



**ASSESSMENT OF CONSTRUCTION OVERHEAD COSTS
FOR GRADE ONE CONTRACTORS IMPLEMENTING
BUILDING PUBLIC PROJECTS IN ADDIS ABABA**

DANIEL SUSIE ASSEFA

**A THESIS SUBMITTED TO THE SCHOOL OF POST GRADUATE
PROGRAM DEPARTMENT OF CONSTRUCTION TECHNOLOGY
AND MANAGEMENT IN PARTIAL FULFILLMENT OF THE
REQUIREMENT OF A MASTER OF SCIENCE IN CONSTRUCTION
TECHNOLOGY AND MANAGEMENT (COTM)**

ADVISOR- BELACHEW ASTERYE (Ph.D.)

AUGUST 2023

ADDIS ABABA



**ASSESSMENT OF CONSTRUCTION OVERHEAD COSTS
FOR GRADE ONE CONTRACTORS IMPLEMENTING
BUILDING PUBLIC PROJECTS IN ADDIS ABABA**

DANIEL SUSIE A.

APPROVED BY THE BOARD OF EXAMINERS

ADVISOR

INTERNAL EXAMINER

EXTERNAL EXAMINER

CHAIRMAN

DECLARATION

I hereby declare that this thesis is my original work and that has not been presented, in whole or in part, in any previous application for a degree and will not be presented by me to any other University for a similar or any other degree award.

Name: Daniel Susie Assefa

Signature: _____

Place: Addis College, School of Graduate Studies, Addis Ababa, Ethiopia.

Date: August 2023

ABSTRACT

Overhead cost is one of the most important and challenging components of the construction costs of the company and project. It cannot be neglected; therefore, it needs a well-qualified and experienced engineer for its estimation, monitoring, and control. This study aimed to assess construction overhead costs for grade one contractors implementing building public projects in Addis Ababa. The research depends mainly on descriptive and explanatory methodology to achieve the general objective, the qualitative and quantitative methods have been used to collect data through a structured questionnaire from the professionals of construction companies, consultants, employers, and regulatory bodies. The results of the study were that most engineers did not have enough awareness about the practical meaning of overhead costs and didn't know the components of overhead costs in practice and functionally categorized them into the company and project overhead costs. The study also identified the company and project overhead costs weren't calculated in detail based on historical records, experience, and contractual conditions and were not monitored and controlled independently based on the change in the most significant factors of overhead costs. For these, the researcher recommended the developers establish a guideline and conduct training sessions for engineers to educate them, and for contractors to employ more qualified and experienced estimators and cost managers. Also, the developers and other researchers were recommended to identify the actual percentage ranges of construction overhead costs based on the contractor's income statements by collaborating with the Ministry of Inland Revenue.

Keywords: Construction, Overhead Costs, Building Construction

Table of Contents

ABSTRACT	III
LIST OF TABLES	4
LIST OF FIGURES	6
LIST OF ACRONYMS	7
CHAPTER ONE.....	8
1. INTRODUCTION.....	8
1.1. Background of the study.....	8
1.2. Statement of the Problem	9
1.3. Objective of Study	11
1.3.1. General Objective.....	11
1.3.2. Specific Objectives.....	11
1.4. Significance of Study.....	11
1.5. The Scope of Study	12
1.6. Limitation of the Study	12
1.7. Organization of the Research Paper.....	12
CHAPTER TWO.....	13
2. LITERATURE REVIEW.....	13
2.1. Introduction.....	13
2.2. Overhead Costs in Construction	14
2.2.1. What is the overhead cost in construction?	14
2.2.2. Types of overhead costs in Construction and Their Components	14
2.2.3. Basis and Method for Estimating Overhead Costs and Their Percentage	24
2.2.4. The Most Significant Factors Affecting Overhead Costs	30
2.2.5. The Practice and Method of Monitoring and Controlling Construction Overhead Costs	37
2.3. Summary of Research Gaps.....	41
CHAPTER THREE	43
3. MATERIALS AND METHODS.....	43
3.1. Introduction.....	43
3.2. Study Area	43
3.3. Research Design and Method.....	43
3.4. Research Sampling.....	43

***Assessment of Construction Overhead Costs for Grade One Contractors Implementing
Building Public Projects in Addis Ababa***

3.5.	Data Collection Method.....	44
3.6.	Data Analysis Technique.....	45
3.7.	Validity and Reliability	46
CHAPTER FOUR		47
4.	DATA ANALYSIS AND DISCUSSIONS	47
4.1.	General Respondent Information.....	47
4.1.1.	Response Rate	47
4.1.2.	Frequency Distribution Analysis	47
4.2.	The level of the construction parties’ awareness of the basic meaning of the construction overhead costs.	50
4.3.	The Components of a Construction Company and Project Overhead Costs.....	51
4.3.1.	Types of Overhead Costs and Their Components	52
4.3.2.	Types of Overhead Costs and Their Application.....	52
4.3.3.	Components of the Company and Project Overhead Costs.....	53
4.4.	Basis, Method, and Total Percentage for Estimating Construction Overhead Costs	54
4.4.1.	The Basis for Construction Overhead Costs Estimation	57
4.4.2.	Method of Estimating the Percentage of overhead costs.....	59
4.4.3.	Percentage of the Construction Overhead Costs	65
4.5.	The Most Significant Factors Affecting the Contractors’ Overhead Costs.....	68
4.5.1.	Change in the Rate or Percentage of Overhead Costs	68
4.5.2.	Adjustment of Overhead Costs.....	70
4.5.3.	The Most Significant Factors Affecting the Overhead Costs	72
4.5.4.	The Reason Why Overhead Costs were Dependent on Direct Costs	77
4.6.	The Practice and Method of Monitoring and Controlling Contractor’s Overhead Costs	78
4.6.1.	Preparation of a Detailed Construction Overhead Costs Budget.....	78
4.6.2.	Monitoring and Controlling Practice of the Contractor’s Overhead Costs	79
4.6.3.	The Reason Why the Overhead Cost was not Monitored and Controlled by the Contractor.....	83
4.6.4.	Standard System or Method for Monitoring and Controlling the Overhead Costs	83
CHAPTER FIVE.....		86
5.	CONCLUSION AND RECOMMENDATION	86

***Assessment of Construction Overhead Costs for Grade One Contractors Implementing
Building Public Projects in Addis Ababa***

5.1.	Conclusion	86
5.2.	Recommendation	87
	REFERENCE	i
	APPENDIX	iv
	Appendix A: Questionnaire	iv
	Appendix B: Circular Letters from Ministry of Finance regarding Price Adjustment Due to Inflation.....	xvi
	Appendix C: Correspondences among Governmental Offices about Inflation, Price Adjustment, and Price Index.....	xix
	Appendix D: Data Requestion Letter to Ministry of Inland Revenue.....	xxvi
	Appendix E: Quarterly Report on the Percentage of Overhead Costs, City Government of Addis Ababa Construction Bureau.	xxviii
	Appendix F: Originality Report.....	xxxiii

LIST OF TABLES

Table 2. 1 Summary of average percentages of overhead costs	29
Table 2. 2 Summary of factors affecting overhead costs.. Error! Bookmark not defined.	
Table 4. 1 Response Rate.....	47
Table 4. 2 Position held by the valid respondent and category of their working organization	48
Table 4. 3 Respondents' qualification and their working organization.....	49
Table 4. 4 Respondents' working experience and number of projects participated in the last 10 years	49
Table 4. 5 Definition of overhead costs.....	50
Table 4. 6 Engineer's Experience and Qualification Status	52
Table 4. 7 Types of overhead costs and their valuation and Evaluation	53
Table 4. 8 Components of prime contractor's head office overhead costs and their percentage	55
Table 4. 9 Components of prime contractor's project overhead costs and their percentage	56
Table 4. 10 Basis for construction overhead costs Estimation	58
Table 4. 11 Method of estimating the percentage of overhead costs.....	60
Table 4. 12 Prime contractor head office overhead costs	62
Table 4. 13 Prime contractor project overhead costs.....	64
Table 4. 14 Average percentages of overhead costs used by scholars since 2014	65
Table 4. 15 Percentage of overhead costs.....	67
Table 4. 16 Changes in the percentage of overhead costs in the last ten years	69
Table 4. 17 Inflation of material price for projects executed within five years (March 2018 – March 2022).....	70
Table 4. 18 Adjustment of overhead costs.....	71
Table 4. 19 Factors Affecting Overhead Costs.....	74
Table 4. 20 Reason for combining unrelated overhead costs with direct costs and making them dependent on each other	78
Table 4. 21 Overhead expenses budget (Plan).....	79
Table 4. 22 The time of programming the overhead expenses budget (plan)	80

Assessment of Construction Overhead Costs for Grade One Contractors Implementing Building Public Projects in Addis Ababa

Table 4. 23 Overhead costs management (monitoring and controlling)**Error! Bookmark not defined.**

Table 4. 24 The time of monitoring and controlling the overhead costs82

Table 4. 25 Reasons for failure to monitor and control the overhead Costs83

Table 4. 26 Verification of the existence of a standard method or system for managing overhead costs.....84

Table 4. 27 Standard system for managing (monitoring and controlling) the overhead costs85

LIST OF FIGURES

Figure 2. 1 Walter’s (1996) prime contractor spreadsheet checklist	27
Figure 4. 1 Sample for overhead cost analysis	62

LIST OF ACRONYMS

AAU = Addis Ababa University

AASTU = Addis Ababa Science and Technology University

CBE = Commercial Bank of Ethiopia

EBCA = Ethiopian Building Construction Authority

ECA = Ethiopian Construction Authority

ECDSWC = Ethiopian Construction Design and Supervision Works Corporation Building
and Urban Design & Supervision Works Sector

ECSU = Ethiopian Civil Service University

FDRE PPA = Federal Democratic Republic of Ethiopia Public Procurement Agency

GCC = General Conditions of Contract

OH = Overhead

MWUD = Ministry of Works and Urban Development

CHAPTER ONE

1. INTRODUCTION

1.1. Background of the study

Construction costs are typically divided into direct costs and overhead costs (Steven, 2009). Of the two, the main and the most challenging is to calculate the proper and reasonable overhead cost estimation. As a result, they estimated the costs of overhead were simply fixing an arbitrary percentage based on direct costs without genuine justification (Tadesse, 2006). Accordingly, the estimators, especially, most of the contractors didn't consider the realistic amount of construction overhead costs to take the risk and win the tender. Due to such reasons, some contractors were forced out of their business. However, the study revealed that the overhead cost was calculated based on detailed calculations. No specific amount or percentage could be applicable to be added to direct costs Steven (2009), Nabil et al., (2015). Aziz F. et al. (2021) and Swati S. Patil et al. (2014) studies also indicated that the change in the rate of construction overhead costs until 2021 has increased and recommended to be adjusted accordingly.

In Ethiopia, there is no directive or guideline prepared on it at least to direct how much we consider the percentage of overhead costs of contractors at the national level by the Ministry of Urban and Infrastructure or other responsible public bodies. However, currently, the City Government of Addis Ababa Design and Construction Bureau issues the percentage of overhead costs and its method of estimating for contractors having different grades or classes every quarter for the public body offices under it and for the construction projects they regulate through its FACEBOOK, TELEGRAM, and TWITTER pages. Individually, some studies have been made on cost estimation and tried to include some portion of overhead costs about its estimation like Tadesse (2006), Wubshet (2007), Abeselom (2008), and Danait (2015).

Therefore, the researcher needed to make a study on construction overhead costs for grade one contractors implementing building public projects in Addis Ababa to fill the gaps.

1.2. Statement of the Problem

Most scholars examined the level of contractors' awareness of overhead costs in different countries in their study. In Ethiopia, we could not confidently say about the professionals' level of understanding due to the absence of a study conducted on overhead costs. To examine the level of professionals' awareness of the basic meaning of construction overhead costs, the researcher conducted the study by using a survey (questionnaire).

Both the foreign and Ethiopian researchers identified and introduced functionally grouped two types of overhead costs (Clough, 2015; Tadesse, 2006). However, most of the estimators and contract managers used a packaged (total) overhead rate as a company (head office) and/or project overhead costs for their fixing rates and monitoring and controlling purposes. Accordingly, for the appropriate purpose of estimating, planning, implementing, monitoring, and controlling overhead costs, the components of overhead costs were identified independently under the functionally grouped types of overhead costs (i.e., company and project overhead costs) by this study in Addis Ababa through a survey.

In line with the scholars' studies made from 2006 to 2021, the average rate of company overhead costs in other countries was about 9.00%, the project overhead was about 10.00%, and the overhead costs ranged from 17.50% to 19.00%. Whereas in Ethiopia, the average company overhead was about 8.00%, the project overhead was about 13.00%, and the overhead costs ranged from 15.00% to 21.00% (Chan, 2006; Siskina et al., 2009; Clough, 2015; R. Janani et al., 2015; Swati S Patil et al., 2014).

However, in practice, the amount of overhead costs used by estimators and contract engineers was not known and the allocation of its percentage made a dispute among the professionals of the parties. The majority of estimators were fixing the rates for construction works in public projects based on their intuition without justification. Because they didn't have their historical data or there was no published guideline or standard to use a reasonable and proper rate of construction overhead costs. For such things, this study investigated the amount of percentage of overhead costs used for the contractors' head office and projects based on survey data and analysis of contractors' income statements of audit reports through detailed calculations (Nabil et al., 2015).

Chan (2012), S. Hesami et al. (2014), and Aziz F. et al. (2021) have explored the principal factors affecting construction project overhead expenses. Whereas in Ethiopia, there is no study conducted to identify the factors affecting contractors' overhead costs, and most of the professionals assumed there were no changes in overhead costs. However, the strength of most local contractors' finances was declining due to such factors. To fill the gap, I used a survey to collect the data and identify the most significant factors affecting overhead costs from professionals of contractors, consultants, public bodies, and regulatory bodies with my study and showed the changes in overhead costs.

Construction managers often spend enormous amounts of time and effort budgeting, tracking, and controlling direct construction costs while ignoring overhead costs. Overhead costs are a major expense to a construction company, construction managers should manage the overhead costs just as they would direct and indirect construction costs (Steven, 2009). In Ethiopia, there was no study conducted on the practice and method used for controlling and monitoring contractors' overhead costs. On the other hand, some local contractors are trying to know their expenses through their monthly technical reports. But most of them are not interested to hear the result of their technical financial reports to monitor and control accordingly, I didn't know the reason behind this.

The overhead costs cannot be neglected; they should be in control always. The contractors will not be in business if the cost goes out of their control. Hence, to prepare a strategic plan to win other competitive bidders based on technical and price requirements, accomplish the objectives of the projects they have, deploy the appropriate measures to overcome overhead costs-related problems, protect the company from financial failure, and maximize the overall profit margin of a company, the healthiness of contractors' overhead costs shall be in a good position. To examine it, the practice of controlling and monitoring contractors' overhead costs and their methods will be surveyed via my study.

In general, these were the reasons that led the researcher to do this thesis based on the following research questions:

- ❖ What is the meaning of a contractor's overhead cost in construction?
- ❖ What are the components of the company and project overhead costs for a grade one contractor?

- ❖ What are the basis and methods used for estimating overhead costs to determine the percentage range of contractors' overhead costs used in the process of estimation?
- ❖ What are the most significant factors affecting the contractor's overhead costs?
- ❖ Is there any practice for preparing a construction overhead costs budget and the method applied for monitoring and controlling them?

1.3. Objective of Study

1.3.1. General Objective

The study's general objective was to assess the construction overhead costs for grade one contractors implementing building public projects in Addis Ababa.

1.3.2. Specific Objectives

The specific objectives of the study were: -

- ❖ To examine the level of the construction parties' awareness of the basic meaning of the construction overhead costs.
- ❖ To identify the components of the construction company and project overhead costs for a grade one contractor.
- ❖ To investigate the basis, methods, and total percentage for estimating construction overhead costs.
- ❖ To find out the most significant factors affecting the contractors' overhead costs.
- ❖ To examine the practice and method of monitoring and controlling contractors' overhead costs.

1.4. Significance of Study

The significance of this study will be used as reference material for other researchers who can take similar studies, it will be used as input for the local consultants, public bodies, and regulatory bodies when they fix the prices and rates of building projects during the contract planning phase. In addition, it will be used by construction companies as an input or a checklist when they fix their rates and prices of building projects during tendering and then monitor and control the overhead costs during the implementation phase.

1.5. The Scope of Study

It was restricted to building construction works overhead costs and performed on parties participating in grade one contractors implementing building public projects in Addis Ababa under the supervision of the City Government of Addis Ababa Design and Construction Bureau and ECDSWC (Ethiopian Construction Design and Supervision Works Corporation Building and Urban Design & Supervision Works Sector), the owners of the Commercial Bank of Ethiopia (CBE), governmental Universities (AAU, AASTU, and ECSU), and Ethio Telecom.

For this study, the researcher used the general conditions of contracts prepared by the Federal Democratic Republic of Ethiopia Public Procurement Agency (PPA) (August 2011) in addition to other professional books as a reference.

1.6. Limitation of the Study

During the study, there was no problem faced that related to time, money, and other resource limitations. Also, no error occurred related to sampling. However, out of the 52 questionnaires that were distributed to collect the data, 2 were not filled and returned.

1.7. Organization of the Research Paper

The basic elements of this paper are Abstract, Introduction (Chapter One, Literature Review (Chapter Two), Materials and Methods (Chapter Three), Data analysis and Discussion (Chapter Four), and Conclusion and Recommendation (Chapter Five).

Chapter One provides the basic information about the research including the background of the study, statement of the problem, objectives of the significance, the scope of the study, and limitations of the study. The theories and empirical related to the aim of the study are included in chapter two. Chapter three includes study area, research approach, data collection technique, research sampling, data analysis, validity, and reliability. The data presentation, data analysis, and interpretation of the results are presented in chapter four. The last chapter focused on the research's conclusions and recommendations.

CHAPTER TWO

2. LITERATURE REVIEW

The purpose of reviewing literature in a thesis is to provide a comprehensive and critical analysis of existing research and scholarly works related to the topic of the thesis. It helps to identify gaps in knowledge, establish the study's theoretical framework, and provide context for the research questions. It also demonstrates the author's familiarity with the relevant literature and ability to position their work within a broader academic discourse.

For this study, different literature has been reviewed such as books, articles, magazines, journals, newspapers, and conditions of contract. Besides, the construction company audit reports, construction contract agreements, PPA conditions of contracts, etc. have been reviewed as needed. This phase was vital to support and strengthen the research before the research proceeded to other stages.

2.1. Introduction

The prices and rates inserted in the bill of quantities are to be the full inclusive values of the works described under the items, including all costs and expenses that may be required in and for the construction of the works described together with any temporary works and installations which may be necessary and all general risks, liabilities, and obligations set forth or implied in the documents on which the tender is based (Tadesse, 2006).

In simple words, construction price is the amount of expense for direct costs (material, labor, machinery, and/or equipment), overhead costs, and profit margin. Overhead costs and profit margin are two critical metrics that construction companies account for during every accounting cycle. Understanding how overhead expenses can affect the profits your company retains can help you streamline project costs, determine effective pricing strategies, and improve the outcomes of future projects. If you're responsible for monitoring and controlling project budgets, reviewing overhead and profit calculations can help ensure your team and organization are meeting business and financial goals.

In this study, we explored what overhead costs in construction are, what are the components of overhead costs, what factors affect overhead costs, what is the basis for

estimating overhead costs, what is the method for estimating overhead costs, how much the percentage range of overhead costs, and is there any practice to prepare a construction overhead costs budget and what method was applied for monitoring and controlling them.

2.2. Overhead Costs in Construction

2.2.1. What is the overhead cost in construction?

Law Insider dictionary defines overhead costs are all indirect construction costs, that cannot be directly booked under a specific activity in a construction project but are required to keep the whole project operational (Tadesse, 2006). Overhead costs are also defined as those costs that are not a component of the actual construction work but are incurred by the contractor to support the work (Janani et al., 2015). Contractor Hub [19] defines overhead as the costs of operating your business. Includes costs such as insurance, bonds, office supplies, payroll, vehicle expenses, utilities, accounting expenses, etc.

2.2.2. Types of overhead costs in Construction and Their Components

Types of overhead costs

According to Clough's (2015), Dagostino's, Frank R's (2011), and Tadesse's (2006) studies, overhead costs are divided functionally into the head office or home office and project or job site overhead costs. Head office overhead costs are also referred to as a company or as general overhead costs or administration costs. Project overhead costs are also referred to as site or job overhead costs.

A. Company overhead costs

The company or home office overhead costs include items that cannot be readily charged to any one project but represent the cost of operating the construction company (Dagostino, Frank R, 2011). The company or general overhead consists of those costs that cannot be specifically identified for the completion of a construction project. General overhead may also be referred to as the company's indirect costs, including all main office and supervisory costs that cannot be billed to a specific construction project. General overhead costs are controlled on a companywide basis. The responsibility for controlling these costs falls on the construction general manager (Steven, 2009).

In the Ethiopian context, head office overhead costs are all costs required to run the whole operation of the construction company, which usually administers different projects at a time. These costs are not usually associated with a specific project but rather shared proportionally by all projects under the company (Tadesse, 2006).

B. Project overhead costs

As the name implies, project overhead costs refer to overhead costs incurred on the job site (Clough, 2015). The job overhead costs include all overhead expenses that will be incurred as a result of executing a specific project (Dagostino, Frank R, 2011). According to Tadesse's (2006) study, site overhead costs are all costs required to run the whole operation of a specific construction project at the site level. These costs are not associated with a specific activity in a project but rather are shared proportionally by all activities within the project.

Components of overhead costs

In the studies of Clough (2015), Swati S. Patil et al. (2014), and Tadesse (2006), the books of Steven (2009) on Construction Accounting and financial management, and Dagostino, Frank R. (2011) on Estimating Building Construction and, PPA's (2011) General Conditions of Contract, the components of details or elements of company overhead costs were identified and recommended as follows:

A. Components of the Company Overhead Costs

The following is a list of items or components or details that could be included in a company's overhead costs:

Senior Management Costs: these refer to costs related to salaries and benefits packages of the senior management in the head office.

Indirect Labor Costs: Indirect labor refers to employees who are not involved in construction projects. Depending on the size, type, and organizational structure of the construction company, every organization has to incur costs to cover the salaries, overtime, and benefits of staff other than the senior management members working at the head office such as the technical, administrative, marketing, finance, and supply staffs.

Head Office Building Rent or Depreciation: Usually, companies either rent or own their office buildings. In both cases, costs are incurred in such a way either rental cost will be paid, if the building is rented and building depreciation will be considered if the building is owned. According to the income tax proclamation No. 286/2002, the acquisition or construction cost and the cost of improvement, renewal, and reconstruction of buildings shall be depreciated on a straight-line basis at a five percent (5%) rate annually.

Marketing and Bidding Expenses: These costs are usually associated with bid document purchases, expenses related to attending the pre-bid conference and visiting the site, bid bonds, and so on.

Expertise Service Fees: These costs will be incurred when professional services are required such as the services of external auditors, lawyers, technical advisors, computer support staff, designers (engineers and architects), and management consultants.

Office Furniture and Equipment: Different office furniture and equipment are required depending on the size and standard of the company. Some of these are chairs, tables, computers, photocopiers, printers, repair costs of furniture and equipment, and other facilities depending on the company's requirements. According to income tax proclamation No. 286/2002, the office furniture and equipment shall be depreciated at the rate of 20% annually on a pooling system.

Office Running Expenses: The head office operation requires lots of miscellaneous expenses to run the day-to-day activities of the company such as telephone, fax, internet services, office supplies (stationeries), mail services, software licensing, office cleaning items, and/or the cost of regular cleaning services, and so many others.

Workshops, Garages, and Warehouses: Depending on the size and type of the construction company, it usually incurs costs related to central workshops, garages, and warehouses such as the depreciation costs of the buildings or rental expenses. Moreover, equipment working in the workshops and garages.

Bank Charges (Credit Obligations): naturally, companies may borrow money from banks mainly to purchase types of machinery, plants, buildings as well as materials. Therefore, the interest to be paid on the borrowed capital shall be considered under the

Assessment of Construction Overhead Costs for Grade One Contractors Implementing Building Public Projects in Addis Ababa

head office costs unless these types of machinery and, as well as materials, will be consumed in a specific project. In this case, these costs shall be considered under the site overhead costs of the specific project.

Insurance Premium: Head office employees usually have medical insurance depending on the prevailing laws and company internal rules and regulations. Moreover, the office building and small vehicles shall also be insured and all these insurance Premiums shall be treated under the head office overhead costs.

Transportation and Travel Fare: The day-to-day activities of the head office require transportation facilities such as small vehicles. Moreover, regular site visits shall be conducted from the head office to the project sites at different levels to evaluate and assist in the proper execution of projects using various means of transportation. In addition, some other local and international visits may be conducted for different purposes such as training, meetings, purchasing, experience sharing, joint venture formation, etc. Therefore, all these costs related to transportation, per diem, and living expenses shall be considered under the head office overhead costs.

Advertising: Advertising includes all costs to market the construction company through printed materials, such as trade journals, newspapers, and direct mail. These costs should include the design and preparation of advertising materials, printing, postage, and the cost of ad space. It may also include billboards, signage for the office, online ads, flyers, mailers, and business cards.

Charitable Contributions: Charitable contributions are any donations that are donated to a qualified organization. Qualified organizations include churches, nonprofit schools and hospitals, public parks and recreation facilities, and other nonprofit charitable organizations. Charitable donations may be in the form of cash property or labor and material support.

Risk Allowance (Inflation, devaluation, change in government regulation, and lack of foreign currency): All the estimated company overhead costs may change from time to time mainly due to economic, social, political, and technical variations as compared to the assumptions made during the cost estimation. Accordingly, the Contractors incorporate all risk allowances in their tender price to compensate for the negative economic impacts

Assessment of Construction Overhead Costs for Grade One Contractors Implementing Building Public Projects in Addis Ababa

of main inflation, devaluation, change in government regulation, and lack of foreign currency (LC).

Entertainment: the deductions for business entertainment expenses, except for certain employee events, like entertaining customers, office parties, and recreational, social, or similar activities.

Income Tax: Unless otherwise established for a special purpose, contractors perform construction contracts to get the maximum possible profit, and any construction company operating a profitable business in Ethiopia shall pay 30% of its gross profit as an income tax as per the income tax Proclamation No. 286/2002. This type of tax shall also be considered as overhead costs when we price a financial proposal.

Dues and Memberships: Dues and memberships include the fees paid to professional organizations, such as the Association of Contractors, and so on.

Employee Training: Employee training should include the cost of seminars and classes to improve employee skills. Meals and travel associated with the training should be budgeted under the Meals and Entertainment line item and Travel line item, respectively.

Promotion: Promotion includes items given away to promote the company, such as hats, shirts, and cups printed with the company's name and logo.

Publications and Subscriptions: Publications and subscriptions include the cost of trade magazines and newspapers used to keep the company's staff up-to-date concerning potential projects and other changes in the industry. This also includes newspapers and publications used in the waiting area that cover employee recruiting (typical employee recruiting costs include the cost of newspaper and other advertising to find employees and hiring personnel agencies and other costs incurred during the hiring process).

Repairs and Maintenance: Repairs and maintenance include the cost of maintaining office facilities and the associated capital equipment- computers and furnishings-covered under the general overhead budget.

Taxes and Licenses: Taxes and licenses include property taxes, business licenses, relevant professional practice certificates, and other government-mandated permits required to

operate a business.

Equipment and Vehicles: Leased equipment and/or vehicles, owned equipment and/or vehicles, and maintenance and repairs.

Depreciation of Company Assets: the cost of a tangible or physical asset over its useful life.

Miscellaneous: Miscellaneous includes all costs not included elsewhere. This line item should be used for infrequent or unusual costs.

B. Components of the Project Overhead Costs

The following is a list of items or components or details that could be included in a project overhead cost:

Site Management Costs refer to costs related to salaries and benefits packages of the site management members on the project site.

Indirect Labor Costs: Indirect labor refers to employees who are not involved in construction project activity. Depending on the size, type, and organizational structure of the construction project, costs are incurred to cover the salaries, overtime, and benefits of staff other than the site management members working at the project site such as all site engineers, office engineers, administrative and finance staffs, data collectors, and surveyor and so on.

Mobilization and Demobilization Costs: Different construction machinery, materials, and labor force must be mobilized during construction and all the labor force, remaining machinery, and materials shall be demobilized after completing the construction of the specific project. These costs are mainly transportation costs.

Tender Expenses: These costs are related to the costs of the contract performance security (PPA (2011) Clause 58), advance repayment guarantee (PPA (2011) Clause 60), contractor's all risk insurance, insurance of the works, and third-party insurance (PPA (2011) Clause 40) depending on the contract conditions agreed.

Site Offices (Temporary Office): The cost of temporary office buildings includes all tool sheds, watch towers, and sanitary facilities (toilets for the workers). Depending on the size and location of the construction project, site offices are constructed from different materials such as corrugated iron sheets, prefabricated materials, material packing steel containers, steel structures, and normal hollow concrete blocks (PPA (2011) Clause 52). If the temporary office is a rental, the rental cost is considered as a project's overhead costs.

Expertise Service Costs: These costs will be incurred when professional services are required at the project site such as lawyers, claim experts, and so on. It also can include fees paid to professional engineers and architects that cannot be billed to a construction project.

Office Furniture and Equipment: Different office furniture and equipment are required depending on the size and location of the project. Depending on the project requirement, some of these are chairs, tables, computers, photocopiers, printers, and others.

Office Running Expenses: The project office operation requires different expenses such as telephone service, mobile phone, fax, internet services, mail services, postage and delivery, and stationery.

Radio Communications: This type of wireless communication uses radio waves to transmit information. It is a common form of communication on large construction sites because it does not require line-of-sight and can work in areas with limited or no cell phone service. If the coverage area of the construction project is vast such as road and hydropower projects, handheld and stationed radio communications may be used within the site and with the head office.

Camp Facilities: If the project location is far from cities and towns, it is very normal to construct and operate site camps where all staff and workers will live. Moreover, the costs of construction and operation of other facilities such as restaurants, recreational centers, compound lighting, fire protection, fencing, security equipment, and playgrounds are also included in the camp facilities.

Access Roads: Depending on the topography and location of the project site, different access roads may be required to construct such as detour roads, access roads to quarry and disposal areas, access roads to facilities such as batching plant, crushing plant, and water supply as well as internal temporary roads within the site offices and camp facilities. These costs include the construction and maintenance costs of these access roads. On the other hand, If the road exists, the expense related to the repair of any damage caused to roads, tracks, or bridges by the transport of materials, plants, or equipment shall be considered in the site overhead costs.

Water and Power Supply Charges: All the site offices, camp facilities, and the construction itself require water and power supply for operating the whole project properly. In case the project location is far from cities and towns, costs will be incurred to construct and operate water and power supplies. These costs may cover the cost of construction, purchase cost of equipment such as generators and water pumps as well as the operating costs of the systems.

Workshops, Garages, and Warehouses: Depending on the size and type of the project, costs are incurred in constructing and running the project's workshops, garages, and warehouses. Moreover, equipment depreciation and running costs shall be considered for this equipment working in the workshops and garages.

Bank Charges: The construction company may borrow money from banks specifically for a particular project to purchase machinery and plants as well as materials to be consumed in a specific project. In this case, the cost of borrowed capital shall be considered under the site overhead costs.

Transportation and Travel Fare: The site operation requires lots of travel within and outside the project site. Therefore, transportation facilities such as small vehicles are vital for the proper execution of the project. Moreover, depending on the project rules and regulations, some trips may require additional travel expenses such as per diem and displacement allowance.

Insurance Premium: Depending on the prevailing laws and company internal rules and regulations, usually, site staff and workers usually have medical insurance. It is also very normal that all construction equipment, plants, and small vehicles shall be insured.

Occupational Health and Safety on Site: In line with The Civil Code of Ethiopia Article 2549-2552 and PPA GCC Clause 40 and 45, the contractor shall be liable for accidents that the employee suffers and for diseases that the employee contracts arising from his work. Hence, the Contractor shall ensure the safety on sites during the whole period of execution and shall be responsible for taking the necessary steps, in the interests of his employees, agents of the Public Body, and third parties, to prevent any loss or accident which may result from carrying out the works. Accordingly, the contractor shall consider the reasonable amount of costs for safety and health when pricing his offer.

Testing, material sampling, and inspection Charges: For fulfilling the quality requirements of a project, according to PPA (2011) Clauses 80 and 81, material testing, sampling, and production inspection shall be required during the performance of the contract. The costs of such operations shall be borne by the contractor.

Risk Allowance (Inflation, Devaluation, and lack of foreign currency): All the estimated direct material, labor, and equipment costs, as well as the site overhead costs, may change from time to time mainly due to economic, social, political, and technical variations as compared to the assumptions made during the cost estimation. Accordingly, the Contractors incorporate all risk allowances in their tender price to compensate for the negative economic impacts of main inflation and price escalation of direct construction costs (Material, Manpower, and Machinery and/or Equipment).

Income Tax: Any construction company operating a profitable business in Ethiopia shall pay 30% of its gross profit as an income tax to the FDRE Ministry of Inland Revenue as per the income tax Proclamation No. 286/2002. This type of tax shall also be considered as overhead costs when we price a financial proposal.

Tests on completion: The completed project works shall not be accepted until the prescribed verifications and tests have been carried out at the expense of the contractor (PPA (2011) GCC Clause 85). To cover it, the estimator should consider the overhead estimate.

Other Contract Requirements: By contract requirements, the costs may be borne by contractors. For instance, the costs related to Changes in Laws and Regulations (PPA (2011) GCC/ SCC Clause 16), Contractor's Drawings (Shop Drawings) (PPA (2011) GCC/

Assessment of Construction Overhead Costs for Grade One Contractors Implementing Building Public Projects in Addis Ababa

SCC Clause 42), Safeguarding Adjacent Properties (PPA (2011) GCC/ SCC Clause 46), Interference with Traffic (PPA (2011) GCC/ SCC Clause 47), Removal of Cables and Conduits (PPA (2011) GCC/ SCC Clause 48), Soil Studies (PPA (2011) GCC/ SCC Clause 53), etc.

Unallocated Materials and Equipment: Unallocated materials and equipment include the costs of materials and equipment purchased for construction projects but not billable to a construction project. This includes inventory shrinkage, ladders and stairs, construction elevators, hoists, cranes, etc.

Advertising: It includes all costs to market the construction company through printed materials. It may also include signage for trucks, job signs, and billboards or projects.

Charitable Contributions: Charitable contributions are any donations that are donated to a qualified organization. Qualified organizations include churches, nonprofit schools and hospitals, public parks and recreation facilities, and other nonprofit charitable organizations. Charitable donations may be in the form of cash or property.

Entertainment: the deductions for business entertainment expenses, except for certain employee events, like entertaining customers, office parties, and recreational, social, or similar activities.

Photographs: Photographs are very necessary at various stages of construction, and even if they are not required, it is strongly suggested that a digital camera and a video camera be kept at each job site. The project office engineer should make use of them at all important phases of the project to record progress and then report. In addition to the cost of the above items, the cost of processing and any required enlarging of the pictures should be considered in the overhead estimate.

Surveys: If a survey of the project location on the property is required, the estimator must include the cost for the survey in the overhead estimate. A survey may be used to lay out the corners and grid lines of a building even if it is not required by the contract documents, which costs need to be included in the estimate.

Cleanup: Throughout the construction's progress, rubbish or construction waste will have to be removed from the project site. The overhead costs estimator needs to estimate how

many trips will be required and the cost per trip. In addition, before acceptance of the project by the owner, the contractor will have to clean the floors, the job site, and, in many cases, even the windows. This is typically performed by a cleaning service and estimated in the overhead costs.

Miscellaneous: Miscellaneous includes all costs not included elsewhere. This line item should be used for infrequent or unusual costs.

In addition to the above, the special conditions contract should be checked carefully for other requirements that will add to the job overhead expense.

2.2.3. Basis and Method for Estimating Overhead Costs and Their Percentage

3. The Basis for Construction Overhead Costs Estimation

Accurate estimation of construction overhead costs' components and reviewing the factors affecting overhead costs are very important to the overall estimation of the costs and also to ensure that the construction project stays within budget and is completed on time.

The most appropriate basis to estimate construction overhead costs may vary depending on the specific (scope and type) project, the availability of data, the expertise of the estimator, and the industry. However, some common methods include using a percentage of direct costs such as material, labor costs, and equipment or machinery costs, or using historical data, requirements of projects, and experience.

According to the studies investigated by Nabil et al. (2015) and Steven (2009), the most appropriate basis for the estimation of overhead costs, bids, and the allocation of budgets used by the construction companies executed in different countries are the contractors' historical records, experience, and contract conditions.

As per Abeselom's (2008) report, the majority of the local contractors estimated or calculated the construction overhead costs based on the percentage of direct costs by selecting an arbitrary rate of overhead costs.

4. The Method for Construction Overhead Costs Estimation

Construction costs can include both those that are directly attributable (such as labor) and indirect costs (such as labor burden or insurance). Companies must be particularly careful with their indirectly attributable overhead costs.

Overhead costs are often overlooked or underestimated, which can lead to cost overruns and schedule delays. Calculating and recording the overhead costs regularly will help the contractors save money, get a better price for their works, products, and services, and streamline business operations. (Steven, 2009)

In the construction industry, there are several methods used for estimating construction overhead costs, including:

1. **Historical data analysis:** Analyzing the history of the company and/or the projects to determine the average overhead costs and using that information (patterns and trends) to estimate future company and/or projects (Nabil et.al, 2015).
2. **Benchmarking:** It is a systematic process of searching for the best practices, innovative ideas, and highly effective operating procedures that lead to superior performance. Accordingly, compare your company's and/or projects' overhead costs against industry benchmarks to determine if your estimates are proper and reasonable or in line with industry standards (Bala et.al, 2015).
3. **Percentage of direct costs:** Calculating a percentage of the direct costs (such as material, labor, equipment, and/or machinery) to allocate towards overhead expenses. The percentage used will depend on the type of project and the company's historical data (Abeselom, 2008).
4. **Activity-based costing:** this method involves identifying all activities that contribute to overhead costs, assigning a cost to each activity, and then allocating those costs to each project based on the level of activity required (Aziz F., et al., 2021).
5. **Expert opinion:** Seeking input from experienced professionals in the industry to estimate overhead costs based on their knowledge and expertise (Nabil et.al, 2015).

It is important to note that each method has its strengths and weaknesses, and it's often best to use a combination of methods for a more accurate estimate.

Assessment of Construction Overhead Costs for Grade One Contractors Implementing Building Public Projects in Addis Ababa

There are at least nine formulas that have been used, with varying degrees of success, in litigation in the United States and Canada. Those formulas were used by courts to compensate the companies for overhead costs due to owners' delays, which are: the Eichleay Formula, Modified Eichleay Formula–Variation 1, Modified Eichleay Formula–Variation 2, Hudson Formula, Ernstrom Formula, Manshul Formula, Carteret Formula, Allegheny Formula, and Emden Formula (Zack, 2002). Whereas, in Ethiopian courts, such formulas are not recommended to be used for calculating the compensation (damage) of overhead costs. They will accept when the compensation is calculated based on the details of actual damage as stated in Article 1892 (Civil Code of Ethiopia).

On the other hand, when estimating the overhead costs for projects, companies typically use either a volume-based allocation method or resource-based costing. Volume-based allocation is a method in which overhead costs are allocated to work packages by the volume of direct labor hours, direct labor costs, or contract amount. Resource-based costing is a method by which project resources are estimated and converted to their financial value (Globerson, 2017).

Enshassi et al. (2008) showed that 60 percent of the surveyed Palestinian contractors estimated the indirect costs in detail from the tender documents of the projects and that 21 percent of the contractors estimated the indirect cost as a percentage of both (the materials and labor costs), 10 percent took it as a fixed amount based on previous similar projects. The remaining respondents did not consider the overhead costs during their estimation.

Project overhead costs shall be computed by listing and costing each item of overhead individually, rather than by using an arbitrary percentage of the project cost. The only way to arrive at an accurate estimate of job overhead is to analyze the particular needs of each project and determine the cost (Clough, 2015).

There are several ways to calculate overhead costs in construction projects. The most common method is to use a percentage of the direct costs incurred. This can be done by estimating the total direct project cost and then applying a certain percentage to that amount [22].

However, according to the Nabil et al. (2015) study and their recommendation, the overhead cost calculated based on detailed calculations for all items required by

Assessment of Construction Overhead Costs for Grade One Contractors Implementing Building Public Projects in Addis Ababa

contractual conditions is the most appropriate method of estimating it. No specific amount or percentage could be applicable to be added. Furthermore, during the bidding stage, the overhead costs are equally distributed within each item proportionally to the total contract value.

To facilitate the process of estimating contractors' overhead costs, the contractors can use Walter's (1996) prime contractor spreadsheet checklist, which is a list of prime of

Table 1 – Prime Contractor Overhead Spreadsheet Checklist Organized by Type of Overhead Component

Prime Contractor Overhead Spreadsheet Checklist Organized By Type Of Overhead Component				
Medical Training Facility Duke Field, Florida				
Summary:				
Project Size (Gross Square Meters)				1,014
Project Duration (Months)				10
Project Direct Cost			\$	1,133,213
Prime Contractor Overhead			\$	138,230
Percentage Of Overhead To Direct Cost				12.2%
Cost Per Month			\$	13,823
Cost Per Gross Square Meters			\$	136.38
Detail:				
Prime Contractor Overhead	Quantity	U/M	Unit Cost (\$)	Total (\$)
<u>General Conditions</u>				
Project Superintendent	10	Month	3,500	35,000
Secretary/Time Keeper	10	Month	1,100	11,000
Mobilization	1	LS	1,000	1,000
Demobilization	1	LS	1,000	1,000
Storage Trailer	10	Month	200	2,000
Field Office	10	Month	200	2,000
Field Office Supplies	10	Month	75	750
Fencing	133	M	6	800
Temporary Safety Barricades	1	LS	1,000	1,000
Temporary Electricity	10	Month	200	2,000
Temporary Telephone	10	Month	150	1,500
Temporary Toilets	10	Month	100	1,000
Temporary Water	10	Month	50	500
Continuous Cleanup	40	Week	125	5,000
Final Cleanup	1	LS	1,500	1,500
Testing And Inspection	10	Month	200	2,000
Project Sign	1	Each	200	200
Bulletin Board	1	Each	200	200
<u>Equipment</u>				
Flat Bed Truck	10	Month	600	6,000
Transportation	10	Month	300	3,000
Vehicle Maintenance	10	Month	100	1,000
<u>Bonds</u>				
Performance And Payment Bond	1	LS	17,250	17,250
<u>Insurance</u>				
Contractor's Public Liability	1	LS	4,000	4,000
Builder's Risk Insurance	1	LS	2,000	2,000
<u>Home Office</u>				
Home Office Expense	1	LS	36,530	36,530
Total Prime Contractor Overhead				138,230

Figure 2. 1 Walter's (1996) prime contractor spreadsheet checklist (for illustration)

Of contractor's overhead cost items that usually occur on a building construction project. The Spreadsheet can perform mathematical calculations to determine the costs and ratios of prime contractor overhead.

In addition, as per Danait (2015) and Abeselom (2008) reports, most Ethiopian contractors followed to estimate the percentage of overhead costs mainly depends on the consideration of an arbitrary percentage of direct costs equally distributed within each item. However, simply applying a percentage for the overhead costs degrades the overall accuracy of the estimate. If its estimation is inaccurate, it will challenge contractors regarding winning tenders and/or obtaining an anticipated profit margin from the contracted projects. If its estimation is over, it may result in high tender prices, forcing contractors out of competition during the bid. If it is an underestimation, it will hamper the contractors from realizing a sufficient profit (Danait, 2015).

5. Percentage of the Construction Overhead Costs

The percentage of overhead costs in project price estimation is considered the key parameter in estimating the financial value of the bid offer. Many contractors took the risk due to the non-considering of the actual costs of overhead to win the tender. Hence, neglecting overhead costs has forced some contractors out of business (Nabil et al., 2015).

Site overhead costs will be 10 to 12%, and inclusive of company overhead costs will be 15% of the contract value. If the overhead cost exceeds 15%, the profit of a project will go down (Janani et al., 2015).

Siskin et al. (2009), surveyed 30 construction companies in Lithuania and estimated the average project overhead costs to be around 10% of total costs and the average overhead administration costs to be around 8% of total costs. Another study by Chan (2006) of 20 construction projects found that overhead costs account for 11%-19% of total project costs.

According to the literature reviewed by Swati S Patil et al. (2014), the total overhead costs did not usually exceed 15% of the annual construction volume in India. However, in their study, the calculated overall percentage was 16.83%.

The total cost of company overhead expense generally ranges from three to ten percent (3% to 10 %) of the contractor's annual business volume and the Project contributes from

Assessment of Construction Overhead Costs for Grade One Contractors Implementing Building Public Projects in Addis Ababa

five to fifteen percent (5% -15%) of the total project cost, depending on where and how certain project costs are included in the cost estimate (Clough, 2015).

The Ethiopian Building Construction Authority (EBCA) has recommended about 5-10% of the direct cost for total overhead costs EBCA (1989).

The City Government of Addis Ababa Design and Construction Works Bureau is releasing its plan of the applying percentage of overhead costs for public building works when pricing the estimation of works quarterly and managing the changes (variation works) through its FACEBOOK, TELEGRAM, and TWITER. For instance, for Class 1-3 Building Contractors, the Bureau has decided to consider 10% for total overhead costs.

According to Wubshet’s (2007) study the ratio of site overhead costs to project direct costs ranges from 11.4 to 14.6 %, of the direct project cost, and that of company overhead was 4.5 %.

Also, Abeselom (2008) found that 14.23% and 11.22% of the project's direct costs and the company's overhead costs, respectively.

Therefore, in line with the scholars’ studies made from 2006 to 2021, the average rate of company overhead costs in other countries was about 9.00%, the project overhead was about 10.00%, and the overhead costs ranged from 17.50% to 19.00%. Whereas in Ethiopia, the average company overhead was about 8.00%, the project overhead was about 13.00%, and the overhead costs ranged from 15.00% to 21.00% (Table 2.1).

Table 2. 1 Summary of average percentages of overhead costs

I.n	Scholars	Range of Indirect Cost (Overhead Cost), %		
		Company Overhead Cost	Project Overhead Cost	Total Overhead Cost
A. Other Countries				
1	Chan (2006)			11%-19%
2	Siskina et al. (2009)	8%	10%	18.00%
3	Clough (2015)	3%-10%	5%-15%	8%-25%
4	R.Janani et al (2015)	15%	10%-12%	25%-27%
5	Swati S Patil et al. (2014)			16.83%
Average Percentage of Overhead Costs Using in Other Countries		9.00%	10.00%	19.00%
B. Ethiopia				
6	EBCA (1989)			5%-10%
7	Wubshet (2007)	4.50%	11.4%-14.6%	15.9%-19.1%
8	Abeselom (2008)	11.22%	14.23%	25.45%
9	Addis Ababa Design and Construction Works Bureau (2012-2015E.C)			10.00%
Average Percentage of Overhead Costs using in Ethiopia		8.00%	13.00%	21.00%

2.2.4. The Most Significant Factors Affecting Overhead Costs

A. Change in the rate or percentage of overhead costs

A change in the rate of construction overhead costs refers to a modification in the amount or proportion of indirect expenses incurred by a construction project to complete the work. This can occur due to various factors such as changes in labor costs, change in material costs, or change in the allocation of overhead costs to different activities like inflation, duration, etc. A decrease in the rate or percentage of construction overhead costs can lead to lower overall project costs, while an increase can lead to higher costs and potentially impact the project's profitability or feasibility.

Aziz F. et al. (2021) and Swait's (2014) studies indicated that there was a change in the rate of construction overhead costs.

B. Adjustment of the Rate of Overhead Costs

Adjusting the rate of construction overhead costs involves re-evaluating the project's overhead budget and making necessary changes to ensure that the project remains financially feasible.

Steven (2009) recommended that the estimated overhead costs be adjusted for inflation and changes in the market.

However, according to the Asian Development Bank (2018), overhead costs were considered a component of the fixed portion of a price adjustment (non-adjustment portion) formula.

C. The Significant Factors Affecting Overhead Costs

Based on a review of appropriate literature, it can be said that overhead costs are a focus for many researchers, especially in terms of construction projects. For example, Chan (2012), S. Hesami et al. (2014), and Aziz F. et al. (2021) have explored the principal factors affecting construction project overhead expenses (Table 2.2).

The factors extracted from different kinds of literature are described as follows:

Project Complexity: Project complexity is a function of organizational complexity, resource complexity, and technical complexity (S. Hesami et al., 2014). Chan (2012) noted that special techniques and tools in construction were introduced as an agent linked with project complexity, especially technical and organizational complexity since this

Assessment of Construction Overhead Costs for Grade One Contractors Implementing Building Public Projects in Addis Ababa

Table 2. 2 Summary of factors affecting overhead costs

I.n	Description of Factors affecting Overhead costs	Scholars				
		Li-chung Chao, 2010	Chan, 2012	S. Hesami et al., 2014	Swati S Patil & P. Bhanak, 2014	Aziz F, et al., 2021
1	Project Complexity		√	√		
2	Project Location	√	√	√		
3	Project Size	√		√		
4	Payment Schedule			√	√	√
5	The Client's Strictness and Exactness in Supervision			√		
6	Regional Economic Condition		√	√		
7	Need for the Contractor's Work		√	√	√	√
8	Type of Contract (Contract Conditions)	√	√	√		
9	Tendering Method		√	√		
10	Project Management Method			√		
11	Method of Performing the Project		√	√		
12	Number of Competitors			√		
13	Contractor's Cash Availability			√		
14	Assigning Work to Subcontractors			√		
15	Companies' Classification			√		
16	Type of Project	√	√	√		
17	Country of Performing the Project	√		√		
18	Required Quality Level of the Projects	√		√		
19	Work Scope	√		√		
20	Duration of the Project	√	√	√		
21	Familiarity with and Influence in Area (Native contractor)			√		
22	Stakeholders' Profits		√	√		
23	Inflation and Interest rate in the Area		√	√	√	√
24	Extent of Bond and Warranty Requirement		√	√		
25	Contractor's Designing Necessities		√	√		
26	Site Layout (Infrastructure, Site shape, Site coverage, Etc ...)		√	√		
27	Foreign Joint Venture			√		
28	Experience of Performing a Similar Project			√		
29	Similar Project Availability			√		
30	The Volume of Work in the Construction Market		√	√		
31	Government Regulation				√	√
32	Firm's Growth				√	√
33	Internal Mistakes (Wrong management decisions and errors)					√
34	Marketing Expenditure (New market opportunities)					√
35	Lack of Staff Training and Development					√
36	Company Strategy (Expansion of a Company/organization)					√

sensitivity increases the requirement for more professional experts and better support. Finally, it increases costs.

Project Location: Choosing the project location can affect some components of the project overhead costs including travel costs, transportation, access, the amount of importation, security of the public properties, launching and conserving offices, and other temporary facilities (S. Hesami et al., 2014).

Project Size: The requirement for resources and staff is increased by increasing the size of the project. Hence, it affects the amount of overhead costs. S. Hesami et al. (2014) state that the size and complexity of the project affect the organizational structure of the contractor, the cost breakdown structure, and the project period.

Payment Schedule: The results of the research of Aziz F. et al. (2021) and Swati S. Patil & P. P. Bhanale (2014) showed that the cash flow and the contractors' financial problems that the contractors are involved are the most important effective factors in the construction costs. S. Hesami et al. (2014) state that many contractors depend on these payments for performing the project faster, and any delay in confirming these payments with the employer causes a pause in performing the contractors' work.

The Client's Strictness and Exactness in Supervision: Where there is an increase in bureaucracy and strictness, an employer's supervision in obtaining the desired quality, and their interaction with the contractor, there will be an effect on overhead costs. In their study, S. Hesami et al. (2014) confirmed that meetings and bureaucracy are the two major activities that consume the most overhead resources.

Regional Economic Condition: In bad economic periods, companies have fewer projects and there is a need to decrease overhead costs to improve the chance of survival (Chan, 2012). The economic condition of the region has an impact on staff salaries, the price of services, the rental of machines, etc., and consequently, it affects the amount the overhead costs (S. Hesami et al., 2014)

Need for the Contractor's Work: Maintaining staff and financial earnings are the most fundamental reasons required for organizational work and contract work companies. The staff is usually trained by spending the cost for the company and the contract work companies as an economic real-estate are normally desired to keep the experienced staff. However, without the existence of this project, keeping this capital is difficult for the organizations. The amount of need for work in the study of S. Hesami et al. (2014), Swati

S. Patil & P. P. Bhanale, (2014), and Aziz F. et al. (2021) is justified as the most important effective factor for overhead costs.

Type of Contract: The type of the contract in terms of the construction, the design, and the construction, and the relation of the under-contracts have an impact on overhead costs (Chan, 2012).

Tendering Method: The tendering method like the contract type and the size of the contract necessities affects the amount of the project overhead costs (Chan, 2012).

Project Management Method: The project manager has the least and the most authority in the duty structure and the project-directed structure, respectively. In project-directed organizations that make a specific team for each project, the overhead costs are lower than the organizations that use the organizational staff in the matrix or duty ways (S. Hesami et al., 2014).

Method of Performing the Project: The project's method shows the main contractor's ability and commitment (Chan, 2012). The method of performing the project affects overhead costs and must be considered in terms of engineering, providing and supplying goods, construction, financial support, maintenance, and exploitation, up to what level, under the commitment of which side of the contract is put, and the project is done in the form of two-sided or three-sided factors (S. Hesami et al., 2014).

Number of Competitors: The number and quality level of the competitors is effective on the amount of the overhead costs because of its effect on the profit level, the contingency reserves, and in some other cases the requirement for more accuracy (S. Hesami et al., 2014).

Contractor's Cash Availability: The contractor's cash availability with the effect on providing and supplying goods and machines, etc. provides the possibility of economizing and performing the project more economically and is very effective on the amount of the overhead costs (S. Hesami et al., 2014).

Assigning Work to Subcontractors: Although assigning the spending work to the subcontractors and the experts saves the organizations from overspread, it causes some costs including the costs to create coordination and integration between them, suitable

support, etc., and puts the amount of the spending work packages among the effective factors on the overhead costs in Iran (S. Hesami et al., 2014).

Companies' Classification: It is obvious that the companies with higher grades need more workspaces, machines, and storehouses as well as better and more expert staff; hence, they have more overhead costs. The classification of the companies in the study of S. Hesami et al. (2014) is identified as the effective factor in overhead costs in Iran.

Type of Project: Elsaywy et al. (2011) examined 52 construction projects in Egypt from 2002-2009 and showed that the type of the project is one of the effective factors in the direct overhead costs.

Country of Performing the Project: The country in which the project is performed affects the number of overhead costs in the aspect of culture, governmental laws, taxes, the safety of war, sanctions by other countries, etc. According to Chao (2010) and S. Hesami et al. (2014), the country performing the project is important in the amount of the overhead costs in terms of weather, culture, and laws.

Required Quality Level of the Projects: Access to better quality depends on existing better tools and resources, and suitable management that has an impact on the overhead costs. Since reaching the optimum level of the overhead directly faces the quality of services with challenges, it is a complex and difficult issue for organizations (S. Hesami et al., 2014).

Work Scope: Work scope affects the number of middles, communication necessities, distribution of resources, and engineering costs and as a result, it affects the overhead costs (Chao, 2010). In addition, the work scope decreases the performance of the additional activities that are ineffective in the achievement of the project via better and more correct identification of the employers' requirements and a better understanding of the word limit. Consequently, it is effective on the decrease of overhead costs.

Duration of the Project: Most of the research emphasizes project duration as an important factor that affects the overhead costs and the parts related to the duration include more than 45% of the overhead costs of the project. In addition, the high potential risk of project delay increases the importance of this factor in affecting overhead costs (Chan, 2012).

Familiarity with and Influence in Area (Native contractor): Better familiarity with the area is effective in supplying and providing materials and goods, using professional staff, and simpler and less expensive solutions to the created crises as well as affecting the overhead costs. In addition to the mentioned cases, the native contractors can perform more economically in traveling costs, residing, staff salary, telecommunications, etc., and have a higher chance of winning the bids (S. Hesami et al., 2014).

Stakeholders' Profits: Chan (2012) believes that if a project causes riot or unrest even if the claims are successful, the contractor must bear the project overhead costs due to the extension or stop working.

Inflation and Interest Rate in the Area: In Aziz F. et al. (2021) and Swat S. Patil & P. P. Bhanale, 2014 research inflation and interest rates are the most important factors affecting construction costs. No doubt increasing inflation causes an intense fluctuation in the insurance right because of the increase in the financial claims of the insurance companies. Besides, changes in the interest rate led to high insurance rights, and the above cases put a heavy responsibility for the contractors regarding the project overhead costs (Chan, 2012).

The Extent of Bond and Warranty Requirement: According to the study by Chan et al. (2006), the insurance and the warranty form nearly 10% of the overhead costs, and this issue turns into a main concern for the contractors in the case of increasing the insurance right and the warranty amount.

Contractor's Designing Necessities: The requirement for using special software, further experiments, or the requirement of making a model for explaining the primary design, and such instances are the most fundamental constituents of this part that are effective on the amount of the overhead costs. If the project design is complex or unknown and has many variables, the contractor will need more staff to coordinate the design and provide the plans; failure in performing this work can simply lead to a delay or performing unconvincing works and additional uncoverable costs (Chan, 2012).

Site Layout (Infrastructure, Site shape, Site coverage, etc. ...): Infrastructure, shape, site coverage, the possibility of providing suitable support for the project, materials, and storage limitations, and such instances affect overhead costs. For example, the level of the

infrastructure is directly linked with the bulk of work, the amount of the required resources, and the rate of overhead costs. In addition, whatever the level of the infrastructure is wider and the area of the site is smaller, storing the construction materials and other construction facilities is difficult. There are solutions to solve the above problem including delivering the materials at a consuming time or renting the storage near the site that led to the increase in overhead costs (Chan, 2012).

Foreign Joint Venture: The presence of foreign joint ventures with increasing transportation costs, dance (party) costs, and staff salary cause leases in the rate of overhead costs (S. Hesami et al., 2014).

Experience in Performing a Similar Project: The experience of performing a similar project decreases the amount of trial and error and makes it possible for the project team to provide a more accurate explanation of the project framework. Lack of experience to perform a project and lack of technical knowledge led to delays and increased overhead costs (S. Hesami et al., 2014).

Similar Project Availability: Although similar projects' availability causes limitations in resource assumption, recognizing supplies, optimum accomplishing method, the number of required resources, and finally better management leads to economizing in overhead resources and makes suggesting competitive price possible (S. Hesami et al., 2014).

The Volume of Work in the Construction Market: It is sometimes difficult to obtain project resources and reduce costs in a thriving market, and vice versa, so the market capacity and project size also influence overhead costs. When there is a downturn in business and when companies have fewer projects, they may have no option but to adjust overhead costs (Chan, 2012).

Government Regulation: Government regulations came as the fourth reason for increased company overhead costs. Increased costs to recruit manpower from abroad and work legally in the Kingdom have affected company overhead costs as many contractors consider such costs a company overhead cost. Also, awarding projects using the lowest bid prevents the company from effective company overhead cost recovery (Aziz F. et al., 2021; Swati S. Patil & P. P. Bhanale, 2014).

Firm's Growth: A company's strategy regarding expanding to new working horizons or even shrinking to a smaller size company has significant accompanying costs. Expanding construction activities may involve recruiting more manpower, expanding the head office, buying more equipment, or negotiating a loan. On the other hand, downsizing involves getting rid of surplus manpower, reducing or changing head office, or liquidating equipment and batching plants which usually takes place in bad times leading to high company overhead costs (Aziz F. et al., 2021; Swati S Patil & P. P. Bhanale, 2014).

Internal mistakes: Mistakes such as wrong management decisions and errors can increase company overhead cost levels (Aziz F. et al., 2021).

Marketing expenditure: During a slowdown or recession most contractors usually seek new marketing opportunities, which can increase company overhead costs (Aziz F. et al., 2021).

Lack of staff training and development: Staff training and development can be used to reduce company overhead costs. More qualified staff can perform better and be more productive (Aziz F. et al., 2021).

Company strategy: When a company is expanding, it will require more office equipment, recruitment of more personnel, etc. for its operation, which may increase company overhead costs. (Aziz F. et al., 2021).

Instability of political situation: Political instability is one of the factors that influence overhead costs. Due to such a case, the progress of the project has been suspended, whereas the overhead cost is expanding.

2.2.5 The Practice and Method of Monitoring and Controlling Construction Overhead Costs

A. Monitoring and Controlling Construction Overhead Costs

In construction, monitoring overhead costs refers to the process of tracking and recording all indirect expenses associated with a project. Controlling overhead costs, on the other hand, involves taking corrective actions to keep these expenses under control when they exceed the budgeted amount. In other words, monitoring focuses on identifying potential

cost overruns before they become problems while controlling focuses on addressing cost overruns that have already occurred. Both processes involve keeping a close eye on the expenses incurred and making adjustments as needed to achieve the desired outcome.

Overall, monitoring and controlling construction overhead costs are essential components of effective cost management in construction, helping to ensure that projects are completed within the allocated budget and without unnecessary expenses.

Accordingly, at the initial stage, contractors who are bidding should have complete knowledge about their direct and overhead costs. This helps them monitor and control overhead costs throughout the project life (R. Janani, 2015).

A construction company's competitiveness depends on its ability to complete projects on time, within the assigned budget, and according to all agreed-upon specifications. A company's ability to complete projects is highly correlated to its internal ability to properly manage the above three criteria. The highly competitive construction industry is mainly controlled by prices since technological know-how is shared throughout the industry, with slow changes. As such, companies have to continuously seek ways to reduce their project costs, of which overhead cost is a major part (Globerson, 2017).

Since overhead costs comprise a significant part of the construction estimate, the evaluation of overhead costs is a key task for building contractors. However, the unstable construction market makes it difficult for contractors to decide on the optimum level of overhead costs that enable contractors to win public tenders and manage large projects without financial losses. Besides, if a contractor does not know his actual overhead costs, his unsuccessful effort to cover them may result in the financial collapse of a construction company (Assaf et al., 2001).

To control overhead costs, a budget should be prepared for the overhead expenses and the overhead costs should be tracked, just as one prepares budgets for and tracks indirect construction costs for each project. The overhead budget is a plan of all expenditures for the company and/or project that cannot be billed to a construction project. The overhead budget should be used when making day-to-day decisions that involve the expenditure of company funds. The preparation and use of an overhead budget help to control the overhead costs and thereby increase profits. Experience has shown that companies that use

Assessment of Construction Overhead Costs for Grade One Contractors Implementing Building Public Projects in Addis Ababa

sound budgeting principles to manage their overhead are more profitable than companies that do not. The use of an overhead budget requires daily vigilance, vigilance that many construction companies fail to exercise. Overhead budgets may be prepared for two specific reasons: projection of cash needs and projection of profits. The difference between these two generals' overhead budgets is in how we handle capital costs and loans (Steven, 2009).

To control the overhead costs in the project, the initiated project has to be completed on time without any delay, delayed arrival of materials to the project site has to be controlled or must be eliminated at any reason, regular review of reports, and regular supervision of project work, delayed payments of wages to employees, proper monitoring and control on costs must be performed (R. Janani et al., 2015).

To manage construction overhead costs, appropriate cost control procedures need to be implemented. When controlling overhead costs, the earlier in the process the costs can be checked and approved against a budget the easier it is to control costs. Costs should be entered into the accounting system as soon as possible after the costs are known. At a minimum, the cost reports from the accounting system should be reviewed every week for all projects and their overhead. In addition to using accounting reports, the earned value may be used to measure the scheduling and cost efficiency of a project. The schedule performance index is used to measure the scheduling efficiency and the cost performance index is used to measure the cost efficiency of the project. After each project, management should perform a project closeout audit, during which time it learns from what was done right and from its mistakes (Steven, 2009).

Construction managers often spend enormous amounts of time and effort budgeting, tracking, and controlling construction costs while ignoring overhead costs. Overhead costs are a major expense to a construction company, construction managers should manage the overhead costs just as they would direct and indirect construction costs (Steven, 2009).

Generally, the overhead costs cannot be neglected, but the indirect costs should be in control always. The contractors will not be in business if the cost goes out of their control. For such a case, the earned value approach helps to better monitor and control overhead expenses. The Earned Value approach is typically used for the cost control of work packages that generate deliverable products. This approach has not been used before for

Overhead cost control, since overhead activities do not have specific, measurable deliverables (Globerson, 2017).

Earned Value Approach

As Steven (2009) presents, one of the basic indicators to control the overhead cost is the Cost Performance Index. The cost performance index (CPI) measures the success of the project's management in completing the work under budget. The cost performance index is based on the relationship between the budgeted cost of the work performed (BCWP) and the actual cost of the work performed (ACWP) using the following formula:

$$\text{CPI} = \text{BCWP}/\text{ACWP}$$

The actual cost of the work performed is obtained from the accounting system. If the budgeted cost of the work performed is greater than the actual cost of the work performed, the anticipated cost of the work performed is greater than the actual cost of the work and the corresponding cost performance index is greater than one, indicating that the project is under budget. A cost performance index of one indicates that the project is on budget, and a cost performance index of less than one indicates that the project is over budget.

Moreover, Project Management Institute (2013), as cited in (Globerson, 2017), outlined the following notations and equations in using the "Earned Value Management" concept:

EV - Earned Value (BCWP), the measured value of work performed, expressed in terms of the budget authorized for that portion of work that had been completed.

AC - Actual Cost (ACWP), is the realized cost incurred for the work performed on an activity during a specific period.

PV - Planned Value, the authorized budget assigned to scheduled work.

CV - Cost Variance, the amount of budget deficit or surplus at a given point in time, expressed as the difference between the earned value and the actual cost.

Cost performance index (CPI)

The cost performance index indicates the cost efficiency of your project and measures the value of the completed work against the actual cost.

Cost performance index formula

To get the CPI, divide the earned value by the actual cost.

$$\text{CPI} = \text{EV/AC}$$

If the cost performance index is:

Greater than 1: The value of the completed work is more than the amount spent. Your project is under budget.

Less than 1: The value of the completed work is less than the amount spent. Your project is over budget.

Equal to 1: The value of the completed work is equal to the amount spent. Your project is on budget.

2.3 Summary of Research Gaps

In Ethiopia, the following problems or gaps were commonly observed during the performance of estimating and managing construction overhead costs against the facts and theories.

1. The practical meaning of construction overhead costs was not known by the engineers working in the firms of Project Employers, Consultants, Contractors, and Regulatory Bodies.
2. Most of the engineers were known for the functional types of construction overhead costs. However, their components were not recognized by most of the engineers.
3. Because of the lack of knowledge of the basis and methods used to determine the percentage of the contractor's overhead costs in the process of estimation, most of the engineers assigned an arbitrary percentage based on their interest or the trend their firms practiced. Due to such a case, disputes were raised among the engineers to fix a proper and reasonable rate of the overhead costs. Especially, pricing the variation works.
4. There were different factors affecting the construction overhead costs. However due to a lack of study in the planning phase (feasibility study) and/or the

unavailability of provision(s) related to the adjustment of project costs including overhead costs in the special conditions of the contract against the change in factors, most of the projects' progress were affected.

5. Technically, due to the lack of experienced engineers, the contractors didn't want to worry and didn't know the overall effect, the overhead costs were not properly planned (budgeted), monitored, and controlled regularly.

CHAPTER THREE

3. MATERIALS AND METHODS

3.1. Introduction

The construction industry has been facing significant challenges in estimating monitoring and controlling overhead costs, which can significantly affect project profitability and sometimes its direct costs. To address this issue, this thesis aims to assess the construction overhead costs for grade one contractors implementing building public projects in Addis Ababa and specifically to examine the level of respondents' awareness of the basic meaning of the construction overhead costs, to identify the components of the company and project overhead costs, to investigate the basis, methods, and total percentage for estimating construction overhead costs, to find out the most significant factors affecting the contractors' overhead cost, and to examine the practice and method of monitoring and controlling contractors' overhead costs.

In this section, the researcher described below the methodology used for this study to collect and analyze the data related to construction overhead costs.

3.2. Study Area

To assess the construction overhead costs for grade one contractors implementing building public projects, the selected study area by the researcher was in Addis Ababa.

3.3. Research Design and Method

According to the characteristics of the data, the appropriate research design and methodological approach or method selected to achieve the research objectives were descriptive and explanatory research design and hybrid (quantitative and qualitative) research method, respectively.

3.4. Research Sampling

To get the sampling frame, the researcher used the main parties for public projects under the supervision of the City Government of Addis Ababa Design and Construction Bureau

and ECDSWC, Building and Urban Design Supervision Works Sector head office. In addition, the researcher tried to incorporate the Commercial Bank of Ethiopia (CBE), three governmental Universities (AAU, AASTU, and ECSU), and Ethio Telecom for his study.

Out of 73 firms (the target population), the sample size identified for assessing construction overhead costs that perform and consult the public building projects in Addis Ababa is a total of 65 (i.e., 3 Regulatory Bodies, 21 Public Bodies (Client), 17 Consultants, 24 (Contractors)). In other words, the sampling parties that participated in the construction of building projects in Addis Ababa were 65.

In addition, the researcher employed the non-probability sampling method or technique for individual selection and a convenience sampling method for each specific objective.

3.5. Data Collection Method

This study used both primary and secondary data. The primary data were collected firsthand using structured questionnaires and interviews with selected active parties' representatives, such as project managers, office engineers, and contract administrators from Contractors, resident engineers, and contract engineers or contract administrators from consultants, experts from regulatory bodies, and project coordinators from the employer.

Secondary data were obtained from sources already existing contract agreements, PPA 2011 General Conditions of Contract, Contractors' Audit Report, and other published materials such as books, personal sources, journals, newspapers, seminar papers, articles, previous research reports, magazines, blogs, and electronic resources through the websites.

This research used a questionnaire survey method or technique as recommended by Daw Son C. (2019) to collect data using hard copies in physical, Email, and Telegram applications, and then prepare for analysis. The questionnaire was designed to be a wide framework that was deep enough to follow the standard cost estimation method likely used by local contractors, consultants, public bodies, and regulatory bodies.

The developed questionnaire consists of 21 questions on construction overhead costs to examine the level of respondents' awareness of the basic meaning of construction overhead costs, to identify the components of the company and project overhead costs, to

investigate the basis, methods, and total percentage for estimating construction overhead costs, to find out the most significant factors affecting the contractors' overhead costs, and to examine the practice and method of monitoring and controlling contractors' overhead costs.

For the ease and convenience of reaching the respondents that participated in this study, closed-ended questions were used to develop the questionnaire. The closed-ended questions consisting of multiple choice and Likert-Scale questions were used to collect the current construction overhead costs in Addis Ababa. The multiple-choice questions used three to five-item options. The Likert scale questions used a five-point scale (i.e., strongly disagree, disagree, neutral, agree, and strongly agree) with each point coded as 1, 2, 3, 4, and 5, respectively to rate the most significant factors affecting the contractors' overhead costs.

The questionnaire was initially verified by the researcher advisor and senior professionals to ensure clarity and conciseness and later validated through a pilot test of a small sample of five respondents to ensure the questions were easily understood by the respondents and that each question had the same meaning to each participant. The advice was used to revise the requests and refine the questionnaire.

3.6. Data Analysis Technique

The collected data shall be prepared for analysis. Responses from the questionnaire were organized, coded, and entered the data into a statistical software program, IBM SPSS, for analysis and then exported to an Excel spreadsheet. The analysis used for this study includes percentage, frequency (number of participants), importance index, and rank. To analyze the related Likert-scale (agreement scale) questions the importance index was calculated using Equation (1). This involves ranking the attributes in each related question based on the importance index revealing the comparative significance of the criteria under assessment.

$$I = \sum_{i=1}^5 \left[\frac{a_i X_i}{5} \right] 100\% \quad \text{-----Equation (1)}$$

Where,

I = Importance index

a_i = A constant expressing the weight of the i th response where, $a_i = 1, 2, 3, 4, 5$ for $i = 1, 2, 3, 4, 5$, respectively.

x_i = The frequency of the i th response given as a percentage of total responses for each cause or factor; $i = 1, 2, 3, 4, 5$, where x_1 = Frequency for strongly disagree response, x_2 = Frequency for disagree response, x_3 = Frequency for a neutral response, x_4 = Frequency for agree on a response, x_5 = Frequency for strongly agree response.

The data was analyzed by using the quantitative and qualitative methods/techniques of data analysis.

3.7. Validity and Reliability

As per the recommendations given by LinkedIn (2023), to validate and check the reliability of research for such type of data, the researcher followed these steps: -

1. The researcher used multiple sources of data and evidence, such as questionnaires, interviews with more experienced and qualified professionals, governmental documents, and manufactured articles, to triangulate the findings and reduce bias.
2. The researcher used member checking, which involves sharing the data and interpretations with some senior participants, to ensure the accuracy and credibility of the results.
3. The researcher used peer debriefing, which involves discussing the research process and outcomes with some experts, to enhance the validity and reliability of the study.
4. The researcher used rich and thick descriptions, which provide detailed and contextualized accounts of the phenomena under investigation, to enable transferability and generalizability of the findings.
5. The researcher used reflexivity, which involves reflecting on his assumptions, values, and biases, to increase the transparency and trustworthiness of the research.

CHAPTER FOUR

4. DATA ANALYSIS AND DISCUSSIONS

4.1. General Respondent Information

4.1.1. Response Rate

Table 4.1 shows that 52 questionnaires were distributed to respondents and out of them 50 responses were collected. All the collected responses were valid for analysis. Accordingly, the overall response rate is 96%.

Table 4. 1 Response Rate

Category of respondents working organization	Contractor	Consultant	Public Body (Client)	Regulatory body	Total
Target Population(N)	24	17	29	3	73
Selected Sample Size (n)	24	17	21	3	65
Number of Questionnaires Distributed (A)	24	17	8	3	52
Number of Responses Collected (B)	24	15	8	3	50
Number of Valid Responses ©	24	15	8	3	50
Response Rate (D= C/A * 100)					96%

4.1.2. Frequency Distribution Analysis

First of all, the frequency distribution analysis was performed on the demographic variables using SPSS to identify the respondents' demographic composition.

Part 1 of the questionnaire had 5 demographic questions to identify; category of the organization, current job title or position of the respondents, their education background, years of experience, and the number of public building projects participated in in the last ten years in Addis Ababa of the research sample.

The frequency distribution results shown in Table 4.2 indicate that 48% of the respondents currently work in Construction Companies (Contractors), while 30% are working in Consulting firms, 16% are in Public Bodies, and the remaining 6% are working in Regulatory Bodies. Besides, in their job title, 18% of respondents are project managers, 2% are quantity surveyors, 4% are office engineers, 38% are contract administrators, 8% are cost engineers, 20% are project coordinators, 0% are contract engineers, 10% from the

Assessment of Construction Overhead Costs for Grade One Contractors Implementing Building Public Projects in Addis Ababa

respondents are other experts (See Table 4.2). This implies that the key personnel of contractors, consultants, and clients have participated in this study and they will add more practicality and reliability to the coming results.

Table 4. 2 Position held by the valid respondent and category of their working organization

Category of organization	Job Title or Position of the Respondent in the Current Construction and Engineering Companies										
	Project	Quantity	Office	Resident	Contract	Cost	Project	Contract	Other	Total	
	Manager	Surveyor	Engineer	Engineer	Admin.	Engineer	Coordinator	Engineer	Expert	No.	%
Contractor	8		1		8	2	4		1	24	48%
Consultant		1			7	1	4		2	15	30%
Regulatory body						1	1		1	3	6%
Public Body (Client)	1		1		4		1		1	8	16%
Total No. of Respondents	9	1	2	0	19	4	10	0	5	50	100%
Total Respondents in %	18%	2%	4%	0%	38%	8%	20%	0%	10%	100%	

Based on frequency distribution, it was found that the educational background of the respondents was analyzed using three categories of education level: diploma, first-degree, and M.Sc. and above. The results described that 42% were first-degree, and 58% had master-level and above education (Table 4.3). This suggests that most of the respondents were well-qualified engineers (master-level holders) and they contributed more to this research.

Moreover, the response rates of respondents having different working experiences and the number of projects participated in in the last 10 years are shown in Table 4.4. Maximum responses came from professionals having experience of more than 10 years (76%) and the number of projects participated was 5 projects (50%). This means that their responses have adequate knowledge of the activities associated with construction overhead costs. In addition, even if the sample size could be small, it should be a convincing experience and qualification. Their contribution and impact on the research results should make the research more relevant, realistic, reliable, and indisputable.

Assessment of Construction Overhead Costs for Grade One Contractors Implementing Building Public Projects in Addis Ababa

Table 4. 3 Respondents' qualification and their working organization

No.	Qualification	Repondents									
		Regulatory Bodies		Public Bodies		Consultants		Contractors		Total	
		Freq.	%	Freq.	%	Freq.	%	Freq.	%	Freq.	%
1	College diploma										
2	First-degree	1	2%	4	8%	5	10%	11	22%	21	42%
3	M.Sc. and above	2	4%	4	8%	10	20%	13	26%	29	58%
	Total	3	6%	8	16%	15	30%	24	48%	50	100%

Table 4. 4 Respondents' working experience and number of projects participated in the last 10 years

No.	Discription	Repondents									
		Regulatory Bodies		Public Bodies		Consultants		Contractors		Total	
		Freq.	%	Freq.	%	Freq.	%	Freq.	%	Freq.	%
	Respondents' Years of Experience or Service										
1	0 to 5years	0	0%	2	4%	5	10%	0	0%	7	14%
2	5 to 10years	0	0%	2	4%	1	2%	2	4%	5	10%
3	More than 10years	3	6%	4	8%	9	18%	22	44%	38	76%
	Total	3	6%	8	16%	15	30%	24	48%	50	100%
	Respondents' Praticipated Number of Projects										
1	1 to 5 Projects	0	0%	8	16%	5	10%	12	24%	25	50%
2	5 to 10 Projects	0	0%	0	0%	10	20%	10	20%	20	40%
3	More than 10 Projects	3	6%	0	0%	0	0%	2	4%	5	10%
	Total	3	6%	8	16%	15	30%	24	48%	50	100%

The procedure, findings, and relevant discussion of the analyses are detailed in the following section.

The presentation of the data and interpretation of the results were carried out based on the total results collected from questionnaires with different companies.

4.2. The level of the construction parties' awareness of the basic meaning of the construction overhead costs.

To examine the level of the construction parties' awareness of the basic meaning of the construction overhead costs, two questions were requested from the respondents and discussed as follows:

4.2.1. What is construction overhead cost?

The main purpose of this question is to examine the level of respondents' (Regulatory bodies, Public Bodies, Consultants, and Contractors) awareness regarding the basic meaning of the construction overhead cost.

The result in Table 4.5 shows that 32 % of the respondents chose the most appropriate definition of overhead costs as stated overhead costs are costs that are a component of operating costs and that can be calculated based on direct costs. Another 58% of the respondents chose the most appropriate definition of overhead costs as stated overhead costs are all indirect construction costs, which cannot be directly booked under a specific activity in a construction project but are required to keep the whole project operational. Only 10 % of the respondents don't know about construction overhead costs.

Table 4. 5 Definition of overhead costs

No.	Responses	Repondents									
		Regulatory Bodies		Public Bodies		Consultants		Contractors		Total	
		Freq.	%	Freq.	%	Freq.	%	Freq.	%	Freq.	%
1	Overhead costs are costs that are a component of operating costs and that can be calculated based on direct costs.	0	0%	5	10%	6	12%	5	10%	16	32%
2	Overhead costs are all indirect construction costs, which cannot be directly booked under a specific activity in a construction project but are required to keep the whole project operational.	3	6%	2	4%	7	14%	17	34%	29	58%
3	Don't know	0	0%	1	2%	2	4%	2	4%	5	10%
	Total	3	6%	8	16%	15	30%	24	48%	50	100%

4.2.2. The Experience and Qualification Status of the Assigned Estimator

The assignment of the engineer in the position of estimating, monitoring, and controlling the construction overhead costs during the pricing of tenders and construction period both at the head office and the project level is also used as a norm that measures the level of respondents or organizations.

Accordingly, the result shown in Table 4.6 shows that 50% of the respondents said that the assigned engineer for estimating, monitoring, and controlling the construction overhead costs was well-experienced both in office and site work and has a Diploma in Civil Engineering or Building Engineering. Another 36% of the respondents said that he/she was well-experienced both in office and site work and whose qualification was a Degree in Civil Engineering or Building Engineering or COTEM. Of the remaining 14%, 4% of the respondents said that the assigned engineer was well-experienced both in office and site work and whose qualification was an M.Sc. in Civil Engineering or COTEM and 10 % of the respondents reported that the assigned engineer for estimating and monitoring the construction overhead costs has no experience. That means the assignment of low-level engineers in the position of estimating, monitoring, and controlling overhead costs indicated the perception level of organizations to overhead costs was not enough.

Based on such investigations, it was assumed that the respondents seemed fully to understand the basic meaning of the construction overhead costs, but their organizations assigned low-level engineers. It indicates that the level of awareness of overhead costs was not enough among the respondents (organizations). Staff that are more experienced in construction overhead costs and qualified can perform better and be more productive (Aziz F. et al., 2021).

4.3. The Components of a Construction Company and Project Overhead Costs.

To identify the components of company and project overhead costs, three questions were requested from the respondents, and their responses were discussed as follows:

4.3.1. Types of Overhead Costs and Their Components

This question was raised to get feedback about how practically the respondents applied the type of construction overhead costs and their components. The basic problem faced in the estimation of overhead costs and their monitoring and controlling was the identification of the construction overhead cost components and functionally grouping them under the types of overhead costs.

Table 4. 6 Engineer’s experience and qualification status

No.	Responses	Repondents									
		Regulatory Bodies		Public Bodies		Consultants		Contractors		Total	
		Freq.	%	Freq.	%	Freq.	%	Freq.	%	Freq.	%
1	A well-experienced both in office and site work and whose qualification is a Diploma in Civil Engineering or Building Engineering.	2	4%	6	12%	6	12%	11	22%	25	50%
2	A well-experienced both in office and site work and whose qualification is a Degree in Civil Engineering or Building Engineering or COTEM.	1	2%	2	4%	5	10%	10	20%	18	36%
3	A well-experienced both in office and site work and whose qualification is an M.Sc. in Civil Engineering or COTEM.	0	0%	0	0%	1	2%	1	2%	2	4%
4	Have no experience.	0	0%	0	0%	3	6%	2	4%	5	10%
	Total	3	6%	8	16%	15	30%	24	48%	50	100%

4.3.2. Types of Overhead Costs and Their Application

In different literature, functionally, the researchers specified the two types of construction overhead costs. Those were company (general or home office) overhead costs and project (the site or job) overhead costs and they were considered individually during estimation and their management by contractors (Clough, 2015; Tadesse, 2006).

In Ethiopia, as per Abeselom’s (2008) report, most (87%) of the contractors recognized the type of overhead costs as company and project overhead costs. However, 52% of the contractors used them as a package (without segregating the two) only as a basis for the estimation of overhead costs.

Assessment of Construction Overhead Costs for Grade One Contractors Implementing Building Public Projects in Addis Ababa

The same as that, in this study, as you can see from the result in Table 4.7, all the respondents (100%) confirmed that there was no other type of construction overhead cost that was classified based on function. Moreover, during the performance period, 88% of the respondents considered the types of overhead costs as a package to estimate, monitor, and control the overhead costs. This was also confirmed in Table 4.10.

Table 4. 7 Types of overhead costs and their valuation and Evaluation

No.	Basis for Estimation of Overhead Costs	Repondents									
		Regulatory Bodies		Public Bodies		Consultants		Contractors		Total	
		Freq.	%	Freq.	%	Freq.	%	Freq.	%	Freq.	%
1	Are there any other types of contractor's overhead costs that you have experienced other than company and project overhead costs,?										
	Yes	0	0%	0	0%	0	0%	0	0%	0	0%
	No	3	6%	8	16%	15	30%	24	48%	50	100%
	Total	3	6%	8	16%	15	30%	24	48%	50	100%
2	How did you value and evaluate the head office and project overhead costs during estimation and management, respectively?										
	Individually	0	0%	0	0%	0	0%	6	12%	6	12%
	Package	3	6%	8	16%	15	30%	18	36%	44	88%
	Total	3	6%	8	16%	15	30%	24	48%	50	100%

In addition, the researcher interviewed some senior experts personally and found that the overhead costs were reported as a package.

4.3.3. Components of the Company and Project Overhead Costs

To identify the components of the construction company and project overhead costs of the prime contractor, the researcher reviewed different kinds of literature collected the items through a spreadsheet checklist that could be applied in Ethiopia, and grouped them under their functions (either under company or project overhead costs) to select by respondents as they are known and applied, known but not applied, don't know, and asked them to

write down the amount of percentage considered if applied (Steven (2009), Tadesse's (2006), PPA (2011), Swati S Patil et al. (2014)).

Accordingly, as can be seen from Tables 4.8 and 4.9, 34 % of the respondents indicated that they knew and applied the specified components of both company and project overhead costs. Of the remaining 66 % of respondents; 52% replied as known but not applied and 14% of respondents replied don't know. This implies that the majority of the respondents did not know the details (components) of both company and project overhead costs in practice.

In addition, during estimation, 100% of respondents did not specify the percentage considered for each item or component of both company and project overhead costs (Tables 4.8 and 4.9). This implies that the contribution or impact of each component of construction overhead costs, in terms of percentage, was not known by the respondents in practice. If so, the estimated amount of overhead costs that were assigned or added to the estimated project price to allocate its budget, as well as the estimated bid/or contract price, might not be correct (i.e., over or under-estimated).

4.4. Basis, Method, and Total Percentage for Estimating Construction Overhead Costs

To investigate the basis, methods, and total percentage for estimating construction overhead costs, three independent questions were requested of the respondents, and their responses were discussed as follows:

In the literature reviewed by the researcher, the basis for the estimation of overhead costs, bids, and the allocation of budgets used were the contractors' historical records, experience, and contract conditions (Nabil et al., 2015; Peterson, 2009).

On the other hand, as the researcher interviewed some senior experts in different positions of public organizations and reviewed the literature of the works made on construction overhead cost estimation, no fixed or specific percentage for contractors' overhead cost could be applicable or decided to practice in Ethiopia as a basis for estimation and management. But at the Addis Ababa level, the City Government of Addis Ababa Design and Construction Bureau issued the percentage of overhead costs and its method of

Assessment of Construction Overhead Costs for Grade One Contractors Implementing Building Public Projects in Addis Ababa

estimating for contractors having different grades or classes every quarter for the public body offices under it and for the construction projects they regulated.

In the City Government of Addis Ababa Design and Construction Bureau’s document, there was a phrase that expressed “For detailed calculation, you can use the attached list of related costs” (This was the researcher’s translation). Consequently, the researcher tried to get the attachment to see the basis for the estimation they used or the detailed calculation of how the amount was determined and which components of overhead costs were considered. But there was nothing related to it.

Table 4. 8 Components of prime contractor’s head office overhead costs and their percentage

I/n	Components of Overhead Costs		Total Respondents			Amount of % you considered
			Known and applied	Known, but not applied	Don't know	
1	Senior Management Costs	F	20	27	3	0
		%	40%	54%	6%	0%
2	Indirect Labor Costs	F	22	23	5	0
		%	44%	46%	10%	0%
3	Head Office Building Rent or Depreciation	F	19	27	4	0
		%	38%	54%	8%	0%
4	Marketing and Bidding Expenses	F	18	27	5	0
		%	36%	54%	10%	0%
5	Expertise Service Fees	F	15	28	7	0
		%	30%	56%	14%	0%
6	Office Furniture and Equipment	F	18	26	6	0
		%	36%	52%	12%	0%
7	Office Running Expenses	F	22	24	4	0
		%	44%	48%	8%	0%
8	Workshops, Garages, and Warehouses	F	18	26	6	0
		%	36%	52%	12%	0%
9	Bank Charges (Credit Obligations)	F	18	25	7	0
		%	36%	50%	14%	0%
10	Insurance Premium (for employees, office buildings, and small vehicles)	F	19	29	2	0
		%	38%	58%	4%	0%
11	Transportation and Travel Fare	F	20	27	3	0
		%	40%	54%	6%	0%
12	Advertising	F	14	26	10	0
		%	28%	52%	20%	0%
13	Charitable Contributions	F	9	28	13	0
		%	18%	56%	26%	0%
14	Risk Allowance(Inflation, Devaluation, and lack of foreign currency)	F	17	24	9	0
		%	34%	48%	18%	0%
15	Entertainment	F	8	26	16	0
		%	16%	52%	32%	0%
16	Income (Profit Tax)	F	15	21	14	0
		%	30%	42%	28%	0%
17	Dues and Memberships	F	11	29	10	0
		%	22%	58%	20%	0%
18	Employee Training	F	13	31	6	0
		%	26%	62%	12%	0%
19	Promotion	F	11	25	14	0
		%	22%	50%	28%	0%
20	Publications and Subscriptions	F	11	24	15	0
		%	22%	48%	30%	0%
21	Repairs and Maintenance	F	20	28	2	0
		%	40%	56%	4%	0%
22	Taxes and Licenses	F	20	27	3	0
		%	40%	54%	6%	0%
23	Equipment and Vehicles	F	21	26	3	0
		%	42%	52%	6%	0%
24	Depreciation of Company Assets	F	15	30	5	0
		%	30%	60%	10%	0%
25	Miscellaneous	F	21	17	12	0
		%	42%	34%	24%	0%
Average		F	17	26	7	0
		%	34%	52%	14%	0%

**Assessment of Construction Overhead Costs for Grade One Contractors Implementing
Building Public Projects in Addis Ababa**

Table 4. 9 Components of prime contractor’s project overhead costs and their percentage

I/n	Components of Overhead Costs		Total Respondents			Amount of % you considered
			Known and applied	Known, but not applied	Don't know	
1	Site Management Costs	F	22	26	2	0
		%	44%	52%	4%	0%
2	Indirect Labor Costs	F	22	26	2	0
		%	44%	52%	4%	0%
3	Mobilization and Demobilization Costs	F	21	27	2	0
		%	42%	54%	4%	0%
4	Tender Expenses	F	20	24	6	0
		%	40%	48%	12%	0%
5	Site Offices	F	20	27	3	0
		%	40%	54%	6%	0%
6	Expertise Service Costs	F	13	30	7	0
		%	26%	60%	14%	0%
7	Office Furniture and Equipment	F	22	23	5	0
		%	44%	46%	10%	0%
8	Office Running Expenses	F	22	26	2	0
		%	44%	52%	4%	0%
9	Radio Communications	F	11	21	18	0
		%	22%	42%	36%	0%
10	Camp Facilities	F	17	24	9	0
		%	34%	48%	18%	0%
11	Access Roads	F	18	26	6	0
		%	36%	52%	12%	0%
12	Water and Power Supply Charges	F	22	25	3	0
		%	44%	50%	6%	0%
13	Workshops, Garages, and Warehouses	F	20	28	2	0
		%	40%	56%	4%	0%
14	Bank Charges	F	15	29	6	0
		%	30%	58%	12%	0%
15	Transportation and Travel Fare	F	20	25	5	0
		%	40%	50%	10%	0%
16	Insurance Premium	F	17	29	4	0
		%	34%	58%	8%	0%
17	Health and Safety on Site	F	17	29	4	0
		%	34%	58%	8%	0%
18	Testing, material sampling, and inspection Charges	F	18	26	6	0
		%	36%	52%	12%	0%
19	Risk Allowance	F	15	31	4	0
		%	30%	62%	8%	0%
20	Income Tax	F	15	27	8	0
		%	30%	54%	16%	0%
21	Tests on completion	F	17	27	6	0
		%	34%	54%	12%	0%
22	Other Contract Requirements	F	15	26	9	0
		%	30%	52%	18%	0%
23	Unallocated Materials and Equipment	F	12	25	13	0
		%	24%	50%	26%	0%
24	Advertising	F	9	31	10	0
		%	18%	62%	20%	0%
25	Charitable Contributions	F	10	27	13	0
		%	20%	54%	26%	0%
26	Entertainment	F	12	29	9	0
		%	24%	58%	18%	0%
27	Photographs (Digital and video Cameras)	F	15	27	8	0
		%	30%	54%	16%	0%
28	Surveys	F	17	25	8	0
		%	34%	50%	16%	0%
29	Cleanup (Construction waste removal)	F	17	19	14	0
		%	34%	38%	28%	0%
30	Miscellaneous	F	21	16	13	0
		%	42%	32%	26%	0%
Average		F	17	26	7	0
		%	34%	52%	14%	0%

In addition, the Bureau assigned the percentage of overhead costs for contractors having different grades or classes that should be considered during the price estimation or valuation of modification by change order (variation works). Of those listed, 10% of direct costs shall be considered overhead costs for grade one up to three contractors. In the researcher's opinion, the assigned amount of overhead percentage by the City Government of Addis Ababa Design and Construction Bureau has not represented the current actual overhead costs. Accordingly, the rate shall be determined and evaluated against the results reported by other researchers.

In this study, before investigating the percentage of grade one contractor's overhead costs in extracting prices in bids and estimating or evaluating variation and/or supplementary works during the construction phase, the researcher asked the respondents about their basis for estimation, which methods were used when estimating or evaluating the contractor's overhead cost, and how much they have used the estimated range of construction overhead cost percentage when pricing. Because, the overhead costs, unless estimated properly, can challenge contractors as well as the projects.

4.4.1. The Basis for Construction Overhead Costs Estimation

Table 4.10 shows that 84% of the respondents used Direct Costs (Material, Manpower, and Equipment) as a basis for total overhead costs (company and project overhead costs) estimation. While 16% of respondents used historical records, experience, and contractual conditions. No one used the remaining bases for construction overhead cost estimation (those are the experience in similar projects, personal interests, and others). That means that the estimated construction overhead costs were more dependent on the direct costs, not on the historical records of indirect costs, experience, and contractual conditions. In other words, most respondents did not use the components of overhead costs as a base to fix or calculate the construction overhead costs.

However, in line with the studies of Nabil et al (2015) and Steven (2009), the majority of the construction companies that executed in different countries estimated the overhead costs based on their historical records, experience, and contractual conditions.

Assessment of Construction Overhead Costs for Grade One Contractors Implementing Building Public Projects in Addis Ababa

Table 4. 10 Basis for construction overhead costs estimation

Company Overhead Costs											
No.	Basis for Estimation of Overhead Costs	Repondents									
		Regulatory Bodies		Public Bodies		Consultants		Contractors		Total	
		Freq.	%	Freq.	%	Freq.	%	Freq.	%	Freq.	%
1	Direct Costs (Material, Manpower, and Equipment)	0	0%	0	0%	0	0%	1	2%	1	2%
2	Historical Records, Experience, and Contractual Conditions	0	0%	0	0%	0	0%	5	10%	5	10%
3	Experience in Similar Projects	0	0%	0	0%	0	0%	0	0%	0	0%
4	Personal Interest	0	0%	0	0%	0	0%	0	0%	0	0%
5	Others	0	0%	0	0%	0	0%	0	0%	0	0%
	Total	0	0%	0	0%	0	0%	6	12%	6	12%
Project Overhead Costs											
No.	Basis for Estimation of Overhead Costs	Repondents									
		Regulatory Bodies		Public Bodies		Consultants		Contractors		Total	
		Freq.	%	Freq.	%	Freq.	%	Freq.	%	Freq.	%
1	Direct Costs (Material, Manpower, and Equipment)	0	0%	0	0%	0	0%	1	2%	1	2%
2	Historical Records, Experience, and Contractual Conditions	0	0%	0	0%	0	0%	5	10%	5	10%
3	Experience in Similar Projects	0	0%	0	0%	0	0%	0	0%	0	0%
4	Personal Interest	0	0%	0	0%	0	0%	0	0%	0	0%
5	Others	0	0%	0	0%	0	0%	0	0%	0	0%
	Total	0	0%	0	0%	0	0%	6	12%	6	12%
Total Overhead Costs (Company + Project Overhead Costs)											
No.	Basis for Estimation of Overhead Costs	Repondents									
		Regulatory Bodies		Public Bodies		Consultants		Contractors		Total	
		Freq.	%	Freq.	%	Freq.	%	Freq.	%	Freq.	%
1	Direct Costs (Material, Manpower, and Equipment)	3	6%	8	16%	15	30%	16	32%	42	84%
2	Historical Records, Experience, and Contractual Conditions	0	0%	0	0%	0	0%	8	16%	8	16%
3	Experience in Similar Projects	0	0%	0	0%	0	0%	0	0%	0	0%
4	Personal Interest	0	0%	0	0%	0	0%	0	0%	0	0%
5	Others	0	0%	0	0%	0	0%	0	0%	0	0%
	Total	3	6%	8	16%	15	30%	24	48%	50	100%

Also, Abeselom (2008) reported that the majority of the local contractors selected the rate of overhead costs arbitrarily based on their perception, experience, and expected competition.

4.4.2. Method of Estimating the Percentage of overhead costs

Regarding the method of estimating the percentage of overhead costs, the researcher asked the respondents and summarized the result in Table 4.11. Accordingly, 84% of the respondents have estimated by considering an arbitrary percentage (%) of direct costs and equally distributed within each item. While 16% of the respondents estimated the overhead costs by doing detailed calculations (i.e., Sum all the recorded and calculated expenses in the spreadsheet checklist and then divide by total direct costs) and no one responded that used the method estimated by setting a fixed amount and distributing on each activity or some specific items of the project work and other methods. This implies that the majority of respondents didn't know the components or want to calculate the overhead costs in detail. They simply considered an arbitrary percentage to estimate the overhead costs.

By the research conducted by Enshassi et al., (2008), Steven (2009), Nabil et.al (2015), and Globerson (2017), the majority of the construction companies that executed in different countries followed the detailed calculation and then changed the amount to a rate as a percent of direct costs.

Whereas in Ethiopia, as per Danait (2015) and Abeselom (2008) reports, most of the local contractors followed to estimate the percentage of overhead costs mainly depend on consideration of an arbitrary percentage of direct costs and equally distributed within each item.

The use of a percentage of direct cost method to estimate the overhead costs were not a problem. It was one of the several methods for estimating construction overhead costs. However, the problem was simply applying a percentage for the overhead costs in the process of pricing. The percentage used must depend on the type of project, contract conditions, experience (expert opinion), and the company's historical data. Because it might be degrading the overall accuracy of the estimate. If its estimation is inaccurate, it will challenge contractors regarding winning tenders and/or obtaining an anticipated profit margin from the contracted projects. If its estimation is over, it may result in high tender

Assessment of Construction Overhead Costs for Grade One Contractors Implementing Building Public Projects in Addis Ababa

prices, forcing contractors out of competition during the bid. If it is an underestimation, it will hamper the contractors from realizing a sufficient profit (Danait, 2015).

Table 4. 11 Method of estimating the percentage of overhead costs

Company Overhead Costs											
No.	Method of Estimating Overhead Costs	Repondents									
		Regulatory Bodies		Public Bodies		Consultants		Contractors		Total	
		Freq.	%	Freq.	%	Freq.	%	Freq.	%	Freq.	%
1	Consideration of an arbitrary percentage (%) of direct costs and equally distributed within each item	0	0%	0	0%	0	0%	1	2%	1	2%
2	Distribution of a fixed amount on each activity or some specific items of the project works	0	0%	0	0%	0	0%	0	0%	0	0%
3	Doing Detail calculations	0	0%	0	0%	0	0%	4	8%	4	8%
4	Others	0	0%	0	0%	0	0%	0	0%	0	0%
	Total	0	0%	0	0%	0	0%	5	10%	5	10%
Project Overhead Costs											
No.	Method of Estimating Overhead Costs	Repondents									
		Regulatory Bodies		Public Bodies		Consultants		Contractors		Total	
		Freq.	%	Freq.	%	Freq.	%	Freq.	%	Freq.	%
1	Consideration of an arbitrary percentage (%) of direct costs and equally distributed within each item	0	0%	0	0%	0	0%	1	2%	1	2%
2	Distribution of a fixed amount on each activity or some specific items of the project works	0	0%	0	0%	0	0%	0	0%	0	0%
3	Doing Detail calculations	0	0%	0	0%	0	0%	4	8%	4	8%
4	Others	0	0%	0	0%	0	0%	0	0%	0	0%
	Total	0	0%	0	0%	0	0%	5	10%	5	10%
Total Overhead Costs (Company + Project Overhead Costs)											
No.	Method of Estimating Overhead Costs	Repondents									
		Regulatory Bodies		Public Bodies		Consultants		Contractors		Total	
		Freq.	%	Freq.	%	Freq.	%	Freq.	%	Freq.	%
1	Consideration of an arbitrary percentage (%) of direct costs and equally distributed within each item	3	6%	8	16%	15	30%	16	32%	42	84%
2	Distribution of a fixed amount on each activity or some specific items of the project works	0	0%	0	0%	0	0%	0	0%	0	0%
3	Doing Detail calculations	0	0%	0	0%	0	0%	8	16%	8	16%
4	Others	0	0%	0	0%	0	0%	0	0%	0	0%
	Total	3	6%	8	16%	15	30%	24	48%	50	100%

As an illustration, there was one university project constructed in one Regional city of Ethiopia four years ago. During the performance period, some variation works occurred and accordingly, the contractor provided his price following the work order to a consultant by proposing 35% for the rate of overhead costs and profit margin. After reviewing and fixing the rate, the consultant verified the price proposal as per his given responsibility and sent it to the project owner for his approval. According to that, the employer saw the price analysis sent by the consultant and asked him why 35% was applied. At that time, the consultant simply explained that the assigned percentage was normal for grade-one contractors. Following that, if you didn't provide me with proof, the employer said that the 25% that was sent to me from the Regional Urban Development Bureau for me to use is 25%. Accordingly, the consultant requested the respective contractor to deliver his five-year audit reports (fiscal years 2006 -2010E.C) which were accepted by the Ministry of Inland Revenue to review and analyze the income statements as described in Fig.4.1 (Sample for overhead cost and profit analysis) for his justification and finally, he found that the rate of overhead was 40% and the profit was 11%. As a result, it was surprising for engineers, because the investigated amount of overhead rate was very larger-than-life. But, in addition to causing a dispute among them, the fact that the results were normally (assigned arbitrary percentage, 35%) and in detail (Actual 51%) different indicated that it was a high risk for the contractor as well as the project.

Hence, detailed calculations based on the overhead component are a preferable and accurate method to eliminate or minimize such kinds of risks. You can use the modified Walter's (1996) prime contractor spreadsheet checklist Excel format (Table 4.12 and Table 4.13) for your detailed calculation.

Assessment of Construction Overhead Costs for Grade One Contractors Implementing Building Public Projects in Addis Ababa

OVERHEAD AND PROFIT ANALYSIS SHEET																				
PROJECT	LOCATION	CLIENT	CONSULTANT	CONTRACTOR								INDIRECT EXPENSE					PROFIT			
												MATERIAL EXPENSE		LABOUR EXPENSE		EQUIPMENT EXPENSE			OVERHEAD	
Fiscal year	Income	Material	Loading/ unloading	Fuel and Lubricant	Total Material Expense	Labor	Sub-contractor	Total Labor Expense	Operation	Depreciation	Equipment Expense	Total	Construction overhead	Administration overhead	Total Overhead Expense	in %	Total Expense	in %	Profit	
2014 G.C	604,027,966	225,373,360	715,076	12,220,960	238,309,396	66,662,276	-	66,662,276	6,556,152	19,095,657	25,651,809	25,651,809	165,805,843	50,029,245	215,835,088	65%	546,458,569	90%	57,569,397	10%
2015 G.C	714,947,646	265,801,737	1,350,333	18,029,992	285,182,062	69,417,973	-	69,417,973	6,233,709	3,376,736	9,610,445	9,610,445	186,076,548	72,606,421	258,682,969	71%	622,893,449	87%	92,054,197	13%
2016 G.C	841,780,983	300,084,079	1,590,511	10,772,075	312,446,665	85,367,270	181,384,659	266,751,929	2,124,967	23,860,455	25,985,422	25,985,422	15,196,917	124,655,074	139,851,991	23%	745,036,007	88%	96,744,976	11%
2017 G.C	986,612,606	366,046,193	3,615,601	16,503,730	386,165,524	83,150,895	196,065,115	279,216,010	4,420,841	28,847,088	33,267,929	33,267,929	57,843,374	131,854,185	189,697,559	27%	888,347,032	90%	98,265,574	10%
2018 G.C																				
The current Audit report is under process.																				
SubTotal	3,147,369,201			SubTotal	1,222,103,647		SubTotal	682,048,188		SubTotal	94,515,615		SubTotal	804,067,607	40%	2,802,735,057	89%	344,634,144	11%	51%

Figure 4. 1 Sample for overhead cost analysis

(Source: Yohannes Abbay Consulting Architects and Engineers)

**Assessment of Construction Overhead Costs for Grade One Contractors Implementing
Building Public Projects in Addis Ababa**

Table 4. 12 Prime contractor head office overhead costs

Prime Contractor Overhead Spreadsheet Checklist				
Company Name :				
Covered Period:				
Total Projects Amount			Birr	
Weighted Projects Duration (Month)				
Total Projects Direct Cost			Birr	
Prime Contractor Head Office Overhead Cost			Birr	
Percentage of Overhead Cost to Direct Cost				
Overhead Cost Per Month			Birr	
Detail				
I/n	Prime Contractor Overhead	Unit	Description	Amount
1	Senior Management Costs			
2	Indirect Labor Costs			
3	Head Office Building Rent or Depreciation			
4	Marketing and Bidding Expenses			
5	Expertise Service Fees			
6	Office Furniture and Equipment			
7	Office Running Expenses			
8	Workshops, Garages, and Warehouses			
9	Bank Charges (Credit Obligations)			
10	Insurance Premium			
11	Transportation and Travel Fare			
12	Advertising			
13	Charitable Contributions			
14	Risk Allowance			
15	Entertainment			
16	Income Tax			
17	Dues and Memberships			
18	Employee Training			
19	Promotion			
20	Publications and Subscriptions			
21	Repairs and Maintenance			
22	Taxes and Licenses			
23	Equipment and Vehicles			
24	Depreciation of Company Assets			
25	Miscellaneous			
Total Prime Contractor Overhead Costs				

**Assessment of Construction Overhead Costs for Grade One Contractors Implementing
Building Public Projects in Addis Ababa**

Table 4. 13 Prime contractor project overhead costs

Prime Contractor Overhead Spreadsheet Checklist				
Project Name				
Covered Period:				
Total Projects Amount			Birr	
Project Duration (Month)				
Project Direct Cost			Birr	
Prime Contractor Project Overhead			Birr	
Percentage of Project Overhead Cost to Direct Cost				
Cost Per month			Birr	
Detail				
I/n	Prime Contractor Overhead	Unit	Description	Amount
1	Site Management Costs			
2	Indirect Labor Costs			
3	Mobilization and Demobilization Costs			
4	Tender Expenses			
5	Site Offices			
6	Expertise Service Costs			
7	Office Furniture and Equipment			
8	Office Running Expenses:			
9	Radio Communications			
10	Camp Facilities			
11	Access Roads			
12	Water and Power Supply Charges			
13	Workshops, Garages, and Warehouses			
14	Bank Charges			
15	Transportation and Travel Fare			
16	Insurance Premium			
17	Health and Safety on Site			
18	Testing, material sampling, and inspection Charges			
19	Risk Allowance			
20	Income Tax			
21	Tests on completion			
22	Other Contract Requirements			
23	Unallocated Materials			
24	Advertising			
25	Charitable Contributions			
26	Entertainment			
27	Photographs			
28	Surveys			
29	Cleanup (Construction waste disposal)			
30	Miscellaneous			
Total Prime Contractor Project Overhead Costs				

4.4.3. Percentage of the Construction Overhead Costs

In line with the scholars' studies from 2014 to 2021 (Table 4.14), the company overhead percentage ranged from 3% to 15% (or an average of 7.5%), the project overhead ranged from 5% to 15% (or an average of 10%), and the total overhead cost ranged from 8% to 27% (or an average of 17.5%).

Whereas, in Ethiopia, according to Wubshet's (2007) study the ratio of site overhead costs to project direct costs ranges from 11.4 to 14.6 %, and that of company overhead was 4.5 %. That means the total overhead cost ranged from 15.90% to 19.10% (or an average of 17.5%). Also, Abeselom (2008) found that 14.23% and 11.22% of the project's direct costs and the company's overhead costs, respectively. In other words, the total overhead cost he found was 25.45%.

In Addis Ababa (Ethiopia), the percentage of overhead cost used by the public body projects that were regulated by the City Government of Addis Ababa Design and Construction Bureau from 2012 E.C up to the third quarter of 2015 E.C. (or up to March 2015 E.C) was 10% for grade one contractors (Table 4.14; Appendix E).

Table 4. 14 Average percentages of overhead costs used by scholars since 2014

I.n	Scholars	Range of Indirect Cost (Overhead Cost), %		
		Company Overhead Cost	Project Overhead Cost	Total Overhead Cost
	A. Other Countries			
1	Swati S Patil et al. (2014)			16.83%
2	Clough (2015)	3%-10%	5%-15%	8%-25%
3	R.Janani et al (2015)	15%	10%-12%	25%-27%
4	Asian Development Bank (2018)			10%-20%
	Average Percentage of Overhead Costs Used in Other Countries	7.50%	10.00%	17.50%
	B. Ethiopia			
4	City Government of Addis Ababa Design and Construction Bureau			10.00%
	Average Percentage of Overhead Costs Used in Addis Ababa			10.00%

Assessment of Construction Overhead Costs for Grade One Contractors Implementing Building Public Projects in Addis Ababa

The percentage of overhead costs from the questionnaires is given in Table 4.15. The results indicated that the company overhead percentage ranged from 6% to 10%, the project overhead ranged from 11% to 15%, and the total overhead cost ranged from 16% to 20%. This result was almost equivalent to the findings reported by different foreign scholars and Wubshet's study but above the percentage used by the City Government of Addis Ababa Design and Construction Bureau, 10%. However, it implies that the respondents used the common arbitrary percentage range of overhead costs (not the actual costs) for their estimation.

However, when the researcher compared the total overhead percentage result against the current situation or factors affecting overhead costs, the actual overhead rate was not 10%, it was 20% more than what was found in the study.

To show this, if you take one of the main factors for changing the overhead costs listed in Table 4.19, the overhead costs of the project have increased by 122% on average due to inflation in the last four years (i.e., a 30% increment annually) in Addis Ababa, Ethiopia (Table 4.17). Due to such a case, the financial capacity of local contractors has declined, the projects are delayed, and the governmental bodies recognize it and then mutually agree to amend the contracts of the public projects for price adjustments (Appendix C).

To justify it, in addition, through documents, the researcher tried to find the five years (from 2017 to 2022) audit reports of the contractors that were included in this study, specifically the amounts recorded in the income statements, to evaluate the rate of construction overhead costs against the given results. However, it was not possible to go far because the researcher could not find enough resources from the responsible bodies (i.e., the Ethiopian Ministry of Inland Revenue and the Contractors). If it were, the researcher would get the accurate and current overhead percentage, the result would eliminate the dispute over the determination of the overhead percentage created among Project owners, consultants, and contractors and would also play a significant role in the performance of the project in terms of cost.

The researcher thought that would be better for the other researcher or developer to get a realistic and timely percentage of the overhead costs if they worked on this basis. Because, as the researcher understood from this study, the overhead percentage they set was not

Assessment of Construction Overhead Costs for Grade One Contractors Implementing Building Public Projects in Addis Ababa

based on a detailed calculation (actual data), but based on the direct costs of an arbitrary percentage.

Table 4. 15 Percentage of overhead costs

Company Overhead Costs											
No.	Percentage Range	Repondents									
		Regulatory Bodies		Public Bodies		Consultants		Contractors		Total	
		Freq.	%	Freq.	%	Freq.	%	Freq.	%	Freq.	%
1	0-5%	0	0%	0	0%	0	0%	1	2%	1	2%
2	6-10%	0	0%	0	0%	0	0%	5	10%	5	10%
3	11-15%	0	0%	0	0%	0	0%	0	0%	0	0%
4	16-20%	0	0%	0	0%	0	0%	0	0%	0	0%
5	Above 20%	0	0%	0	0%	0	0%	0	0%	0	0%
	Total	0	0%	0	0%	0	0%	6	12%	6	12%

Project Overhead Costs											
No.	Percentage Range	Repondents									
		Regulatory Bodies		Public Bodies		Consultants		Contractors		Total	
		Freq.	%	Freq.	%	Freq.	%	Freq.	%	Freq.	%
1	0-5%	0	0%	0	0%	0	0%	0	0%	0	0%
2	6-10%	0	0%	0	0%	0	0%	1	2%	1	2%
3	11-15%	0	0%	0	0%	0	0%	5	10%	5	10%
4	16-20%	0	0%	0	0%	0	0%	0	0%	0	0%
5	Above 20%	0	0%	0	0%	0	0%	0	0%	0	0%
	Total	0	0%	0	0%	0	0%	6	12%	6	12%

Total Overhead Costs (Company + Project Overhead Costs)											
No.	Percentage Range	Repondents									
		Regulatory Bodies		Public Bodies		Consultants		Contractors		Total	
		Freq.	%	Freq.	%	Freq.	%	Freq.	%	Freq.	%
1	0-5%	0	0%	0	0%	0	0%	0	0%	0	0%
2	6-10%	1	2%	1	2%	0	0%	1	2%	3	6%
3	11-15%	2	4%	6	12%	6	12%	8	16%	22	44%
4	16-20%	0	0%	1	2%	8	16%	14	28%	23	46%
5	Above 20%	0	0%	0	0%	1	2%	1	2%	2	4%
	Total	3	6%	8	16%	15	30%	24	48%	50	100%

4.5. The Most Significant Factors Affecting the Contractors' Overhead Costs

In particular, not only aiming to identify the most significant factors affecting the contractors' overhead costs, the researcher wanted to investigate in advance the availability of change in the rate or percentage of overhead costs and if there was a practice on an adjustment of overhead costs through questions from the respondents. Accordingly, the researcher prepared the related questions for respondents. The results were presented and discussed as follows:

4.5.1. Change in the Rate or Percentage of Overhead Costs

The replies from the respondents to determine the change in construction overhead costs in the last ten years were given in Table 4.16. As a result, 34% of the respondents indicated that overhead costs increased (changed). While, 64% of the respondents indicated that overhead costs did not change in the last ten years and 2% of the respondents did not know if their rate of overhead costs increased, decreased, or did not change.

These imply that the rate of construction overhead costs was not properly known if it was dynamic (change) or static (did not change), and also how much affected the projects as well as the company.

To justify it, the researcher further surveyed the quarterly document issued by the City Government of Addis Ababa Design and Construction Bureau from the 2013 E.C. 3rd quarter up to the 2015 E.C. 3rd quarter and found that the rate of overhead costs did not change.

However, as you see a change in inflation in Table 4.17, the actual situation shows that there was an increment in overhead costs. Because inflation or risk allowance in construction price is one of the major components of overhead costs. If inflation increased, overhead costs proportionally increased.

Aziz F. et al. (2021) and Swait (2014) studies justified that the change in the rate of construction overhead costs until 2021 has increased.

Assessment of Construction Overhead Costs for Grade One Contractors Implementing Building Public Projects in Addis Ababa

Table 4. 16 Changes in the percentage of overhead costs in the last ten years

Company Overhead Costs											
No.	Changes in percentage of overhead costs	Repondents									
		Regulatory Bodies		Public Bodies		Consultants		Contractors		Total	
		Freq.	%	Freq.	%	Freq.	%	Freq.	%	Freq.	%
1	Increased	0	0%	0	0%	0	0%	6	12%	6	12%
2	Decreased	0	0%	0	0%	0	0%	0	0%	0	0%
3	Did not Change	0	0%	0	0%	0	0%	0	0%	0	0%
4	Did not Know	0	0%	0	0%	0	0%	0	0%	0	0%
	Total	0	0%	0	0%	0	0%	6	12%	6	12%
Project Overhead Costs											
No.	Method of Estimating Overhead Costs	Repondents									
		Regulatory Bodies		Public Bodies		Consultants		Contractors		Total	
		Freq.	%	Freq.	%	Freq.	%	Freq.	%	Freq.	%
1	Increased	0	0%	0	0%	0	0%	6	12%	6	12%
2	Decreased	0	0%	0	0%	0	0%	0	0%	0	0%
3	Did not Change	0	0%	0	0%	0	0%	0	0%	0	0%
4	Did not Know	0	0%	0	0%	0	0%	0	0%	0	0%
	Total	0	0%	0	0%	0	0%	6	12%	6	12%
Total Overhead Costs (Company + Project Overhead Costs)											
No.	Changes in percentage of overhead costs	Repondents									
		Regulatory Bodies		Public Bodies		Consultants		Contractors		Total	
		Freq.	%	Freq.	%	Freq.	%	Freq.	%	Freq.	%
1	Increased	0	0%	2	4%	4	8%	11	22%	17	34%
2	Decreased	0	0%	0	0%	0	0%	0	0%	0	0%
3	Did not Change	3	6%	6	12%	11	22%	12	24%	32	64%
4	Did not Know	0	0%	0	0%	0	0%	1	2%	1	2%
	Total	3	6%	8	16%	15	30%	24	48%	50	100%

That was why the governmental responsible bodies of Ethiopia such as the Ministry of Finance, Ministry of Urban and Infrastructure, Ethiopian Construction Authority, and Ministry of Education recognized that the projects were being delayed due to high inflation or increases in construction prices, and they have agreed to amend the governmental Universities projects' contract so that the prices of the projects can be adjusted based on the basic representative materials (Cement, reinforcement bar, fuel and ceramic) (Appendix B).

Assessment of Construction Overhead Costs for Grade One Contractors Implementing Building Public Projects in Addis Ababa

Table 4. 17 Inflation of material price for projects executed within five years (March 2018 – March 2022

No.	Description of Materials	Unit	Unit Price, Birr									Change (Trend)			
			Mar-18			Mar-19			Mar-20		Mar-21		Mar-22		
			Basic Price	Current Price	Inflation	Current Price	Inflation	Current Price	Inflation	Current Price	Inflation		Current Price	Inflation	
A	B	C	E	F	G	H	I	J	K	L	M	N			
1	Cement	Qtl	174.08	191.77	10%	208.54	20%	253.47	46%	450	159%	Increased			
2	Reinforcement Bar	Kg	39.42	38.00	-4%	35.64	-10%	57.29	45%	110	179%	Increased			
3	Fuel	Li	16.35	18.03	10%	18.75	15%	23.18	42%	28.94	77%	Increased			
4	Ceramic	m ²	281.77	297.74	6%	320.04	14%	319.8	13%	493.74	75%	Increased			

Where;

Inflation, % = (Current Price- Basic Price)/Basic Price*100.....(PPA 2011 GCC 62.12)

Basic Price = 28 days before bid closing date

Current Price = 28 days before completing the current works

Price Source : Ethiopian Construction Authority

4.5.2. Adjustment of Overhead Costs

The researcher tried to identify whether the adjustment of change in construction overhead costs was applied or not (Table 4.18). Accordingly, 32% of the respondents indicated that the change has been considered when fixing prices and rates (“Applied”). While 2% of the respondents indicated “Not applied” and 66% of the respondents did not know about the adjustment of overhead costs.

Moreover, 20% of the respondents indicated that they didn’t apply or were supposed to consider the overhead costs as an element in the Price Adjustment Factor Formula for new projects like cement, reinforcement bars, fuel, and ceramic. While 80% of the respondents indicated that it was not considered a changing element in the price adjustment factor formula.

This implies that the rate of construction overhead costs was not evaluated against the most significant factors affecting the construction overhead costs and was also uncontrolled (unadjusted) accordingly.

Steven (2009) recommended the estimated overhead costs shall be adjusted for inflation and changes in the market.

Assessment of Construction Overhead Costs for Grade One Contractors Implementing Building Public Projects in Addis Ababa

However, according to the Asian Development Bank’s (2018) and Ethiopian Construction Authority (ECA) training manual (given in PowerPoint in October 2022), overhead costs were considered a component of the fixed portion of a price adjustment (non-adjustment portion) formula.

Besides, in line with the Ethiopian Minister of Finance circular that was issued in March 2021 and July 2021, the announced selected major elements that affect the project price and that could be considered in price adjustments were Cement, Reinforcement bar, Fuel, and Ceramic tile (Appendix B). The overhead cost was not included in the adjustment portion, but it had a greater portion, a maximum of 20% of project direct costs, than such elements in the building project and also it ran until the project’s completion date.

In addition, unless the project duration is delayed due to the employer’s default, almost all the selected major elements for price adjustment are used for execution in the first construction period (365 calendar days), which shall not be allowed for price adjustment (PPA 2011, Sub-Clause 62.1). However, as per the analysis shown in Table 4.17, the researcher educated from the result that the adjustment starting from the effective date of the contract (contract signing date) and the minimum percentage of escalated amount (inflation) shall be stated in the particular conditions of the project contract.

Table 4. 18 Adjustment of overhead costs

No.	Description	Repondents									
		Regulatory Bodies		Public Bodies		Consultants		Contractors		Total	
		Freq.	%	Freq.	%	Freq.	%	Freq.	%	Freq.	%
1	Do you have considered the change when fixing prices and rates for variation and/or supplementary works?										
	Applied	0	0%	2	4%	3	6%	11	22%	16	32%
	Not applied	0	0%	0	0%	1	2%	0	0%	1	2%
	Didn't know	3	6%	6	12%	11	22%	13	26%	33	66%
	Total	3	6%	8	16%	15	30%	24	48%	50	100%
2	Do you have considered or supposed to be considered the overhead costs as an element in the Price Adjustment Factor Formula for new projects?										
	Applied	0	0%	0	0%	0	0%	0	0%	0	0%
	Not applied	0	0%	0	0%	2	4%	8	16%	10	20%
	Didn't know	3	6%	8	16%	13	26%	16	32%	40	80%
	Total	3	6%	8	16%	15	30%	24	48%	50	100%

4.5.3. The Most Significant Factors Affecting the Overhead Costs

The factors affecting the construction overhead costs were surveyed and the result was given in Table 4.19., the top 10 most significant factors that affect overhead costs were given and discussed as follows in their order of importance;

Inflation: Inflation is the rate of a broad increase in prices of works, goods, and services (not just of individual items) over a given period, most commonly a year (Oner C.)

According to Ethiopian's construction price estimation system, as a standard, the minimum amount that should be considered for price increases or inflation was not revealed in the special conditions of the tender document. For that reason, the contractors may consider some amount, not more than 5% of direct costs, as a risk allowance in their overhead costs. This was also if they made a strategic plan and believed that they would win the bid.

Hence, the party that conducts the feasibility study, as well as the party that prepares the tender and contract document, should consult the employer at least to include the condition of price adjustment if the direct cost (material, labor, and equipment) is inflating more than 5%. Otherwise, the assigned percentage of overhead costs and profit margin will be lost and then the performance of the project will be difficult.

On the other hand, an arbitrary percentage based on direct costs should not be added to the cost simply to cover overhead. If so, not only the direct cost but also the overhead costs and profit margin are highly affected by inflation (Dagostino, Frank R, 2011).

In the study of S. Hesami et al. (2014), inflation was the most significant factor in increasing overhead costs. In this study, just like was the first and most significant factor affecting overhead costs attributed to economic factors.

Duration of the Project: A major underlying determinant of indirect costs associated with a project is how long it will take to complete the project. This length of time especially affects the estimator about project overhead items. Most of the components of overhead costs like company and site management costs, indirect labor costs, head office building rent or depreciation, office running expenses, camp facilities, water and power supply charges, bank charges, transportation and travel fare, insurance premiums, health and

safety on site, risk allowance, repairs, and maintenance are a function of the project duration, which covered more than 45% of the overhead costs of the project. Thus, if the project duration increases, then the overhead costs increase.

Traditionally, the estimator assumes an approximate project duration given by the employer in the bid document that is the basis for the estimated company and project overhead costs. This may lead to an inaccurate estimation of overhead costs. Therefore, having a good estimate of the project duration is critical in developing a good project overhead as well as a company overhead estimate (Dagostino, Frank R, 2011).

S. Hesami et al. (2014) show that the project duration was the most important effective factor in overhead costs. In this study, duration was the second and most significant factor affecting overhead costs attributed to the project.

Instability of political situation: Political instability is a crisis within the country that can be caused by a variety of reasons: government incompetence, economic problems, high crime rates, and so on (Bekr , 2017).

According to the findings by Bekr (2017), unstable political and security conditions caused high-cost incurrence in construction projects. In this study, the third most significant factor that affects overhead costs attributed to environmental factors was Political instability.

Project Management Method: In the construction context, project management is the art of delivering a scope at a certain level of quality with a defined budget and during a determined schedule. Its methodologies are a set of guiding principles and processes used to plan, manage, and execute projects (Bizmanualz).

The most common project management failures were bad reputation, cost overruns, project schedule delays, demoralization of the project team (especially the office team), and sustainability risks to the organization. There are many causes or reasons for project management failure. Some of them are poor communication, poor schedule or resource management (mismanagement), weak requirements definitions, inadequate planning, assumptions, risks, or resources, ineffective quality controls, and lack of qualified staff like project managers, office engineers, contract administrators, etc. (Master of Project Academy).

Assessment of Construction Overhead Costs for Grade One Contractors Implementing Building Public Projects in Addis Ababa

Table 4. 19 Factors affecting overhead costs

I.n	Description of Factors affecting Overhead costs	Sentiment level					Total	Importance Index,%	Rank	
		Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree				
1	Inflation	No	0	0	1	8	41	50	96.00%	1
		%	0%	0%	2%	16%	82%	100%		
2	Duration of the Project	No	0	0	0	11	39	50	95.60%	2
		%	0%	0%	0%	22%	78%	100%		
3	Instability of political situation	No	0	0	0	13	37	50	94.80%	3
		%	0%	0%	0%	26%	74%	100%		
4	Project Management Method	No	1	0	0	14	35	50	92.80%	4
		%	2%	0%	0%	28%	70%	100%		
5	Payment Delay	No	0	0	1	19	30	50	91.60%	5
		%	0%	0%	2%	38%	60%	100%		
6	Number of Competitors	No	0	1	3	17	29	50	89.60%	6
		%	0%	2%	6%	34%	58%	100%		
7	Contractor's Cash Availability	No	0	1	1	22	26	50	89.20%	7
		%	0%	2%	2%	44%	52%	100%		
8	Method of Performing the Project	No	0	0	4	19	27	50	89.20%	7
		%	0%	0%	8%	38%	54%	100%		
9	Contract Conditions	No	1	0	0	24	25	50	88.80%	8
		%	2%	0%	0%	48%	50%	100%		
10	Project Complexity	No	0	1	4	18	27	50	88.40%	9
		%	0%	2%	8%	36%	54%	100%		
11	Experience and qualification of staff	No	2	0	0	21	27	50	88.40%	9
		%	4%	0%	0%	42%	54%	100%		
12	Experience in Performing a Similar Project	No	0	0	4	22	24	50	88.00%	10
		%	0%	0%	8%	44%	48%	100%		
13	The Volume of Work in the Construction Market	No	0	0	4	23	23	50	87.60%	11
		%	0%	0%	8%	46%	46%	100%		
14	Project Location	No	0	1	4	22	23	50	86.80%	12
		%	0%	2%	8%	44%	46%	100%		
15	Regional Economic Condition	No	0	1	3	29	17	50	84.80%	13
		%	0%	2%	6%	58%	34%	100%		
16	Need for the Contractor's Work	No	0	1	5	28	16	50	83.60%	14
		%	0%	2%	10%	56%	32%	100%		
17	Familiarity with and Influence in Area (Native contractor)	No	0	0	5	32	13	50	83.20%	15
		%	0%	0%	10%	64%	26%	100%		
18	New market opportunities (Lack of new projects)	No	0	0	5	33	12	50	82.80%	16
		%	0%	0%	10%	66%	24%	100%		
19	Expansion of a company or organization	No	0	0	4	37	9	50	82.00%	17
		%	0%	0%	8%	74%	18%	100%		
20	Similar Project Availability	No	0	0	8	29	13	50	82.00%	17
		%	0%	0%	16%	58%	26%	100%		
21	Project Size	No	0	3	10	18	19	50	81.20%	18
		%	0%	6%	20%	36%	38%	100%		
22	Work Scope	No	0	2	10	21	17	50	81.20%	18
		%	0%	4%	20%	42%	34%	100%		
23	Awarding projects using the least bidder	No	0	0	10	29	11	50	80.40%	19
		%	0%	0%	20%	58%	22%	100%		
24	wrong management decisions & errors	No	0	0	11	29	10	50	79.60%	20
		%	0%	0%	22%	58%	20%	100%		
25	Required Quality Level of the Projects	No	3	3	9	17	18	50	77.60%	21
		%	6%	6%	18%	34%	36%	100%		
26	The Client's Strictness and Exactness in Supervision	No	2	1	9	29	9	50	76.80%	22
		%	4%	2%	18%	58%	18%	100%		
27	Companies' Classification	No	0	3	16	19	12	50	76.00%	23
		%	0%	6%	32%	38%	24%	100%		
28	Type of Project	No	1	3	14	21	11	50	75.20%	24
		%	2%	6%	28%	42%	22%	100%		
29	Country of Performing the Project	No	0	2	17	24	7	50	74.40%	25
		%	0%	4%	34%	48%	14%	100%		
30	Assigning Work to Subcontractors	No	0	4	18	19	9	50	73.20%	26
		%	0%	8%	36%	38%	18%	100%		
31	Firm's Growth	No	1	4	13	25	7	50	73.20%	26
		%	2%	8%	26%	50%	14%	100%		
32	Tendering Method	No	1	4	23	15	7	50	69.20%	27
		%	2%	8%	46%	30%	14%	100%		
33	Contractor's Designing Necessities	No	1	7	19	18	5	50	67.60%	28
		%	2%	14%	38%	36%	10%	100%		
34	Stakeholders' Profits	No	2	8	22	9	9	50	66.00%	29
		%	4%	16%	44%	18%	18%	100%		
35	Foreign Joint Venture	No	0	9	25	12	4	50	64.40%	30
		%	0%	18%	50%	24%	8%	100%		
36	The extent of Bond and Warranty Requirement	No	3	8	25	11	3	50	61.20%	31
		%	6%	16%	50%	22%	6%	100%		
37	Site Layout	No	6	11	21	7	5	50	57.60%	32
		%	12%	22%	42%	14%	10%	100%		

Such failures are common problems happening within Ethiopian contractors' projects. Accordingly, the project management method was the fourth important factor that affects overhead costs attributed to the finance factors in this study.

Payment Delay: According to PPA 2011 GCC Clauses 59 and 67, a payment delay is the period an employer (client) waits between receiving a bill from the Engineer and the date on which the paying institution's account is debited excluding the first 30 calendar days. When such a situation occurs, contractors search for external financing, which escalates overhead costs.

In the research of S. Hesami et al. (2014), the payment delay was the most important factor in increasing overhead costs. They stated that many contractors depend on the payments for performing the projects faster, and any delay in confirming these payments with the employers makes them suspended from performing the contractors' work.

This research showed that payment delay was the fifth most significant factor affecting overhead costs attributed to client requirements and government regulations.

Number of Competitors: Based on the competition, contractors usually decrease or increase the overhead costs to win the bids although the project may not recover all the company overhead costs assigned to it (Aziz F. et al., 2021).

In the research of S. Hesami et al. (2014), the number of competitors was the most important factor that affected the overhead costs.

Likewise, the results of this research showed that it was the sixth most significant factor affecting overhead costs attributed to environmental factors.

Contractor's Cash Availability: This factor can affect contractors' competitiveness. The contractors with good financial positions are not very much influenced by the overhead costs, whereas the contractors with low financial capacities are influenced more (S. Hesami et al., 2014).

The results of this study showed that the contractor's cash availability was the seventh most significant factor that affects overhead costs attributed to finance factors.

Method of Performing the Project: The method of performing the project refers to the contractor's ability and commitment (Chan, 2012). The method of performing the project affected overhead costs and must be considered in terms of managing the cost of a construction project with completion in time with high quality and achievement of objectives, providing and supplying resources (material, manpower, and equipment), construction, financial support, etc.

The same as above, this research showed that the seventh most significant factor affecting overhead costs attributed to client requirements and government regulation was the method of performing the project.

Contract Conditions: Respondents recognized this as the eighth most important factor affecting construction overhead costs attributed to client requirements and government regulation. Conditions of a contract are essential or fundamental terms in a contract. A condition of the contract is a requirement and one or both parties must comply. The contract conditions, included in the general conditions of the contract and/or the special conditions of the contract, that are agreed upon between clients and contractors can affect overhead costs (Aziz F. et al., 2021).

Project Complexity: In this study, the respondents indicated that this factor was the ninth most significant factor that affected construction overhead costs attributed to the project. Complexity is a key characteristic of construction projects. Levels of complexity could be measured in terms of a function of organizational complexity, resource complexity, and technical complexity (S. Hesami et al., 2014). Complex projects usually have high levels of overhead costs. Accordingly, contractors should carefully review the bid requirements and the respective designs before bidding to ensure the overhead costs are in good health.

Experience and qualification of staff: Staff that are more qualified and experienced can perform better and be more productive. To reduce overhead costs, the contractors shall also assign more qualified and experienced staff or use staff training and development (Aziz F. et al., 2021).

The same to the above results respondents also showed that this factor was the ninth most significant factor affecting construction overhead costs attributed to the organization.

Experience in performing similar projects: The experience of performing a similar project decreases the time of execution, helps to eliminate unnecessary costs, and makes it possible for the project team to provide a more accurate explanation of the project framework. As a result, it impacts decreasing overhead costs and achieving a high quality of work standard and overall project success (S. Hesami et al., 2014).

In this study, the respondents indicated that this factor was the tenth most significant factor that affected construction overhead costs attributed to the organization.

4.5.4. The Reason Why Overhead Costs were Dependent on Direct Costs

As you see in the above result shown in Table 4.19, the direct costs (i.e., Material Costs, Labor Costs, and Equipment and/or Machinery Costs) are not the elements of the factors that affect the overhead costs. However, most of the engineers believed that there was a relationship between the direct costs and overhead costs (indirect costs) and accordingly they simply fixed some percentage of overhead costs based on the direct costs (Enshassi et al., 2008). This means they are combining unrelated overhead costs with direct costs and making them dependent on each other. If so, the rate of overhead costs in the agreed contract is affected when direct costs are affected.

Accordingly, this question was raised to identify the reason why engineers combine unrelated overhead with direct costs and make them dependent on each other.

Accordingly, in the results revealed in Table 4.20, 50% of the respondents indicated that because of easy calculation and proportionally distribution of the costs on each activity. While 50% of the respondents indicated that because of the trend. There are no respondents that answered because of the equivalent result and they did not know why engineers combine unrelated overhead with direct costs and make them dependent on each other.

This implies that most of the engineers were not doing detailed calculations to determine the overhead costs, they were simply fixing an arbitrary percentage of overhead costs based on direct costs due to easy calculation and proportionally distribution of the costs on each activity or the trends their firms followed.

Assessment of Construction Overhead Costs for Grade One Contractors Implementing Building Public Projects in Addis Ababa

Table 4. 20 Reason for combining unrelated overhead costs with direct costs and making them dependent on each other

No.	Reasons	Repondents									
		Regulatory Bodies		Public Bodies		Consultants		Contractors		Total	
		Freq.	%	Freq.	%	Freq.	%	Freq.	%	Freq.	%
1	Because of easy calculation and proportionally distribution of the costs on each activity.	2	4%	5	10%	7	14%	11	22%	25	50%
2	Because of the equivalent result.	0	0%	0	0%	0	0%	0	0%	0	0%
3	Because of trend.	1	2%	3	6%	8	16%	13	26%	25	50%
4	I didn't know	0	0%	0	0%	0	0%	0	0%	0	0%
	Total	3	6%	8	16%	15	30%	24	48%	50	100%

4.6. The Practice and Method of Monitoring and Controlling Contractor's Overhead Costs

To examine the practice and method of monitoring and controlling the construction overhead costs, related questions were requested of the respondents, and their responses were discussed in the following subsections:

4.6.1. Preparation of a Detailed Construction Overhead Costs Budget

This question was raised to examine whether the contractors were preparing for the construction overhead expenses budget (plan) or not.

Accordingly, the results in Table 4.21 showed that 20 % of the respondents chose the answer "yes" (or they have prepared the overhead expenses budget or plan). Another 28% of the respondents chose the answer "No". Only 52 % of the respondents selected the answer "Not necessary" to prepare the budget or plan. In other words, specifically, the regulatory bodies, public bodies, and consultants (i.e., 52%) chose "Not Necessary" to prepare the construction overhead expense budget or plan for their organization. Of the remaining 48 % of respondents; 20% replied "yes" and 14% of respondents replied "No".

Particularly, in this study, 42% of the contractors replied "yes" (or they have prepared the overhead expenses budget or plan). while 58% of the contractors replied "No".

Assessment of Construction Overhead Costs for Grade One Contractors Implementing Building Public Projects in Addis Ababa

Table 4. 21 Overhead expenses budget (Plan)

No.	Description	Repondents									
		Regulatory Bodies		Public Bodies		Consultants		Contractors		Total	
		Freq.	%	Freq.	%	Freq.	%	Freq.	%	Freq.	%
1	Are you prepared a detailed construction overhead costs budget plan?										
	Yes	0	0%	0	0%	0	0%	10	20%	10	20%
	No	0	0%	0	0%	0	0%	14	28%	14	28%
	Not necessary	3	6%	8	16%	15	30%	0	0%	26	52%
	Total	3	6%	8	16%	15	30%	24	48%	50	100%

Regarding the time of programming, the regulatory bodies, public bodies, and consultants (i.e., 52%) chose “Not prepared”. Of the remaining 48 % of respondents; 8% replied: “Quarterly” and 4% of respondents replied, “Monthly” (Table 4.22). Out of the total contractors, 17% of the contractors replied: “Quarterly” (or they prepared the overhead expenses budget or plan quarterly). while 8% of the contractors replied “Every six months” and 75% of the contractors chose “Not prepared” for the plan.

These imply that most of the construction companies or contractors did not prepare a detailed overhead expenses budget (plan). Some (17%) of the contractor prepared their overhead expenses budget or plan quarterly based on the components of the overhead costs and the prime program of implementation of tasks.

Steven (2009) recommended the overhead expense budget must be estimated line by line by breaking down the quarterly overhead budget into monthly overhead budgets.

Similarly, when the researcher interviewed some senior representatives of the contractors in Addis Ababa, most of them said that the appropriate time for programming the overhead expenses budget they experienced was quarterly.

4.6.2. Monitoring and Controlling Practice of the Contractor’s Overhead Costs

This question was raised to study whether the contractors were monitored and controlled their overhead costs or not.

Assessment of Construction Overhead Costs for Grade One Contractors Implementing Building Public Projects in Addis Ababa

Table 4. 22 The time of programming the overhead expenses budget (plan)

Company Overhead Costs											
No.	Time of Programming	Repondents									
		Regulatory Bodies		Public Bodies		Consultants		Contractors		Total	
		Freq.	%	Freq.	%	Freq.	%	Freq.	%	Freq.	%
1	Project's Period at the Planning Stage	0	0%	0	0%	0	0%	0	0%	0	0%
2	Monthly	0	0%	0	0%	0	0%	0	0%	0	0%
3	Quarterly	0	0%	0	0%	0	0%	4	8%	4	8%
4	Every Six Months	0	0%	0	0%	0	0%	2	4%	2	4%
5	Annually	0	0%	0	0%	0	0%	0	0%	0	0%
6	Not prepared	3	6%	8	16%	15	30%	18	36%	44	88%
	Total	3	6%	8	16%	15	30%	24	48%	50	100%

Project Overhead Costs											
No.	Time of Programming	Repondents									
		Regulatory Bodies		Public Bodies		Consultants		Contractors		Total	
		Freq.	%	Freq.	%	Freq.	%	Freq.	%	Freq.	%
1	Project's Period at the Planning Stage	0	0%	0	0%	0	0%	0	0%	0	0%
2	Monthly	0	0%	0	0%	0	0%	3	6%	3	6%
3	Quarterly	0	0%	0	0%	0	0%	7	14%	7	14%
4	Every Six Months	0	0%	0	0%	0	0%	0	0%	0	0%
5	Annually	0	0%	0	0%	0	0%	0	0%	0	0%
6	Not prepared	3	6%	8	16%	15	30%	14	28%	40	80%
	Total	3	6%	8	16%	15	30%	24	48%	50	100%

Total Overhead Costs (Company + Project Overhead Costs)											
No.	Time of Programming	Repondents									
		Regulatory Bodies		Public Bodies		Consultants		Contractors		Total	
		Freq.	%	Freq.	%	Freq.	%	Freq.	%	Freq.	%
1	Project's Period at the Planning Stage	0	0%	0	0%	0	0%	0	0%	0	0%
2	Monthly	0	0%	0	0%	0	0%	0	0%	0	0%
3	Quarterly	0	0%	0	0%	0	0%	4	8%	4	8%
4	Every Six Months	0	0%	0	0%	0	0%	2	4%	2	4%
5	Annually	0	0%	0	0%	0	0%	0	0%	0	0%
6	Not prepared	3	6%	8	16%	15	30%	18	36%	44	88%
	Total	3	6%	8	16%	15	30%	24	48%	50	100%

Assessment of Construction Overhead Costs for Grade One Contractors Implementing Building Public Projects in Addis Ababa

Accordingly, the results in Table 4.23 show that 14 % of the respondents chose the answer “yes” (or they have monitored and controlled overhead costs). While 34% of the respondents chose the answer “No”. Only 52 % of the respondents selected the answer “Not necessary” to monitor and control the overhead costs. In other words, specifically, the regulatory bodies, public bodies, and consultants (i.e., 52%) chose “Not Necessary” to monitor and control the construction overhead costs. Of the remaining, contractors, 48 % of respondents; 14% replied “yes” and 34% of respondents replied “No”. This means 29% of the contractors replied “Yes”. While 71% of the contractors replied “No”.

Regarding the time of monitoring and controlling, the regulatory bodies, public bodies, and consultants (i.e., 52%) chose “Not monitored and controlled”. Of the remaining, contractors, 48 % of respondents; 10% replied “Monthly” and 4% of respondents replied “Quarterly” (Table 4.24). Or, 21% of the contractors replied: “Monthly” (or they monitored and controlled the overhead costs monthly). While 8% of the contractors replied “quarterly” and 71% of the contractor chose “Not prepared”.

This implies that most of the construction companies or contractors did not monitor and control their overhead costs during the implementation period of the project. However, some (21%) of the contractor monitored and controlled their overhead costs monthly against the expenses budget or plan.

Steven (2009) also recommended the overhead expense must be monitored and controlled during the course of the project against a budget every week. The study of most percent of contractors applied to control and monitor systems continuously (agree and strongly agree) during the project’s life.

When the researcher interviewed some senior representatives of the contractors in Addis Ababa, most of them said that the appropriate time for monitoring and controlling the overhead costs they experienced was monthly.

Assessment of Construction Overhead Costs for Grade One Contractors Implementing Building Public Projects in Addis Ababa

Table 4. 23 Overhead costs monitoring and controlling

No.	Description	Repondents									
		Regulatory Bodies		Public Bodies		Consultants		Contractors		Total	
		Freq.	%	Freq.	%	Freq.	%	Freq.	%	Freq.	%
1	Are you monitored and controlled the prepared detailed construction overhead costs budget (plan)?										
	Yes	0	0%	0	0%	0	0%	7	14%	7	14%
	No	0	0%	0	0%	0	0%	17	34%	17	34%
	Not necessary	3	6%	8	16%	15	30%	0	0%	26	52%
	Total	3	6%	8	16%	15	30%	24	48%	50	100%

Table 4. 24 The time of monitoring and controlling the overhead costs

Company Overhead Costs											
No.	Ttime of Managing	Repondents									
		Regulatory Bodies		Public Bodies		Consultants		Contractors		Total	
		Freq.	%	Freq.	%	Freq.	%	Freq.	%	Freq.	%
1	Monthly	0	0%	0	0%	0	0%	1	2%	1	2%
2	Quarterly	0	0%	0	0%	0	0%	2	4%	2	4%
3	Every six months	0	0%	0	0%	0	0%	1	2%	1	2%
4	Annually	0	0%	0	0%	0	0%	0	0%	0	0%
5	Not monitored and controlled	3	6%	8	16%	15	30%	20	40%	46	92%
	Total	3	6%	8	16%	15	30%	24	48%	50	100%
Project Overhead Costs											
No.	Ttime of Managing	Repondents									
		Regulatory Bodies		Public Bodies		Consultants		Contractors		Total	
		Freq.	%	Freq.	%	Freq.	%	Freq.	%	Freq.	%
1	Monthly	0	0%	0	0%	0	0%	3	6%	3	6%
2	Quarterly	0	0%	0	0%	0	0%	1	2%	1	2%
3	Every six months	0	0%	0	0%	0	0%	0	0%	0	0%
4	Annually	0	0%	0	0%	0	0%	0	0%	0	0%
5	Not monitored and controlled	3	6%	8	16%	15	30%	20	40%	46	92%
	Total	3	6%	8	16%	15	30%	24	48%	50	100%
Total Overhead Costs (Company + Project Overhead Costs)											
No.	Ttime of Managing	Repondents									
		Regulatory Bodies		Public Bodies		Consultants		Contractors		Total	
		Freq.	%	Freq.	%	Freq.	%	Freq.	%	Freq.	%
1	Monthly	0	0%	0	0%	0	0%	5	10%	5	10%
2	Quarterly	0	0%	0	0%	0	0%	2	4%	2	4%
3	Every six months	0	0%	0	0%	0	0%	0	0%	0	0%
4	Annually	0	0%	0	0%	0	0%	0	0%	0	0%
5	Not monitored and controlled	3	6%	8	16%	15	30%	17	34%	43	86%
	Total	3	6%	8	16%	15	30%	24	48%	50	100%

4.6.3. The Reason Why the Overhead Cost was not Monitored and Controlled by the Contractor

This question was raised to identify the reason why is the construction overhead cost not monitored and controlled by the contractor.

Accordingly, in the results revealed in Table 4.25, 26% of the respondents indicated that lack of experienced professionals. While 16% of the respondents indicated that didn't want to worry. 52 % of the respondents selected "Not necessary" and 6% of the respondents didn't know the reason. This implies that most of the contractors are not capable to monitor and control their overhead costs due to a lack of experienced professionals.

Table 4. 25 Reasons for failure to monitor and control the overhead costs

No.	Reasons	Repondents									
		Regulatory Bodies		Public Bodies		Consultants		Contractors		Total	
		Freq.	%	Freq.	%	Freq.	%	Freq.	%	Freq.	%
1	Lack of experienced professionals	0	0%	0	0%	0	0%	13	26%	13	26%
2	You didn't want to worry	0	0%	0	0%	0	0%	8	16%	8	16%
3	Not necessary	3	6%	8	16%	15	30%	0	0%	26	52%
4	Didn't know	0	0%	0	0%	0	0%	3	6%	3	6%
	Total	3	6%	8	16%	15	30%	24	48%	50	100%

4.6.4. Standard System or Method for Monitoring and Controlling the Overhead Costs

The results in Table 4.26 show that 14 % of the respondents chose the answer "yes" (or they have a standard method or system for monitoring and controlling construction overhead costs). While 34% of the respondents chose the answer "No". Only 52 % of the respondents selected the answer "Not necessary" to use a standard system for monitoring and controlling the overhead costs. In other words, specifically, the regulatory bodies, public bodies, and consultants (i.e., 52%) chose "Not Necessary" to use the system for monitoring and controlling construction overhead costs. Of the remaining, contractors, 48 % of respondents; 14% replied "yes" and 34% of respondents replied "No".

Assessment of Construction Overhead Costs for Grade One Contractors Implementing Building Public Projects in Addis Ababa

Table 4. 26 Verification of the existence of a standard method or system for monitoring and controlling overhead costs

No.	Description	Repondents									
		Regulatory Bodies		Public Bodies		Consultants		Contractors		Total	
		Freq.	%	Freq.	%	Freq.	%	Freq.	%	Freq.	%
1	Do you have a standard method or system for monitoring and controlling the construction overhead costs?										
	Yes	0	0%	0	0%	0	0%	7	14%	7	14%
	No	0	0%	0	0%	0	0%	17	34%	17	34%
	Not necessary	3	6%	8	16%	15	30%	0	0%	26	52%
	Total	3	6%	8	16%	15	30%	24	48%	50	100%

Regarding the system or method of monitoring and controlling the overhead costs, the regulatory bodies, public bodies, and consultants (i.e., 52%) chose “Not necessary”. While 12% chose using a “Typical control system (Comparing the actual amount spent for the completed work to the expected cost established during the planning stage)”, 2% of respondents replied using an “Earned Value Management System”, and 34 % of the respondents selected the answer “Not used” (Table 4.25). This implies that most of the construction companies or contractors did not use modern technology and tools (i.e., Earned Value Management System) for their overhead costs management system.

Globerson (2017), Project Management Institute (2013), and Steven (2009) recommended Earned value approach helps to better control and manage overhead expenses.

However, when the researcher interviewed some senior representatives of the contractors in Addis Ababa, most of them said that the system or method for monitoring and controlling the overhead costs they experienced was the typical control system. That is simply comparing the actual amount spent for the completed work to the expected cost established during the planning stage.

Assessment of Construction Overhead Costs for Grade One Contractors Implementing Building Public Projects in Addis Ababa

Table 4. 27 Standard system for monitoring and controlling the overhead costs

Company Overhead Costs											
No.	Systems or Methods	Repondents									
		Regulatory Bodies		Public Bodies		Consultants		Contractors		Total	
		Freq.	%	Freq.	%	Freq.	%	Freq.	%	Freq.	%
1	Typical control system (Comparing the actual amount spent for the completed work to the expected cost established during the planning stage)	0	0%	0	0%	0	0%	3	6%	3	6%
2	Earned Value Management System	0	0%	0	0%	0	0%	1	2%	1	2%
3	Not used	0	0%	0	0%	0	0%	20	40%	20	40%
4	Not necessary	3	6%	8	16%	15	30%	0	0%	26	52%
	Total	3	6%	8	16%	15	30%	24	48%	50	100%

Project Overhead Costs											
No.	Systems or Methods	Repondents									
		Regulatory Bodies		Public Bodies		Consultants		Contractors		Total	
		Freq.	%	Freq.	%	Freq.	%	Freq.	%	Freq.	%
1	Typical control system (Comparing the actual amount spent for the completed work to the expected cost established during the planning stage)	0	0%	0	0%	0	0%	3	6%	3	6%
2	Earned Value Management System	0	0%	0	0%	0	0%	1	2%	1	2%
3	Not used	0	0%	0	0%	0	0%	20	40%	20	40%
4	Not necessary	3	6%	8	16%	15	30%	0	0%	26	52%
	Total	3	6%	8	16%	15	30%	24	48%	50	100%

Total Overhead Costs (Company + Project Overhead Costs)											
No.	Systems or Methods	Repondents									
		Regulatory Bodies		Public Bodies		Consultants		Contractors		Total	
		Freq.	%	Freq.	%	Freq.	%	Freq.	%	Freq.	%
1	Typical control system (Comparing the actual amount spent for the completed work to the expected cost established during the planning stage)	0	0%	0	0%	0	0%	6	12%	6	12%
2	Earned Value Management System	0	0%	0	0%	0	0%	1	2%	1	2%
3	Not used	0	0%	0	0%	0	0%	17	34%	17	34%
4	Not necessary	3	6%	8	16%	15	30%	0	0%	26	52%
	Total	3	6%	8	16%	15	30%	24	48%	50	100%

CHAPTER FIVE

5. CONCLUSION AND RECOMMENDATION

5.1. Conclusion

Based on the study conducted on the assessment of construction overhead costs for grade one contractors implementing building public projects in Addis Ababa, it was found that:

1. the majority of engineers working in the firms of regulatory bodies, public bodies, consultants, and contractors did have not enough awareness about the practical meaning of overhead costs,
2. The engineers working in the offices and projects of contractors, consultants, public bodies, and regulatory bodies didn't know the identified components of overhead costs in practice and functionally categorized them into the company and project overhead costs.
3. The company and project overhead costs weren't calculated in detail based on historical records, experience, and contractual conditions and were not managed independently. For easy calculation and adopting the trend, the engineers estimated the construction overhead costs based on the direct costs by considering an arbitrary percentage range from 16% to 20%.
4. Due to changes in the identified most significant factors that affect overhead costs such as inflation, duration of the project, instability of the political situation, project management method, payment delay, and others, there was no change in overhead rate and adjustment for the agreed project.
5. Due to a lack of experienced professionals, the majority of the contractors didn't have the experience to develop overhead budgets based on the identified overhead costs' components and monitor the actual overhead costs against the budget regularly by using the Earned Value Management System to identify any variances and taking corrective action if necessary.

This study is limited to a small number of participants, especially the number of contractors, the limited scope of the research, the limited to obtain the required resources (Income statements for contractors), and it was only conducted in one city (Addis Ababa). Therefore, the findings cannot be generalized. Despite this limitation, this study makes

important contributions to the Ethiopian construction industry because the overhead cost is a critical issue for the construction industry and also, no deep research has been done on it in Ethiopia before.

As a result, it is suggested that future research conduct a study with a larger group of participants and all classes of contractors at the national level.

Overall, this research provides valuable insights into the role of construction overhead in construction companies and projects and emphasizes the need for effective estimation, monitoring, and controlling of overhead costs to ensure the project as well as company success.

5.2. Recommendation

By the researcher, the following recommendations are given to the government (regulatory bodies), Public bodies, Consultants, and Contractors.

1. The research found that the majority of engineers working in different firms did have not enough awareness about the practical meaning of overhead costs in general. Therefore, the Ministry of Construction (Ministry of Urban and Infrastructure) or the Ethiopian Construction Authority in collaboration with the Association of Contractors, as well as the Civil Engineers Association and the Association of Consultants, shall establish a standard or a guideline and training sessions for engineers to educate them about construction overhead costs every six months at least for three consecutive years.
2. The study also identified the respondents didn't know the components of overhead costs in practice and functionally categorized them into the company and project overhead costs. Accordingly, most of the estimators valued the construction overhead costs based on the direct costs by considering an arbitrary percentage range (16% - 20%) as a package for easy calculation and adopting the trend. This type of application is very risky and should not be practiced. Hence, primarily, the contractors should employ experienced and more qualified estimators to work on overhead estimation and monitoring expenses, and then the estimators must consider overhead costs carefully, make a complete list of all required items by categorizing them functionally, and estimate the cost for each of those items in the

function of project duration, and finally put them together into one estimate by using an analytic estimation technique (also called bottom-up estimating method) and relate with the total direct costs of the projects to determine it in percentage.

3. Based on this study, the given overhead percentage range is arbitrary and ranges from 16 to 20%. It should be verified against the facts. To find the actual (realistic) and timely percentage range of overhead costs, the researcher suggested that the other researcher or developer or Association of Contractors shall evaluate/determine the overhead costs based on the audit reports of the contractors, specifically the amounts recorded in the income statements, by making collaboration with the Ministry of Inland Revenue.
4. Furthermore, this study identified the rate of construction overhead costs is not properly known if it is dynamic (change) or static (did not change), or how much affected the projects as well as the company against the factors affecting overhead costs. For such a thing, the researcher tried to identify the most significant factors affecting overhead costs (such as inflation, duration of the project, instability of the political situation, project management method, payment delay, and others) and justified the existence of the change or increment of overhead rate (percentage) to adjust the rate. Accordingly, the governmental-responsible bodies (developers), public bodies, and consultants shall review their data against the factors affecting overhead costs, consider it as a changing element for price adjustments in the bid and/or contract document during the planning period, and the adjustments of contract prices shall be allowed starting from the effective date of the Contract if the escalated amount is more than 5%.
5. This study also highlighted the majority of the construction firms didn't have the experience to develop overhead budgets based on the overhead costs' components and monitor the actual overhead costs against the budget regularly. As a contractor, if you cannot budget the overhead costs in detail, and monitor, and control them, the failure will be worse. Because the existence of contractors is based mainly on such price estimation and cost management. Thus, the contractors should have a strong engineering-based construction cost accounting system or costing tracking system, which can help to identify and manage the overhead costs, and the data must allow for management to monitor and control costs, and the accounting data must be readily available to all employees who are responsible for estimation, and

actively monitoring, and controlling overhead costs by using the appropriate tools like Earned Value Management System.

6. In addition, this study is limited to a small number of participants, especially the number of contractors, the limited scope of the research, and it was only conducted in one city (Addis Ababa). Therefore, the findings cannot be generalized. As a result, it is suggested that future research conduct a study with a larger group of participants and all classes of contractors at the national level.

REFERENCE

1. Abeselom Abraham (2008), Improving Cost Management Practices of National Contractors: Focus on Building Construction Projects, Master's Thesis, Addis Ababa University, Faculty of Technology, Department of Civil Engineering.
2. Asian Development Bank's (2018), PRICE ADJUSTMENT GUIDANCE NOTE ON PROCUREMENT.
3. Assaf, S. A., Bubshait, A. A., Atiyah, S. and Al-Shehri, M. (2001), "The management of construction company overhead costs", International Journal of Project Management, Vol.19, pp. 295-303.
4. Aziz F., Willis C. (2021) An Investigation of Construction Company Overhead Costs in Guyana. Int J Account Res 9:216.
5. Bala Krishnamoorthy; Christine D'Lima, Benchmarking as a Measure of Competitiveness, International Journal of Process Management and Benchmarking. Vol. 3, No. 4, 2014, pp. 342-359. DOI: 10.1504/IJPMB.2014.063240.
6. Bekr (2017), Factors affecting the performance of construction projects in unstable political and economic situations (Article).
7. Chan, Caroline T. W., A decision-making matrix model for estimating construction project overhead, PMI Conference Proceeding, 2006.
8. Chan, C.T.W.: The principal factors affecting construction project overhead expenses: an exploratory factor analysis approach, Construction Management, and Economics, Vol. 30, No. 10 (2012) 903-914.
9. Dagostino, Frank R (2011), Estimating Building Construction, Frank R. Dagostino, 7th Edition, pp 45.
10. Danait Andom (2015), Evaluation of the Cost Estimating System of Building Contractors, Master's Thesis, Addis Ababa University, Institute of Technology, Civil Engineering Construction Technology and Management.
11. Daw Son C. (2010), Introduction to Research Method.
12. EBCA Construction Material Breakdown, Prepared by the Ethiopian Building Construction Authority, Addis Ababa, 1989, Unpublished document.
13. ElSawy, I., Hosny, H. and Abdel Razeq, M. (2011), "A Neural Network Model for Construction Projects Site Overhead Cost Estimating in Egypt". IJCSI International Journal of Computer Science Issues, Vol. 8 No. 1, pp. 273-283.

Assessment of Construction Overhead Costs for Grade One Contractors Implementing Building Public Projects in Addis Ababa

14. Enshassi A., Abdul Aziz A. and El Karriri A. (2008), 'Investigating the overhead costs in construction projects in Palestine'. *Journal of Financial Management of Property and Construction*, Vol. 13 (1), pp. 35-47.
15. Ethiopian Minister of Finance circular letters that were issued in March 2021 and July 2021, Regarding Price Adjustment.
16. Globerson, S.: Using the earned value approach for controlling overhead cost in construction projects, *Journal of Modern Project Management*, Vol. 5, No. 2 (2017) 50-55.
17. Bizmanualz. What are the top 10 reasons for project management failures [Internet]. Bizmanualz; [cited 2023 Feb 10]. Available from: <https://www.bizmanualz.com/better-project-management/what-are-the-top-10-causes-of-project-management-failures.html>
18. Master of Project Academy. Consequences of poor project management [Internet]. Master of Project Academy; [cited 2023 Feb 10]. Available from: <https://blog.masterofproject.com/consequences-of-poor-project-management/>
19. Adobe Experience Cloud Blog. Popular project management methodologies [Internet]. Adobe Experience Cloud Blog; [cited 2023 Feb 10]. Available from: <https://business.adobe.com/blog/basics/methodologies>
20. Contractor Hub. Contractor business basics: calculating overhead and profit [Internet]. Contractor Hub; 2017 Nov [cited 2023 Mar 12]. Available from: <https://blog.contractorhub.com/blog/contractor-business-basics-calculating-overhead-and-profit>
21. Oner, C. Inflation: Prices on the rise [Internet]. International Monetary Fund; [cited 2023 Mar 15]. Available from: <https://www.imf.org/en/Publications/fandd/issues/Series/Back-to-Basics/Inflation>
22. Bonis AD. How to calculate overhead costs in construction projects [Internet]. Workyard; 2022 Apr [cited 2023 Mar 12]. Available from: <https://www.workyard.com/blog/how-to-calculate-overhead-costs-in-construction-projects>
23. LinkedIn. How do you evaluate-validity-reliability qualitative research [Internet]. AI and the LinkedIn community; 2023 Sep [cited 2023 Sep 10]. Available from:

<https://www.linkedin.com/advice/1/how-do-you-evaluate-validity-reliability-qualitative-research>

24. Income Tax Proclamation No. 286/2002, issued on July 4, 2002
25. Janani, R.; Rangarajan, P. T.; Yazhini S.: A systematic study of on-site overhead costs in the construction industry, *International Journal of Research in Engineering and Technology*, Vol. 4, No. 10 (2015) 149-151.
26. Li-Chung Chao, Estimating Project Overheads Rate in Bidding: DSS approach using neural networks, *Construction Management and Economics*, Vol. 28, 287-299, March 2010.
27. Nabil I. El-Sawalhi, Ahmed El-Riyati. An Overhead Costs Assessment for Construction Projects at Gaza Strip. *American Journal of Civil Engineering*. Vol. 3, No. 4, 2015, pp. 95-101. DOI: 10.11648/j.ajce.20150304.11.
28. Ethiopian Federal Government Procurement and Property Agency (PPA), General Conditions of Contract, August 2011.
29. Project Management Institute, A Guide to Project Management Body of Knowledge (PMBOK guide), 5th edition, 2013, Project Management Institute.
30. Šiškina, A., Juodis, A., Apanavicien, R., Evaluation of the competitiveness of construction company overhead costs, *Journal of Civil Engineering and Management*, Vol. 15, No. 2, pp 215-224, 2009
31. S. Hesami et al (2014) S. Hesami, S. Amin Lavasani, Identifying and Classifying Effective Factors Affecting Overhead Costs in Constructing Projects in Iran, *International Journal of Construction Engineering and Management*, Vol. 3 No. 1, 2014, pp. 24-41. DOI: 10.5923/j.ijcem.20140301.03.
32. Steven J. Peterson, *Construction Accounting and Financial Management*, second edition, published by Hamilton Printing company, United States of America, 2009.
33. Swati S Patil & P. P. Bhangale, *Overhead Cost in Construction Industry, India*, Vol. 4, Issue 2, Apr 2014, 1-6.
34. Tadesse Yemane (2006), *Construction Cost Estimation Guidelines for Local Contractors in Ethiopia*, Master's Thesis, Addis Ababa University.
35. Walter B. Jones, *CCC Cost Engineering*, Vol. 38, No. 8, Aug 1996.
36. Wubishet Jekale (2007). *Construction Management Process*. EACE bulletin, Vol. 7, No. 2, Addis Ababa.

37. Zack, J. (2002), Calculation and Recovery of Home/Head Office Overhead [paper held at the International Cost Engineering Council, 3rd World Congress on Cost Engineering, Project Management & Quantity Surveying, April 2002]. Melbourne, Australia.

APPENDIX

Appendix A: Questionnaire

QUESTIONNAIRE COVER LETTER

Dear Sir/Madam,

This is a questionnaire designed for research purposes at Addis College in the Program of Construction Technology and Management and the requirement of the partial fulfillment of the M.Sc. degree program under the title of **Assessment of Construction Overhead Costs for Grade One Contractors Implementing Building Public Projects in Addis Ababa**.

The specific objectives of the study are: -

- ❖ To examine the level of respondents' awareness of the basic meaning of the construction overhead costs.
- ❖ To identify the components of the construction company and project overhead costs for grade one contractors.
- ❖ To investigate the basis, methods, and total percentage for estimating construction overhead costs.
- ❖ To find out the most significant factors affecting the contractors' overhead cost.
- ❖ To examine the practice and method of monitoring and controlling contractors' overhead costs.

Accordingly, your practical answers (whatever it is) will be used for such study purposes only and may be for further references to improve similar works in the upcoming.

Therefore, I kindly request you to give me the actual or practical answers you have experienced in the construction industry to the questions attached. Your data and information collected through this questionnaire will be kept confidential and be used only for academic purposes.

Thank you in advance for giving your valuable time to complete and return the questionnaire on time.

With Regards,

Name of the Researcher: Daniel Susie Assefa

Mobile: +251-911-42-45-92, E-mail: danielsusie1@gmail.com

Addis College, Tel: +251-911-52-29-35, E-mail: addiscollege85@gmail.com

QUESTIONNAIRE

Part I. General Respondent Information

Note that: 1-You don't need to write your name or organization.

2-Indicate your choice by putting a \surd mark.

3-Respond your answer based on your current organization.

4-OHC refers to Overhead Cost

1. Category of your current organization

Regulatory body Client Consultant Contractor

2. Current job title or position of the respondent

Project Manager Quantity Surveyor Office Engineer

Resident Engineer Contract Administrator Cost Engineer

Project Coordinator Contract Engineer Other Expert

3. Educational background

College diploma First-degree M.Sc. and above

4. Years of experience or service in the construction industry

0-5 Years 5-10 Years Above 10 years

5. Numbers of public building projects participated in the last ten years in Addis Ababa

0-5 Projects 5-10 Projects Above 10 Projects

Part II. Specific objective № 01 (The level of parties' awareness of the basic meaning of the construction overhead costs)

Assessment of Construction Overhead Costs for Grade One Contractors Implementing Building Public Projects in Addis Ababa

Q1. From your experience, which of the following lists the most appropriate definition of overhead costs in the construction industry?

- Overhead costs are costs that are a component of operating costs and that can be calculated based on direct costs.
- Overhead costs are all indirect construction costs, which cannot be directly booked under a specific activity in a construction project but are required to keep the whole project operational.
- I don't know

Q2. How much is the assigned engineer's experience and qualification status for estimating, monitoring, and controlling the construction overhead costs during the pricing of tenders and construction period in your head office or project?

- A well-experienced both in office and site work and whose qualification is a Diploma in Civil Engineering or Building Engineering.
- A well-experienced both in office and site work and whose qualification is a Degree in Civil Engineering or Building Engineering or COTEM.
- A well-experienced both in office and site work and whose qualification is an M.Sc. in Civil Engineering or COTEM.
- Have no experience.

Part III. Specific objective № 02 (The components of company and project overhead costs)

As itemized in Tables 1 and 2, the researcher identified the types of contractors' overhead costs that are classified based on functions and their components in different works of literature.

Q3. Functionally, are there any types of contractor overhead costs that you have experienced other than the company and project overhead costs? If any, please specify them.

- Yes No

Q4. How did you value and evaluate the head office and project overhead costs during estimation, monitoring, and controlling?

- Individually Package Don't know

Q5. In the items specified in Tables 1 and 2, which items are considered/not considered in the contractor's overhead costs during your price estimation process? Also, write

*Assessment of Construction Overhead Costs for Grade One Contractors Implementing
Building Public Projects in Addis Ababa*

down how much percentage you fix for the considered components. Please mark (√)
on the spaces provided.

Assessment of Construction Overhead Costs for Grade One Contractors Implementing Building Public Projects in Addis Ababa

Table 1: Components of Prime Contractor Head Office Overhead Costs and Their Percentage

I/n	Prime Contractor's Overhead Costs	Known and applied	Known but not applied	Don't know	Amount of % you considered
1	Senior Management Costs (Related to salaries and benefits packages)				
2	Indirect Labor Costs (salaries and benefits of staff other than Item no.1)				
3	Head Office Building Rent or Depreciation				
4	Marketing and Bidding Expenses				
5	Expertise Service Fees				
6	Office Furniture and Equipment				
7	Office running expenses (telephone, fax, internet services, stationery, mail services, software licensing, office cleaning items, and others).				
8	Workshops, Garages, and Warehouses				
9	Bank Charges (Credit Obligations)				
10	Insurance Premium (for employees, office buildings, and small vehicles)				
11	Transportation and Travel Fare				
12	Advertising (the design and preparation of advertising materials, printing, postage, and the cost of ad space)				
13	Charitable Contributions				
14	Risk Allowance (Inflation, Devaluation, and lack of foreign currency)				
15	Entertainment				
16	Income (Profit Tax)				
17	Dues and Memberships (the fees paid to professional organizations, such as the Association of Contractors, and so on.)				
18	Employee Training				
19	Promotion				
20	Publications and Subscriptions (the cost of trade magazines, books, and newspapers used)				
21	Repairs and Maintenance (the cost of maintaining office facilities and the associated capital equipment- computers and furnishings-covered)				
22	Taxes and Licenses				
23	Equipment and Vehicles				
24	Depreciation of Company Assets				
25	Miscellaneous				

**Assessment of Construction Overhead Costs for Grade One Contractors Implementing
Building Public Projects in Addis Ababa**

Table 2: Components of Prime Contractor Project Overhead Costs Their Percentage					
I/n	Prime Contractor's Overhead Costs	Known and applied	Known but not applied	Don't know	Amount of % you considered
1	Site Management Costs (Related to salaries and benefits packages)				
2	Indirect Labor Costs (salaries and benefits of staff other than Item no.1)				
3	Mobilization and Demobilization Costs				
4	Tender Expenses (Performance security, advance repayment guarantee, contractor's all-risk insurance, insurance of the works, and third-party insurance)				
5	Site Offices (Construction expense)				
6	Expertise Service Costs (Surveys, Testing, Photographs, and Engineering service)				
7	Office Furniture and Equipment				
8	Office Running Expenses (Telephones, fax, internet services, mail services, postage, and delivery, office cleaning items, and stationary)				
9	Radio Communications				
10	Camp Facilities				
11	Access Roads				
12	Water and Power Supply Charges				
13	Workshops, Garages, and Warehouses				
14	Bank Charges				
15	Transportation and Travel Fare				
16	Insurance Premium (for employees, office buildings, and small vehicles)				
17	Health and Safety on Site				
18	Testing, material sampling, and inspection Charges				
19	Risk Allowance (Inflation, Devaluation, and lack of foreign currency, etc.)				
20	Income (Profit) Tax				
21	Tests on completion and cleaning for PA				
22	Other Contract Requirements (Change in Laws and Regulations, Contractor's Drawings, Safeguarding Adjacent Properties, Interference with Traffic, Removal of Cables and Conduit, Soil Studies, etc.)				
23	Unallocated (Indirect) Materials				
24	Advertising				
25	Charitable Contributions				
26	Entertainment				
27	Photographs (Digital and video Cameras)				
28	Surveys				
29	Cleanup (Construction waste removal)				
30	Miscellaneous				

Part IV. Specific objective № 03 (Basis, method, and total percentage for estimating construction overhead costs)

Q6. In your practice, which of the following lists are the basis for your estimation of construction overhead costs (Company Overhead costs, Project Overhead Costs, or Total Overhead Costs)? Please mark (√) on the spaces provided in Table 3.

Table 3: Basis for Construction Overhead Costs Estimation

No.	Types of Overhead Costs	The Basis for Estimation of Overhead Costs				
		Direct Costs (Material, Manpower, and Equipment)	Historical Records, Experience, and Contractual Conditions	Experience in Similar Projects	Personal Interest	Other, if any. Please specify it.
1	Individually					
	1.1 Company OHC					
	1.2 Project OHC					
2	Package ((1.1) +(1.2))					

Q7. In your work experience up to now, which method are you practicing when estimating or evaluating the contractor’s overhead cost? Please mark (√) on the spaces provided in Table 4.

Table 4: Method of Estimating Percentage of Overhead Costs

No.	Types of Overhead Costs	Method of Estimating Percentage of Overhead Costs			
		Consideration of an arbitrary percentage (%) of direct costs and equally distributed within each item	Distribution of a fixed amount on each activity or some specific items of the project works	Doing Detailed calculations (Sum all the recorded and calculated expenses and then divide by total direct costs)	Other, if any. Please specify it.
1	Individually				
	1.1 Company OHC				
	1.2 Project OHC				
2	Package ((1.1) +(1.2))				

Assessment of Construction Overhead Costs for Grade One Contractors Implementing Building Public Projects in Addis Ababa

Q8. If your answer in Q7 is the percentage of direct costs, what is the range of construction overhead cost percentage estimated for grade one contractors in public building construction when pricing a bid and/or fixing rates and prices for variation works? Please mark (√) on the spaces provided in Table 5.

Table 5: Percentage of Overhead Costs

No.	Types of Overhead Costs	Percentage of Overhead Costs				
		0-5%	6-10%	11-15%	16-20%	Above 20%
1	Individually					
	1.1 Company Overhead Costs					
	1.2 Project Overhead Costs					
2	Package ((1.1) +(1.2))					

Part V. Specific objective № 04 (The most significant factors affecting the contractors' overhead costs)

Q9. In the last ten years, how is the trend or change in the rate or percentage of construction overhead costs you considered in your company? Please mark (√) on the spaces provided in Table 6.

Table 6: Changes in Percentage of Overhead Costs in the Last Ten Years.

No.	Types of Overhead Costs	Changes in Percentage of Overhead Costs			
		Increased	Decreased	Did not Change	Did not Know
1	Individually				
	1.1 Company OHC				
	1.2 Project OHC				
2	Package ((1.1) +(1.2))				

Q10. If your response for Q9 is Increase/Decrease, do you have considered the change when pricing new projects or fixing prices and rates for variation and/or supplementary works?

Applied Not applied Didn't know

Assessment of Construction Overhead Costs for Grade One Contractors Implementing Building Public Projects in Addis Ababa

Q11. If your response for Q9 is Increase, do you have considered or supposed to consider overhead costs as an element in the Price Adjustment Factor Formula for new projects?

- Applied
 Not applied
 Didn't know

Q12. In the different literature reviewed, the factors affecting overhead costs are listed in Table 7. What are the most significant factors affecting the contractor's overhead costs in your experience? Please mark (√) on the spaces provided in Table 7 with the following Likert scale (agreement scale) 1-5.

- ❖ Strongly Disagree = 1, Disagree = 2, Neutral (Or neither agree nor disagree) = 3, Agree = 4, Strongly Agree = 5

Table 7: Factors Affecting Overhead Costs

I.n	Description of Factors Affecting Overhead Costs	Sentiment level				
		1	2	3	4	5
	I. Project					
1	Project Complexity					
2	Project Location					
3	Project Size					
4	Required Quality Level of the Projects					
5	Work Scope					
6	Duration of the Project					
7	Site Layout					
8	Type of Project					
	II. Finance Factor					
9	Contractor's Cash Availability					
10	Need for the Contractor's Work					
	III. Organization					
11	Project Management Method					
12	Assigning Work to Subcontractors					
13	Companies' Classification					
14	Familiarity with and Influence in the Area (Native contractor)					
15	Experience in Performing a Similar Project					
16	Foreign Joint Venture					
17	Firm's Growth					
18	Expansion of a company or organization					
19	Experience and qualification of staff					
	IV. Client Requirement and Government Regulation					

Assessment of Construction Overhead Costs for Grade One Contractors Implementing Building Public Projects in Addis Ababa

20	Payment Delay					
21	The Client's Strictness and Exactness in Supervision					
22	Contract Conditions					
23	Tendering Method					
24	Method of Performing the Project					
25	The extent of Bond and Warranty Requirement					
26	Contractor's Designing Necessities					
27	Awarding projects using the least bidder					
	V. Economic Factors					
28	Inflation					
29	The Volume of Work in the Construction Market					
30	Stakeholders' Profits					
31	Similar Project Availability					
32	New market opportunities (Lack of new projects)					
33	Internal mistakes (wrong management decisions & and errors)					
	VI. Environmental Factors					
34	Regional Economic Condition					
35	Number of Competitors					
36	Country of Performing the Project					
37	Instability of political situation					

Q13. As you have seen in Table 7, the direct costs (i.e., Material Costs, Labor Costs, and Equipment and/or Machinery Costs) are not the elements of the factors that affect the overhead costs. However, most of the engineers simply fixed some percentage of overhead costs based on the direct costs. This means combining unrelated overhead with direct costs and making them dependent on each other. As a result, the rate of overhead costs in the agreed contract is affected when direct costs are affected. What is the reason for such consideration?

- Because of easy calculation and proportionally distribution of the costs on each activity.
- Because of the equivalent result. Because of the trend. Didn't know

Part VI. Specific objective № 05 (The practice and method of monitoring and controlling contractors' overhead costs)

Q14. As a well-experienced contractor in construction, does your company prepare a detailed construction overhead expenses budget (plan) regularly?

Assessment of Construction Overhead Costs for Grade One Contractors Implementing Building Public Projects in Addis Ababa

Yes

No

Not necessary

Q15. If so, how often do you prepare?

Table 8. The Time of Programming of Overhead Costs Budget (Plan)

No.	Types of Overhead Costs	The time of programming					
		Project's Period at the Planning Stage	Monthly	Quarterly	Every Six Months	Annually	Not Prepared
1	Individually						
	1.1 Company OHC						
	1.2 Project OHC						
2	Package ((1.1)+(1.2))						

Q16. If your answer for Q14 is yes, do you monitor and control them?

Yes

No

Not necessary

Q17. If your answer for Q16 is yes, how often do you monitor and control them?

Table 9. The Time of Overhead Costs Monitoring and Controlling

No.	Types of Overhead Costs	The Time of Overhead Costs Monitoring and Controlling				
		Monthly	Quarterly	Every Six Months	Annually	Not Monitored & Controlled
1	Individually					
	1.1 Company					
	1.2 Project OHC					
2	Package					

Q18. If your answer for Q16 is No, why?

Lack of experienced professionals

You didn't want to worry

Not necessary

Didn't know

Q19. Do you have a standard method or system for monitoring and controlling construction overhead costs?

Assessment of Construction Overhead Costs for Grade One Contractors Implementing Building Public Projects in Addis Ababa

Yes

No

Not necessary

Q20. If so, which of the following methods or systems have you used to monitor and control the construction overhead costs?

Table 10. Overhead Costs Monitoring and Controlling Method or System

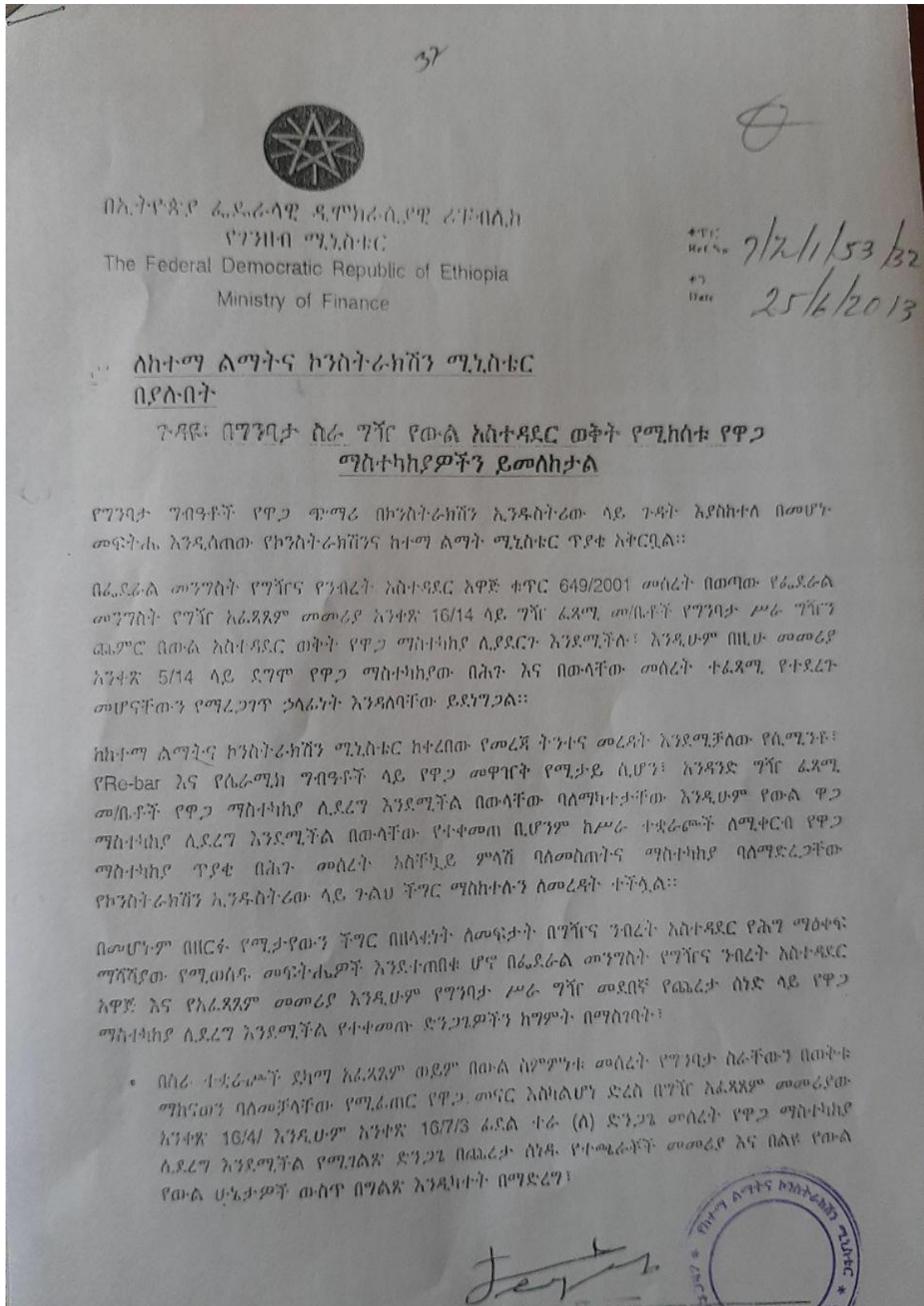
No.	Types of Overhead Costs	Overhead Costs Management System			
		Typical control system (Comparing the actual amount spent for the completed work to the expected cost established during the planning stage)	Earned Value Management System	Don't Know	Not necessary
1	Individually				
	1.1 Company OHC				
	1.2 Project OHC				
2	Package ((1.1) +(1.2))				

Q21. If you have any other practical gaps questions or recommendations related to construction overhead costs to consider in this study, please describe and specify them.

-

Thank you!!

Appendix B: Circular Letters from Ministry of Finance regarding Price Adjustment Due to Inflation



Assessment of Construction Overhead Costs for Grade One Contractors Implementing Building Public Projects in Addis Ababa

- በአፈጻጸም መመሪያው አንቀጽ 16/14/3/ ፊደል ተራ (ሀ) እና (ለ) መሰረት የሲ.ሚ.ንቶ፣ የRe-barና የሴራሚክ ግብዓቶችን ጨምሮ የዋጋ ማስተካከያ ሊደረግባቸው የሚገባቸውን ግብዓቶች ዝርዝር አስቀድሞ በመለየት እና በጨረታ ሰነዱ እና በውሳኔ በማካተት፤
- ከተቋራጮች ለሚቀርብ የዋጋ ማስተካከያ ጥያቄ የግዥ አፈጻጸም መመሪያው፣ እንዲሁም በጨረታ ሰነዱ እና በውሳኔው የተቀመጡ ዝርዝር አሰራሮችንና የዋጋ ማስተካከያ ቀመር ተከትለው የዋጋ ማስተካከያ ተግባራዊ በማድረግና ወቅታዊ ምላሽ መስጠት የሚገባ መሆኑን፣ እንዲሁም፤
- ቀደም ሲል ከመ/ቤቱ ጋር የተፈረመ የገንባታ ሥራ ግዥ የዋጋ ማስተካከያ አንቀጽ ያላየተቱ ከሆነ በአፈጻጸም መመሪያው አንቀጽ 29/4 እና በአጠቃላይ የውል ሁኔታ ውስጥ የተቀመጡ የውል ማሻሻያ ድንጋጌዎችን መሰረት በማድረግ ለሲ.ሚ.ንቶ፣ ለRe-bar እና የሴራሚክ ግብዓቶች የዋጋ ማስተካከያ በሚፈቅድ መልኩ የውል ማሻሻያ በማድረግና የዋጋ ማስተካከያ ቀመርን በመከተል ለቀሪ ሥራዎች የዋጋ ማስተካከያ ማድረግ እንደሚቻል፤

እያሳሰብን በክስተራክሽን ኢንዱስትሪው በተለይም በአገር በቀል ተቋራጮች ላይ ሊፈጠር የሚችለውን ጉዳት ለማስቀረት ይቻል ዘንድ ግዥ ፈጻሚ መ/ቤቶች ለወደፊት ለውል አስተዳደር ስራዎች ልዩ ትኩረት በመስጠት ተገቢ የአፈጻጸም ክትትልና ቁጥጥር እንዲያደርጉ፣ እንዲሁም የከተማ ልማትና ኮንስትራክሽን ሚኒስቴርና ተጠሪ ተቋማት ዝርዝር አፈጻጸሙ ላይ ክትትል እና ቱክኒካዊ ድጋፍ ሊያደርጉ እንደሚገባ እናስታውቃለን።

ግልባጭ:-


- ለከተማ ልማትና ኮንስትራክሽን ሚኒስቴር
- ለመንግስት ግዥና ንብረት አስተዳደር ኤጀንሲ አዲስ አበባ



ከሆላምታ ጋር
[Handwritten Signature]
 ኢዮብ ተክልኝ (ዲ/ር)
 ሚኒስትር ዳኔኔ

የከተማ ልማትና ኮንስትራክሽን ሚኒስቴር
 የደብዳቤ ማቅረቢያ ትኩረት የገቢ ግዛት
 ቀን 29/06/2013
 ተራ ቁጥር 8
 የተመራበት 10116
 ጥቅም ቁጥር 8230280
 የግዛት ቁጥር
 41

Assessment of Construction Overhead Costs for Grade One Contractors Implementing Building Public Projects in Addis Ababa



የገንዘብ ሚኒስቴር
FEDERAL DEMOCRATIC REPUBLIC OF ETHIOPIA
MINISTER OF FINANCE

ቁጥር / Ref. No. ገ/አ/1/53/49
ቀን / Date 05/11/2013

በዝርዝር ለተመለከተት መ/ቤቶች በሙሉ በይዘት

ጉዳዩ:- በግንባታ ስራ ግዥ የውል አስተዳደር ወቅት የሚከሰቱ የዋጋ ማስተካከያዎችን ይመለከታል

የግንባታ ግብአቶችን የዋጋ ማስተካከያ በሚመለከት በ25/06/2013 በቁጥር ገ/አ/1/53/32 ያስተላለፍነው ሰርዘላር ይታወሳል።

ሆኖም ግን የከተማ ልማትና ኮንስትራክሽን ሚኒስቴር በ12/09/2013 ዓ.ም በቁጥር T-250/15/32 በተጻፈ ደብዳቤ የግንባታ ግብአቶች የዋጋ ማስተካከያ ሊደረግባቸው ከሚገቡ ዕቃዎች መካከል የሴራሚክ ግብአቶች የሚለው አገላለፅ በግዥ ፈፃሚ መስሪያ ቤቶች መካከል ወጥነት የሳይለው አረጋጅ በመፍጠሩና ለአፈጻጸም ምቹ ባለመሆኑ የሴራሚክ ግብአቶች የሚለው አገላለፅ የማጠናቀቂያ ዕቃዎች (Finishing material) በሚል ተስተካክሎ መስሪያ ቤቶች እንዲያውቁት እንዲደረግ ጠይቋል።

የመንግስት መስሪያ ቤቶች ለሚያስገነቡት ግንባታ ሥራዎች በመንግስት ግዥና ንብረት አስተዳደር አዋጅ እና መመሪያ እንዲሁም የግንባታ ሥራ ግዥ መደቦች የጨረታ ሰነድ ላይ የተገለጹትን ድንጋጌ እና አሠራር በመከተል የዋጋ ማስተካከያ ማድረግ የመስሪያ ቤቱ ተግባርና ኃላፊነት መሆኑ ይታወቃል።

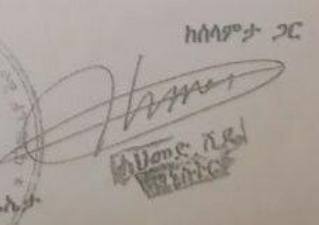
ነገር ግን እንዳንድ የመንግስት መስሪያ ቤቶች የግዥ ድንጋጌውን ተከትለው የግንባታ ግብአቶች ላይ ለደረገ በሚገባ መጠን የዋጋ ማስተካከያ ስለማያደርጉ በኮንስትራክሽን የሥራ አፈጻጸም ላይ አሉታዊ ተጽዕኖ እያሳደሩ መሆኑን ከሚኒስቴር መስሪያ ቤቱ ከተረጋገጠው ጥያቄ ለመገንዘብ ተችሏል።


ስለዚህ የዋጋ ማስተካከያ በሕገ መሠረት ባለማድረግ በኮንስትራክሽን ኢንዱስትሪው ላይ የተፈጠረው አሉታዊ ተጽዕኖ እንዳይቀጥል ወደፊት በሚኖር የግንባታ ግዥ ሂደት ላይ በመንግስት ግዥና ንብረት አስተዳደር አዋጅ እና መመሪያ እንዲሁም እነዚህ ህጎች ለማስፈጸም የወጡ ድንጋጌዎችን መሰረት በማድረግ የማጠናቀቂያ ግብአቶች ላይ እንደአስፈላጊነቱ የዋጋ ማስተካከያ ማድረግ የሚገባ መሆኑን እንገልጻለን።

ግልጻዊ

- > ለከተማ ልማትና ኮንስትራክሽን ሚኒስቴር
- > ለመንግስት ግዥና ንብረት አስተዳደር ኤጀንሲ
- > አዲስ አበባ
- > ለከቡር የፊሰካል ፖሊሲና ፕላንና ፕላንና ፋይናንስ ዘርፍ ሚኒስቴር ይላታ
- > ለከቡር ኢኮኖሚ ትብብር ዘርፍ ሚኒስቴር ይላታ
- > ገንዘብ ሚኒስቴር

ከሰጠታ ጋር





ኪሳራ
251-11-155 24 00,22 66 98
251-11-155 00 81,83 86 89

የፖ.ሣ.ቁ
P.O.Box 1805,1037
አዲስ አበባ

4ክ/ፋክስ
251-11-155 01 24,55 14 98

Appendix C: Correspondences among Governmental Offices about Inflation, Price Adjustment, and Price Index



የኢትዮጵያ ፌዴራላዊ ዲሞክራሲያዊ ሪፐብሊክ
ትምህርት ሚኒስቴር

FEDERAL DEMOCRATIC REPUBLIC OF ETHIOPIA
MINISTRY OF EDUCATION

ስ: +25111 155 3133
ፓ. ሳ.ቁ 1367፣ አራዳ ክፍለ-ከተማ,
አዲስ አበባ፣ ኢትዮጵያ
ፒ: +251 11 155 3133
P.O. BOX 1367, ARADA SUB-CITY,
ADDIS ABABA, ETHIOPIA
www.moe.gov.et
www.facebook.com/fdremoe
@fdremoe
info@moe.gov.et

ግንቦት 29 2014

ቀን/DATE: _____
ቁጥር/REF NO: 02/256/454/14

ለሁሉም የመንግሥት ዩኒቨርሲቲዎች
ባለ-በት

ጉዳዩ:- የግንባታ ሥራዎች ዋጋ ማስተካከያ ይመለከታል:-

የግንባታ ሚኒስቴር በቁጥር ገ/አ./1/53/112 በቀን 25/9/2014 በጻፈው ደብዳቤ ከዚህ ቀደም ከግንባታ ሚኒስቴር የወጡ ሁለት ሴርኩላሮችን ማለትም በቁጥር ገ/አ./1/53/32 በቀን 25/6/2013 እና በቁጥር ገ/አ./1/53/49 በቀን 05/11/2013 እንዲሁም የግዥ መመሪያው አንቀፅ 16/7/3 እና 16/14/3 መሠረት በማድረግ እና በኮንትራክቶች ተቆጣጣሪ ባለስልጣን እና በትምህርት ሚኒስቴር ተጠንቅ በቀረበው የወካዩ ግብአቶች ዋጋ መሠረት የዋጋ ማስተካከያ እንዲደረግ መፈቀዱን አሳውቆናል።

በዚህ መሠረት የዋጋ ማስተካከያ አፈፃፀም እንዲረዳ በከተማና መሠረተ ልማት ሚኒስቴር የቀረበውን ከ2009 -2013 ያለውን የወካዩ ግብአቶች ዋጋ ዝርዝር 4 ገጽ ከዚህ ጋር አባሪ የተደረገ በመከተል የዋጋ ማስተካከያው እንዲፈፀም እያልኩ ሥራው በከፍተኛ ጥንቃቄና ኃላፊነት እንዲፈፀም አሳስባለሁ።

- አባሪ ፡-** 1. ከግንባታ ሚኒስቴር የተላከ 2 ገጽ ደብዳቤ
2. አራት ገጽ የተጠቀሰው የተወካዩ ግብአቶች ዋጋ ዝርዝር

ግልባጭ፡
ለከተማና መሠረተ ልማት ሚኒስቴር
ለኮንትራክቶች ተቆጣጣሪ ባለሥልጣን
አዲስ አበባ
ለከፍተኛ ሚኒስትር ጽ/ቤት
ለሚኒስትር ዴኤታ ጽ/ቤት [ከፍተኛ ትምህርት ልማት ዘርፍ]
ለአስተዳደር መሠረተ ልማት ዋና ሥራ አስፈጻሚ
ትምህርት ሚኒስቴር



ከሰላምታ ጋር
የ: **ባሙኤል ክፍለ ኪዳኔ (ዶ/ር)**
ሚኒስትር ዶ/ር



በኢትዮጵያ ፌዴራላዊ ዲሞክራሲያዊ ሪፐብሊክ
የገንዘብ ሚኒስቴር
 FEDERAL DEMOCRATIC REPUBLIC OF ETHIOPIA
MINISTER OF FINANCE

ቁጥር / Ref. No. 7/ሥ/1/53/112
 ቀን / Date 25/9/2014

ለትምህርት ሚኒስቴር
አዲስ አበባ

ከትምህርት ሚኒስቴር ሚያዝያ 14/2014 ዓ.ም በቁጥር 02/247/650/14 ከከተማና መሰረተ ልማት ሚኒስቴር ሚያዝያ 11/2014 ዓ.ም በቁጥር 5/000250/261 እና ግንቦት 15/2014 በቁጥር 85100250/195 በተጻፉ ደብዳቤዎች በዩኒቨርሲቲዎች እየተሰሩ ያሉ የግንባታ ፕሮጀክቶች በሀገራችን አሁን ባለው የግንባታ ግብዓቶች የዋጋ መናር ምክንያት በጊዜ ማጠናቀቅ አለመቻሉን በመግለጽ የዋጋ ማስተካከያ የሚደረግበት መንገድ እንዲፈለግላቸው ጥያቄ ለመ/ቤታችን አቅርቦዋል።

ለፕሮጀክቱ የዋጋ ማስተካከያ ወካይ ግብአቶች ማለትም የነዳጅ፣ የሲሚንቶ፣ የአርማታ ብረት እና የሴራሚክ ዋጋ እ.ኤ.አ ከ2017 ጀምሮ እስከ 2022 ድረስ ያለው መረጃ ቀርቧል። በቀረበው ወካይ ግብአቶች ዋጋ ላይ አስተያየት እንዲሰጥበት ከመ/ቤታችን ለኢትዮጵያ ስታትስቲክስ አገልግሎት በ3/09/2014 ዓ.ም በቁጥር 7/አ/1/53/110 በተጻፈ ደብዳቤ ተጠይቆ አገልግሎቱ ግንቦት 5/2014 ዓ.ም በቁጥር 1-9-3/637 በተጻፈ ደብዳቤ በተመሳሳይ በጀት ዓመትና ጊዜ የወካይ ግብዓቶች የቸርቻሮ ዋጋ የላከልን ሲሆን የአርማታ ብረት ዋጋ መረጃ ግን የሌለው መሆኑን ገልጿል።

ከኢትዮጵያ ስታትስቲክስ አገልግሎት በኩል ለመ/ቤታችን የተላከው የሲሚንቶና ሴራሚክ ዋጋ በከተማና መሰረተ ልማት ሚኒስቴር ፀድቆ የቀረበ ሲሆን እንዲሁም የነዳጅ ግብዓት ዋጋ በመንግስት የሚወሰን ስለሆነ የቀረበው ዋጋ ተቀባይነት አግኝቷል።

ስለዚህ በፌዴራል የግዥና ንብረት አስተዳደር አዋጅ፣ የአፈጻጸም መመሪያ፣ ድንጋጌዎች እና የውል ስምምነት በግዥ አፈጻጸም መመሪያው አንቀጽ 16/7/3 ፊደል ተራ ቁጥር (ለ) እና አንቀጽ 16/14/3 ድንጋጌ ከመ/ቤታችን የካቲት 25/2013 ዓ/ም በቁጥር 7/አ/1/53/32 እና ሃምሌ 5/2013 ዓ/ም በቁጥር 7/አ/1/53/49 በተላለፈው የዋጋ ማስተካከያ ሰርኩላር መሠረት በማድረግ እንዲሁም የከተማና መሰረተ ልማት ሚኒስቴር ከኮንስትራክሽን ተቆጣጣሪ ባለስልጣን ጋር በመሆን ግንቦት 15/2014 ዓ/ም በቁጥር 85100250/195 በተጻፈ ደብዳቤ አባሪ የተገለጸውን የወካይ ግብዓቶች ዋጋ መሰረት በማድረግ የዋጋ ማስተካከያ ሊደረግላቸው የሚገባቸውን ቀሪ የግንባታ ሥራዎች በመለየት የዋጋ ማስተካከያው ሊደረግ እንደሚችል እየገለጸን፣ ለዋጋ ማስተካከያው አፈጻጸም



ስልክ	የፖ.ሣ.ቁ	ፋክስ/Fax	MoF_Ethiopia
251-11-155 24 00,22 66 98	P.O.Box 1905,1037	251-11-156 01 24,55 14 96	facebook.com/MoFEDet
251-11-155 00 81,83 86 89	ጠባቂ መለስ ለፊት ለገን ቁጥር ይጥቁ	251-11-155 11 38	mofed.gov.et

Assessment of Construction Overhead Costs for Grade One Contractors Implementing Building Public Projects in Addis Ababa



በኢትዮጵያ ፌዴራላዊ ዲሞክራሲያዊ ሪፐብሊክ
የገንዘብ ሚኒስቴር
 FEDERAL DEMOCRATIC REPUBLIC OF ETHIOPIA
MINISTER OF FINANCE

ቁጥር / Ref. No. _____

ቀን / Date _____

እንዲረዳ ከከተማና መሰረተ ልማት ሚኒስቴር የቀረበውን ከ2009 እስከ 2013 ዓ.ም ያለው ወካይ ግብዓቶች ዋጋ ዝርዝር 4 ገፅ ከዚህ ጋር አያይዘን ልክናል። ከዚህም በተጨማሪ ግንባታውን የሚያካሄዱ ዩኒቨርሲቲዎች ይህ መመሪያ በመ/ቤታችሁ በኩል ተላልፎላቸው ህጉን ጠብቀው ስራ ላይ እንዲያውሉት እንዲገለጽላቸው እናሳስባለን።



ከሰላምታ ጋር

ሰላምታ ጋር

ግልጻ፤

- ለከተማና መሰረተ ልማት ሚኒስቴር
- ለመንግስት ግዥና ንብረት ባለስልጣን
- ለኮንስትራክሽን ሥራዎች ተቆጣጣሪ ባለስልጣን
- አዲስ አበባ**
- ለበጀት ዳይሬክቶሬት
- ለትራዥኖር ዳይሬክቶሬት
- ገንዘብ ሚኒስቴር**

ስልክ	የፖ.ሣ.ቁ	ፋክስ/Fax	MoF_Ethiopia
251-11-155 24 00,22 66 98	P.O.Box 1905,1037	251-11-156 01 24,55 14 96	facebook.com/MoFEDet
251-11-155 00 81,83 86 89	ጋህዲ ማህበረ ሰባተኛው ተገኝ ተቆጣጣሪ	251-11-155 11 38	mofed.gov.et



በኢትዮጵያ ፌዴራላዊ ዲሞክራሲያዊ ሪፐብሊክ
የከተማና መሠረተ ልማት ሚኒስቴር
THE FEDERAL DEMOCRATIC REPUBLIC OF ETHIOPIA
MINISTRY OF URBAN AND INFRASTRUCTURE

ቁጥር
 Ref.No 951/ሀ/200/195
 ቀን
 Date 15/09/2012

ለኢ.ፌ.ዲ.ሪ ገንዘብ ሚኒስቴር
አዲስ አበባ

ጉዳዩ:- የወካይ ግብዓቶች የዋጋ ዝርዝር መላክን ይመለከታል፤

በዋጋ ማስተካከያ አተገባበር ላይ ጥናት እንዲያጠና የተቋቋመው ቡድን ከ2009 ዓ.ም ጀምሮ የነበሩትን የወካይ ግብዓቶች ዋጋ መረጃ ከዚህ በፊት በተላከው ሰነድ ውስጥ ተያይዞ መቅረቡ ይታወቃል።

ሚኒስቴር መ/ቤታችሁ በተሰበሰበው የወካይ ግብዓት ዋጋ ላይ የኢትዮጵያ ስታቲስቲክስ አገልግሎት አስተያየት እንዲሰጥ በጠየቀው መሠረት መረጃዎችን መላኩ ይታወቃል።

ከኢትዮጵያ ስታቲስቲክስ አገልግሎት በዋጋዎች ላይ የተሰጡ አስተያየቶችን በማካተት የላክን መሆኑን እናሳውቃለን።



ከሠላምታ ጋር
 ማልቲ ሳኒ [Signature]
 ሚኒስቴር

አባሪ: 3 ገጽ የወካይ ግብዓት ዋጋ ዝርዝር



ግልባጭ:-

- ለትምህርት ሚኒስቴር
አዲስ አበባ
- ለከቡር ሚ/ር ዴኤታ የመሰረተ ልማት ዘርፍ
ከ/መ/ል/ማ
- ለኢትዮጵያ ኮንስትራክሽን ባለስልጣን
አዲስ አበባ

Assessment of Construction Overhead Costs for Grade One Contractors Implementing Building Public Projects in Addis Ababa

May 19, 2022

[የተመረጡ ወካይ ግብዓቶች የነበረው ዋጋ]

1. የ2017 በየወሩ የወካይ ግብዓቶች ዋጋ

No.	Month	Diesel (Birr/Lit)	Cement (Birr/Qtl.)	Rein. Bar (Birr/Kg)	Ceramic Tiles (Imported) (Birr/m2) (30cm x 30cm)
1	July 2017	16.35	174.06	19.31	249.58
2	August 2017	16.35	174.06	20.19	236.47
3	September 2017	16.35	174.06	22.76	230.60
4	October 2017	16.35	174.06	27.07	251.98
5	November 2017	16.35	174.06	27	250.40
6	December 2017	16.35	174.06	27.67	269.18

2. የ2018 በየወሩ የወካይ ግብዓቶች ዋጋ

No.	Month	Diesel (Birr/Lit)	Cement (Birr/Qtl.)	Rein. Bar (Birr/Kg)	Ceramic Tiles (Imported) (Birr/m2) (30cm x 30cm)
1	January 2018	16.35	174.06	29.77	274.83
2	February 2018	16.35	174.06	33.23	279.65
3	March 2018	16.35	174.06	38.67	281.77
4	April 2018	16.35	191.77	39.74	281.14
5	May 2018	16.35	191.77	39.42	283.80
6	June 2018	16.35	191.77	39.85	265.69
7	July 2018	16.35	191.77	39.79	282.49
8	August 2018	16.35	191.77	39.74	287.45
9	September 2018	16.35	191.77	39.48	277.56
10	October 2018	16.35	191.77	39.15	274.81
11	November 2018	17.78	191.77	39.15	278.42
12	December 2018	17.78	191.77	39	282.70

(Handwritten signature)



Assessment of Construction Overhead Costs for Grade One Contractors Implementing Building Public Projects in Addis Ababa

May 19, 2022

[የተመረጡ ወኪይ ግብዓቶች የነበረው ዋጋ]

3. የ2019 በየወሩ የወኪይ ግብዓቶች ዋጋ

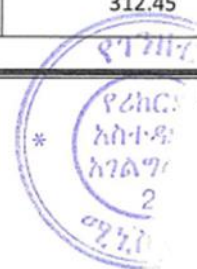
No.	Month	Diesel (Birr/Lit)	Cement (Birr/Qtl.)	Rein. Bar (Birr/Kg)	Ceramic Tiles (Imported) (Birr/m ²) (30cm x 30cm)
1	January 2019	17.91	191.77	39	279.23
2	February 2019	18.03	191.77	38	290.57
3	March 2019	18.03	191.77	38	297.74
4	April 2019	18.03	194.66	39	295.82
5	May 2019	18.75	194.66	39.86	300.85
6	June 2019	18.75	194.66	39.86	307.97
7	July 2019	18.75	194.66	40	315.42
8	August 2019	18.75	194.66	38.5	320.37
9	September 2019	18.75	194.66	38	305.52
10	October 2019	18.75	197.56	37.14	294.20
11	November 2019	18.75	197.56	36.5	307.06
12	December 2019	18.75	199.01	35.61	309.71

4. የ2020 በየወሩ የወኪይ ግብዓቶች ዋጋ

No.	Month	Diesel (Birr/Lit)	Cement (Birr/Qtl.)	Rein. Bar (Birr/Kg)	Ceramic Tiles (Imported) (Birr/m ²) (30cm x 30cm)
1	January 2020	18.75	199.01	35.5	316.79
2	February 2020	18.75	208.54	35.64	310.43
3	March 2020	18.75	208.54	35.64	320.04
4	April 2020	18.75	212.88	39.29	317.41
5	May 2020	18.75	212.88	39.29	324.26
6	June 2020	18.75	212.88	39.29	316.41
7	July 2020	18.75	208.83	38	327.25
8	August 2020	18.75	208.83	38	330.89
9	September 2020	18.75	216.94	38	321.79
10	October 2020	19.09	216.94	38.29	314.05
11	November 2020	19.09	216.94	41.14	301.62
12	December 2020	19.09	234.33	42.86	312.45

የኢትዮጵያ ኮንስትራሽን ባለሥልጣን

(Handwritten signature)



Page 2

Assessment of Construction Overhead Costs for Grade One Contractors Implementing Building Public Projects in Addis Ababa

May 19, 2022 | የተመረጡ ወኪይ ግብዓቶች የነበረው ዋጋ |

5. የ2021 በየወሩ የወኪይ ግብዓቶች ዋጋ

No.	Month	Diesel (Birr/Lit)	Cement (Birr/Qtl.)	Rein. Bar (Birr/Kg)	Ceramic Tiles (Imported) (Birr/m2) (30cm x 30cm)
1	January 2021	23.04	234.33	55	316.57
2	February 2021	23.04	251.27	57.29	329.25
3	March 2021	23.18	253.47	57.29	319.80
4	April 2021	23.18	253.47	55	336.66
5	May 2021	23.18	253.47	56	347.57
6	June 2021	23.18	257.24	58	352.74
7	July 2021	23.18	276.88	75	392.59
8	August 2021	23.18	303.48	75.07	421.42
9	September 2021	28.94	310	75.07	409.99
10	October 2021	28.94	453	75.07	431.42
11	November 2021	28.94	450	85	426.29
12	December 2021	28.94	450	95	475.28

1. የ2022 በየወሩ የወኪይ ግብዓቶች ዋጋ

No.	Month	Diesel (Birr/Lit)	Cement (Birr/Qtl.)	Rein. Bar (Birr/Kg)	Ceramic Tiles (Imported) (Birr/m2) (30cm x 30cm)
1	January 2022	28.94	450	110	478.38
2	February 2022	28.94	450	110	475.03
3	March 2022	28.94	450	110	493.74

Handwritten signature and notes in blue ink.




**Appendix D: Data Requestion Letter to Ministry of Inland
Revenue**

Assessment of Construction Overhead Costs for Grade One Contractors Implementing Building Public Projects in Addis Ababa

0911 42 45 42 - 23766

0



ADDIS COLLEGE

የድህረ ምረቃ ት/ት ክፍል

SCHOOL OF GRADUATE STUDIES

በአገር ውስጥ ገቢ ማኒፎቲር
ለገጽ 47 ፎ 07/07/2015/8/104
አዲስ አበባ

Ref: _____
 ቁጥር: SGS/431/15
 Date: _____
 ቀን: 10/09/2015

07/11/15
ለዋና ሥ/አኮኔድ
15/09/15

ጉዳዩ:- ማስረጃ ስለመስጠት፤

በርዕሱ እንደተገለጸው በኮንትራክቲን ተክሎ-ጂ እና ማኔጅመንት ትምህርት ክፍል የ2ኛ ዓመት የማስተርስ ተማሪ የሆኑት ዳንኤል ሱሴ የኮሌጁ ተማሪ መሆናቸውን እና የመሠረታዊ ዕውቀት በመስራት ላይ እንደሆኑ የሚገልጸው ደብዳቤ እንደገናገላቸው በ09/09/2015 ዓ.ም በጸፉት ደብዳቤ ጠይቀዋል።

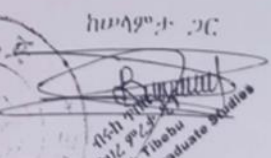
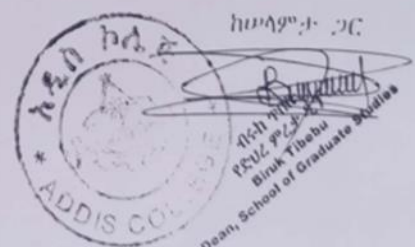
በዚህ መሰረት ስማቸው የተጠቀሰው ተማሪ የአዲስ ኮሌጅ የማስተርስ ፕሮግራም ተማሪ እና የመሠረታዊ ሠራተት (Thesis) "Assessment of Construction Overhead Costs for Building Public Projects Implementing by Grade One Contractors in Addis Ababa" በሚል ርዕስ በመስራት ላይ መሆናቸውን እየገለጸ ለሚደረግላቸው ትብብር በትድግ እና መስጫነት።

የአዲስ አበባ ኮሌጅ
 የምረቃ ት/ት ክፍል
 የጽ/ቤት ስም: _____
 የጽ/ቤት አድራሻ: _____
 የጽ/ቤት ስልክ: _____
 የጽ/ቤት ፊደል: _____
 የጽ/ቤት ስም: _____
 የጽ/ቤት አድራሻ: _____
 የጽ/ቤት ስልክ: _____
 የጽ/ቤት ፊደል: _____

02/08/15 74615
15/09/15

15/09/15

ከሠላምታ ጋር

ADDIS COLLEGE
 School of Graduate Studies
 Birkat Tibeabu

አድራሻ ስለ ምስራቅ ክፍለ-ትምህርት ኮሌጅ ፊት ለፊት E-mail: addis_college@ethionet.et Fax: 251-11-663.12.74

ጠልቅ ሲጻግ የጽ/ቤት ቁጥር ይጠቅም / In replying please quote our Ref. No.

Appendix E: Quarterly Report on the Percentage of Overhead Costs, City Government of Addis Ababa Construction Bureau.



በአዲስ አበባ ከተማ አስተዳደር የዲዛይንና ግንባታ ሥራዎች ቢሮ
 City Government of Addis Ababa Design & Construction Works Bureau



Dedicated for the betterment of our city

Date 17, 04, 2015
 Your Ref. _____
 Our Ref. 20/27/ዲ.አ.ቢ.ሲ/172/1

በአዲስ አበባ ከተማ አስተዳደር

- ለልደታ ክፍለ ከተማ ዋና ስራ አስፈጻሚ ጽ/ቤት
- ለየካ ክፍለ ከተማ ዋና ስራ አስፈጻሚ ጽ/ቤት
- ለቦሌ ክፍለ ከተማ ዋና ስራ አስፈጻሚ ጽ/ቤት
- ለኮልፌ ቀራኒያ ክፍለ ከተማ ዋና ስራ አስፈጻሚ ጽ/ቤት
- ለቂርቆስ ክፍለ ከተማ ዋና ስራ አስፈጻሚ ጽ/ቤት
- ለንፋስ ስልክ ክፍለ ከተማ ዋና ስራ አስፈጻሚ ጽ/ቤት
- ለአራዳ ክፍለ ከተማ ዋና ስራ አስፈጻሚ ጽ/ቤት
- ለጉሰሌ ክፍለ ከተማ ዋና ስራ አስፈጻሚ ጽ/ቤት
- ለአዲስ ከተማ ክፍለ ከተማ ዋና ስራ አስፈጻሚ ጽ/ቤት
- ለአቋቋ ቃሊቲ ክፍለ ከተማ ዋና ስራ አስፈጻሚ ጽ/ቤት
- ለሰሜ ኩራ ክፍለ ከተማ ዋና ስራ አስፈጻሚ ጽ/ቤት
- ለቤተች ልማትና አስተዳደር ቢሮ
- ለአዲስ አበባ ውሃና ፍሳሽ ባለስልጣን
- ለአዲስ አበባ መንገዶች ባለስልጣን
- ለመሬት ልማትና አስተዳደር ቢሮ
- ለአካባቢ ጥበቃ ባለስልጣን
- ለከተማ ውበትና አረንጓዴ ልማት ቢሮ
- ለቤተች ልማት ኮርፖሬሽን
- ለአዲስ አበባ ከተማ አስተዳደር ትራንስፖርት ቢሮ
- ለግንባታ ፈቃድና ቁጥጥር ባለስልጣን
- ለአዲስ አበባ ከተማ አስተዳደር የኮንስትራክሽን ዲዛይን፣ ግንባታ ማማከር ድርጅት
- ለአዲስ አበባ ከተማ አስተዳደር የግንባታ ኢንተርፕራይዝ



አዲስ አበባ

- ለየኮንትራት አስተዳደር ዘርፍ
- ለየዲዛይንና ምህንድስና ግዥ ዘርፍ

ዲ/ግ/ሥ/ቢ.ሮ



በአዲስ አበባ ከተማ አስተዳደር የዲዛይንና ግንባታ ሥራዎች ቢሮ
 City Government of Addis Ababa Design &
 Construction Works Bureau



Dedicated for the betterment of our city

Date _____

Your Ref. _____

Our Ref. _____

ጉዳዩ:- የ2015 በጀት ዓመት 2ኛ ሩብ ዓመት የኮንስትራክሽን ሥራዎች የቀጥተኛ ዋጋ (Direct Cost) ይመለከታል

ከላይ በርዕሱ እንደተጠቀሰው በአዲስ አበባ ከተማ አስተዳደር የዲዛይንና ግንባታ ሥራዎች ቢሮ በዓዋጅ ቁጥር 74/2014 በተሰጠው ሥልጣን መሰረት ወቅታዊ የግንባታ ስራዎች የቀጥተኛ ዋጋ በማጥናት ለሚመለከታቸው ተቋማት እያሰራጩ ይገኛል።

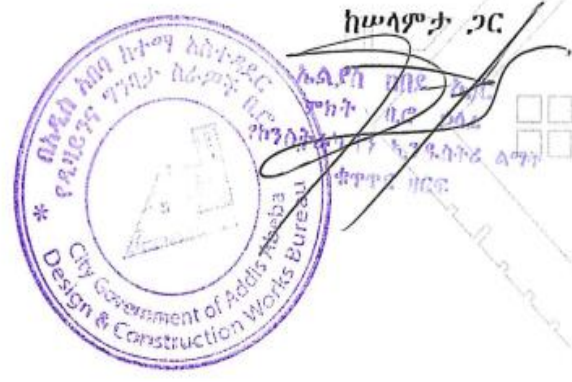
በዚህ መሰረት በያዝነው በጀት ዓመት 2ኛ ሩብ ዓመት በቢሮው አማካኝነት ተዘጋጅቶ የጸደቀውን የግንባታ ሥራዎች የቀጥተኛ ዋጋ (Direct Cost) ከዚህ ቀጥሎ በተገለጸው በቢሮ ጽ/ፈ ገጽ መጠቀም የምትችሉ መሆኑን እንገልጽለን።

- 1. FACE BOOK:- Addis Ababa Design & Constructon works bureau
- 2. TELEGRAM:- Addis Ababa Design & Constructon works bureau
- 3. TWITTER:- Addis Ababa Design & Constructon works bureau

ግልበጭ

- ለቢሮ ኃላፊ
- ለም/ቢሮ/ኃ/ኮ/ኢ/ል/ቁ/ዘርፍ
- የኮ/ግ/አቅ/ግ/ዳይሬክተር
- ለኮንስትራክሽን ግንባታ ግብአት ዋጋ ትመናና ትንበያ ቡድን መሪ

ዲ/ግ/ቢ





በአዲስ አበባ ከተማ አስተዳደር የዲዛይንና ግንባታ ሥራዎች ቢሮ

City Government of Addis Ababa Design &
Construction Works Bureau



የ2015 ዓ.ም የ2ኛ ሩብ
ዓመት የግንባታ ስራዎች
ቀጥተኛ ዋጋ
(DIRECT COST)

ጥናት



+251 111 54 12 17 14659 @AddisCityCon @AddisCity Addis Ababa Design and Construction Works Bureau addisdesignandconstruction@gmail.c

Assessment of Construction Overhead Costs for Grade One Contractors Implementing Building Public Projects in Addis Ababa

መግቢያ:-

በአዲስ አበባ ከተማ አስተዳዳሪ በኮንስትራክሽን ቢሮ በአዋጅ ቁጥር በተሰጠው ስልጣን መሰረት የኮንስትራክሽን ግብዓት ቁርጥ ዋጋ ተዘዋዋሪ ወጪ (Overhead) እና ትርፍ (Profit) ተሰልፎ ጭምር ለባለድርሻ አካላት የሚተላለፍ ቢሆንም ይህንን የቁርጥ ዋጋ በተለይ የተደራጁ ማህበራት የሚጠቀሙት ከመሆኑ አንጻር የኮንስትራክሽን ኢንዱስትሪውን እድገትና የማህበራቱን አቅም ከመገንባት አንጻር ለረጅም ጊዜ ወቅታዊነቱን ሚዛናዊነትን ያማከለ በቁርጥ ዋጋ ለሚሰሩ ስራዎች የተዘዋዋሪ (Overhead) 7% እና ትርፍ (Profit) 8% በማድረግ የግንባታ ስራ ነጠላ ዋጋ ጥናት ቢሮው ሲደረግ ቆይቶአል።

ሆኖም ለተለያዩ የግንባታ ስራዎች እንደፕሮጀክቱ ስፋት፣ የተጻፈው አቅምና ደረጃ እንዲሁም ልዩ ልዩ ነባራዊ ሁኔታዎች የተዘዋዋሪ (Overhead) እና ትርፍ (Profit) አሰራር የሚለያይ በመሆኑ በያዘነው በጀት አመት ጥናቱ ቀጥተኛ ወጪ (Direct Cost) ብቻ ያካተተ ሲሆን ተጽማት ግን እንደፕሮጀክቱ ሁኔታ ከዚህ ቀጥሎ በተዘረዘረው መግለጫ አሰራር መሰረት በመጠቀም (Overhead) እና ትርፍ (Profit) ተክለው የግንባታ ስራ ነጠላ ዋጋ መትክል የሚቻልበት ሁኔታ መፍጠር አስፈላጊ በመሆኑ ቢሮው በዚህ መሰረት ተፈጻሚ እንዲሆን ውሳኔ ላይ ደርሶአል። በመሆኑም ከዚህ በመቀጠል በዝርዝር በተቀመጠው የአሰራር መግለጫ መሰረት ባለድርሻ አካላት የግንባታ ስራ ነጠላ ዋጋ ማስፈጸም የሚችሉበት ሁኔታ እንዲፈጸር ተደርጎአል።

[Handwritten signatures and official stamps]

The page contains several official stamps and handwritten signatures. At the top left, there are two handwritten signatures. Below them are four official stamps: a circular stamp from the City Government of Addis Ababa Construction Bureau; an oval stamp from the Addis Ababa City Government Design & Construction Bureau; a circular stamp from the Addis Ababa City Government Design & Construction Bureau; and a large circular stamp from the Addis Ababa City Government Design & Construction Bureau.

Assessment of Construction Overhead Costs for Grade One Contractors Implementing Building Public Projects in Addis Ababa

1. ተዘዋዋሪ ዋጋ /ወጪ/ (O)

ተዘዋዋሪ ወጪ እንደ የጽ/ቤት ኪራይ፣ የጽ/ቤት ዕቃ ዕልቀት፣ የሠራተኞች ደመወዝ፣ የፖስታ መላላኪያ፣ የመብራት፣ የስልክ፣ የውሃ፣ የውሳኔ አበል፣ ወዘተ የመሳሰሉትን ወጪዎች ለመሸፈን የሚወጣ ክፍያ ነው። እንደ የድርጅቱ አቅምና ደረጃ እንዲሁም በእጅ ላይ በሚገኙ ፕሮጀክቶች ብዛት፣ መጠን አቅምና ደረጃ ተዘዋዋሪ ወጪ ዋጋ ፕሮጀክት ይለያያል። ተዘዋዋሪ ዋጋ /ወጪ/ በሁለት ይከፈላል፡- እነርሱም የዋና መስሪያ ቤት እና የፕሮጀክት ሳይት በመባል ይታወቃሉ።

- ለደረጃ 3 እና ከዚያ በላይ ላሉ ሥራ ተቋራጮች እስከ 10% የቀጥተኛ ወጪ /Direct Cost/ ድረስ ይሰላል።
- ለደረጃ 4፣ 5 እና 6 ሥራ ተቋራጮች እስከ 8% የቀጥተኛ ወጪ /Direct Cost/ ድረስ ይሰላል።
- ከደረጃ 6 በታች ላሉ ሥራ ተቋራጮች እስከ 6% ድረስ ይሰላል።

ጥልቅ የሆነ ሥራ ለመስራት አባሪ የተደረገውን የተዛማጅ ወጪዎችን ዝርዝር መጠቀም ይቻላል።

2. ትርፍ (P)

- የፕሮጀክት ዋጋቸው ከ5,000,000.00 ብር በታች ለሆኑ 13% የቀጥተኛ የሥራ ዋጋ /ወጪ/ ትርፍ ይሰላል።
- የፕሮጀክት ዋጋቸው ከ5,000,000.00 ብር እስከ 15,000,000.00 ብር ለሆኑ 11% የቀጥተኛ የሥራ ዋጋ /ወጪ/ ትርፍ ይሰላል።
- የፕሮጀክት ዋጋቸው ከ15,000,000.00 ብር እስከ 30,000,000.00 ብር ለሆኑ 10% የቀጥተኛ የሥራ ዋጋ /ወጪ/ ትርፍ ይሰላል።
- የፕሮጀክት ዋጋቸው ከ30,000,000.00 ብር እስከ 50,000,000.00 ብር ለሆኑ 10% የቀጥተኛ የሥራ ዋጋ /ወጪ/ ትርፍ ይሰላል።
- ከ50,000,000.00 ብር በላይ ለሆኑ 7% የቀጥተኛ የሥራ ዋጋ /ወጪ/ ትርፍ ይሰላል።



Appendix F: Originality Report



Plagiarism Checker X Originality Report

Similarity Found: 0%

Date: Wednesday, July 19, 2023

Statistics: 0 words Plagiarized / 109 Total words

Remarks: No Plagiarism Detected - Your Document is Healthy.

ADDIS COLLEGE / ASSESSMENT OF CONSTRUCTION OVERHEAD COSTS FOR GRADE ONE CONTRACTORS IMPLEMENTING BUILDING PUBLIC PROJECTS IN ADDIS ABABA DANIEL SUSIE A. ADVISOR- BELACHEW ASTERYE (Ph.D.) A THESIS SUBMITTED TO ADDIS COLLEGE IN PARTIAL FULFILLMENT OF THE REQUIREMENT OF A MASTER OF SCIENCE IN CONSTRUCTION TECHNOLOGY AND MANAGEMENT (COTM) JULY 2023 ADDIS ABABA ADDIS COLLEGE / ASSESSMENT OF CONSTRUCTION OVERHEAD COSTS FOR GRADE ONE CONTRACTORS IMPLEMENTING BUILDING PUBLIC PROJECTS IN ADDIS ABABA DANIEL SUSIE A. ADVISOR- BELACHEW ASTERYE (Ph.D.)

APPROVED BY THE BOARD OF EXAMINERS _____

_____ ADVISOR _____

_____ INTERNAL EXAMINER _____

_____ EXTERNAL EXAMINER _____

_____ CHAIRMAN _DECLARATION I hereby declare that this thesis is my original work and that has not been presented, in whole or in part, in any previous ap

INTERNET SOURCES:
