure that feeds the middle income economy plan. And has a mission to provide adequate and quality electricity generation and transmission through continuous improvement of management practices responsive to the socio economic development and environmental projection need of the public by implementing the construction of power plants transmission lines, substation, operation and energy wholesale. (www.eep.gov.et)

Currently the EEP has one generation system ICS (Interconnected system) of 13 hydro power, 6 Diesel standby, 1 geothermal and 3 wind farm plants with installed capacity of 3,807.60 MW, 99.17 MW , 7.3 MW and 324 MW respectively. This brought a total capacity of 4,238.07 MW. The electric energy generated from the major hydropower plants is transported through high voltage transmission lines rated 45, 66, 132, 230, 400 and 500 KV. The total length of the existing transmission line is about 19,874.42 km. (www.eep.gov.et).

According to the term of reference by African development bank (2008) , Gibe III hydropower project is one the hydropower projects under EEP which is located about 155 kms downstream from Gibe II Power House. Situated 470 kms south of Addis Ababa (via Shashemene), in Welayta-Dawro Zones. Gibe III is the largest hydropower project in Ethiopia. This power plant will be the third project on the Omo-Gibe river basin, which has an operational 184 MW Gibe I plant and a 420 MW Gibe II plant. GIBE III consists of a hydropower scheme with an installed capacity of 1,870 MW and is comprised of a 240 m RCC dam, a surface powerhouse has 10, with 187 MW capacity Francis turbines . It is the highest power generating project in the country with an annual generation capacity of 6,500 GWH energy.

According agreement no 1 of Gibe III project, For the construction of Gibe III, the earlier owner the Ethiopian Electric Power Corporation ("EEPCo"), the State owned electricity

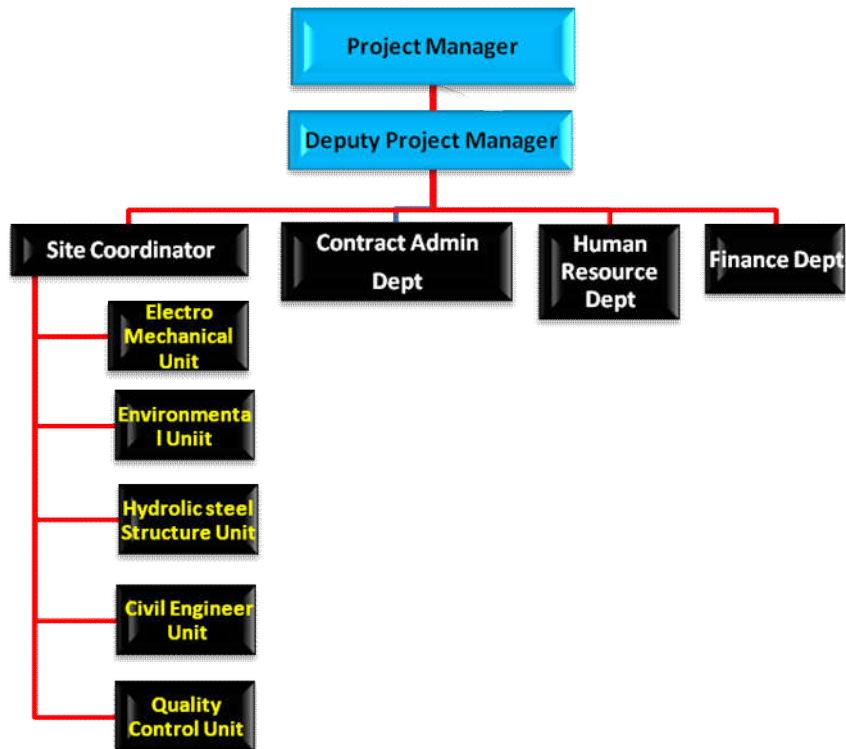
utility, has entered into an Engineering, Procurement and construction turnkey contract with Salini Costruttori S.p.A. (Italy) on a sole source basis. Salini Costruttori S.p.A. also constructed Gibe I, Gibe II and the Beles hydroelectric power project.

Based on the contract agreement no 1 and 2 , The construction of the dam was built by Salini, an Italian dam construction company and by Chines Dong Feng Electric Company, the project contract administration and supervision is mainly done by the project and to some extent by the consultants in which they have advisory role. As per the project management plan the project was started on, 2006.

The main objective of the project is, to meet the increasing demand Ethiopia has embarked on an accelerated electrification program to increase the low rate of population access to electricity from 25% to 50% and to generate foreign currency by exporting electricity to Djibouti, Kenya and Sudan.

Based on agreement no 1 to 6, The project was completed with a cost of Euro1.29 Billion and ETB 6,362,798,234.41 without incorporating the expected estimated payment of ETB 40,000,000.00 with a period of 10 years but planned to be completed with a period of 7 years. 85% of the construction cost was financed by the Ethiopian Government and the rest 15% was secured from the loan secured from the Chinese Government.

Figure 1.1- Organization structure



1.3. Problem statement

Partha, (2015), by his research indicated that, in many countries every year a major portion of government budget is allocated for the investment of different public infrastructures as per requirements of diversified projects.

According to the study by Kanchana¹, Niranjan, Arun (2018) Contract management is the process undertaken to maintain integrity of the contract and ensure that the roles and responsibilities contractually demarcated are fully understood and carried out to contracted standard. Construction industry is a most complicated industry which is constantly facing uncertainties. The salient features of any contract including delivery schedule, quality specifications, regulations and standards are to be monitored by a good contract management team.

According to California department of general service, (2004) weak contract administration can cause the project to violate terms of a contract, which can lead to penalties, fines and potential lawsuits, also make projects caught up in daily routines and lose sight of contract renewals which makes projects operating under expired contracts, and makes projects in having poor reporting relationship with the contractor and leads the two parties losing benefits of monitoring, the benefits of the agreement and developing any changes to make when the agreement comes up for renewal. Each move made with a contracted entity should be dictated by the good contract management to avoid the high cost of the contract penalty clause.

Monczka, (1998) on the other hand argued that a successful contract administration helps the project in effective working relationship with the contractor, appropriate communication between the parties, good reporting framework that provide useful and regular information, appropriate sanction for poor performance, team performance and leadership, joint problem solving and etc. Besides to create an effective contract administration system, it is vital to address the administration problems that affect it.

Tadesse, Zakari, Zoubier , (2016) in their research cited Zewdu, (2015) and Mengesha, (2004) which argued that, regardless of its major role, the construction industry in Ethiopia, like in other developing countries, faces many challenges in its practice. Some of these challenges are project overruns, poor quality, inappropriate procurement systems, and a failure to cope with project requirements and the inability to adopt best practices. They further indicate that, the performance of construction projects against what was planned can

be measured and evaluated using a large number of performance indicators that could be related to various dimensions (groups) such as time, cost, quality, client satisfaction, business performance and safety. Besides time, cost and quality are the three predominant performance evaluation dimensions and they are the three basic and most important performance indicators in construction projects. They also stated that the application of sound Project Management and Contract Administration practices provides construction project stakeholders with the means to meet their objectives.

Solomon, (2019), in his study presented on the international anti-corruption conference held in Seoul, Korea stated that, in the post EPRDF regime, Ethiopia losses a billion dollars by a high profile corruption in connection with Government procurement contracts. Ethiopian telecommunication and Ethiopian Electric Power Corporation are among some of them which are affected by it. The embezzlement in the contract of electromechanical part of EGRD (Ethiopian Grand reinesance dam) is an example for this, which was an ETB 25 billion contract, which was planned to be installed by METEC. Among this contract price, 65% of it was collected by METEC and only 25% of the contract was completed. The rest 40% was affected by the embezzlement. This can be a result of barriers for poor contract administration practice which leads projects to cost overrun, time delay and poor quality outputs. For a country like Ethiopia which covers a quarter of its annual budget through loans and grants managing and controlling such capital investments has to be a priority. So, effective contract administration is a major tool in controlling such mega project contracts from such misappropriations.

Furthermore, very few studies have been done so far on contract administration practices of construction industries in Ethiopia i.e, Meron, (2018) and Hirut,(2017) ; As per the information got from the EEP office, with regards to the power sector no researches have been done so far in relation to contract administration practices. This is an indication for the presence of a research gap in the area of power sector regarding contract administration practice. So, the researcher initiated to fill this research gap by conducting a research on the assessment of the practice of contract administration in EEP, Gibe III Hydro power project, which is the highest power generating project in the country.

1.4. Objective of the study

General Objective of the Study

The general objective of the study to assess the practice of contract administration in EEP HPP projects.

Specific Objectives of the Study

In order to achieve the broad objectives this study will address the following specific objectives.

- 1- To assess the effectiveness of contract administration practice in EEP HPP projects.
- 2- To explore the factors affecting (the challenges) in the implementation of contract administration practice in EEP HPP projects..
- 3- To assess the contract administration practices in different stages and Milestones of the project lifecycle of EEP HPP projects.

1.5. Research question

Therefore in order to achieve the above broad objectives, the researcher developed three-research question

- 1- To what extent was the contract administration practice in EEP Gibe III HPP effective?
- 2- What were the factors affecting (the challenges) in the implementation of the contract administration practice of EEP Gibe III HPP?
- 3- What does the contract administration practices look like at different stages and Milestones of the project life cycle?

1.6. Scope of the study

This study was conducted in EEP, Gibe III Hydroelectric power project, even though there are different Dam projects under EEP. So, the scope is somewhat limited. To make the study to be manageable and effective, the researcher delimited the study geographically in Addis Ababa in Ethiopian Electric Power as case study of GIBE III HPP projects was the only research case study chosen with time constraint consideration and project size and budget considerations. The scope is also limited to the extent of identifying, assessing and interpreting the practice of contract administration in particular to Ethiopian Electric Power by triangulating with literature associated with contract administration.

1.7. Limitation of the study

This study focuses on the assessment of contract administration practice in EEP HPP with reference to the Gibe III Project. While conducting a study on the contract administration practice, the study was considered only the practice and its application in the EEP with

regards to Gibe III HPP, thus the scope can be somehow limited. However, the nature of the HPP projects built in EEP and their contracts are similar with the Gibe III HPP, thus it is supposed that this study can fairly reveal the contract administration practice of the EEP.

Besides, due to the nature of the study of the contract administration practice of HPPs needs knowledge and specialization regarding the nature of the construction, the focus of the primary data source is on the staffs and management members who have deep knowledge regarding the contract administration practice and who are engaged in the construction activity. As a result the number of staffs involved in the study is limited to 12 including the management members.

Time was another limitation of the study since a short time schedule has been provided for the completion of the project work.

1.8. Significant of the Study

The primary use of this research is to provide constructive feedback about the performance of the existing contract administration practices with reference to EEP, Gibe III Hydro power project. The organization might be able to see the performance of contract administration practices, and learn some lessons and build some corrective measures for the weaknesses based on recommendations forwarded. Further, the study will be helpful for different stakeholders who have an interest on the project, such as government agencies.

Finally, the study might have much importance for those who are interested to conduct further study on the related issues; it may be used as an indication.

1.9. Organization of the Study

This project work is divided into five main chapters. Chapter One is about the back ground of the study which explained the back ground information of the study, the statement of the problem which explained about the research gap and justifies the problem areas which needs further research, the research questions, the significance, the limitation and the organization of the study are other topics which are covered by this chapter. Chapter Two is comprised a theoretical review and an empirical study of the existing literatures of contract administration. It is an evidence for the contract administration practice. The Third Chapter focuses on the research methodology including the population, methods of data collection and the research instruments used. Chapter Four is a detailed analysis of data collected and presentation of

information with the help of statistical models. The Fifth Chapter is the final part of the research and focuses on the findings, conclusion, and recommendations.

1.10. Definition of Terms

Claim: Is a compensation requested by the contractor for suffering delays and/or incurs cost as a result of a failure by the Employer.

Contract: is an agreement made between two or more parties whereby legal rights and obligations are created which the law will enforce’.

Contract Administration: is the process of systematically and efficiently managing contract creation, execution, and analysis for the purpose of maximizing financial and operational performance and minimizing risk.

Effective Contract Administration: is about ensuring the meetings of agreed terms of the contract.

Milestone: Is the time by which some specific project deliverable has been achieved.

Turnkey contract: is a contract where the essential design emanates from, the contractor and not the employer, so that the legal responsibility for the design, suitability and performance of the work after completion will be made to rest with the contractor.

Variation: is any change to the Employer’s requirements or the works.

Literature Review

2.1. Contract

According to Thomas and Philip (2009) ‘A valid contract is an agreement made between two or more parties whereby legal rights and obligations are created which the law will enforce’. Contracts have no existence outside a legal system. They are a product of the law. They are promises that the courts will enforce, usually by an award of damages for breach. There can be agreements which may be ‘morally’ or ‘socially’ binding (binding in conscience), for example an agreement to come to a party, but these are not contracts. Contracts cannot be considered in isolation. Although a contract may not create an obligation, there can still be an obligation under tort, statute or the doctrine of unjust enrichment. A contract is a legally-binding agreement which recognizes and governs the rights and duties of the parties to the agreement. According to Ryan and Fergus (2006), there can be parallel obligations owed under the areas of civil law obligations. Hence the efficient contract administrator must have knowledge of more than contract law. The efficient contract administrator must always be conscious of the law of obligations generally.

Contract=Agreement + Enforceability at law

2.1.1- The elements of a contract

Seven elements are generally regarded as essential to the validity of a contract: There must be an intention to create a legal relationship, there must be offer and acceptance, There must be valuable consideration, the parties must have legal capacity to contract, there must be a genuine consent by the parties, the legality of the object of the agreement must be ensured, the terms of the contract must be sufficiently certain. Ashley,(2018).

Intention

The phrase “meeting of the minds” is typically applied to mutuality or intention and simply means all the parties involved in the contract actually intended to create a valid, enforceable contract. Ashley,(2018).

The first important factor in the formation of a contract is the necessity for an intention by the parties to create legally binding obligations. If the parties do not intend their agreement to constitute an agreement enforceable at law, there is no contract. The intention may be expressed or implied. Courts do not consider all agreements to be intended as legally binding. Generally, a distinction is made between commercial agreements, which are presumed to be legally binding, and domestic or social agreements, which are not so intended. Thomas and Philip (2009)

Offer and acceptance

Based on Ashley, (2018), an offer exists when one party brings something of value that they wish to exchange for another. Offers are the terms that make up the contract. After an offer is presented, it can be accepted or rejected. Acceptance simply means that the offer presented was accepted.

Consideration

Thomas and Philip (2009) explained that when a party gets into an agreement promises to do something with someone that someone must get “something” in return. This “something” is defined as consideration. In other words, Consideration is something of value (it need only be a promise), which is given by each party to the other at the time of making the contract. This implies that, there must be a benefit and detriment accruing to the party making the promise. Consideration is also referred as the price paid for the promise.

Capacity of parties

According to Ashley, (2018), everyone cannot be eligible to form a contract; here the issue of capacity can be raised. Capacity means that a person has the legal ability to sign the contract. It can involve mental capacity, as in the ability to understand the contents of the document (i.e. a sound mind). Ashley also explained that capacity can include individuals with cognitive impairments, individuals who are incapacitated, and more. This does not include individuals who fail to understand the document for no legitimate reason. For example, someone can't claim they did not have the capacity to sign a contract simply because they didn't understand a word used in the document. Capacity can also explained as someone's ineligibility due to the person's age, declaration of bankruptcy, or past or current incarceration.

Consent of the contracting parties

According to Thomas and Philip (2009), in a contract the parties have to voluntarily consent to make a legally binding agreement. An 'agreement' made at the point of gun is made under duress and is not a contract. Duress need not be physical force.

Legality of object

Ashley,(2018), argued that, Legality is about whether the subject matter of the contract is legal or not. This element may seem do not have importance; however, it simply prevents individuals from trying to form contracts involving unlawful promises or consideration. For instance, in any countries selling foreign currencies in a black market is illegal so, an individual would likely be unable to form a contract where they pay someone' in exchange for the currencies.

Certainty

Contract cannot exist if they lack sufficient certainty and completeness. For example, a contract to build an office building for some amount of money, without any agreement on the size, location or anything else to identify better what is to be built for that amount of money, would be void. Thomas and Philip (2009).

2.1.2- Types of a contract

There are a range of contract types which may be attractive on a particular project

Fixed Price Contracts -

According to McMullen,(2019), this kind of contracts required the contractor to tender on and make him to take the risk in relation to, the price of the works. The Contractor, irrespective of the actual cost of the works, will be entitled to be paid no more than and no less than the Contract Sum, as agreed between the parties prior to commencing the works.

Cost plus Contract

According to McMullen, (2019), in this type of contract there is no risk, as to cost, borne by the Contractor. Both the Contractor and the Employer agreed, at the time entering into the Contract, that the Contractor will perform the works, and that the Principal will pay for those works, on the basis of the actual cost of the Works to the Contractor, plus an agreed fee,

usually an agreed percentage of that sum (or some other agreed incentive over and above the actual cost of the works).

Design & Construct Contract

This type of contract requires the Contractor to tender on the works described in the design brief (prepared by the employer), and tender not only for the construction of the works described in that design brief, but also for the completion of the detailed design, consistent with that design brief. It has the potential to reduce the overall cost of construction to the Principal. McMullen, (2019).

Construction Management Agreement

According to, McMullen,(2019). This type of agreement is similar in most respects to a project management agreement, except for, the services to be provided by the Construction Manager are restricted to construction activities only (rather than, for example, design activities, site acquisition, leasing activities)

Turnkey (EPC) Contracts

Wallac, (1984), argued that A Turnkey contract is a contract where the essential design emanates from, the contractor and not the employer, so that the legal responsibility for the design, suitability and performance of the work after completion will be made to rest with the contractor. The word “turnkey” is often used interchangeably with “fixed price contract”, or what are in fact fixed price contracts are wrongly called “turnkey” contracts on particular projects, thereby giving rise to the confusion.

A turnkey contract is one in which the employer and the Contractor agree on a fixed Contract Sum to be paid upon completion of the works to a particular standard and/or performance criteria, and in relation to which the Principal does not participate in any way in the actual performance of the works but, at the end of the works, is invited to inspect the works and, subject to the works being adequately constructed and performing to the requisite criteria, the employer then paying the full amount of the Contract Sum and taking over the works. John, (2019)

2.2. Contract Administration

According to , Arrow, Linarelli, Wallace (2000), “Contract management” is similar to “Contract implementation”; that it is the process that enables both parties to a contract to

meet their obligations in order to deliver the objectives required by the contract. It involves creating a good relationship between the employer and the contractor. Contract administration continues throughout the life of a contract and involves managing proactively to anticipate future needs as well as reacting to situations and/or risks that may arise in the course of executing the contract. The main target of Contract management may also involve aiming for continuous improvement in performance over the lifecycle of the contract and to obtain the services as agreed in the contract and achieve the value for the money spent. In other words it is about optimizing the efficiency which measures how productively the resources are used, effectiveness through assessing the results achieved by the service and; economy for the price paid for the resource used by service.

According to the Government of federal procurement of USA, (1994), Contract Administration is the process of systematically and efficiently managing contract creation, execution, and analysis for the purpose of maximizing financial and operational performance and minimizing risk. Contract administration involves activities which are performed by the government officials after a contract has been awarded to determine how well the government and the contractor performed to meet the requirements of the contract. Contract Administration involves all the dealings between the government and the contractor from the time the award of the contract until the work or termination of the contract administration. So, its main focus is obtaining supplies and services, of requisite quality, on time, and within budget.

2.2.1- Effective Contract administration

CIPS Australia (2005) defined effectiveness as the extent to which objectives have been met. It is referred as doing the right thing. Measuring effectiveness is simply to measure results based on goals. This is the degree to which objectives are achieved and the extent to which targeted problems are solved. Contract administration is concerned with the mechanics of the relationship between the customer and the provider, the implementation of procedures defining the interface between them, and the smooth operation of routine administrative and clerical functions. Effectiveness of contract management is about ensuring the meetings of agreed terms of the contract. Contracts fail due to misunderstandings, misinterpretations, accountability, responsibility and failure to accurately describe the contract scope. So, effective contract administration exists when the arrangements for service delivery continue to be satisfactory to both employer and contractor, expected business benefits and value for

money are being realized, the employer is co-operative and responsive, the contractor knows its obligations under the contract, disputes are rare and there are no surprises for either party ANAO, (2007).

2.2.2- Components of an Effective Contract Administration

According to Russel, (2003), Employers can avoid risks which are related to the contract through, developing an effective contract administration practice. The components of an effective contract administration practice are detailed below.

Training in Contract Administration

Giving Training on contract administration increases the likelihood that individuals will monitor contracts reliably by giving them the appropriate background knowledge related to contracts. Russel (2003).

Written Policies and Procedures

According to Russel (2003), written policies and procedures serve as a guide to agencies and their personnel in ensuring a consistent, high-quality contract monitoring process.

Contingency Plans

The effect of not having contingency plan by the employer can be visible when the contractors default on their obligations and may pay additional costs for taking back services. The following can be taken as an option for a default contingency plan: contracting with the next lowest bidder from the original solicitation; using another current vendor; delivering the service in-house; and contracting with another government entity. Russel (2003)

Communicating Clear Expectations to contractors

This is about communicating the contractors regarding what is expected from him before and after the execution of the work. By clearly stating contract requirements and performance goals, the employer reduces the potential for poor performance. Russel (2003)

Organized Contract Files

Contract files should be organized so that someone could reconstruct and understand the history of the contract in the absence of the contract administrator. Contract files should hold all the information necessary to know what was expected and received under the contract. Russel (2003)

Payments Linked to Satisfactory Performance

This is concerned about submitting the required programmatic reports by the contractors before requesting a payment. The Programmatic reports should be directly related to the terms of the contract. Russel (2003)

Regular Programmatic Reports from contractor

The contractor should submit programmatic reports on a scheduled basis which can be used for measuring performance. Programmatic reports should require information related to the performance measures (outputs and outcomes) in the contract, as well as any other deliverables. Russel (2003)

On-Site Monitoring

Onsite inspections by the employer is necessary to check the status of the project to ensure all terms of the contract are being fulfilled. On-site monitoring visits are most effective when based on a specific methodology or a checklist of review tasks. On-site monitoring visits may not be necessary for all contracts. Russel (2003)

Dispute Resolution Procedures

The Employers should notify the problems and has to set a timetable for resolution to the contractor in written form. If problems do not get resolved, the employer should notify the dispute resolution committee or the arbitration committee to compel the contractor to adequately comply with contract terms (i.e., financial consequences, contract cancellation). Russel (2003)

Closeout Procedures

At the completion of the project, formal written closeout procedures are required in order to check important elements are not overlooked. The use of a checklist of closeout procedures helps to assure that all actions have been completed. Russel (2003)

Post-Contract Review

When contract periods completed, employers should evaluate the contractor's performance and their own method of monitoring. Russel (2003)

2.2.3- Contract Management Challenges

Based on the study made by Nancy (2017), contract management challenges are as follows:

Work is not what is expected

Defining and clarifying expectations in the contract is the best way to avoid the challenge of work not being what is expected. Business requirements are usually documented in a Statement of Work. Involve people at all levels of the business in establishing requirements and writing the Statement of Work, including end users. Avoid use jargon words. Define all business terms and acronyms. Nancy (2017).

Budget or Timeline is exceeded

In order to avoid time and cost overrun, the scope must be clearly defined, ensure that the negotiated budget and timeline are realistic, establish a method by which to track the budget and timeline to ensure that you are on target. Nancy (2017).

Lack of Resources with the right skills

An organizational plan should include an empowered project teams, who can carry out the work needed on both sides of the contract as part of the contract requirements. In the contract, define titles, if not individuals, to work on the project and state skills or certifications that may be required. The Organizational Plan will expand on this, including an organizational chart of all project team members. Nancy (2017).

Project status is unknown

State in the contract that a Communications Plan will be put into place. This plan should include what is required in terms of status updates and routine meetings, as well as address how communication will occur with other parts of the organization, especially those people working on dependent projects. Nancy (2017).

Change occurs

The best way to prepare for change is structuring the contract to ensure that risks are identified and reviewed weekly by the team. The contract should include requirements to assess risk and identify solutions to mitigate risk. In addition, a formal change control process should be included in your contract. Nancy (2017).

Payment is disputed

Define methods and processes in your contract to reward/penalize based on compliance with the contract. Define methods to measure progress. Set exact acceptance criteria. This clarity in the contract will ensure that both parties understand what is expected for acceptance and payment. Nancy (2017).

2.2.4- Roles and Responsibility of a contract administrator

According to, Terry Northwood (2011), The responsibility of the Contract Administrator is , administering the terms of the contract between the employer and the contractor. The CA will act as the agent of the employer in some circumstances but will be required to make impartial decisions in others. The obvious contradiction of this ‘dual’ role can give rise to difficult issues. The two dual roles of the CA described as: an agency role, and a decision-making role. The main duties of the CA are chairing meetings, periodically inspecting the works, giving instructions, including variation or change orders, determining any applications for extensions of time by the contractor, authorizing interim payments to the contractor, certifying the date of completion, settling the adjusted contract sum (final account) etc.....

2.3. Construction contracts

According to Thomas and Philip (2009), construction contracts are a set of written conditions including issues related to construction contracts i.e progress payments, construction program, variations, etc. Many organizations have published their own set of standard general conditions of contract for various types of contract. Sometimes they are published with a view to earning profits from the sale of copies and licensing of their use. They are also published by an organization with a view to protecting the interests of its members by assigning risks to clients of members rather than to members, or by the principal with a view to assigning risks to contractors. General conditions of contract vary greatly in fairness, quality of drafting and matters covered.

2.4. General conditions of a contract

Risk Allocation

According to Burke, (2003), Due to their unique nature of construction projects, they are full of risks which may exert impacts, to some extent, upon the cost, time and quality. To be successful projects have to have, a sound risk management system that usually comprises

identification, analysis and response so that when the risks do eventuate they can be overcome. So, based on this the main tasks of all the project participants, including employers, contractors, professional advisors and subcontractors, is to identify the discrete sources of risk, develop a risk management strategy as part of their risk management system Flanagan and Norman, (1993) and also cultivate the capability of carrying out such.

Flow of Information

Site meetings

The main purpose of site meetings is to discuss past performance, identify the main problem areas and reasons for problems, agree on a new short-range schedule, and co-ordinate the activities of all the parties including subcontractors. Thomas and Philip (2009),

Contract documents

Contract documents like drawings, specifications and bill of quantities are the link between the designer and the contractor. On signing the contract, the contractor will be issued with multiple sets of documents i.e the drawings, specification, bill of quantities, if any, and other written information required by the contract to be supplied to the contractor. All documents should be checked by the contractor for any discrepancies, errors or omissions and any that are found should be reported to the superintendent in writing. Before signing every document should be checked for errors and omissions. Thomas and Philip (2009).

Bill of quantities

According to D. Atkinson (2000), Bills of Quantities must include briefly described list of items of work. The Bills also provide a measure of the extent of work and this allows the work to be priced. The measure may be a single item or number, dimension (linear meter, square meter, and cubic meter), time (hrs, weeks) or weight.

Cash flow statement

Contracts require future estimated cash flows of the work by the contractor. Based on this employers can adjust their financing. So, contractors should take due care and the estimation has to be accurate as possible. The estimating of cash flow may be based on the priced bill of quantities and the construction program or on standard S-curves. Whatever the predicted cash flow, the principal is still obliged to pay all progress claims. An exception is where there is a special condition fixing the maximum amount of progress claims. Thomas and Philip (2009).

2.5. The contract framework

According to Thomas and Philip (2009), the contract framework includes clauses covering: The agreement (Scope of works, what is to be done, who is involved, Times), Documents (Financial arrangements, Payments, Liquidated damages, Insurance), Management arrangement (Responsibilities, Relationships, subcontracts), legal arrangement (Contract conditions, legal courses of action) and administration (procedures).

2.6. Responsibilities of contractual parties

Principal

According to Thomas and Philip (2009), the main responsibility of the employer is making the site available to the contractor on or before the date for possession, which helps the contractor to start work and carry out the work in accordance with the requirements of the contract, paying the contractors as per the contract the accuracy of all information given by the principal concerning the site, including surveys of the site, services and land titles, and physical site conditions. After taking possession of the works at the date of practical completion, the principal must also allow the contractor reasonable access to the site for making good defects. The employer must ensure that there is a consultant at all times and that the consultant acts honestly and fairly and within the prescribed times or a reasonable time. The employer has an obligation to indemnify the contractor in respect of: Damage that is the unavoidable result of the construction of the works in accordance with the contract and Claims in respect of the right of the principal to construct the work under the contract on the site.

Contractor

The contractor is responsible execution and completion the works in accordance to the contract documents and in accordance with any directions of the consultant, and must bring the works to practical completion by the date for practical completion. The contractor must bring security in the form stated in the contract. Neither party to the contract can, without the written approval of the other, assign the contract. The contractor is not prohibited from subcontracting the work but is liable for the acts, defaults and neglects of any subcontractor. Thomas and Philip (2009).

The contractor is responsible for all construction means, methods techniques, sequences and procedures employed in the execution of the works and for co-ordinating all portions of and

the execution of all portions of the works. The contractor is responsible to complete the project in a stated time in the contract and also responsible for the quality of work . Thomas and Philip (2009),

Consultants

Consultants are agents who are assigned to administer the work. The powers and functions of the consultants will depend on the agreement between him and the employer. The consultant must be careful not to breach that agreement and not to exceed the powers delegated to him by the employer. Thomas and Philip (2009).

2.7. Time in contract

All contracts include a time element which is a period for completing the work which are established by the employer during tendering time. This time may be finite, no extensions allowed, or it may be extended due to changed circumstances after the contract is commenced. According to Davenport (1991b), If there is not provision for extension of time that is in broad enough terms, the principal may not be able to recover liquidated damages for delay. The word for ‘practical completion’ is different from ‘completion’ in the point of view of preserving the principal’s right to liquidated damages.

Defects liability period

The term defect represents for the deficiency of the standard & quality of work. This is a period that begins on the date of practical completion and ends on the day on which the defects liability or a period in which the contractor can get the opportunity to remedy defects. Were it not for the defects liability period, the principal could sue the contractor for damages for any defect. The defects liability period is there for the protection of the contractor. Some contractors make the mistake of thinking that they are not liable for defects that are not discovered during the defects liability period. Thomas and Philip (2009).

Notification of delays — extension of time

Delays can be caused by internal or external factors, i.e the contractor, or by the principal, or by some other means. The last are frequently called ‘neutral delays’ or ‘delays caused by neutral events’. Thomas and Philip (2009), Examples of delays caused by the contractor are: financial problems, poor management, job-related industrial disputes, late subcontract letting, materials-handling delays, subcontract problems, poor management of resources. Examples

of delays caused by the employer are: unavailability of site, late instructions, variation orders, late approvals, design changes, consultant-related problems. Examples of delays caused by neutral events are: weather, industry-wide strikes, latent conditions, acts, regulation, statutory and other bodies, Suppliers of materials.

2.8. Payment to a contractor

Contract price

In It is a price which is listed in the contract for the goods and services in return. Whether that price is reasonable or not is irrelevant. A contractor who tenders a price that is unprofitable is still bound to complete the work for that price. The price for any work will be a lump sum or a rate. Thomas and Philip (2009).

Progress claim

According to Thomas and Philip (2009), As the name indicates it is a claim which request the contractor for the work executed. This is usually based on a monthly intervals but it can be at stages of the work or on particular dates. The contractor must submit to the consultant a claim for payment showing the amount claimed by the contractor, supported by evidence of the amount due and such information as the consultant may reasonably require. It is usually the value of work performed to the date of the progress claim. This value may include the value of variations and amounts claimed for damages. It also include a clause called a 'cost adjustment' or 'rise and fall' clause.

Final payment claim

These claims are requested finally after all activities are completed as per the contract. This claim would commonly show in detail all adjustments to the contract price and the amount claimed by way of release of retention moneys or security. If the contractor has been making progress claims, a final claim need be no different in format than a progress claim except for the addition of the word 'final claim'. Thomas and Philip (2009).

2.9. Liquidated damages

This is a payment for damages to the employer by the construction failure to not completing the project as per the contract. The damage may relate for receiving rents from tenants of the works. The amount of the rents lost would be the damages for delay. The damage also be

based on the actual loss and must be based on the agreement between the contractor and the employer. The law permits the parties to agree ahead of time on the amount of the damages for delay. If they agree on an amount, then the damages are said to be 'liquidated damages'. Thomas and Philip (2009).

2.10. Variations

FIDIC, (1999), states "Variation" as any change to the Employer's Requirements or the Works. Oloo, Githae, Munala (2015) cited Ashworth (2001), The term 'variation' is a combination of additions, omissions or substitution of any work : the alteration of any kind of standards of materials or goods; the removal from site of work; materials or goods that were formerly in accordance with the contract but which have been changed and change in the circumstances in which the work is carried out such as , access and use of site; limitations of working space ; limitations of working hours and changes made to sequencing of works. Variations are directed (or approved) by the consultant giving a written or oral notice to the contractor to do one or more of the following things: to Increase, decrease or omit any part of the work under the contract, Change the character or quality of any material or work, Change the levels, lines, positions or dimensions of any part of the work under the contract., Demolish or remove material or work no longer required by the principal. The contractor is bound only to execute a variation that is within the general scope of the contract. The superintendent should not direct work that is so radically different from the work originally specified that it cannot be said to be within the general scope of the contract. However, if the superintendent does so and the contractor carries out the variation, then the principal must nevertheless pay the value.

2.11. Adjustments

According to Thomas and Philip (2009), these are extra payments which can be made to the contractor for the errors in quantities in the bill of quantities, discrepancies in contract documents, changes in the law, latent conditions, finding of fossils, errors in setting out the works, extra tests, change in order of work, suspension, Variations. In each instance the appropriate provision of the general conditions provides that the adjustment will be valued.

2.12. Contract Insurance

The contractors are responsible for indemnifying :Loss of damage to property of the principal and Claims by any person against the principal in respect of personal injury or death or loss

of or damage to any property arising out of or as a consequence of the carrying out by the contractor of the work under the contract. If the hand of an employer is there on the damage, the contractor's liability will reduce to some extent. Thomas and Philip (2009).

2.13. Defective work

According to Thomas and Philip (2009), if the superintendent discovers defective work, the superintendent can: reject the work and direct its correction, order a variation and accept the work in its defective state.

2.14. Disputes

If there is any dispute issues between the constructing parties (the contractor and the employer), both parties have to submit their detail claim issues and reasons for rejection by the other party to the consultant for decision making. Then the consultant must then give each party a written decision on the dispute. Most standard forms of construction contract have a similar dispute resolution procedure. Some require the parties to attempt mediation. If either party is dissatisfied with the decision of the consultant, the dispute may be referred to arbitration. Arbitration is the reference of a particular matter in dispute to the decision of one or more persons. If the parties cannot agree on an arbitrator, then: either party may request the person to nominate a single arbitrator. If these mechanisms fail, the Supreme Court can appoint an arbitrator. An arbitrator must not be an employee of the principal or the contractor, a person who has been connected with the work under the contract, or a person in respect of whom there has been a failure to agree by the principal and the contractor. Thomas and Philip (2009).

2.15. FIDIC Contracts

The International Federation of Consulting Engineers (FIDIC, acronym for its French name Fédération Internationale Des Ingénieurs-Conseils) is an international standards organization for the consulting engineering & construction best known for the FIDIC family of contract templates.

The FIDIC Contracts

The Red Book	Used for contracts that the majority of design rests with the Employer.
The Yellow Book	Used for contracts that the contractor has the majority of the design responsibility.
The Silver Book	Used for turnkey projects. This contract places significant risks on the contractor. The contractor is also responsible for the majority of the design.
The Pink Book	Is an adaptation of The Red Book created to fit the purposes of Multilateral Development Banks.
The Gold Book	This is FIDIC's first Design-build and operate contract.

FIDIC Turnkey Contracts (Silver Book)

2.15.1- Delay and Claim Issues

According to FIDIC Sub clause 2.1, If the Contractor suffers delay and/or incurs Cost as a result of a failure by the Employer to give any such right or possession within such time, the Contractor shall give notice to the Employer and shall be entitled subject to Contractor's Claims to: (a) an extension of time for any such delay, if completion is or will be delayed, under FIDIC Sub-Clause 8.4 [Extension of Time for Completion], and (b) payment of any such Cost plus reasonable profit, which shall be added to the Contract Price. After receiving this notice, the Employer shall proceed in accordance with FIDIC Sub-Clause 3.5 [Determinations] to agree or determine these matters. However, if and to the extent that the Employer's failure was caused by any error or delay by the Contractor, including an error in, or delay in the submission of, any of the Contractor's Documents, the Contractor shall not be entitled to such extension of time, Cost or profit.

2.15.2- Employer's Financial Arrangements

According to FIDIC Sub clause 2.4, the Employer shall submit, within 28 days after receiving any request from the Contractor, reasonable evidence that financial arrangements have been made and are being maintained which will enable the Employer to pay the Contract Price (as estimated at that time) in accordance with FIDIC Clause 14 [Contract Price and Payment]. If the Employer intends to make any material change to his financial arrangements, the Employer shall give notice to the Contractor with detailed particulars.

2.15.3- The contractor General obligations

FIDIC Sub clause 4.1 states that, the Contractor shall design, execute and complete the Works in accordance with the Contract, and shall remedy any defects in the Works. When completed, the Works shall be fit for the purposes for which the Works are intended as defined in the Contract. The Contractor shall be responsible for the adequacy, stability and safety of all Site operations, of all methods of construction and of all the works.

2.15.4- Quality Assurance

According to FIDIC Sub Clause 4.9, The Contractor shall institute a quality assurance system to demonstrate compliance with the requirements of the Contract. The system shall be in accordance with the details stated in the Contract. The Employer shall be entitled to audit any aspect of the system. Details of all procedures and compliance documents shall be submitted to the Employer for information before each design and execution stage is commenced. When any document of a technical nature is issued to the Employer, evidence of the prior approval by the Contractor himself shall be apparent on the document itself. Compliance with the quality assurance system shall not relieve the Contractor of any of his duties, obligations or responsibilities under the Contract.

2.15.5- Progress Reports

According to FIDIC Sub Clause 4.21, unless otherwise stated in the particular conditions, monthly progress reports shall be prepared by the contractor and submitted to the Employer in six copies. The first report shall cover the period up to the end of the first calendar month following the Commencement Date. Reports shall be submitted monthly thereafter, each within 7 days after the last day of the period to which it relates. Reporting shall continue until the Contractor has completed all work which is known to be outstanding at the completion date stated in the Taking-Over Certificate for the Works.

2.15.6- Training

According to FIDIC Sub Clause 5.5, The Contractor shall carry out the training of Employer's Personnel in the operation and maintenance of the Works to the extent specified in the Employer's Requirements.

2.15.7- Design Error

According to FIDIC Sub-Clause 5.8, if errors, omissions, ambiguities, inconsistencies, inadequacies or other defects are found in the Contractors documents, they and the Works shall be corrected at the Contractor's cost, notwithstanding any consent or approval, under this Clause.

2.15.8- Time for Completion

According to FIDIC Sub-Clause 8.2 The Contractor shall complete the whole of the Works, end each Section (if any), within the Time for Completion for the Works or Section (as the case may be), including:(a) achieving the passing of the Tests on Completion, and (b) completing all work which is stated in the Contract as being required for the Works.

2.15.9- Extension of Time for Completion

According to FIDIC Sub-Clause 8.4, The Contractor shall be entitled subject to Sub-Clause 20.1 [Contractor's Claims] to an extension of the Time for Completion if and to the extent that completion for the purposes of Sub-Clause 10.1 [Taking Over of the Works and Sections] is or will be delayed by any of the following causes:(a) a Variation, (b) a cause of delay giving an entitlement to extension of time under a Sub-Clause of these Conditions, or(c) any delay, impediment or prevention caused by or attributable to the Employer, the Employer's Personnel, or the Employer's other contractors on the Site.

2.15.10- Defects Liability

According to FIDIC Sub-Clause 11.1 In order that the Works and Contractor's Documents, and each Section, shall be in the condition required by the Contract (fair wear and tear excepted) by the expiry date of the relevant Defects Notification Period

2.15.11- Contract Price and Payment

According to FIDIC Sub-Clause 14.1The Contract Price Unless otherwise stated in the Particular Conditions:(a) payment for the Works shall be made on the basis of the lump sum contract price, subject to adjustments in accordance with the contract; and (b) the Contractor shall pay all taxes, duties and fees required to be paid by him under the Contract, and the Contract Price shall not be adjusted for any of these costs, except as stated in Sub-Clause 13.7[Adjustments for Changes in Legislation].

2.15.12- Application for Interim Payments

According to FIDIC Sub-Clause 14.3, The Contractor shall submit a Statement in six copies to the Employer after the end of the period of payment stated in the Contract (if not stated, after the end of each month), in a form approved by the Employer, showing in detail the amounts to which the Contractor considers himself to be entitled, together with supporting documents which shall include the relevant report on progress in accordance with Progress Reports.

2.15.13- Payment of Retention Money

According to FIDIC Sub-Clause 14.9 When the Taking-Over Certificate has been issued for the Works, and the Works have passed all specified tests (including the Tests after Completion, if any), the first half of the Retention Money shall be paid to the Contractor. If a Taking-Over Certificate is issued for a Section, the relevant percentage of the first half of the Retention Money shall be paid when the Section passes all tests. Promptly after the latest of the expiry dates of the Defects Notification Periods, the outstanding balance of the Retention Money shall be paid to the Contractor. If a Taking-Over Certificate was issued for a Section, the relevant percentage of the second half of the Retention Money shall be paid promptly after the expiry date of the Defects Notification Period for the Section. However, if any work remains to be executed under, the Employer shall be entitled to withhold the estimated cost of this work until it has been executed.

2.15.14- Currencies of Payment

According to FIDIC Sub-Clause 14.5, The Contract Price shall be paid in the currency or currencies named in the Contract Agreement. Unless otherwise stated in the Particular Condition.

2.15.15- Risk

According to FIDIC Sub-Clause 17.4 Employer's Risks are, (a) war, hostilities (whether war be declared or not), invasion, act of foreign enemies, (b) rebellion, terrorism, revolution, insurrection, military power, or civil war, within the Country, (c) riot, commotion or disorder within the Country by persons other than the Contractor's Personnel and other employees of the Contractor and Subcontractors, (d) munitions of war, explosive materials, ionizing radiation or contamination by radio-activity, within the Country, except as may be attributable to the Contractor's use of such munitions, explosives, radiation or radio-activity,

and.(e) pressure waves caused by aircraft or other aerial devices travelling at sonic or supersonic speeds.

2.15.16- Claim

According to FIDIC Sub-Clause 20.1, Contractor's Claims, if the Contractor considers himself to be entitled to any extension of the Time for Completion and/or any additional payment, under any Clause of these Conditions or otherwise in connection with the Contract, the Contractor shall give notice to the Employer, describing the event or circumstance giving rise to the claim. The notice shall be given as soon as practicable, and not later than 28 days after the Contractor became aware, or should have become aware, of the event or circumstance. The Contractor shall also submit any other notices which are required by the Contract, and supporting particulars for the claim, all as relevant to such event or circumstance.

2.16. Empirical Studies

(Meron, 2018) conducted the practice of project contract administration in Ethiopian Investment Commission. The research used descriptive research method. The data collection tools were interview and questionnaires. The sample size of the study was 26 individual who were selected through purposive sampling and the response rate was 100%. The sample size was selected through purposive sampling and a question with an item of 38 was distributed to the team member. The finding of the study revealed that there is lack of cooperation, no follow up on the deliverables, didn't involve the contractor to identify any problems that arises in the contract, no time management of possible problems, not control and manage contract variation and lack of technical skill on the team members. Generally, the result of the research confirmed that there is a problem in the contract administration practice in Ethiopian Investment Commission. Based on the findings the researcher recommended team members to take trainings related with their qualification and position and also there is a need to participate the contractor in the contract administration practice, there is also a need to solve disputes on time that arises in the contract administration practice.

Mayie, (2016), conducted a study on the use of contract management practices on performance of the road construction projects in Wakiso district. The objectives of the study was to examine the role of monitoring intensity in enhancing performance of the road construction projects in Wakiso district; to analyze the relationship between risk management and performance of the road construction projects in Wakiso district; and, to assess the role of evaluation in enhancing

performance of the road construction projects in Wakiso district. A cross-sectional design was employed where both qualitative and quantitative methods were used in the study. The targeted sample size was 132 respondents out of a total population of 241 road construction. The findings of the study indicated that there was a significant positive relationship between monitoring intensity, risk management, evaluation and performance of road construction projects in the study context. The performance of the road construction projects in Wakiso district was more related to the availability and use of resources which include funding, human resources and the basic raw materials used in the construction process which results into delays, cost overruns and poor quality service. Finally the researcher recommended that Wakiso district should commit more resources to evaluation and risk management to realize higher level of service delivery in the road construction sector.

Benard and Wilfred, (2018) conducted a study on examining factors that determine the effectiveness of procurement contract management of selected state corporations in Nakuru County. Specifically the study sought to establish the role of compliance with contract conditions and contract documentation on procurement contract management of selected state corporations in Nakuru County. This study adopted descriptive research design. The target population of this study comprised of 28 procurement staff, 28 finance staff, and 30 management staff from 10 selected state corporations in Nakuru County. Data was collected using a self-designed questionnaire and was analyzed using descriptive and inferential statistics through SPSS 24. Findings reveal that there is a negative and statistically significant relationship between compliance with contract terms and conditions and the effectiveness of contract management. Findings also revealed that there is a positive and statistically significant relationship between the quality of documentation and the effectiveness of contract administration. The study recommends that state corporations should place more emphasis on improving the quality of contract documentation in order to enhance the contract management process.

Ephantu, (2018), conducted a study aiming at assessing the influence of staff competency on effective procurement contract administration and the effect of technology adoption on effective procurement contract administration in public secondary schools in Mogotio Sub-County, Kenya, and; The study adopted a descriptive research design using quantitative approaches. The target population of the study are all principals and their deputies of public secondary schools in Mogotio Sub-County who total (52) individuals. A positive and strong correlation ($R= 0.790$) are found to exist between the variables. The variables of this study only accounted for 62.5% of the variability in effective procurement contract administration in public secondary schools in Mogotio Sub-County, Kenya. The study found that staff competency and budgetary allocation have a statistically significant influence on the effective procurement contract

administration in public secondary schools in Mogotio Sub-County, Kenya. Additionally, the study found that technology adoption has no statistically significant influence on the effective procurement contract administration in public secondary schools in Mogotio Sub-County, Kenya. The findings of this study are of significance to: management/Board of Management of public secondary schools; management/Board of Management of other schools, both public and private; National Government CDF board, and; researchers and scholars.

Barbara, Romzek and Jocelyn (2014) conducted a study on Effective Contract Implementation and Management Using data derived from an initial case of state contracting for social services for the elderly. The article builds a theoretical model to explain variations in the effectiveness of the implementation and management of state contracts. Contracts for complex social services often present unforeseen challenges and administrative consequences that make for difficult transitions for both the state agencies and their nongovernmental contractors. These challenges can compromise the effectiveness of contract implementation and management. A preliminary test, based on the original case plus four additional cases of contracting, suggests support for the model. Successful contracting requires an extraordinary amount of advance planning, negotiation, and ongoing collaboration among contracting partners. The results indicated that contract implementation and management effectiveness can be enhanced by competition among providers, resource adequacy, performance measurement planning, training for state contract managers, careful evaluation of contractors' staff and financial management capacities, and the presence of a sound rationale for the reform.

Ngugi (2017), Conducted a study on factors affecting contract management in acquirement of goods and services in private firms, a case study of Integrated YMR Partnership located at Lion Place, Waiyaki Way, off Karuna Close, West lands, in Nairobi County. The purposes of the study is to establish how supplier assessment procedures, staff proficiency, strategic decisions and technology affect contract management in procuring of goods and services in private organizations. In this study, descriptive research design was used. A target population of the study was 200 respondents. The researcher used a sample size of 60 respondents, that is, 30% of the population which was selected through stratified random sampling technique. Open and closed ended questions contained in the semi structured questionnaires are used as instruments of data collection. According to the study, supplier's evaluation process moved contract management to a higher level and has an effect on it, further the study indicates that staff competency affected contract management to great extent and it is an important factor

which boost morale of the staff and increase productivity, strategic decisions has great effect to contract management and technology has great impact on contract management. The research recommended that supplier's evaluation process should be encouraged in the organization so as to ensure smooth flow of business activities the organization. The management should ensure that the employees have knowledge in staff competency required to carry out the contract management procedures. Proper strategic decisions should be put in place be established, thereby providing a formal mechanism in the organization. There should be use of technology policy that will ensure timely performance of activities in the organization as it improves technological know-how.

Hirut (2017), conducted a study on the assessment of the practices of project contract administration practice of the New Head quarter Design-Build project of Commercial Bank of Ethiopia. The researcher came up with a major research gap of which the effectiveness of DB contract administration on the project's time, cost, quality management and variation of work . In addition, the researcher has further assessed whether this DB project contract Administration has become effective in terms of meeting its objectives of technology transfer and training through the contract administration. The methodology was designed as semi-structured interviews, focus group discussion and site observation, then later descriptive analysis were made. Different kinds of secondary data were also greatly used as triangulation mechanism. The qualitative research came up with a finding that following the legal bindings, keeping confidentialities, having well experienced professionals on the project doing, is leading the undergoing project to be successful so far with regard to the well administered contract. Moreover, the advantage and disadvantage of the DB project contract Administration which has been newly introduced for the country is properly accessed. Hence the researcher recommended to having a clear contract first later on leads to success with a proper follow up & monitoring of a project and all the new technologies implemented in the project have to be disseminated to the local construction industry through various outreach mechanisms; including publication, construction magazines, and seminars.

Table2.1-Summary of empirical studies

Author(s)	Focus of the study	Methodology used	Key findings	Research Gaps
Meron (2018)	Assessing the practice of project contract administration in Ethiopian Investment Commission	Descriptive research; interview method using questionnaires; purposive sampling	Existence of lack of cooperation, no follow up on the deliverables, absence of contractor involvement in identifying problems that arose in the contract, no time management of possible problems, no control and management of contract variation and lack of technical skill on the team members	This study didn't examine challenges as well as contract administration practices at various levels of the project
Mayie ,(2016),	Contract management practices on performance of the road construction projects in Wakiso district	Quantitative data was analyzed using descriptive statistics and Pearson Correlation to examine the relationship between the independent and the dependent variable in the study. Qualitative data techniques such as interviews helped to enhance the data collected.	The findings of the study indicated that there was a significant positive relationship between monitoring intensity, risk management, evaluation and performance of road construction projects.	This study didn't examine the effectiveness , the challenges as well as contract administration practices at various levels of the project
Benard and Wilfred , 2018	Examining factors that determinants of contract management of selected state corporations in Nakuru County.	This study adopted descriptive research design. Data was collected using a self-designed questionnaire and was analyzed using descriptive and inferential statistics.	Findings reveal that there is a negative and statistically significant relationship between compliance with contract terms and conditions and the effectiveness of contract management. Findings also revealed that there is a positive and statistically significant relationship between the quality of documentation and the effectiveness of contract administration.	The study focuses on the influence of compliance on contract management and the influence of contract document on contract management. It doesn't focus on effective contract management and the challenges

				which affect it.
Ephantu, (2018),	Assessing the influence of staff competency on effective procurement contract administration and the effect of technology adoption on effective procurement contract administration in public secondary schools in Mogotio Sub-County, Kenya,	The study adopted a descriptive research design using quantitative approaches.	The study found that staff competency and budgetary allocation have a statistically significant influence on the effective procurement contract administration in public secondary schools in Mogotio Sub-County, Kenya. Additionally, the study found that technology adoption has no statistically significant influence on the effective procurement contract administration in public secondary schools in Mogotio Sub-County, Kenya	Specifically focused on the procurement contract administration practice. It is not based on the construction contract administration practice.
Barbara S. Romzek and Jocelyn (2014)	Assessing the Effective Contract Implementation and Management Using data derived from an initial case of state contracting for social services for the elderly		The results indicated that contract implementation and management effectiveness can be enhanced by competition among providers, resource adequacy, performance measurement planning, training for state contract managers, careful evaluation of contractors' staff and financial management capacities, and the presence of a sound rationale for the reform.	This research is not based on construction projects.

Hirut (2017),	The assessment of the practices of project contract administration practice of the New Head quarter Design-Build project of Commercial Bank of Ethiopia.	This study adopted descriptive research design. Data was collected using Semi-structured interviews, focus group discussion and site observation. Different kinds of secondary data were also greatly used as triangulation mechanism. The qualitative research was used as a research approach.	CBE HQ project on time, cost, quality, variation of work and meeting the objective of technology transfer the DB project is was effective in meeting its project time duration, cost effectiveness and having no variation of work so far but the quality assurance is not certainly known and also it is not becoming effective in technology transfer to local contractors.	The study was done the building construction of a specific bank, which is a onetime activity. But when we compare the nature of the construction is different. The construction of dam is not a onetime construction it is a cascade of different dams. For example Gibe II is a continuation of Gibe I and Gibe III is a continuation of Gibe II. And Gibe IV will continue by the same cascading.
Ngugi(2017),	factors affecting contract management in acquirement of goods and services in private firms, a case study of Integrated YMR Partnership located at Lion Place, Waiyaki Way, off Karuna Close, Westlands, in Nairobi County	Descriptive research design was used, stratified random sampling technique. Open and closed ended questions contained in the semi structured questionnaires are used as instruments of data	According to the study, supplier's evaluation process moved contract management to a higher level and has an effect on it, further the study indicates that staff competency affected contract management to great extent and it is an important factor which boost morale of the staff and increase productivity, strategic decisions has great effect to contract management and technology has great impact on contract management.	The study was based on the factors affecting the contract management of goods and services. It lacks checking the effectiveness of contract administration practice.

Figure-2.1- Conceptual framework for effective contract administration



Source: Own construction based on the Empirical study

Chapter Three : Research Design & Methodology **Research Design & Methodology**

The main objective of this project work is the assessment of the contract administration practices in Gibe III HPP. The aim of the study is to get some qualitative data that can facilitate a conclusion about the practice of contract administration in the project. So, the research design and methodology applied will be as follows:

3.1. Research design

This study adopted a descriptive research design. The descriptive research design attempts to describe the effectiveness as well as contract administration practices at various stages of the project and explores the factors that affecting the contract implementation and administration in EEP Gibe III Project. Since the population was small the study will adopt a census method of data collection to identify the effectiveness of the contract administration practices and the factors that affect the contract administration practices in EEP Gibe III Project..

3.2. Population

The population was the EEP Gibe III staffs, and management members. The population under this research comprises 13 staffs and management members who have direct and indirect relation with the contract administration practice.

3.3. Data collection instruments

In this study both primary and secondary data's are used which were collected from EEP, Gibe III hydro power project staffs and contract documents. So, the main instruments used to collect data are Questionnaires and interviews.

3.3.1. Data Types

Data's are the basic input to conduct meaningful research. In conducting the research the data that are used are both primary and secondary data. The primary data collection methods applied in this research work are both questionnaires and interview .

3.3.2. Interview

According to Kvale (1996) stated that , an interview is “a conversation, whose purpose is to gather descriptions of the life-world of the interviewee” with respect to interpretation of the meanings of the ‘described phenomena’. It adds that an interview is an extendable conversation between partners that aim at having an ‘in-depth information’ about a certain topic or subject, and through which a phenomenon could be interpreted in terms of the meanings interviewees bring to it. Among the different interview techniques the researcher prefers to use an unstructured or open ended interview questions. Gubrium & Holstein (2002) argued that, unlike the structured interview, this kind of interviewing is an open situation through which a greater flexibility and freedom is offered to both sides (i.e. interviewers and interviewees), in terms of planning, implementing and organizing the interview content and questions . Therefore, the interviewer here would be more “keen to follow up interesting developments and to let the interviewee elaborate on various issues” (Dörnyei, 2007)

3.3.3. Questionnaire

Questionnaire design for contract administration of this research helps to extract information on the issues of contract administration practices. The questionnaire used in this research are self developed and contains some open – ended, which need further elaboration and suggestion by the respondent. Whereas, the closed ended questionnaires constructed based on a five-point Likert scale model.

3.3.4. . Document Review

Besides secondary data, data’s are collected from the contract documents which may help to strengthen the responses given through questionnaires and interview. Document review is a way of collecting data by reviewing existing documents. Documents may be hard copy or electronic and may include reports, program logs, performance ratings, funding proposals, meeting minutes and newsletters. Document analysis is a form of qualitative research in which documents are interpreted by the researcher to give voice and meaning around an assessment topic (Bowen, 2009).

According to (O'Leary, 2014) , There are three primary types of documents:

- **Public Records:** The official, ongoing records of an organization's activities. Examples include mission statements, annual reports, policy manuals and strategic plans.
- **Personal Documents:** First-person accounts of an individual's actions, experiences, and beliefs. Examples include calendars, e-mails, scrapbooks, blogs, Facebook posts, duty logs, incident reports, reflections/journals, and newspapers.
- **Physical Evidence:** Physical objects found within the study setting (often called artifacts). Examples include flyers, posters, agendas, handbooks, and training materials.

In this research public records have been used for the analyses purpose.

3. 3. Data analysis

In this research Tables are the main tools used for the classification of data's and data's are transformed for the analyses through Excel. SPSS 20 software were used for the analyses and mean and standard deviation are major statistical tools used for the analyses.

Chapter Four : Results & Discussions

Results & Discussions

This chapter focuses on the results and analysis of the data collected using different methods and the aim of the chapter helps to check the effectiveness of the contract administration of the project and to explore the challenges of contract administration practices of EEP GIBE III HPP Project through survey results.

The population size for this study is 13 Engineers and managers, so that 13 questionnaires were distributed. However, the response was collected from only 12 respondents. Yesegat , (2008) , argued that the response rate of 71.8% will be good in poor developing countries, like Ethiopia where data collection activity is very challenging. The response rate for this study is 92.31%, based on the above criteria it is considered as good. The remaining discussion in this section presents the survey outcomes regarding “ Characteristics of Respondents, The effectiveness of contract administration , The challenges in implementing the contract administration...”’

4.1. Respondents profile

4.1.1- Demographic characteristics of Respondents

Table-4.1- Classification of respondents based on Gender and Age

	Description	Frequency	Percent
Gender	Male	10	83.3
	Female	2	16.7
	Total	12	100
Age	20-30	2	16.7
	31-40	9	75
	Over 50 years	1	8.3
	Total	12	100

Source: own survey (2019)

This section classifies respondents based on their gender and age category. Based on the Tables 4.1 above, out of the total respondents, (83.3 %) of the respondents are males and the rest (16.7%) of them are females. It also indicates that, the (16.7%) of the respondents are under the age category of 21 to 30 years inclusive and majority of the respondents (75%) of them range between the age of 31 to 40 years inclusive and the rest 8.3 % of them are above 50 years.

4.1.2- Socio-economic status of the respondent

This section classifies respondents based on their Education status, position and work experience

Table-4.2- Classification of respondents based on their Education level, position and work experience

	Description	Frequency	Percent
Educational Level	Degree	10	83.4
	Masters	2	16.6
	Total	12	100
Work Position	Civil Engineer	7	58.4
	Contract Admin Manager	1	8.3
	Electrical Engineer	1	8.3
	Project Manager	1	8.3
	Site Supervisor	1	8.3
	Quality Control Officer	1	8.3
	Total	12	100
Experience	3-6 years	4	33.3
	7-10 Years	3	25
	More than 10 years	5	41.7
	Total	12	100

Source: own survey (2019)

As per Table-4.2 above, the educational status of the respondents is 83.4% of them are Degree holders and the rest 16.6% of them are Masters Holders.

Regarding the position of the respondents, Table- 4.2 above indicates that, 58.4 % of them are Civil Engineers , 41.5% of them are a Project Manager, Contract Admin manager, Site Supervisor, Electrical Engineer and Quality Control Officer, and the rest 13.3% of them are a quality control officers.

Based on the data on table-4.2 above, 33.3% of the respondents have an experience from 3 to 6 years, 25% of them have an experience of 7 to 10 years and the rest have an experience of more than 10 years.

The position of the respondents helps the research in indicating how the study was based on the staffs that are directly related with the contract administration practice. The experience also helps the study, to indicate how the study was conducted with a staffs of diversified experience instead of conducting a survey from a staffs of a single year experience. Diversification of experience helps to extract information from staff that has different stay in the organization. Educational background helps the study, to show how the data was collected from the respondents who have better knowhow of the construction industry and helps in the clarity of the response.

4.2. Analyses on the actual contract admin practice of the project

4.2.1- Analyses based on an Interview

According to Kvale (1996) an interview is “a conversation, whose purpose is to gather descriptions of the life-world of the interviewee” with respect to interpretation of the meanings of the ‘described phenomena’. It adds that an interview is an extendable conversation between partners that aim at having an ‘in-depth information’ about a certain topic or subject, and through which a phenomenon could be interpreted in terms of the meanings interviewees bring to it. Among the different interview techniques the researcher prefers to use an unstructured or open ended interview questions.

The interview in this research work was held with the project manager and the contract administration team leader, which is a one to one interview technique. Both of the interviewees are having a background of civil and electrical engineering and they are well experienced in the area of construction of dam projects and contract administration practices. The interview was held in the projects office and took a total of 4 hours 2 hour for each. The

interview holds 15 questions which are directly related to the contract administration practice and it is summarized as follows.

4.2.1.1- The contract of GIBE III HPP

Based on the contract agreement no 1, The contract was originally signed in July, 2006, between the earlier employer EEPCO and the contractor Salini SPA, the Italian private industrial company. The contract is a Turnkey or EPC contract, in which the employer and the contractor agreed on a fixed contract sum to be paid upon completion of the works to a particular standard and/or performance criteria. The scope of the contract involves the following major milestones: The construction of temporary facilities, civil work, construction of a plant and giving training for staffs. The temporary facility is about the construction of temporary facility for the execution of the work; such facilities include construction of accommodation for the staffs employed and laborers, offices, stores, communication facilities and protection work against flood. The civil work this is the civil engineering work which mainly includes a construction of rock fill dam on the river of Omo, Construction of twin tunnels, construction of vertical and horizontal penstocks, construction of switchyard buildings, Site environmental mitigation work and construction of spill way structure. The construction of the plant includes the construction of the hydro mechanical steel structure and the electromechanical equipment. Finally the employer's personnel training and factory inspection includes a 20 individual two months training in the main equipment assemblies and factory and shop assembling testing for 5 individuals.

In July,2010 another tripartite agreement was signed between EEPCO, Salini and the new Chinese Dong Feng electric company for the construction of the electromechanical and hydromechanics steel structure work, which was initially EEPCO got into a contract with Salini to accomplish these tasks with a budget of EURO 244,111,449.00 EURO and 67,404,221.00 with a total of EURO 311,515,670.00, but in 2010 this task was forwarded to the new contractor.

The key role of Salini and Dong feng, the contractors in this case, was to carry out the design of the works, to provide the employer with the required operation and maintenance manuals, to provide the works on a turnkey basis and remedy defects in accordance with the contract. The main role of the employer, the earlier EEPCO and the current EEP was giving the contractor access to the site, assisting him with obtaining licenses and permits, checking the design of the work, paying the contract price based on the contract, supervising and

monitoring the work (checking the performance of the contractor), handover the work by making different tests.

The consultants for this project are Tractabela Engineering of France and Electro consult of Italy. They are hired by winning their lower cost offered and by their better technical performance evaluation on the international open bid. Their role is in assisting EEP (the employer) through construction management, checking designs and comment and supervision. They have an advisory role and the decision making was done by EEP.

4.2.1.2- The contract administration practice of GIBE III HPP

Based on the interview conducted, The contract administration activity was done by the EEP contract administration department in collaboration with the consultant. The contract administration activity was mainly done by EEP and the role of the consultant is advisory role and the major decisions were made by EEP. The project has its own contract administration department, who has its own staffs located in the main office and in the site. The staffs under this department have different background of Civil engineering, Electrical Engineering, Quantity surveying, Quality control and finance. The main activities which was accomplished by this department are : Following up of the overall performance of the project, Weekly measurement of the work, Control of materials, Supervision , Payment management (Monthly payment certificate checking), Checking claim issues, following up the failures of the contractor (counterclaim), Quality checking, issuing Daily, weekly, Monthly, Semi-annual and annual reports, dispute resolution and other ...

The contract administration activity was done on a daily, weekly, monthly basis, and especially on the completion of each phase and milestones of the project.

Based on this the major role of the civil engineers are monitoring and evaluating the activities of the civil work, the electrical engineers monitor the activities of electromechanical and hydromechanics steel structures, The quantity surveyor evaluate the materials which are going to be issued for a particular activity, the quality control officer evaluate the quality of materials purchased through EEPs laboratory and the finance officer check the payments certificates before payment and follow the cash flow of the project. The role of the contract administration manager is in controlling the overall status of the activities which are accomplished by the staffs under the department through the reports, managing claim issues, and disputes, issuing report to the project manager.

4.2.1.3- The reason why EEP prefers Turnkey contract

The current GTP of Ethiopia, which has a new target to increase the current generation capacity of 4,238 MW to over 17,000 MW by 2020, with an overall potential of 35,000 MW by 2037, which would help sustain Ethiopia's continued economic growth and enable it to become a regional renewable energy hub in East Africa.

By the current pace of building electric dams it is very difficult to meet even half of this target by 2020 one year from now. Currently construction of electric dam projects is built by contractors who have international experience and who are used latest technology. Meeting the plan of the 2020 can be unimaginable even by using these highly experienced contractors

Turnkey projects are one of the methods of contract, which can help the construction of mega projects to be constructed with a lower cost, short time, lower responsibility and burden for the employer, better quality with better technology and better chance to change the scope of the project when compared to the other contract methods in the EEP case.

How cost and time benefits from turnkey contracts? When design and construction are done by a single contractor, it can save time and cost. It reduces communication with multiple companies, preparing payment for multiple companies which have a time benefit.

How greater quality is achieved from turnkey contracts? When one company handles a project from the design to the completion it is very easy to achieve better quality. Besides changing a dimension or scope of the project is not a problem for turnkey projects. This are reasons for choosing turnkey projects by EEP.

4.2.1.4 - Payment Mode of the project

On the contract it is clearly stated that payment for the contract will be made through EURO and Ethiopian birr. FIDIC Sub-Clause 14.5, states that the contract price shall be paid in the currency or currencies named in the Contract Agreement. Unless otherwise stated in the Particular Condition. So, based on this the project effected payment to the contractor EURO 1,291,053,978.67 and ETB 6,362,798,234.41 and with a plan to pay an estimated amount of ETB 40,000,000.00.

4.2.1.5 – Clarity of the contract

Since the contract is based on FIDIC, the responsibility of the employer and the contractor was clearly stated.

4.2.1.6 – Cost and Time overruns

Due to shortage of resources the projects time schedule was not kept as per the contract and based on the claim report it lags 303 days. As a result the project forced to pay a claim to the contractor which was around 1.3% of the contract price. Besides interest was paid for the delay of payments for 3 years.

4.2.1.7 – Variation with the contract

Variation can be a headache for most of the construction projects, especially for construction of buildings. Regarding the GIBE III project there is no variations from the contract.

4.2.1.8 – Quality Issues

The quality control officers follow each specific activity of the contractor leg by leg. And sometimes they can find lower quality tasks performed by the contractor, so the quality control teams immediately report the case to their higher officials and get tasks their right track.

4.2.1.9 – Dispute with the contractor

The issue of dispute was raised during the claim issues; which is due to the contractor requests for a claim of higher price, which is more than what was expected by EEP. So, through discussion things get resolved and got into consensus.

4.2.1.10 – Risks

In such mega projects risks can be expressed as a result of lower safety and sometimes due to traffic cases. In the project major risk issues were traffic accidents due to high speed driving and sometimes due to safety problems and some accidents was occurred during the construction time. But as per FIDIC Sub-Clause 17.4 except for natural disaster other safety issues and manmade risks are belongs to the contractor.

4.2.1.11 – Shortage of resource

It was the main problem of the project.

4.2.1.12 – Monitoring and Evaluation

The site coordinators compiled the reports from the controlling staffs on a daily basis and send the result of the daily monitoring and evaluation report on a weekly, monthly and semiannually and annually basis .

4.2.1.13 – Reports

Internal report from the project was issued on the performance of the projects, quality issues, resource issues, challenges faced etc... on a weekly, monthly and semiannual and annual basis to the contract administration department. According to FIDIC Sub Clause 4.21, the contractor submitted a performance report on a monthly base.

4.2.2- Analyses based on Document Review

Document review is a way of collecting data by reviewing existing documents. Documents may be hard copy or electronic and may include reports, program logs, performance ratings, funding proposals, meeting minutes, newsletters.. Document analysis is a form of qualitative research in which documents are interpreted by the researcher to give voice and meaning around an assessment topic (Bowen, 2009).

Based on this the researcher reviewed documents which are in the hands of the contract administration department i.e. 7 contract documents which are signed in different times, different payment certificates and reports.

4.2.2.1- The contract of GIBE III HPP

The contract was initially signed in July, 2006, between the employer EEPSCO and the contractor Salini SPA. The purpose of the contract was building a dam with a generation capacity of 1,870 MW within 60 month or 1,812 days and with a budget of EURO 1,396,262,043.00. The contract mainly includes General condition of a contract (FIDIC condition of contract), particular conditions of a contract, price breakdown, and project implementation plan and project basic design. In April 2008, the contract was amended by

considering the following main scope changes which emanates from the employer interest, the main scope changes was changing the planed rock filled dam with the roller compacted concrete (RCC) dam, changing the hydraulic steel structure and the mechanical hydro mechanical and electrical equipment from European standard to International standard and others miscellaneous issue. So, these changes came up with a change in the original agreement with a price escalation and schedule change ,which makes the price to be inflated to 1,470,000,000.00 (5% increment) and an increment of a 1 year on the original scheduled time. Besides additional 6 supplementary agreements was signed on the following issues. Supplementary agreement 2 was signed to resolve the financial shortage of the contractor (request of loan by the contractor), Supplementary agreement no 3 was signed to purchase electricity supply from the employer in order to replace a purchase of fuel for the power source for the construction of the dam. Supplementary agreement no 4 was signed for the settlement of delay claims. Supplementary agreement no 5 was signed for the adjustment of labor and fuel cost change in the market. Finally Supplementary agreement no 6 was signed for the settlement of interest on the delayed payments.

4.2.2.2- Quality Issues of the project

In the contract different international Codes and standards was incorporated in order to control the quality of the materials and equipment's used by the project. The supply of plant equipment and performance of the permanent works conform to the laws and regulations existing in Ethiopia. All materials and equipment's incorporated in the work confirmed with the international standards as per indicated in Table 4.4 and 4.5 below.

Table -4.4 International standards of materials

Abbreviations	Descriptions
AGMA	American Gear Manufacturers Association
AIEE	American Institute of Electrical and Electronic Employers Representatives
AISC	American Institute of Steel Construction
AISI	American Iron and Steel Institute
ANSI	American National Standards Institute
ASME	American Society of Mechanical Employers Representatives
ASTM	American Society for Testing and Materials
AWS	American Welding Society
AWWA	American Water Works Association
CCITT	International Telephone and Telegraph Consultative Committee
DIN	Deutsche Industrie Normen
ICEA	Insulated Cable Employers Representatives Association.
IEC	International Electro-technical Commission
IEEE	Institute of Electrical and Electronic Employers Representatives
ISA	Instrument Society of America
ISO	International Organization for Standardization
SSPC	Steel Structures Painting Council
EN	European Norms

Table -4.5- International Standard for quality measures

Material	Standard	Quality
Gray cast iron	ASTM A 48	Class 35
Ductile cast iron	ASTM A 536	Grade 60-40
Cast Carbon steel	ASTM A 27	Grade 65-35 or 70-36
Cast alloy steel	ASTM A 148	Grade 80-40
Corrosion resistant cast steel	ASTM A 743	Grade CA-15
Forged steel for gears	ASTM A 291	Class 1
Cold finished steel for shafts	ASTM A 108	Grade 1022
Forged steel for shafts, trunnions, etc.	ASTM A 470	Class 2
	ASTM A 668	Class C
Wrought steel wheels and sheaves	ASTM A 504	Class A
Forged alloy steel for general use	ASTM A 668	Class G
Structural steel sections and plates	ASTM A 36	
Steel plates for low and intermediate stresses	ASTM A 283	Grade D
	ASTM A 516	Grade 60, 65, 70
Steel plates for high stresses	ASTM A 225	Grade B
	ASTM A 537	Class 1
Alloy steel for springs	ASTM A 689	
Corrosion resistant steel plates	ASTM A 240	Type 304 or 410
Steel bolts and nuts (not submerged)	ASTM A 307	Grade B
High strength steel, bolts nuts and washers	ASTM A 325	Type 3
Corrosion resistant forged steel for sections bolts and nuts	ASTM A 276	Type 304, 410, 420
Welding rods for:		
- corrosion resistant steel		According to AWS Standard
- carbon steel		According to AWS Standard
Steel piping	ASTM A 53	Type S or E
Pipe fittings	ASTM A 181	Class 70

Other Quality Measures

Beside the standard measures, the project used maximum load and stress calculation in order to measure the quality of materials used.

Allowable stress

When required for approval stress calculation has to be submitted with all the indications necessary for the correct checking of materials.

Maximum Load

It is a combination of different loads which are used to check loads due to wind, earth quack, and resistance force i.e friction, temperature variation, equipment handling due to transportation and test load.

EEP had a testing laboratory in Gibe III project for testing materials and deliverables based on the above international standards set by international organizations. So, the main role of the contract administration department was in controlling the quality of materials based on the standards set. Regarding quality issues nothing was observed in the project with regard to the materials and ending operational testing. So, we can say EEP GIBE III contract administration was effective in this regard.

4.2.2.3- Time (Schedule) Issues

The contract administration department tried to follow the activities to be done in line with the contract schedule, but due to different reasons those schedules cannot be met. Based on this the project lags 303 days from the scheduled time on the contract.

4.2.2.4- Cost of the project

Table-4.6-The overall cost of the project

No	Reason for payment	EURP	Birr	Reference
1	Original Contract Price	1,147,000,000.00	0.00	Agreement no -2
2	Any other sum, like services to the Employer i.e claim, spares part...	120,116,525.69	334,180,313.80	Agreement no 4, 7 and Payment certificate no 140
3	Adjustments in change in cost i.e labour, transportation and fuel	12,321,095.92	5,768,690,614.90	Agreement no 5, 7 and Payment certificate no 140
4	Interest on delay of payment	11,616,357.06	30,337,762.31	Agreement no 6,7 and Payment certificate no 140
5	Adjustments in Government legislation change i.e new legislation declared for surtax payment on imported goods ,new legislation declared for the payment of pension for private organizations	0.00	229,589,543.40	Agreement no 4,7 and Payment certificate no 140
6	Estimated unpaid cost for the contractor, due to surtax from imported materials	0.00	40,000,000.00	Pending
	Grand total	1,291,053,978.67	6,402,798,234.41	

Due to delay of the overall construction activity from the scheduled time, EEP forced to pay a delay claim of EURO 20,248,168.00 or ETB 132,379,508.00. This is 1.38 % of the total contract budget of the project.

Based on the supplementary agreement no 6 EEP forced to pay an interest of EURO 11,000,000.00 or ETB 30,300,000.00 for the delay of payments to the contractor.

These issues indicate that, due to the ineffectiveness of schedule management EEP incurred unnecessary costs like claims and interest.

4.2.2.5- Reporting Issues

Different reports have been issued by Gibe III HPP i.e daily, weekly, monthly, quarterly, semiannually and annually. The reports incorporate the performance issue of the project, resources used, challenges faced, the measures taken , variations , claim and dispute issues (if any) .

The contract administration department was responsible for the following up of this reports which are major input for decision making.

4.3- Analyses on the effectiveness of the contract admin practice of the project

4.3.1- Analyses based on questionnaire response

Based on section 2.16 of the conceptual framework, the researcher constructed 12 parameters which are bases for effective contract administration practice. Based on these parameters primary data's were collected by using likert scale questionnaires (1-Strongly Disagree, 2-Disagree, 3-Neutral, 4-Agree, 5- Strongly Agree) and the analyzed as follows.

According to Chileshe and Kikwasi (2014), the mean values which are driven from the 5 point likert scale can be rated and categorized as follows.

- 1- $O \geq 1.80$ indicates very low extent or it is not very important.
- 2- $1.8 \geq 2.6$ indicated low extent or not important
- 3- $2.6 \geq 3.4$ indicates average or moderate value
- 4- $3.4 \geq 4.2$ indicates important or large extent
- 5- $4.2 \geq 5.0$ indicates very large extent or very important

Based on the criteria above the researcher evaluated the effectiveness of the contract administration practice of GIBE III HPP. Table 4.3 below shows analyses of the data collected from the GIBE III HPP staffs, which have direct relation with the contract administration practice and their response is coded and extracted in the SPSS software .So, the table 4.3 below indicates the descriptive statistics results based on 12 parameters which can help to evaluate the effectiveness of contract administration practice.

Table- 4.3- Descriptive Statistics

	N	Minimum	Maximum	Mean	Std. Deviation
Follow up of deliverables	12	2	5	3.17	1.193
Contract Admin Training to staffs	12	1	4	2.17	.937
Variation Control	12	2	5	3.50	1.000
Financial Management	12	1	5	3.08	1.084
Dispute Resolution	12	2	4	3.25	.754
Performance Measurement plan	12	2	4	3.42	.669
Shortage of resources	12	4	5	4.33	.492
Schedule management	12	1	5	2.42	1.311
Technical skilled teams	12	4	5	4.42	.515
Intense Monitoring & Evaluation	12	2	4	3.50	.674
Risk Management	12	2	5	3.25	1.215
Quality Control	12	4	5	4.17	.389
Valid N (list wise)	12				

Source: own survey (2019)

Based on table 4.3 above

The mean value for staff training and schedule management is 2.17 and 2.42, this implies the extent of staff training and schedule management activity in the project is in its lower level of performance.

The mean value of delivery follow up, financial Management practice, dispute resolution, and risk management activities are 3.17 3.08, 3.25 and 3.25 which implies that this activities are accomplished in the extent of moderate level of performance.

The mean value of the activities performance measurement plan, intense monitoring & evaluation, variation control and quality control indicates 3.42, 3.5, 3.5 and 4.17, which implies that these activities are accomplished in a higher extent of performance.

Regarding the shortage of resources since its mean value is 4.33 which indicate that, the shortage of resources in the project is in its highest peak during the operation of the dam, which is a main cause for the delay and claim issues.

The mean value for the presence of the technical skilled team is 4.42, which implies that the project is filled by skilled professional with a very large extent.

Based on the above 5 performance categories, the contract administration was not effective in the activities of timely resource supply, schedule management as per the contract and giving training to staffs on contract administration practices. And the contract administration practice is in its moderate level of effectiveness in the activities of delivery follow up of the project, financial Management practice, timely dispute resolution, and risk management activities (this means the project accomplish these activities with an average performance). Besides the project contract administration practice was effective in the activities of performance measurement, intense monitoring & evaluation, control of variation from the contract and in the control of quality of deliverables. And finally it is very effective in incorporating technically skilled personnel's.

Standard deviation implies that deviation from the mean. In statistics data's who have small standard deviation indicates that values in a data are close to the mean and higher standard deviation means values in a data are far away from the mean. Based on this, Table 4.3 above indicates that there is a high standard deviation for the variables follow up of deliverable, schedule management and risk management, (1.193, 1.311, 1.215), which indicates there is a high variability between the responses given in measuring such variables when compared to the lower ones. And there is also a low standard deviation in the variables quality control, monitoring and evaluation, shortage of resources and performance measurement plan, (.389, .674, .492, .669), which indicates the variability between the responses are lower when compared with the higher ones. The rest variable have average standard deviation.

4.4- Analyses on the major determinant factors (the challenges) that affect the contract admin practice

The data for this analysis was collected from the open ended questionnaire and the researcher tried to explore the respondent's response regarding the major determinant factors (challenges) which hinder the implementation practice of the contract administration.

Based on this the main challenges were

- ✓ Reworks due to errors during the construction stage.
- ✓ Shortage of resources during the constriction stage.

- ✓ Design change during the project execution for the power intake structure location,
- ✓ Poor schedule management of the project activities.
- ✓ Lack of training on Contract Administration practices.
- ✓ Poor feasibility study.
- ✓ Delay in payment to contractors of completed activities
- ✓ Unforeseen Geological condition at base of main dam foundation level , which lead the project to invest more time and incur additional cost

4.5- Analyses on the contract administration practice at different stages and milestones of the project

4.5.1 – Contract Administration at different stages of the project

Many construction projects have life cycles in which the tasks of the project pass through. These stages begin with the initial idea stage and pass through design, tendering, construction and finally completed with handover stages. The activities which are accomplished at these stages a lit bit differ from company to company based on the nature of the project. And the role of the contract administration department also differs from project to projects at these stages. Under these stages different milestones will be available.

Based on this the Turnkey project passes through 4 stages

- 1- The Idea stage
- 2- Design Stage
- 3- Tendering Stage
- 4- Construction stage
- 5- Handover stage

The Idea Stage

This is the idea generation stage of the project. In this stage the employer plays the major role, and the questions like what to be done? How to do it? When to be done? By how much? and What resources do I have? will be answered. In the case of EEP the contract administration department does not exist at this stage and do not have any roles here.

The Design Stage

The duties of the contract administration department start from this stage. In the case of EEP during this stage the contract administration department in collaboration with the consultant and other concerned departments engaged with the activities of checking the design which was earlier developed by the contractor.

The Tendering stage

The activities which are performed during this stage are preparation of the tender documents and evaluation of tender documents are the major ones. With regards to EEP projects, the case is different. Since dam projects are different in their nature from other construction project their tendering process is also differ as well. It is based on the sources of fund. If the source of fund comes from borrowing, the borrower organization dominates the construction of the project to be done by company his origin. And if the source of fund emanates from the government, from the current experience of EEP the contract will be given solely to the contractor who previously have good performance. So, the contract administration department do not have major role here. But their role will be in the facilitation of the tendering process of the selection of the consultant.

The Construction stage

This is a stage where more risks are involved with respect to time, money and with the required quality as mentioned in the specifications. Based on the context of EEPs electric dam contracts, the contract administration department has a higher burden at this stage. The Contract Administration department engaged with the following up of issues of schedule management, quality controlling, payment for the contractor, progress claims, control of variations from the contract, handling claim issues including extension of Time and other legal matters.

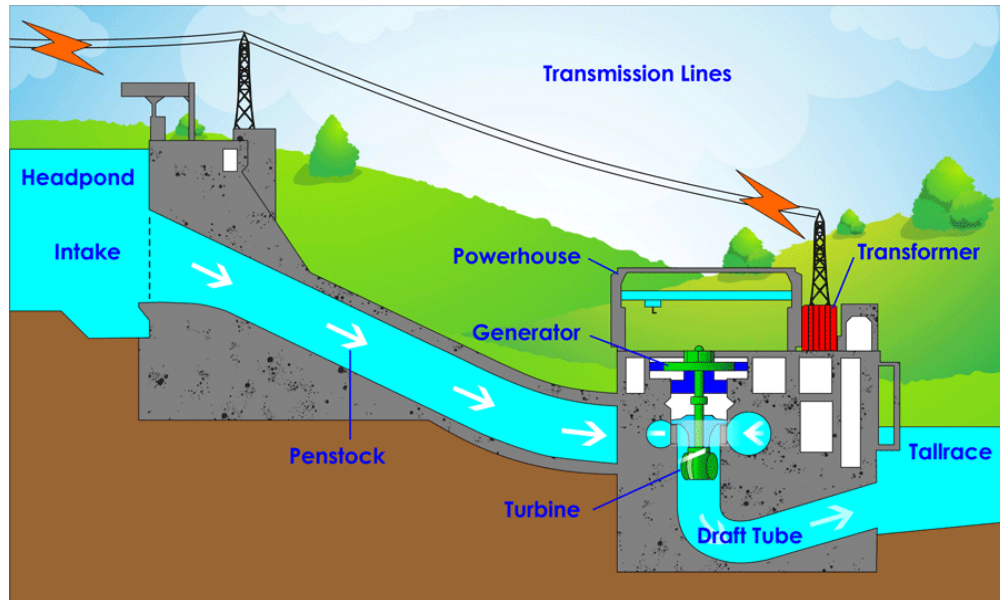
The Handover stage

In this stage EEP GIBE III contract administration department was responsible for monitoring the defects and testing the operations of the deliverables (checking functionality of all the deliverables based on the agreed contract). After performing all the tests and after all the obligations are fulfilled they are ready to settle the final payment according to the final

payment certificate. Adjustments to the contract document in terms of variations, liquidated damages or penalties are included in the Final payment certificates.

4.5.2- Contract administration at different Milestones of the project

Milestones are the time by which some specific project deliverable has been achieved.



The major milestones of the EEP GIBE III HPP are

- 1- Temporary Facilities
- 2- Civil work
- 3- Plant
- 4- Employee training and factory inspection

Temporary Facilities

These are facilities which are required by the contractor to perform the work. Such activities are the construction of accommodation for laborers and staffs who are employed for the work, offices stores and workshops, communications and protection from the flood.

The Civil work

This is a milestone where the civil engineering works are performed. This includes the construction of roads to the project, construction of a rock filled (RCC) dam on the Omo rivers, construction of tunnels, construction of spill way structure, construction of penstocks.

Switchyard and construction of different buildings for powerhouse and control unit etc... The role the contract administration at this stage of the project will be very high.

Plant

This includes the construction of Electromechanical and hydraulic steel structures.

The hydro mechanical steel structure mainly includes the construction of trash racks for the power intake, construction of spillway radial gates, construction of stop logs for the power intakes and for the spill way, construction of crane stand construction of steel lining for the penstocks.

The construction of the electromechanical part of the dam, include mainly the construction of turbines, inlet butterfly valves, installing synchronous generators, installing step-up transformers, connection between the step up transformer and switchyard, fire protection and ventilation system,

Employers personnel training and Factory Inspection

This is the final stage of the milestone, in which the contractor shall provide training and factory inspection facilities for the employer's personnel. The contractor gave a 2 month training for 20 staffs of the employer on manufacturer's main equipment assemblies and factory and shop assembly inspections for the main equipment for 5 staffs.

Responsibility of the contract administration department at each milestone

So, based on the above milestone the main function of the contract administration department is monitoring and controlling with regards to cost, schedule and quality. The department received the progress reports from the supervising unit of the project as well as the contractor. Based the reports received it measures the performance and progress of each milestones of the project.

Finding, Conclusion and Recommendations

This chapter provides a conclusion on the contract administration practices of EEP, GIBE III HPP. The conclusions are supported by a summary of the results from the analysis of the contract administration practice. The chapter also contains major findings and recommendations on improving the contract administration practices of EEP HPP.

5.1. Findings/ Summary

Based on the data collected from questionnaire response, Interview and document review the researcher arrived at the following findings.

With reference to table 4.6, due to delay of the overall construction activity from the scheduled time, EEP paid a delay claim of EURO 20,248,168.00 or ETB 132,379,508.00. This is 1.38 % of the total contract budget of the project.

With reference to table 4.6, based on supplementary agreement 6 EEP payed an interest of EURO 11,000,000.00 or ETB 30,300,000.00 for the delay of payments for 3 years (due to shortage of resources). From this it is implied that projects have been started without securing enough resources. If the contractor paid on time without delay the project can save the interest payment.

There is cost overrun due to inflation of materials especially in purchase of fuel the project incurs additional ETB 2 Billion, which leads the project for adjustment of the contract. This is one of the results of delay of the project.

Due to urgent implementation need by the Government, there is shortage of time on the EEP side, in reviewing the design as well as the contract budget which is submitted by the contractor, which leads EEP to accept the contractors proposal without major comments given.

In the project there was a shortage of staff training especially in contract administration practices.

In the project there was a serious shortage of resources which leads the project for delays and claim issues.

According to FIDIC Sub-Clause 14.9 retention has to be deducted for the guarantee of defects after the completion of the project. After the works have passed all specified tests (including the Tests after Completion, if any), the first half of the retention money shall be paid to the Contractor. Promptly after the latest of the expiry dates of the Defects Notification Periods, the outstanding balance of the retention Money shall be paid to the Contractor. However, if any work remains to be executed, the employer shall be entitled to withhold the estimated cost of this work until it has been executed. But in the case of EEP Gibe III project the deduction of retention has been overlooked. This may be a danger for the EEP if any material defects can occur after the completion of the project and the contractor refused to maintain.

There were reworks due to errors during construction.

There was poor schedule management of the project.

There was poor feasibility study before the start of the project.

There was delay in payment to contractors of completed activities

And finally there was an unforeseen Geological condition which leads the project to invest more time and incur additional cost.

5.2. Conclusion

The result of the study indicates that, staff training regarding contract administration practice and schedule management activity was at the lower extent of performance in the project. The delivery follow up, financial Management practice, dispute resolution, performance measurement and risk management activities are performed in an average level of performance. The tasks like monitoring & evaluation, Variation control and quality control activities was performed in a better extent. The study also indicated that shortage of resources in the project was in the very large extent. This implies that the shortage of resources in the project was in its highest peak during the operation of the dam, which leads the project for delay and claim issues. Finally the response regarding the presence of the technical skilled team indicates that the project is filled by skilled professional in a very large extent.

From this we can conclude that the contract administration was not effective in the activities of timely resource supply, schedule management as per the contract and giving training to staffs especially on the contract administration practices. And the contract administration

practice was not good or bad in the activities like delivery follow up of the project, financial management practice, timely dispute resolution, performance measurement and risk management activities. Besides the project was effective in the activities of intense monitoring & evaluation, control of variation from the contract and in quality control of deliveries. And finally it is very effective in having skilled technical personnel's.

The response for the factors affecting the contract administration practice indicates that, shortage of resources , Reworks due to errors during construction, Poor planning and schedule management of the project, Lack of training on Contract Administration practices, Poor feasibility study and project analysis, Delay in payment to contractors of completed activities and Unforeseen Geological condition are the major factors that hinder the contract administration practice, which lead the project to invest more time and incur additional cost.

The contract administration department practice has a major role in controlling the cost, schedule and quality and progress of the project at each stage and milestones of the project .

5.3. Recommendations

Based on the contract administration practice with a special reference to the GIBE III of EEP and based on the findings the following recommendations are made:

Since strong contract administration activity and staff capacity building is a basic input for the success of a project, it is better for EEP if it keeps training budget related to the contract administration practice for the staffs in the department.

Securing enough resources through loans or issuing bonds before the start of the execution of the project, this helps to avoid unnecessary time delay and claim issues and interest payments.

Developing a detail master schedules and work breakdown structures by incorporating important dates and milestone in the Contract. Evenly allocate the time and resource on the different aspects of the milestones.

Lesson learning from previously completed project experience should be introduced regarding to contract administration practice specially in schedule management issues.

5.4 . Future research directions

The study assesses the effectiveness and the challenges of contract administration practice of EEP Gibe III HPP. During the study there were limitations which hinders the researcher to not make further study in a broader way by incorporating other projects in the company i.e wind power projects, waste to energy power project and geothermal power projects in EEP.

Since the nature of the projects other than the hydropower projects is different, their contract may also differ. Therefore the researchers recommend the following topics for further study.

- Contract administration practice in EEP a case of wind , waste to energy and Geothermal power projects.
- The impact of contract administration practice in the performance of electric power projects.

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Annex

Annex

**Addis Ababa University
School of Commerce
Department of Project Management**

Questionnaire

Dear Respondent:

This questionnaire has been prepared in view of assessing the objectives of research titled “Assessment of Contract administration practices in Ethiopian Electric Power a case in Gilgel Gibe III Hydro Electric Power Project.” The purpose of the study is to analyze the prevailing contract administration practice.. The primary objective of the questionnaire is to collect data, information & opinion for the conduct of a Thesis for partial fulfillment of the requirement for award of Master of Project Management.

Participation in this project is completely voluntary. Results will be recorded anonymously, and strict confidentiality will be maintained. Individual responses will not be identified in the Researcher’s project work.

The questionnaire has two parts: Part -I is about your personal information. Part-II is the overall questions about contract administration practices. Please give your honest response to each item.

Thanking you in advance for your valued time & cooperation, the researcher believes that your genuine response, opinions & views are used only for academic purpose.

Abinet Lulseged.

The Researcher.

Part I - Personal Information

N.B- Please give your answer on the space provided & put tick a mark in the box corresponding to your response.

↪ Sex Male Female

↪ Age 20– 30 yrs 31 – 40 yrs 41 – 50yrs Over 50 yrs

↪ Educational background _____

↪ Position of respondent _____

↪ Number of years of experience

Less than 3 yrs 3-6 yrs 7-10yrs more than10yrs

Part –II - Close ended questionnaires

Pease use a tick (√) mark for your thought and where appropriate give your opinion for the open ended questions.

1- Factors for effective contract administration practice in EEP GIBE III context

Description	Strongly Disagree 1	Disagree 2	Neutral 3	Agree 4	Strongly agree 5
Follow up of deliverables					
Training of staff on contract administration practices					
Control of Variation practice					
Strong Financial Management practice					
Timely dispute controlling mechanism with the contractor					
Performance measurement practice					
Shortage of Resource during the construction time.					
Schedule management based on the contract agreement					
Presence of Technical skilled teams in the project					
Monitoring and Evaluation intensity was good					
Risk management practice in the project					
Quality Control `practice in the project					

Part –III - Open ended questionnaires

1- Was there any claim issues in the project?

2- If yes, please explain the reason for the claim and how it was resolved.

3- What do you think the main reason for cost and schedule overrun in the project?

4- What do you think the main problems (challenges) that affect the contract administration practices in Gibe III project?

5- What has to be done by EEP to reduce poor contract administration practices (if any)?

6- Do you have any ideas, opinions and suggestions that have not been included in the
aforementioned questions?

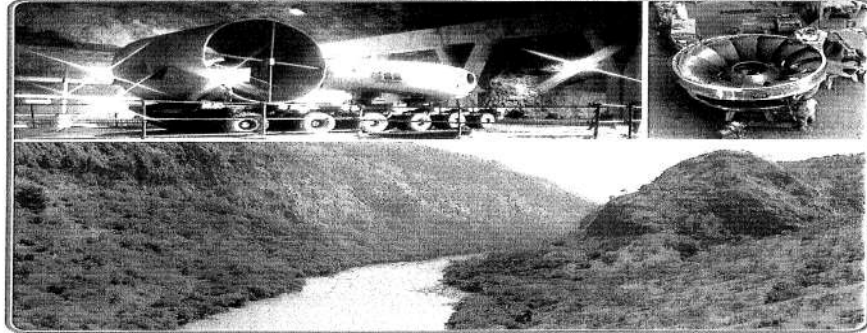


Interview Questions

- 1- What did the overall contract administration practice look like in GIII HPP?
- 2- What were the phases of the project? And what did the contract admin practices look like at these phases of the project?
- 3- Why EEP preferred EPC or turnkey contract? What was the advantage and disadvantage for EEP?
- 4- What was the payment mode for contractors? Was it in local or foreign currency? Is that convenient for EEP? If not why?
- 5- Was the contract language, the responsibility of the organization and the contractor, clearly stated?
- 6- Was there time or cost overrun? What were the reasons for cost overrun and time delays?
- 7- Were there any variations in the contract? How was it resolved?
- 8- Were there any quality issues during the construction time and after completion?
- 9- Was there a dispute with a contractor? If yes, what kinds of disputes were there with the contractor? And how was it managed?
- 10- Were there any claim issues raised by the contractor? What was the reason? Was that fair? How was it resolved?
- 11- Was there any risks faced during the construction of the project? If yes, what kinds of risks were there with the contractor? And how was it managed? And what was the impact on the project?
- 12- Was there any shortage of resources? If yes what was the reason? And what is the impact on the project?
- 13- Was there a monitoring activity in the project? How often a monitoring and evaluation activity was done in the project?
- 14- Was the payment to the contractor was always available based the agreement on the contract? If not why?
- 15- Was there a report at each phases of the project? If any, what kind of report were they?

EEPCO
ETHIOPIAN ELECTRIC POWER CORPORATION

GIBE III Hydroelectric Project



EPC CONTRACT AGREEMENT

July 2006

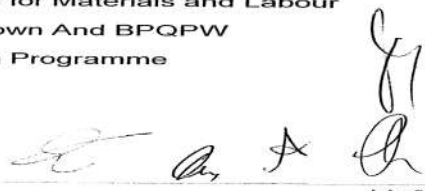
salini COSTRUTTORI S.p.A.

SP studio ing. G. Pietrangeli s.r.l.
consulting engineers


FORM OF CONTRACT DOCUMENT WITH CONDITIONS OF PARTICULAR APPLICATION

TABLE OF CONTENTS

- Agreement
- Letter of Tender
- General Conditions of Contract for EPC/Turnkey Projects as published by FIDIC (1st Edition, 1999)
- Particular Conditions of Contract
- Annexes to Particular Conditions of Contract
 - A. Form of Contract Agreement
 - B. Annex to Particular Conditions of Contract
 - C. Form of Performance Security
 - D. Form of Advance Payment Guarantee
 - E. Form of Retention Money Guarantee
 - F. Dispute Adjudication Board Agreement
 - G. Employer's Requirements
 - H. Physical Conditions
 - I. Changes in Costs for Materials and Labour
- Contract Price Breakdown And BPQPW
- Project Implementation Programme
- Project Basic Design

Handwritten signatures and initials in black ink, including a large signature on the right and several smaller ones below it.

AGREEMENT

 J a Q
A vertical line with a hook at the top connects the word 'AGREEMENT' to the initials 'J a Q'.

Contract Agreement

No 6-7/C-3/2/98
14 July 2006

AGREEMENT

THIS AGREEMENT is made theday of 2006 between the **Ethiopian Electric Power Corporation (EEPCO)** of the Federal Democratic Republic of Ethiopia, whose offices are located at De Gaulle Square, Electricity House, Addis Ababa Ethiopia (hereinafter called **the Employer**) on the one part and **Salini Costruttori SpA** whose offices are located in Via Della Dataria 22, 00187 Rome Italy, (hereinafter called **the Contractor**).

WHEREAS **the Employer** desires the execution of certain Works known as the Construction of the Gibe III Hydroelectric Project.

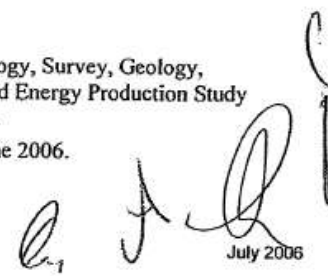
WHEREAS **the Contractor** has compiled the documents which form part of this Agreement and offers to execute the Works in conformity with the Contract for the sum of

hereinafter referred to as the Contract Price, or such other amount as may be ascertained under the Contract.

NOW THIS AGREEMENT WITNESSETH as follows:

1. In this Agreement words and expressions shall have the same meanings as are respectively assigned to them in the Conditions of Contract hereinafter referred to.
2. The following documents shall be deemed to form, to be read and construed as part of this Agreement, viz.:
 - (a) This Agreement.
 - (b) The Particular Conditions of Contract.
 - (c) The Annexes to the Particular Conditions of Contract.
 - (d) The Conditions of Contract for EPC/Turnkey Projects (FIDIC First Edition, 1999)
 - (e) The Contract Price Breakdown.
 - (f) Project Implementation Programme.
 - (g) The Project Basic Design of May 2006 formed by the following documents (not bound to this Agreement):
 - Main Report
 - Drawings
 - Technical Reports
Design Criteria, Site Investigation, Hydrology, Survey, Geology,
Backwater Profile, Reservoir Operation and Energy Production Study
(Revision June 06), Head Losses (July 06).
 - (h) Environmental Impact Assessment Report of June 2006.

Gibe III Hydroelectric Project



July 2006



Contract Agreement



3. In the event of any ambiguity or conflict between the Contract documents listed above, the order of precedence shall be the order in which the Contract documents are listed in item 2 above.
4. In consideration of the payments to be made by the Employer to the Contractor as hereinafter mentioned, the Contractor hereby covenants with the Employer to execute and complete the Works and remedy any defects therein in conformity in all respects with the provisions of the Contract.
5. The Employer hereby covenants to pay the Contractor in consideration of the execution and completion of the Works and the remedying of defects therein the Contract Price or such other sum as may become payable under the provisions of the Contract at the times and in the manner prescribed by the Contract.




IN WITNESS whereof the parties hereto have caused this Agreement to be executed the day and year first written above.

Signed on behalf of
ETHIOPIAN ELECTRIC POWER
CORPORATION

Signed on behalf of
SALINI COSTRUTTORI S.p.A


Mchereet Debebe
General Manager


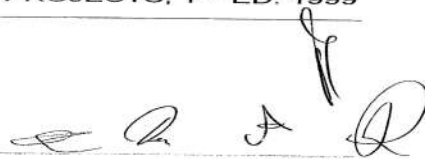



The Ethiopian Electric Power Corporation (EEPCo) is engaged in producing, transmitting, distributing and selling electrical energy as well as carrying out other related activities.
Project EEPCo was established with the council of Ministers Regulation No. 18/1997.

JULY 2006

GENERAL CONDITIONS OF
CONTRACT FOR EPC/TURNKEY
PROJECTS, 1ST ED. 1999

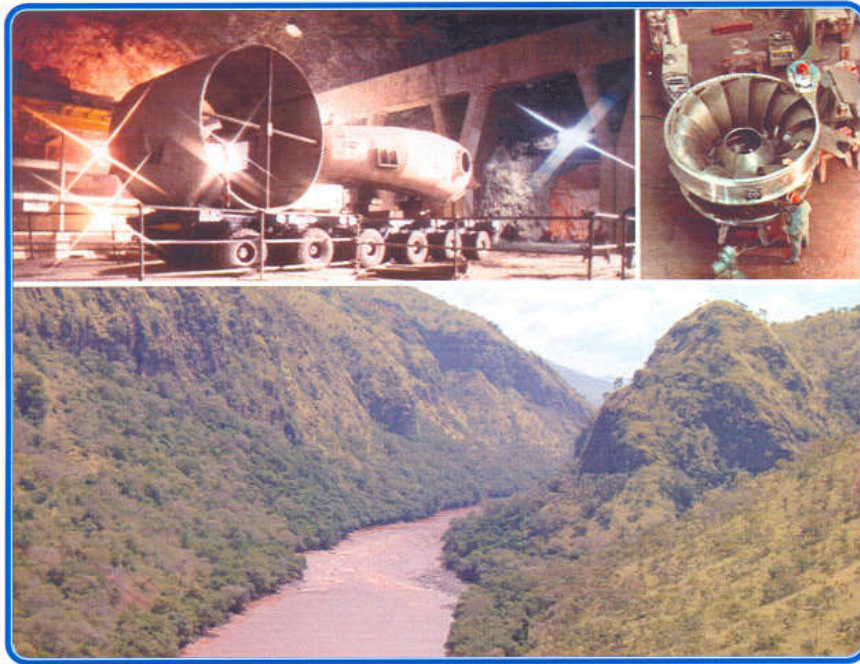
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Gibe III Hydroelectric Project

July, 2005

EEPCO
ETHIOPIAN ELECTRIC POWER CORPORATION

GIBE III Hydroelectric Project



EPC CONTRACT AMENDMENT
CHANGE IN THE SCOPE OF WORK
Roller Compacted Concrete (RCC) Dam

April 2008

salini COSTRUTTORI S.p.A.

SP studio ing. g. pietrangeli s.r.l.
consulting engineers

GIBE III HYDROELECTRIC PROJECT

EPC Turnkey Contract Project

No. 33.20/133/2000

Agreement

To a change in the Scope of Work Roller Compacted Concrete (RCC) Dam

22 APR 2008

This agreement is made in Rome on 19th April 2008 between the **Ethiopian Electric Power Corporation** whose offices are located at the De Gaulle Square, Electricity House, Addis Ababa Ethiopia (hereinafter called **the Employer**) on the one part and **Salini Costruttori SpA** whose offices are located in Via Della Dataria 22, 00187 Rome Italy, (hereinafter called **the Contractor**).

Whereas

- a. The Employer and the Contractor entered into a Contract whereby the Contractor is responsible for the Engineering, Procurement and Construction of Works known as the Gibe III Hydroelectric Project on 19 July 2006 (hereinafter called "the Contract").
- b. The work under this Contract was to consist amongst others of the design and construction of a rockfill dam complete with a partially gated spillway located on the right abutment together with protective cofferdams, diversion tunnels and low-levels outlet works, a double water intake and water conveyance system on the left bank leading to a 1,870 MW installed capacity powerhouse complex and substation located also on the left bank.
- c. The contractor made a proposal dated 15th November 2007 to provide a Roller Compacted Concrete Dam with a fully gated spillway structure located in the Dam Crest together with appropriately varied temporary cofferdams, diversion tunnels, low level outlets, power addition intakes, waterways, powerhouse complex and substation also on the left bank and with similar design and same performance as in (b) here above, with position adjusted so as not to be affected by the spillway flow and scouring effects.
- d. The varied solution known as "The RCC Dam Layout" was accepted by the Employer during General Coordination Meetings held in Rome on 18 and 19 December 2007 and in Addis Ababa on 21 and 22 January 2008.

It is agreed that

1. The time for completion named in Annex B to the Particular Conditions of Contract pursuant to Sub-Clause 8.2 [*Time for Completion*] is changed from 1,812 days to 2,177 days.
2. The Contract Price for the varied works will be the lump sum amount Euro 1,470,000,000.00 in words (Euro one billion four hundred seventy million and no cents) in accordance with the revised Contract Price Breakdown included as Annex 1 to this Agreement.
3. The Sub-Clause 8.2 titled "Time for Completion" of the Particular Conditions is deleted and replaced by:
 - *The Contractor shall complete the Works within the Time for Completion as set out in Annex B to these Conditions including those Works such that the Reservoir Impounding can be started, the Power Tunnel can be flooded for wet testing and the Powerhouse with its ancillary facilities completed such that the pre-commissioning (dry testing) and Testing on Completion pursuant to Clause 9 [Tests on Completion] (wet testing) of first unit can be undertaken. All other activities shall be completed during the next twelve months including the commissioning of the ten units, out of which the last nine shall start wet testing under a sequence of one unit after the other every 4 weeks from the start of commissioning of the first unit.*

1 A Q

4. The design Criteria that are included in the BASIC DESIGN dated May 2006 shall be replaced by the Design Criteria included in Annex 2 to this Agreement.
5. The Employer's Requirements shall be modified in accordance with Annex 3 of this Agreement.
6. The revised Programme of construction for the varied works is shown in Annex 4 to this Agreement
7. The amendments to annex H – Adverse Physical Conditions of the Contract are included in Annex 5 to this Agreement

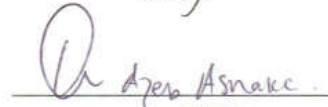
All contract terms and conditions that are not specifically amended by the present Agreement are unchanged.

In witness whereof the parties hereto have hereunto set their respective hands and seals on the day and year first written above.

The Employer
Ethiopian Electric Power Corporation


Mibernet Delele
General Manager

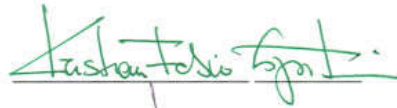



Ayen Asnake



The Contractor
Salini Costruttori S.p.A.







Annex 1

Contract Price Breakdown

Q A B L E M

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Annex 1

CONTRACT PRICE BREAKDOWN

Item	Section of Works	Amount Euro
1	- Contract Inception Cost	17,349,002
2	- Camps & Contractor's Facilities (Employer's Permanent Camp)	41,234,729
3	- Employer & Engineer's Camp (Temporary Office & Living Accomodation)	6,123,875
4	- Stationary Plant	51,072,404
5	- Access Roads	44,093,851
6	- Diversion Tunnel n.1	33,898,059
7	- Diversion Tunnel n.2	38,329,257
8	- Diversion Tunnel n.3	7,599,660
9	- U/s Pre - Cofferdam	2,896,010
10	- D/s Cofferdam	6,824,101
11	- U/s Cofferdam	10,065,694
12	- Dam	546,910,638
13	- Powerhouse	91,782,631
14	- Spillway	55,496,365
15	- Power Intake	107,518,007
16	- Plunge Pool	9,232,778
17	- Switchyard Civil Works	3,744,027
18	- Internal Transport & Services for items 19 & 20	36,333,882
19	- Hydro-Mechanical Works	90,272,291
20	- Electro-Mechanical Works	244,111,449
21	- Engineering	25,111,292
TOTAL PROJECT COST		1,470,000,000

Annex 2
Design Criteria

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B

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h 02

GIBE III HYDROELECTRIC PROJECT

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ANNEX 2 – Design Criteria

1. DAM EXCAVATIONS**1.1 EXCAVATION DEPTH AND EXTENT**

Excavations for foundations shall reach levels where materials/rock possess geotechnical characteristics (shear strength and deformation modulus properties) as required by the design on the overlaying structures, as far as stability and deformation are concerned.

Temporary excavation slopes shall remain stable, during construction, until covered by permanent structures.

Permanent excavation slopes shall remain stable throughout the life of the project.

Design depths shall be checked during construction to ascertain that design requirements are met.

The final design shall specify the geotechnical characteristics required. In situ tests, plate load, dilatometric and flat jack shall be carried out in investigation galleries in order to determine the rock properties which will be used to establish foundations levels.

1.2 DENTAL EXCAVATION AND TREATMENT

Special consideration shall be given to treatment of geological discontinuities and lineaments under the dam, to insure safety, controlling seepage, and preventing erosion and piping.

Amount, extent and type of treatment must be decided by the Designer on the basis of careful geological mapping, after proper cleaning of foundation surfaces.

Design criteria will be related to the extent of the discontinuities, and to their location, with reference to max. water head.

The geological mapping shall be extended over the whole footprint of the dam.

Treatment may include trenching, dental excavation, concrete infilling, concrete blanketing, as established by the Designer to ensure safety.

Dental concrete may also be required to plug depressions in the foundation, which are not large enough to be filled by RCC.

2. CURTAIN AND CONSOLIDATION GROUTING

Purpose of curtain grouting is to establish an effective seepage barrier along a line downstream of the dam upstream face in order to limit the seepage discharge under and around the dam under the Full Reservoir

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Level down to value not exceeding a fraction of the average yearly inflow, fraction which should have no negative consequence on the expectation of project generation and economy. The design of the grout curtain shall be established on the basis of the results of a hydro-geological model, in order to achieve this required performance but also to determine a seepage network in the foundation compatible with the requirements of the bank stability and to avoid the risk of erosion of foundation materials.

The curtain grouting shall consist of a central line of deep curtain grouting holes. Primary grouting holes will be drilled down to a vertical depth corresponding to about two third of the height of the dam, unless on the bases of lugeon test results the design shows that two-thirds the dam height is unnecessary .In no case the depth of the grout curtain shall be less than 30 m. Depth of secondary grouting holes (and further intermediate holes) will depend on geological investigations and results (grout takes) of the primary (and further intermediate) holes.

Cored investigation holes shall be carried out at 45 m intervals before proceeding with the primary grouting in order to determine primary grouting requirements. The investigation holes shall be used for primary grout curtain. The primary holes will be approximately 10 to 15 metres apart. Additional investigations holes (at least one every 50 m) will be realized after completion of the grouting to check its efficiency.

Consolidation grouting, purpose of which is to consolidate the foundation rock, shall be carried to depths sufficient to penetrate any surface zone of open fissures or high permeability.

3. DRAINAGE

Scope of drainage is to control, in association with the grout curtain, the hydraulic gradient under the dam and water pressure compatible with stability requirements. The drainage galleries shall be dimensioned such as to allow grouting operations to be carried out inside the gallery if required. Grouting and Drainage Galleries shall be provided in the Dam abutments.

Drain holes downstream of the grouting curtain will be drilled in the rock from the drainage galleries.

Drain holes may also be required on the open cut excavations for the powerhouse or for other structures to control stability of rock wedges or under the spillway crest and slab to reduce under pressures.

Drain holes can be drilled by percussion rigs and, in general, will be of 75 mm or 100 mm diameter.

4. ROLLER COMPACTED CONCRETE (RCC) DAM DESIGN

The dam, designed as an RCC gravity structure shall meet the following criteria.

- The dam, its foundations and abutments must be stable and safe under all conditions and operations
- The RCC mixes shall aim at developing properties that while controlling thermal stresses, avoid or minimise the need for cooling the aggregates, to reduce and control cracking

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Annex 5

Amendments to Annex – Adverse Physical Conditions

In accordance with Article 7 of the Agreement the Annex H – Adverse Physical Conditions is amended in order to accommodate the RCC Dam solution as follows:

H2 – Surface Works

1 Additional Time for Changes in work for the Dam

Delete the words “*an asphalt or concrete faced rockfill dam*” in the third line of this article and replace with “*a roller compacted concrete (RCC) dam*”.

1.1 Foundation Preparation

Delete the words “*With the exception of the excavation of the plinth foundations for the impervious facing*” in second bullet point and add after “*envisaged*” “*on the left abutment*” in the second bullet point.

Delete the words “*The area in the foundation 30 m downstream of the foundation plinths will be treated by cleaning and shotcrete cover. The extent of the shotcrete will not exceed 1,000 m³*” in the third bullet point.

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