ADDIS COLLEGE

PERFORMANCE OF PUBLIC CONSTRUCTION PROJECTS IN ADDIS ABABA CITY ADMINISTRATION: THE CASE OF ARADA SUB CITY.

BY: Yared Tadesse

A Thesis to be Submitted to the School of Graduate Studies of Addis College in Partial Fulfillment of the Requirement for the Degree of Master of Arts in Project Management

Advisor: - Aweke Ashenafi (Ph.D.)

August, 2023
Addis Ababa, Ethiopia

DECLARATION

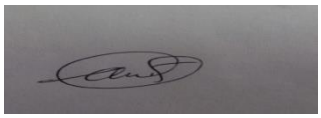
I hereby declare that this thesis report entitled "PERFORMANCE OF PUBLIC CONSTRUCTION PROJECTS IN ADDIS ABABA CITY ADMINISTRATION: THE CASE OF ARADA SUB CITY" is submitted by me to the Department of Project Management Addis Collage. It is a confide work undertaken by me and it is not submitted to any other University or Institution for the award of any degree diploma, certificate or published any time before.

Yared Tadesse ---------- ----------

Addis College, Addis Ababa Signature Date

CERTIFICATION

This is to certify that this project work, " PERFORMANCE OF PUBLIC CONSTRUCTION PROJECTS IN ADDIS ABABA CITY ADMINISTRATION: THE CASE OF ARADA SUB CITY" undertaken by Yared Tadesse for the partial fulfillment of the award of Master's degree in Project Management at Addis Collage School of Graduate, is an original work and not submitted earlier for any degree either at this Collage or any other University.



Aweke Ashenafi (Ph.D)	**_____**	**11/08/2023**
Advisor name	**Signature**	**Date**

APPROVAL FORM

ADDIS COLLEGE

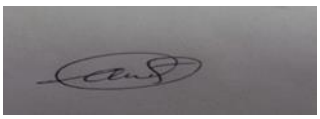
POST GRADUATE PROGRAM SCHOOL OF GRADUATE STUDIES

MA PROGRAM IN PROJECT MANAGEMENT

PERFORMANCE OF PUBLIC CONSTRUCTION PROJECTS IN ADDIS ABABA CITY ADMINISTRATION: THE CASE OF ARADA SUB CITY

BY: YARED TADESSE

APPROVED BY THE COMMITTEE OF EXAMINERS



Aweke Ashenafi (PH.D.)	----------	**11/08/2023** ----------
Advisor	Signature	Date
Name ----------	----------	----------
Internal Examiner	Signature	Date
Name ----------	----------	----------
External Examiner	Signature	Date

ACKNOWLEDGMENTS

First, I would want to express my gratitude to the Almighty God for his unfailing protection and assistance throughout my life.

Next, I would want to sincerely thank my adviser Aweke Ashenafi (PhD) for all of his helpful criticism, suggestions, and remarks throughout the course of this research. My sincere thanks go out to everyone who took part in my survey, especially the department head, directorate directors of arada construction office.

Finally, I would want to express my gratitude to my wife Tsion Chanu for her support throughout the entire process.

Yared Tadesse

LIST OF TABELS

LIST OF FIGURES

ACRONYM

KPI Key Performance Indicators

PM Project Management

PMI Project Management Institute

RII Relative Important Index method

SPM Stakeholder Perspective Measurement

NAE Number of Arada Employee

NCO Number of Contractor

NCT Number of contractor

SPSS Statistical Package for the Social Sciences

ABSTRACT

This study's main goal is to evaluate the Assessment of factors affecting the performance of public construction projects at the Arada Sub-City Construction Office. There are several concerns and significant problems with the execution of public construction in the Arada sub-city construction office for a variety of reasons. The Arada sub-city construction office needs this task to identify and assess the duration, cost, quality, and performance of public construction projects. The construction projects examined in this study include administrative structures, educational institutions, healthcare facilities, communication infrastructure, and shades. The methodology adopt in this study is descriptive research strategy. It was utilized provides the procedures that are necessary for obtaining the information needed to structure the research questionnaire, interview, collect data, analyze the collect data, and interpret. Present the result using Spss software. The sampling method followed in this survey are convenience sampling method. To determine the most important performance indicators, the findings were analyzed and discussed. Here, the cost, time, and quality factors of the relative importance of the key performance indicators were determined using the relative importance index approach. Time, Cost, and quality considerations were ranked first, second, and third, respectively, concerning how relative important index affects projects involving public construction. The public construction project has suffered from a lack of quality assurance training and follow-up, despite the fact that quality is a crucial element and a major aspect. Time is a major factor in public construction projects, and contractors are factors in these projects. All of these factors have an impact on time performance because Relative important index is more important than financial difficulties, subcontractors, site management issues, poor planning, mistakes made during construction, inadequate contractor experience, shortages of materials, labor supply issues, labor productivity, the absence of the consultant's site staff, and a lack of experience on the part of the consultant. Cost considerations for public construction projects also include material pricing variations, supplier monopolies materials, and design modifications.

Keywords: public construction project, time, quality, cost, key performance indicators, relative important index performance

CHAPTER ONE
INTRODUCTION

1.1 Background of the Study

For the economic development of any nation, especially developing nations, the construction industry has assumed a significant role. Effective time planning, according to Nega and Fetene (2008), links a building's design to its cost and quality while taking into account all modifications, risks, utility, and appearance. A project's timeline is therefore scheduled to stay within the financial constraints of the investment. The triple project limitations serve as a gauge for project effectiveness and completion (Cost, time, and quality). The timely completion of the project within the budgeted costs and desired quality constitutes project success. The industry needs more time and money because there are so many project activities, tasks, and limits. Delays have effects that extend beyond the building sector and have an effect on the economy as a whole. Cost and time overruns are widespread in poor nations, and their effects are more severe than in developed nations.

Ethiopia is a developing nation whose building industry is affected by time and expense overruns. This issue affects building construction projects in Ethiopia. Building projects cost a lot of money, but they boost the economy overall by generating jobs and having a significant impact on other commercial operations. Delays in the sector have a variety of root causes, so consideration should be paid to things like the fact that they result in higher expenses than first anticipated. Schedule overruns, commonly referred to as time increases, are the result of unanticipated delays. And this delay may exceed the anticipated duration as a result of underestimating the real timeline during the contracting stage or altering the design during the construction stage (Sambasivan & Soon, 2007).

Modifications are an inevitable part of the building process. It is released in response to current or new developments. Wide-ranging and poorly managed modifications may negatively affect the time, cost, and quality of a project. Project delays, which lead to cost overruns and poor performance, are the main issue the construction sector is currently experiencing. The necessity of finishing construction projects within the projected cost, time schedule, and expected performance criteria is ever more important in today's fiercely competitive construction sector.

(Melaku 2017). Lack of worker expertise, poor management, bad site administration, ineffective leadership, equipment shortages, and equipment failures are a few reasons why construction delays occur. (Faridi&ElSayegh,200).

The selection of the contractors is an important component of project management and typically has a substantial impact on the success or failure of a project, according to Ajayietal.,2022).Future research should concentrate on the following topics in light of these factors: the impact of a construction project manager's skills on the way a project is carried out. Which building project, whether public or private, performs better? Plans for evaluating the performance of construction enterprises are also encouraged to develop a modeling framework and an execution estimating system. The impact of a project manager's abilities on how a project is carried out. Decide which construction project, public or private, performs at a higher level. Plans for evaluating the effectiveness of construction organizations and projects are also advised to include a modeling framework and execution estimating system. It is also advised that the most crucial elements affecting how well building projects perform be research and assesse. As a result, the primary goal of this investigation was to learn more about the Arada sub-city construction office's performance in assessing public construction projects.

1.2 Statement of the problem

Public-sector building projects are designed to offer low-cost services to the general public. Among other things, these development projects in many developing nations strive to provide crucial educational facilities, healthcare facilities, commercial prospects, and employment opportunities. Nega and Fetene (2008), Construction projects frequently encounter issues of poor performance in terms of time delays, cost overruns, and a lack of quality because completion on schedule, within budget, and with a demand for quality have been widely regarded as the three key objectives of project success. Meng (2011) identified time, cost, and quality as crucial indicators of unsuccessful project completion. According to Rwelamina and Savile (1994), standard project performance examines cost, quality, and time, whereas nontraditional project performance evaluates health and safety, the environment, management, employee skills, labor relations, and facilities.

Any building project carries risk, as was already mentioned, and the repercussions might be disastrous in a developing nation like Ethiopia. The most crucial thing a project can do, according to Hillson D. (2009), is make sure that the inherent risk associated with each stretch is at a level that is acceptable to the business and is adequately managed. The implication of this statement is that different organizations accept varying levels of risk, and therefore Ethiopia as a country or the organizations participating in construction may, in a sense, bear to accept low levels of risk due to their limited capital. This involves investigating a range of elements, particularly those that are problematic in developing nations, in order to manage problems with cost, time, and quality that affect the project's performance.

A survey and case study on the reasons for cost overruns in federal road projects in Ethiopia in the Southern Wereda have been done by Wubishet (2017). From the perspectives of the Arada Employee, consultants, and contractors, the study identified six top-rated factors for project cost overruns, including material price fluctuation, cost underestimation, delay in the supply of raw materials, inadequate review of contract documents, lack of coordination at the design phase, and lack of cost planning during the pre- and post-contract stages. Fetene (2008) investigated the causes and effects of cost overruns on public building construction projects in Ethiopia. Siraw (2014) investigated the study of factors contributing to time overruns on building construction projects under the Addis Ababa municipal Administration. In the current construction industry, a project consists of various processes that run from its inception to completion, passing through a few tasks at each key stage to accomplish the project's objectives.

The study offered understanding and insight into evaluating the performance of Wereda 02 health center renovation work, Wereda 03 Smene Kebede Health Center for Wundery, Generator House, Card Room, Pharmacy Room, TV Room, Guard House, and Fence Construction Work, Wereda 04 North Health Center Maintenance ,Ward 10 health center fence renovation, guard house, and APT pharmacy maintenance partition shelf work Second Menlak 1st grade school football field Wereda 4: Mrs. Kelemework Preparatory School football field, Wereda 05 Ras Abebe Elderly 1st Grade School Fence and Guard House and Wereda 5 Bethlehem School Library. major project participants, including Arada Employee, contractors, and consultants. In addition to offering better techniques and methods of delivering construction projects, it is anticipated that the study findings will drive efforts to improve the performance of public construction projects. Administrative

buildings, schools, hospitals, communication facilities, and shading to assess the performance factor of public construction projects in the Arada sub-city construction office are among the construction projects examined in this study.

1.3 Research Questions

The study was guide by the following key research questions:

- What are the factors that affect the performance of public construction projects in the Arada sub-city construction office?
- What are the contractors-performance variables for public construction projects?
- What are the consultant-performance variables for public construction projects?
- What are the Arada employee (client)-performance variables for public construction projects?
- What is the major difficulties and gaps observed in public construction projects in Arada sub-city?

1.4 Objectives of the Study

1.4.1. General Objective

The general objective of this study is to assess factors affecting the performance of public construction projects in the case of Arada sub-city, Addis Ababa City Administration.

1.4.2. Specific Objectives

Specifically, this study tries to assess-

- To assess the contractors-performance aspects for public construction projects.
- To analyze consultant-performance variables for public construction projects.
- To identify Arada employee (client) performance variables for public construction projects.
- To assess the major difficulties and gaps observed in public construction projects in Arada sub-city.

1.5 Significance of the Study

There are several concerns and significant problems with the execution of public construction in the Arada sub-city construction office for a variety of reasons. The Arada sub-city construction office needs this task to identify and assess the duration, cost, quality, and performance of public construction projects. The procedures pertaining to the KPIs, such as time, cost, and quality, as well as the factors of public construction projects in Arada sub-city construction office, were analyzed in order to know the main practical issues of project performance regarding factors and then to formulate recommendations to improve the performance of public construction projects. This research is important for experts, decision makers, policy planners, and practitioners to find the best practices, techniques, and processes for carrying out and managing public construction projects, as well as to use and coordinate human, material, and other resources effectively. In order to establish a favorable atmosphere for successful and efficient project management, it also helps to examine current policies, rules, and manuals. It distinguishes the public building project with the best performance based on the findings.

1.6 Scope of the Study

This study covered public construction project performance from September 11, 2020, to July 05, 2023; It’s main focus was on the performance assessment of sub-city public construction projects to client satisfaction. The analysis takes into consideration the public construction projects located at the Arada sub-city construction office. This study is only focused on Addis Abeba, more precisely the construction office in Arada sub-city. Also includes people whose job is restricted to public initiatives at the sub-city level.

1.7 Limitation of the Study

In this study, two main constraints affect how effectively the study's intended objective can be achieve. The achievement of the study's goal depends on the quality and accessibility of adequate data about the project's foundation, which is why almost all stakeholders have provided organized data as the study requires but some stakeholders Due to their busy schedules not respond the questioners. The second one is this research is just concerned with the Arada sub-city construction office and does not concentrate on the project's effects.

1.8 Organization of the Study

This research project is structured that the first chapter contains the study's introduction, the problem statement, the research objectives, the study's scope, its limitations, and its importance. A theoretical background and framework for the research are attempted to be presented in the second chapter, which is devoted to a review of the relevant literature. The third chapter's methodology section contains the strategies and techniques used to accomplish the goals of the research. It explains how to get data, analyze it, and present the findings. Results and discussions are included in Chapter 4, followed by a summary of findings, conclusion, and recommendation in Chapter 5, and a reference and appendix on the final page.

CHAPTER TWO
REVIEW OF RELATED LITERATURE

2.1. Definition and concept

Project performance is a serious problem for the construction industry. Client satisfaction and on-time completion of projects are two common project deliverables that are used as success indicators. According to Kerzner and Saladis (2009), a construction project is a complex series of activities and tasks with a predetermined start and finish date that uses resources like a budget, human resources, outputs, and equipment in order to accomplish specific goals. According to the Advanced Project Management Institute (Project Management Institute, 2008), a project is temporary if it has a set start and end date, a clear scope, and allocated resources. It is generally define to include any construction activity, including residential construction, as well as the upkeep and repair of existing facilities. Physical infrastructure construction includes the building of roads, railroads, and harbors. Construction projects have been divide into a variety of groups in order to be distinguished from one another. Cost overrun: This is the difference between the project's actual costs and the budgeted costs. It is also known by the name "cost escalation." Cost Performance is a comparison of actual spending to plan spending. Key performance indicators are the metrics used to gauge performance.

Project performance measures how well a project accomplishes its stated goals according to the established parameters. Project performance in this study is measure in terms of timeliness, expense, quality, safety, onsite disputes, and environmental effect. Quality performance: When a project is first conceived, particular technical and quality requirements are set. The degree of a project's performance quality is determined by how closely it adheres to the specifications. Time Performance: The degree to which a project meets its time objectives it is determined by comparing the project's actual time usage to its scheduled time. Project Management Institute in advance (Project Management Institute, 2008).

2.2. Theoretical Review

2.2.1. Classification of construction projects

Based on their complexity, scale, and intended use, the majority of building projects in developing nations can be categorize into different categories. (Shenharetal, 2001) argues that projects differ

in a few ways even though they all share unmistakable traits like an aim, budget, and time limitation. This implies that "one size does not fit all." Construction projects can be categorize in this way: as small, medium, large, or mega; privately owned; used for residential, commercial, industrial, or utility purposes; and as utility or building projects. Project scope is a considerably superior classification criterion than the others for public construction projects. As a result, depending on its scope, a project is categorize as either a building or an infrastructure project. Infrastructure projects include, but are not limited to, bridges, massive constructions, and engineering enterprises (dreyer, Grace 2010). Depending on its intended use, a construction project is classified as either residential or nonresidential. Among the residential construction projects are homes, townhomes, apartments, and cottages. Nonresidential structures include institutional and commercial structures, including hospitals, clinics, schools, universities, sports arenas, huge shopping malls, retail chain stores, light manufacturing facilities, warehouses, and skyscrapers used for offices and hotels.

The construction of private buildings is possibly the most prevalent sort of construction project carried out in developing nations, particularly by the private sector, due to its high use and the crucial institutional building sectors that must be built publicly in order for a nation to thrive and meet the needs of its many citizens. Despite the fact that there are many public construction projects, they only make up a small portion of the overall construction industry, despite being a crucial component of it. The majority of public sector construction projects are for institutions, including schools, hospitals, industrial parks, and agricultural markets, even if they may also be institutional or commercial in nature. Regardless of classification, every project goes through a set of sequentially connected phases known as construction project phases (Project Management Institute, 2008).

2.2.2. Phases of construction projects

Construction projects typically involve a number of stages, each of which may consist of a specific set of tasks that eventually lead to a milestone. Researchers into conception, planning, procurement, building, and startup (Kerzner & Saladis 2009) have categorized project phases. Some have broken it down into the three steps of conception, design, and construction (Puspasari, 2006). According to the Project Management Institute (2008), a project has four phases: (1)

conception, (2) development, (3) implementation, and (4) end. All the actions that take place throughout construction projects are cover by these phases. The four phases could alternatively be referrers to as project conception and planning, project design and tendering, project construction, and project operation and maintenance. This terminology more accurately describes the tasks completed throughout each of the four stages of construction projects.

2.2.3. Construction Projects and Performance

A construction project's performance is a major factor in determining its success. The effectiveness of construction projects has been the subject of several prior studies. The inappropriateness of the selected acquisition framework is one of the driving factors of the construction industry's poor execution, according to Chanetal (1999) who describes the work achievement structure, criticism influences on efficiency and work quality, and impacts from upstream to downstream phases as the three dominant structures that are essential to the energy of a project's performance.

According to Thomas, the primary performance criteria for construction projects include financial stability, work progress, quality standards, health and safety, resources, relationships with clients and consultants, management skills, claim and contractual disputes, relationships with subcontractors, reputation, and the amount of subcontracting. According to Al-Emad and Rahman (2021), construction time is becoming more and more significant since it typically serves as a crucial indicator for assessing project performance and project management competence. According to Pheng and Chuan (2006), project administration is one of the many factors that affect project performance, but it is also perhaps the most crucial because it involves the individuals who design the forms and structures that support the projects.

In accordance with Ugwu and Haupt (2007), archiving managerial goals like improving institutional transformations and making effective design, specification, and construction decisions at various project-level interfaces using suitable Decision support tools requires a sufficient understanding and knowledge of performance. Hosseinietal (2016) examined the response of Singaporean development firms to project management (PM) techniques. This project management team assessed the effectiveness of their projects in China, found PM tactics that produced better outcomes, and suggested crucial PM practices.

2.2.4. Construction project performance measurement models

It is determined that having a few but relevant measurements, being connected to important project objectives, delivering reliable information, and incorporating both financial and nonfinancial metrics are the fundamental prerequisites of effective performance measures and measurement frameworks (Ankrah & Proverbs, 2005). A construction project's success can be evaluate using a variety of performance metrics. They all concentrate on the three critical performance areas of scope, schedule, and money (Alvarado et al., 2005). Seven project performance indicators—construction cost, construction time, cost predictability, time predictability, defects, customer satisfaction with the product, and customer satisfaction with the service—as well as three company performance indicators—safety, profitability, and productivity—have been identified by Akintoye and Takim (2002).

2.2.5. Performance Measurement Theory

In order to create a framework that may be use to explain performance and advancement, the Proposition of Performance builds and links six fundamental generalizations (Don, 2010; pp. 132–139). Position of performance refers to where you are on the road to developing performance. Current performance is influenced by a variety of elements, including environment, position of knowledge, situation of chops, and position of identity, unique factors, and fixed factors. There are three axioms offered for efficient performance improvements. They include having a performer's mindset, spending a lot of time in a supportive atmosphere, and practicing wisely. Performance improves through levels, where "Level 1," "Level 2," etc. are used to describe performance sufficiency. In this case, a Level 3 person or organization is outperforming a Level 2 person or organization. Better performance results in outcomes that fall into the following categories: Quality improves; results or products are more effective at meeting or exceeding partners' expectations; waste production decreases; capability improves; ability to handle more difficult projects or exhibitions; capacity improves; ability to produce more throughput; knowledge improves; depth and breadth of knowledge improve; (v) talents improve; ability to continue setting goals, keep a positive view, etc. rise in the scope of use and efficacy, and (vi) Identity and motivation rise; people become more aware of their professional identities; organizations become more authentic. Response to Egan's analysis from the UK construction

industry (Construction Industry Task Force, Key Performance Indicators (1998)) uses 10 predetermined parameters to gauge project performance (KPIs).

There are three company performance indicators along with the following seven project performance indicators: construction cost, construction time, cost predictability (design and construction), time predictability (design and construction), defects, and client satisfaction with the product and service (safety, profitability, and productivity). The fundamental ideas behind this strategy are easy for clients, designers, consultants, contractors, subcontractors, and suppliers to grasp and put into practice. One weakness in the methodology is the lack of project phase separation in the KPIs. According to Board (1998), (Mbugua et al., 1999) performance evaluation (1990) to choose the approach and scope of the measurement. Technical performance, commercial performance, and overall performance are the three performance metrics used to compare the three performances. Planning and design, marketing, and manufacturing are only a few of the measuring categories, and total performance is assesse at the organizational or strategic business unit level.

The report also suggests a methodology for measuring performance in terms of resources and outputs at various levels. Resources are measured to determine if the least amount of resources are utilized in the production of outputs, and outputs are measured to see if they help achieve objectives (effectiveness) or efficiency).Unfortunately, Cordero (1990) did not include the wellbeing of stakeholders, their wants, or their aspirations in his model. According to Love et al., in order for construction businesses to maintain their competitiveness in the end, they must improve and strengthen their relationships with their customers, suppliers, employees, lenders, and the public As a result; performance measurement must take into account the stakeholders' interests, both morally and monetarily. Additionally, Cherish et al. (2000) provide a demonstration known as stakeholder perspective measurement (SPM) that properly takes into account interactions with clients, vendors, staff members, financiers, and the general public. These are all essential to a company's long-term and short-term viability. SPM takes into account the company's three shared points of view, which are: as a partner substance reflecting the interests of customers and shareholders (measures of product and service performance); as a goal-oriented, benefit center (measures of financial execution); and as a framework that locks in resource gathering, transformation, and trade with the environment (measures of competitive capacity, efficiency, and quality).

2.2.6. Measurement of Project Performance

The goal of performance evaluation is to assist businesses in understanding how past success or failure was influenced by decision-making processes or practices and how this understanding may result in future changes. The type of work, international competition, quality grants, organizational role, external requests, and IT power are all characteristics of expanding performance estimation indicators that necessitate examination of both the organization and the environment, according to Samson and Lema (2002). The indicators should be able to identify the underlying causes of issues, take into account all potential performance variables, and highlight potential areas for improvement. Moreover, Cheung et al. (2004) used the seven crucial executional performance indicators of time, cost, quality, client happiness, customer changes, corporate performance, and safety and health. These three fields include accounting, management, and economics, according to Tangen (2004).

Performance measurement is a challenging issue that typically entails a lot of work, and it has recently attracted a lot of interest from academics and practitioners. According to Tangen (2004) the objective of the measurement, the level of detail required, the time allotted for the measurement, the availability of prepared data, and lastly, the cost of the measurement all affect the decision of the best measuring strategy. Lehtonen (2001) suggested a new framework for measuring building logistics utilizing two dimensions in order to increase productivity. The primary measurement includes two different sorts of metrics (measuring use). One of these categories is referred to as development measurements, which help the development industry find problems with current techniques.These measurements are typically used in development projects. Monitoring actions, which are used to track processes in real time, are another type. The second characteristic of the framework is the emphasis on measures. The measurements that can be applied at the organizational level are specified. Information ought to be accessible at all times. levels, including those of the organization, the project, and each specific supplier or subcontractor.

2.2.7. Factors of Time Performance

While Iyer and Jha (2005) noted that project performance in terms of cost has been studied since the 1960s, Chan and Kumaraswamy (2002) noted that studies in various countries over the past

three decades have attempted to limit and significantly contribute to the knowledge of construction project time performance. These studies cover a wide range, from theoretical work based on the researcher's experience to formal study work. Also, according to Pheng and Chuan (2006), there has been numerous prior research on project performance in relation to cost and time considerations. Fetene (2008) discovered that delays, supplemental agreements, hostile relationships among stakeholders, and budget shortfalls of project owners were the most prevalent results of cost overruns.

2.2.8. Factors of Cost Performance

This information directs efforts to improve the performance of the construction sector in the future. According to Aje, Odusami, and Ogunsemi (2009), the management skills of contractors have a substantial impact on the cost and timeliness of construction projects. Wiguna and Scott (2005) found that the essential risks had a similar effect on project time and expense for building contractors. High inflation, increased material prices, design modification by the owner, flawed designs, weather circumstances, late payments on contracts, and poor construction work were among them. According to Iyer and Jha (2005), the following factors affect cost performance: project manager competency, higher administration support, project manager staffing and leadership skill, monitoring and feedback by members, take measures, coordination among venture members, owners' competence, and social, temperate, and climatic conditions. The factor having the biggest impact on how well a venture is executed has been shown to be the coordination amongst venture members.

2.2.9. Factors of Quality Performance

According to Curt (2005), the quality management system tracks and evaluates the project's construction quality and foresees quality issues and problems. The following are examples of typical quality measures: (i) Quality control tests: frequency, number, and percentage of passes and failures; nonconformance issues; change requests; number of root causes; cost of rework; number of exceptions at turnover; and cost of quality (ii) Quality Control Cost (cost of resources): cost of quality, cost of quality as a percentage of building cost, and cost of quality assurance According to Lepartobiko (2012), the elements that contribute to subpar project performance can be found and eliminated. According to Jha & Jha (2006), the project manager's expertise and top management backing have a vital role in improving the quality performance of a construction

project. The leading factor affecting project quality was an inexperienced contractor. According to Ling and Bui (2010), the participation of international specialists, project inspections by government officials, and tight supervision of novel building techniques all contribute significantly to project success. The absence of precise information on the soil, weather, and traffic conditions is one issue that contributes to poor performance.

2.3. Empirical Review

Fetene (2008, pp. 65-70) examined the reasons behind and consequences of cost overruns in Ethiopian public building construction projects. According to the study's findings, 67 out of 70 public building construction projects experienced cost overruns. For individual projects, the rate of cost overruns varies from 0% at the lowest to 126% at the highest. Iyer and Jha (2006) conducted research on factors influencing cost performance using cost execution data from Indian construction projects. They discovered that the project manager and top management of the Indian construction project significantly improved the quality and performance of the project. According to Kim et al. (2008), the execution of international construction projects is affected by more intricate and dynamic factors than residential projects; the construction project frequently experiences or is significantly impacted by external uncertainty, such as political, economic, social, and cultural risks, as well as internal risks from within the project. Puspassari (2005) listed 46 potential causes of performance in building contracts.

The factors were divided into eight categories by the researcher: those brought on by clients those brought on by contractors, those brought on by consultants, those brought on by subcontractors, those brought on by materials and labor, factors relating to contractual relationships, project procedures, and those brought on by the outside environment. The improvement of labor productivity in the construction industry in Egypt was pioneered by AbdelRazek et al. (2007) through the use of benchmarking for labor productivity performance. The eleven construction projects in Egypt were evaluated for labor productivity using information from masonry activities.

Many benchmarks of construction labor productivity were displayed, calculated, and then utilized to determine the best and worst projects. A crucial concern in any consulting service is the project's eventual success (Wondie, 2016). The success of a building project depends on the specific duties that consultants must perform. A construction consultant is responsible for a wide range of tasks.

The kind of contract condition and project delivery method selected will determine these obligations. A consultant is necessary for the successful conclusion of a building project. Without the contributions of consulting engineers to industries including health, sanitation, transportation, public works, buildings, and communications, it is difficult to envision modern living. It takes a high level of engineering expertise to succeed in this field (Abebe, 2003; cited by Nurham.G., 2018). According to Bui et al. (2010), there are several key factors that contribute to project success in Vietnam, including the presence of foreign specialists, government inspections, and very strict monitoring when novel building techniques are applied.

Amusan and Adebile (2011) examined the factors influencing construction cost performance on Nigerian construction sites in 2011. The investigation showed that a number of issues, including project complexity, project period shortening, and fraudulent practices, were also to blame for cost overruns, including contractor inexperience, inadequate planning, inflation, constant variation orders, and changes in project design. The success of every project is decided by the service quality offered by contractors and the expectations of the project owner, claims Al-Momani (2000). The success of the project depends on managing the construction so that everyone feels they are receiving an equal share of the advantages. It has been found that low performance is caused by a complete lack of focus on owner pleasure. Ineffective performance is also brought on by dwindling market share, poor productivity and efficiency, and quick rises in building costs.

Jin et al. examined the relationship-based variables that affect the success of typical Chinese building projects (2006). Construction project success was evaluated using thirteen performance metrics. Cost, scheduling, quality, and relationship performance were the four groups into which these criteria were subdivided. It was suggested that by taking into account the aforementioned factors, foreign businesses that have entered or intend to enter the Chinese construction industry should learn how to develop cordial and cooperative relationships with Chinese partners and, ultimately, achieve satisfactory project performance. According to Wael A. et al. (2007) in Malaysia, they used a survey to determine the main reasons for delays in construction projects there. The main objective is to determine how different parties see the reasons for delays.

Who is responsible for what, and what kinds of delays are there? As a result, the poll divided the reasons for the delays into four groups according to who was responsible for them: Owner-related causes, contractor-related causes, reasons connected to the consultant, The top 10 external reasons

were determined, and they were all listed. Financial and economic troubles (owner) are at the top of the list, and they are ranked second and third (contractor) and tardy oversight and deliberate slowness (consultants). Inadequate site management (contractor), on-site material shortages (contractor), Errors in construction and poor workmanship (contractor), Delay in delivering materials to the job site (contractor), decision-making, slow-given instructions (consultants), Limited availability of materials on the market (external), and From fourth to tenth place, the issues were slowness (by owners), inexperienced consultants (by consultants), and incomplete papers by consultants.

A survey and case study on the factors that contribute to cost overruns in federal road projects in Ethiopia's southern Wereda were undertaken by Wubishet et al. (2017). From the perspectives of the client, consultants, and contractors, the study identified six top-rated factors for project cost overruns, including material price fluctuation, cost underestimation, delay in the supply of raw materials, inadequate review of contract documents, lack of coordination at the design phase, and lack of cost planning during the pre- and post-contract stages. Abubeker (2015) used a desk study and questionnaire survey to describe the concerns with cost overruns in Addis Abeba road projects. This study identified every road construction project that was completed on schedule and within budget. As a result, the time delay rate ranges from 25% to 264.38% of the contract's total value, and the cost overrun ranges from 4.11% to 135.06%.

2.4. Research Gaps

The literature analysis indicates that one component may have an impact on another group factor, such as how material shortages affect costs, timelines, and quality, or how project complexity affects productivity and timeliness. Dissanayaka and Kumaraswamy (1999), Iyer and Jha (2005), Ugwu and Haupt (2007), Cheung et al. (2004), Okuwoga (1998), Reichelt and Lyneis (1999), LHoai et al. (2008), Ankrah (2007), Takim and Akintoye (2007), Takim and Akintoye (2007), Takim and Akintoye (2007) (2002), and essentially from S. A. Shaban (2008), the following summarizes the main and group factors that affect the performance of construction projects based on literature reviews:

2.4.1 Cost Factors

the company's market share, the project's cash flow, the project's profit margin, the cost of materials and equipment, the project's labor, the cost of overtime, The cost of rework and the cost of variation orders The rate of material waste, the rise in material prices, the variation in currency exchange rates, and the incompleteness of the drawing.

2.4.2 Time Factors

Too many change orders from the owner, inadequate project management support, unexpected ground conditions, slow decision-making, project complexity, effective communication, financial limitations, average delays in claim approval, average delays in owner payments to contractors, site preparation time, and length of time required to fix defects.

2.4.3 Quality Factors

Inability to find people with the necessary qualifications, specification compliance, and Escalation of material prices, quality of machinery or equipment, and raw materials Organizational Quality Assessment System, Quality Training or Meetings, Incomplete Drawing, and Incomplete Technical Specification Fetene (2008) looked into the reasons for and effects of cost overruns on public building construction projects in Ethiopia; Siraw (2014) looked into the causes of time overruns on building construction projects managed by the Addis Ababa City Administration; and Tekalign (2014) looked into the impact of project planning on project performance in Ethiopia. Future research on cost overruns in construction projects should concentrate on the following areas, according to the conclusions of these studies: the effect of a construction project manager's skills on the success of the project. Decide which construction project, public or private, performs at a higher level. It is also recommended that a modeling system and performance measurement framework be created in order to assess the effectiveness of construction organizations and projects. In addition, it is advised that the most crucial elements affecting how well building projects perform be investigated and assessed.

2.5 Conceptual Framework

Ethiopian construction performance and projects involving public construction in general receive less attention. According to a review of the literature, the factors currently influencing the performance of public construction projects can be divided into five categories: factors related to project characteristics, factors related to labor and materials, factors related to contractual relationships, factors related to clients, and factors related to contractors. These categories serve as the foundation for the research model that was created to assess their impact on the effectiveness of public construction in this study. It is displayed graphically as follows:

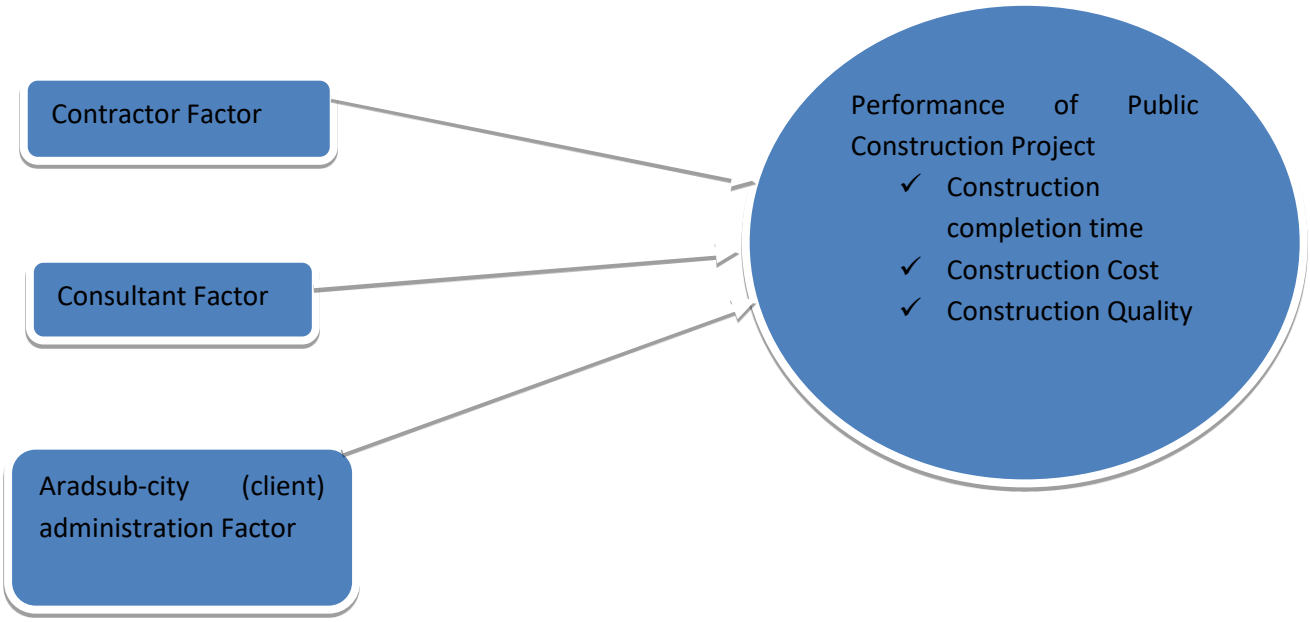


Figure 2.1 Conceptual Framework (Puspassari, 2005)

CHAPTER THREE
RESEARCH METHODOLOGY

3.1. Description of the study area

The systematic process used to find a solution to a specific problem is known as research methodology. The methodology used in this study outlines the steps that must be taken in order to get the data needed to design the research questionnaire, collect the data, analyze the data, and interpret and report the results. The Following sections provide an overview of the methodologies used in this survey:

3.2. Research Design

A descriptive research design are utilized in this study; the main goal of descriptive research is to describe the current state of affairs. Following that, this study describes and evaluates the performance of public construction projects. The researcher employed on descriptive statistics, frequency, percent, sum and RII.

3.3. Research Approach

The two fundamental methods of research are quantitative and qualitative (Leedy and Ormrod, 2005). The former entails the creation of quantitative data in order to derive characteristics or relationships from it. This data is subjected to accurate quantitative analysis in a suitable and rigorous manner. A quantitative approach attempts to produce "real answers" from "hard data," whereas a qualitative approach is concerned with the subjective evaluation of opinions, behaviors, and attitudes. In quantitative research, samples of a population are studied (observed or questioned) to establish its characteristics. Because they consistently use "soft data," qualitative approaches are good at generating new questions rather than providing direct answers. Thus, both quantitative and qualitative Approach were applied in this study.

3.4. Data sources

Data from primary sources was gathered for the study. Employees (professionals) working in various departments of the Arada sub-city construction Employees, consultants, and contractors involved in office projects were the main sources of information. The key sources of information

for the study's target Arada sub-city construction Employees, contractors and consultants. Researchers would gather quantitative and qualitative data by administering the Five-Point Likert Scale questionnaire to various workers at a sample project. The necessary information would be compared to the primary data collected to support the research as a benchmark. Secondary data from files, pamphlets, and office manuals, variety of books, websites journals and news letters were reviewed to make the study fruitful.

3.5 Target population and Sample

3.5.1. Target population

According to Neelam (2014), population refers to the entire population from whom a sample is taken. The Arada Sub-city Construction Employees, consultants, and contractors of public construction projects who operate at various levels and have more than one year of experience were the study's target group of 140 people from three parties they are 40 Arada sub-city construction Employees, 50 contractors and 50 consultants.

3.5.2. Sampling size determination

Given that studying a subset of the population would be more manageable than studying the entire population due to time, cost, and accessibility, the sample size to be used for the study is the appropriate number of respondents that would be chosen, and it is an extract from the total population of stakeholders. Hence, the sample size would be determined to be representative of the entire population. Using Yamane's Statistics, the sample size for this investigation was established.

The sample size was calculated using Yamane's (1967) calculation, which offers a more straight forward method: that the population was not homogeneous, a degree of precision of 0.05 was used. It is crucial and customary to take a minimum sample size, and the following formula is provided to make this calculation easier:

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

$=140/(1+140(0.05)^2)$

$= 140/1.35= 104$

NCE = (NAE/N)*n = (40/140)*104= 30

NCO= (NCO/N)*n = (50/140)*104= 37

NCT = (NCT/N)*n = (50/140)*104= 37

Where n is the sample size, NAE is the Employees calculated sample size, NCO is the consultant's determined sample size, and NCT is the contractor's calculated sample size; The population numbers for Arada Employee, consultants, and contractors are NAE, NCO, and NCT, respectively. The population of arada employee, consultants, and contractors sums to N. The level of precision, e, is set at 5%.

3.5.3. Sampling technique

The researcher used a Convenience sampling technique, followed by a random selection procedure, to select employees from each segment of the total population inside the strata, distribute questionnaires, and gather the necessary data from the samples. With regard to the target population, this strategy was chosen to help reduce prejudice. With this method, the sampling frame is organized into roughly homogeneous groups (strata) before the sample's constituent parts are chosen. This procedure, in accordance with Janet (2006), increases the likelihood that the final sample will be representative of the stratified groups. In a public construction project, there are distinct types of construction called stratum (construction office, contractor, and consultant). The appropriate sample size for a study depends on the type of data being collected, according to Catherine Dawson (2009), as well as the study's population and objectives.

3.6. Data collection methods

The primary data would be acquired from a select sample for the data collection, along with the secondary data that was gathered from the samples through questionnaires and document inspection. The data was gathered under the researcher's constant supervision.

The researcher thought that these materials would be suitable and pertinent for looking into one of the most popular and frequent assessments of public construction projects, the Arada Sub-City project. The researcher would employ semi structured, closed-ended, and open-ended questionnaires to collect data. A semi structured interview is a kind of questionnaire where the interviewer only asks predetermined questions and the rest of the questions are not preplanned.

3.7. Data Analysis and Presentation

Data is raw material; thus, before their meaning and implications are understood, primary data must go through an analytical process and be appropriately evaluated. As a result, to assess the data, both qualitative and quantitative data analysis methodologies would be used. The results of the document analysis and questionnaire would be presented in a narrative format using percentages, tables, and graphs because they are straight forward to use and simple to comprehend. The gathered information was used using the to ascertain the occurrence of evaluating the efficacy of the Arada Sub-City construction project. These statistics were used to determine if each pair of parties was in agreement or disagreement (the respondents). The formula provided below was used to determine the assessment's rating based on the importance index. Kometa et al. (2011) state that the relative relevance index approach was utilized to determine the various assessments and performance consultants. The same approach would be used for this investigation across different groups (i.e., Employee, consultants, or contractors). For each factor, the five-point scale, which ranges from 1 (strongly disagree) to 5 (strongly agree), will be used and transformed into relative significance indices (RII). The data analysis method used is called the Relative Important Index (RII). Calculating the relative importance index is as follows:

$RII = \Sigma W / (A*N)$

Where:

The relative importance index is RII. W = the respondent assigns a weight of 1 to 5 to each factor, A is the highest weight in these case 5 being the highest weight. N is the total number of respondents.

The various reasons were ranked (R) using the RII. These rankings allowed for a cross-comparison of the elements' relative importance, as indicated by the three

Respondent groups (i.e., Employee, consultants, and contractors).

Using the ranking system below (Abd. Majid and McCaffer, 1997)

1= Not important or strongly disagree ($1.00 \leq$ average index ≤ 1.50)

2= less important or disagree ($1.50 \leq$ average index ≤ 2.50)

3= neutral or moderately agree ($2.50 \leq$ average index ≤ 3.50)

4= important or agree (3.50 ≤ average index ≤4.50)

5= very important or strongly agree (4.50 ≤ average index ≤ 5.00)

The respondents were also asked to check boxes on a five-point Likert scale next to factors that could help improve the performance of building project.

3.8. Method of Data Analysis

After the necessary information for this study is collected, the data will be categorized, used to required analytical tools, including frequency, mean, and percentage will be in place to confirm the associated with public-construction and will examined by SPSS version 27.0. Data will be entered and edited at the end of each working day's field work as this ensures accuracy and consistence in information given by respondents.

3.8.1. Reliability

Triangulation is demonstrated in this study by the use of several data sources to produce more accurate results based on various viewpoints. The consistency of data gathering methods and the accuracy of a phenomenon's measurement are both examples of reliability. With 104 participants items into three sets of five pilot tested the instrument and the results will be reliability-analyzed using SPSS. Reliability will be assessed using the relative important index, with Relative important index >0.7 indicating satisfactory reliability.

3.8.2. Validity

The degree to which the data accurately covers the subject of the research is known as its validity. The research objectives were spelt out in as much detail and clarity as possible to ensure the validity of the study. In this study, dependability was improved by designing appropriate survey questions, adding certain closed-ended questions in the interview schedule, and carefully documenting the study's methodology so that it can be repeated in the future. By developing a questionnaire with all the items measuring variables and seeking appropriate advice from an advisor, the researcher achieved content validity.

3.9. Ethical Consideration

The researcher will consider implementing different ethical standards which are not only important but also mandatory. Thus, the researcher will try his best from requesting the consent of the construction company and the respondents up to keeping the confidentiality of the information gathered. Besides, the respondents will be informed about the whole purpose of the study. Therefore, every participant of the study will be assured that their information will not be abused or misappropriated. In line with this, to conduct this research on the sector, first a good measure of request will be made duly. After approval will be gained, participants will be well guaranteed that the responses they give will be kept confidential. This will also be clearly stated on the questionnaire, and the message will be addressed in every communication. Thirdly, the purpose of the study will be stated in the questionnaire to make participants respond with their own consent.

CHAPTER FOUR
RESULTS AND ANALYSIS

4.1. Introduction

The processing, display, and interpretation of the respondents' general information as well as their demographics are examined in this chapter. It also responds to the research questions, with each question being addressed through data analysis and a table-based presentation of the findings. In the case of the Arada sub-city construction office, the research findings were acquired and examined using frequency, percent, diagram, RII, and Rank of the responses provided in the instance of the Arada sub-city construction office. Performance assessment of public construction projects in Addis Ababa One hundred percent of the sampled population, or 104 respondents, provided the study's data. This chapter also contains an overview of the analysis.

4.2. Demography of the participants

Gender information from respondents was analyzed using frequencies and percentages. The Result that 67 (64.4%) of the respondents were men and 37 (35.6%) were women shows that men made up the majority of the sample.

Table 1 Gender of Respondent

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Male	67	64.4	64.4	64.4
	Female	37	35.6	35.6	100.0
	Total	104	100.0	100.0	

Source, own survey 2023

In the table below, respondents were questioned about their Position, and analysis was done using tables that show frequencies and percentages.37(35.6%) of respondents were contractors, 37 (35.6%) were consultants, and 30 (28.8%) were Arada employees, showing that contractors and consultants made up the Majority of respondents.

Table 2 Position of respondent

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Arada Employee	30	28.8	28.8	28.8
	Consultant	37	35.6	35.6	64.4
	Contractor	37	35.6	35.6	100.0
	Total	104	100.0	100.0	

Source, own survey 2023

As indicated in the table below, responses to a question about respondents' project work experien ce with public construction projects were analyzed using frequencies and percentages.91(87.5%) of respondents had three years or more of experience, 9(8.7%) had two to three years, and 4(3.8%) had just one to two years. The fact that the majority of the respondents were older than three plainly proves that they have the necessary experience to react to the study's issue.

Table 3 How long you have been involved in the public construction of Projects

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	1-2 years	4	3.8	3.8	3.8
	2-3 years	9	8.7	8.7	12.5
	Over 3 Years	91	87.5	87.5	100.0
	Total	104	100.0	100.0	

Source, own survey 2023

As indicated in Table 4, the respondents were questioned about their work experience with public construction projects. Frequencies and percentages were used to analyze the data. 6(5.8%) of respondents were project managers,43(41.3%) were site supervisors,45(43.3%) were engineers, and 10(9.6%) were Arada sub-city Auditor. The majority of the respondents held the post of Engineers.

Table 4 Role of respondent

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Project Manager	6	5.8	5.8	5.8
	Site Supervisor	43	41.3	41.3	47.1
	Engineers	45	43.3	43.3	90.4
	Auditor	10	9.6	9.6	100.0
	Total	104	100.0	100.0	

Source, own survey 2023

According to Table 5, the respondents were asked how many public construction projects they have been. The data was then examined using frequencies and percentages.50 (48.1%) of respondents reported having up to 3 projects, followed by 17(16.3%) with 4–6 projects, 35(33.7%) with 7–9 projects and 2(1.9%) are above 10 projects. The majority of the respondents held up to three projects.

Table 5 Building construction projects you handle per year

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Up to 3 projects	50	48.1	48.1	48.1
	4– 6 projects	17	16.3	16.3	64.4
	7 – 9 projects	35	33.7	33.7	98.1
	Above 10 Projects	2	1.9	1.9	100.0
	Total	104	100.0	100.0	

Source, own survey 2023

According to Table 6, the respondents were asked about their level of education. The data was then examined using frequencies and percentages.11 (10.6%) of respondents reported having diploma, 71(68.3%) having a BA or BSC, and 22(21.2%) having an MA or MSC. The majority of the respondents had BAs or BSCs holder.

Table 6 Level of education

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Diploma	11	10.6	10.6	10.6
	BA/BSC	71	68.3	68.3	78.8
	MA/MSC	22	21.2	21.2	100.0
	Total	104	100.0	100.0	

Source, own survey 2023

As indicated in Table 7, the respondents were questioned about the procurement approach. Frequencies and percentages were used to analyze the data.61 (58.7%) of respondents were responding to the design/Bid/Build approach, 3(2.9%) of respondents were responding to the design/Build approach, 35(33.7%) of respondents were responding to the competitive bid negotiated and 5(4.8%) of respondents were responding to the general contract Approach. The majority of the respondent's procurement approach is design/Bid/Build.

Table 7 Procurement Approach

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Design/Bid/Build	61	58.7	58.7	58.7
	Design/Build	3	2.9	2.9	61.5
	Competitive bid Negotiated	35	33.7	33.7	95.2
	General contract	5	4.8	4.8	100.0
	Total	104	100.0	100.0	

Source, own survey 2023

4.3. The cost factor performance of public construction project

With a RII of 0.8173, the findings indicate that the Fourth Factor of cost performance is a Lack of cost planning and monitoring during the pre- and post-contract phases. This shows that pre- and post-planning were necessary for a public construction project in order to track and assess the cost performance of the contract stage. Monitoring is a continual evaluation that tries to give all stakeholders as much information as possible about the advancement or delay of ongoing assessed

activities. It is an error made during the execution of the activity. Its goal is to ascertain whether the anticipated outputs, deliveries, and timelines have been met so that immediate corrective action can be implemented. According to information obtained from the project consultants during a personal discussion on open ended questionnaire briefing, there are no ongoing project work monitoring and evaluation activities to assess the project's performance by comparing it to the allocated time frame and approved budget, as well as to take corrective action for project dalliance. Hence, the cost performance of a construction project is significantly impacted by the cost planning or monitoring during the pre- and post-contract stages. Lack of cost planning at the pre- and post-contract stages has the greatest effects on the performance of project costs from the Arada construction Office, consultants', and contractors' perspectives, according to Wubishet et al.'s (2017) survey and case study on Reasons of Cost Overrun.

With a RII of 0.8423, the findings revealed that the factor of design Change was rated the third factor among project parts. Design modifications are thought to be a primary factor in project cost increases. Any modifications to the design will affect the project's budget and the quantity, kind, and labor requirements for the materials that are needed. Sometimes, design revisions call for the reworking of already finished parts, lengthening the project's timeframe and using up excessive amounts of material. This outcome highlights how crucial it is to manage design modifications in order to finish the project on schedule. There are discrepancies between the anticipated cost and the actual cost due to the design change problem. The significance of these elements in project cost overruns is illustrated by this agreement between the parties. This suggests that Arada Construction Office won't consider the future when creating project designs. According to Ashraf and Ghanim (2016), client design revisions, flaws in design and contract papers, and alterations to the original design are the top 10 reasons why public sector projects in Jordan perform poorly.

According to the findings, unpredictable weather condition has a RII of 0.8019, making it the sixth cost performance factor. This shows that the majority of the projects are in the favorable climate zone so weather events may not significantly affect how well these project.

With a RII of 0.8096, respondents ranked information delays to the contractor during the building phase of a project as the fifth factors. This suggests that information delays affected how much public construction projects cost. All information that must be given to the contractor must be done promptly; any delays will incur extra fees for the contractor. Long wait periods for test and

inspection approval might be categorized as a delay factor, according to the findings of Abdella and Hussien (2002).

With a RII of 0.7980, respondents ranked contractual claims such as time extensions with cost claims in a project is seventh factors. This shows that contractual claims, such as time extensions with cost claims, are not critical to achieving cost performance and are not a factor in the cost performance of an Arada sub-city public construction project. Contractual claims, such as time extensions with cost claims, can therefore not significantly affect the execution of a construction project and instead cause a cost overrun on these projects.

Most responders have the first factor as changes in material cost, with a RII of 0.8846.The performance of the project's budget, costs, and liquidity are all impacted by this issue. Construction project cost performance in Ethiopia is affected by material cost variation, which implies that the cost of public construction is directly increased by the inflation of project materials. As a result, changes in material prices have a big impact on how much money Addis Arada sub-city public construction projects cost. A survey and case study on the reasons behind cost overruns in Ethiopian federal road projects in the southern Wereda were undertaken by Wubishet et al. (2017). Based on the study, material price Fluctuation has the biggest impact on the performance of project costs from the Arada employee's, consultants', and contractors' viewpoints.

With a RII of 0.8577, respondents rated the monopoly on project materials by some providers in second factor. This shows that the monopoly of particular suppliers over project materials is crucial to attaining cost performance and has a big impact on suppliers as a cost performance component of public construction projects in Arada sub-city. The project operations are finished on schedule and within budget, and the project supplies are delivered on time and in good shape.

Table 8 Cost Factor

		C1	C2	C3	C4	C5	C6	C7
N	Valid	104	104	104	104	104	104	104
	Missing	0	0	0	0	0	0	0
Mean		4.09	4.21	4.01	4.05	3.99	4.42	4.29
Sum		425	438	417	421	415	460	446

Cost factor	Mean	Sum	RII	Rank
Lack of cost planning/monitoring during pre and post contract stages	4.09	425	0.8173	4
Design changes	4.21	438	0.8423	3
Unpredictable weather conditions	4.01	417	0.8019	6
Delays in issuing information to the contractor during construction stage	4.05	421	0.8096	5
Contractual claims, such as, extension of Time with cost claims.	3.99	415	0.7980	7
Fluctuations in the cost of materials	4.42	460	0.8846	1
Project materials monopoly by some suppliers	4.29	446	0.8577	2

Source, own survey 2023

4.4. The Time factor on performance of public construction project

4.4.1 Arada Employee perspectives

The results show that the respondent ranked the right-of-way problem's delay in furnishing and delivering the site as the second factor, with RII equal to 0.8673. This outcome highlights how important it is to provide the site on time in order to finish the project on schedule. The right-of-way issue leads to disputes among the project's participants, delaying the completion schedule even more. This contract between the Arada employee office and the contractors demonstrates the importance of these Factors in project delays.

The respondent put finances and payments for finished work first factor, and the RII is currently 0.875. This finding suggests that funding and rewards for finished work have a considerable influence on a public construction project's timeliness. Sambasiva and Soon (2007), who carried out research to determine the reasons behind project delays in the Malaysian construction sector, shared this conclusion. Finance and payment for finished work were the reasons for and repercussions of project delays in the Malaysian construction sector. Additionally, financing and payment for finished work might be categorized as delays' reasons, according to Abdella and Hussien (2002).

With a RII of 0.8480, owners' slow decision-making has been ranked fourth. This finding suggests that owners' sluggish decision-making has significantly impacted how quickly public construction projects are completed. This finding was connected to a study by Sambasiva and Soon (2007) to determine the reasons for and consequences of project delays in the Malaysian construction sector.

The Arada sub-city construction office's unrealistically imposed contract duration is the third factor, with a RII of 0.8653. This highlights how crucially important it is to estimate project length precisely. The project could be delayed since the project duration is occasionally selected carelessly.

Arada sub-city construction office design change is the fifth factor with a RII of 0.8346. Have a direct impact on timing performance. This is because change orders will throw off the project's schedule and, in some situations, cause it to be suspended because of incomplete design changes that have an impact on how the project's activities are carried out. Also, the project's timeliness will be impacted by the length of time needed to implement these modification orders. This is because certain adjustments require or take longer than the original intended tasks. The success of the project will be hampered by time and cost-performance difficulties as a result of the time needed to carry out these orders.

Table 9 Time Factor Arada Employee

		TAE1	TAE2	TAE3	TAE4	TAE5
N	Valid	104	104	104	104	104
	Missing	0	0	0	0	0
Mean		4.34	4.38	4.24	4.33	4.17
Sum		451	455	441	450	434

Time Factors	Mean	Sum	RII	Rank
Arada Employee	Mean	Sum	RII	Rank
Delay to furnish and deliver the site (Right of way problem)	4.34	451	0.8673	2
Finance and payments of completed work	4.38	455	0.875	1
Slow decision-making by Arada Administration.	4.24	441	0.8480	4
Unrealistic imposed contract duration	4.33	450	0.8653	3
Design change by owners	4.17	434	0.8346	5

Source, own survey 2023

4.4.2 Contractor perspectives

The factor of financial Problems was placed third factor by respondents according to the results, with a RII of 0.8519. This finding suggests that the project's time performance is affected by the financial Problem. Yet, a lack of funding for the components would result in a number of problems, such as slow Progress and a decline in productivity. In addition, the contractors failed to get the tools required for the task. This outcome conflicts with Tadesse's findings (2009). This is not a true description because it is often believed that the contractor needs funds to finish the project on schedule. Any contractor cash flow difficulty will result in a number of problems, including slow progress and declining job quality.

All respondents placed subcontractor at First factor, with a RII of 0.8730. This shows that, in the contractors' estimation, the subcontractor plays a significant role in the timely completion of a public construction project. According to Alagbari et al. (2007), a lack of sub-contractor expertise was the primary reason for delays in constructing construction projects in Malaysia. In addition, Sambasiva et al. 2007 found that issues with subcontractors were one of the main reasons for project delays in Malaysia.

According to the respondents' rankings, site management is in second factor with a RII of 0.8596. This suggests that site management is a significant and crucial role in the timeliness of public construction projects. The findings from Alagbari et al. (2007) to determine the primary reasons for delays in building construction projects in Malaysia included the lack of consultant site staff, the consultant's lack of experience, the consultant's site staff's lack of experience (managerial and supervisory personnel), delayed and slow supervision in making decisions, incomplete documents, and slowness in giving instructions.

Construction methods were ranked ninth factor by respondents, with RII 0.7692. This result suggests that a public construction project's timeliness is not significantly influenced by the construction method. Sambasiva and soon (2007), who carried out a study to determine the causes and impacts of project delays in the Malaysian construction industry.

Improper Planning were placed as the sixth factor by respondents, with RII equal to 0.8019. This suggests that, based on respondents' replies on time performance, improper planning are important factor.

RII 0.7923. This suggests that making mistakes during construction is eighth factor affect deadlines in a significant way. Sambasiva et alstudies .'s from 2007 indicate that mistakes made during the building stage are the primary reasons of project delays in Malaysia's construction industry. Alagbari et al. (2007) to determine the primary reasons for construction errors and poor work that delay building projects did similar research.

With a RII of 0.8307, respondents ranked inadequate contractor experiences fifth factor. This suggests that one reason for time performance to fall short of expectations is a contractor with insufficient experience. The public construction project's was significantly impacted by the contractor's experience. The following are the factors, as determined by Guide (2005),that affect how quickly construction projects are completed while working with inexperienced or uneducated contractors. Moreover, Sambasiva and Soon (2007), who carried out a study to determine the causes and impacts of project delays in construction industry.

Respondents, with RII equal to 0.7230, placed shortages of materials as the tenth factor. This suggests that, based on respondents' replies on time performance, material shortages are a minimal or unimportant factor. On the other hand, material shortages significantly affect how quickly public construction projects can be completed. The results are likewise in line with those of Abu-Shaban (2008), who found that two of the most important time-related issues influencing the performance of construction projects in the Gaza Strip are material shortages and average delays in payment from owner to contractor.

With RII equal to 0.8346, respondents regarded labor supply as the Fourth factor most crucial concern. This shows that a significant determinant of time performance is the labor supply problem. Daily life is impacted by the labor shortage, which also has a big impact on public construction projects' ability to complete their contracts on time. This finding is in line with that of Koshe and Jha (2016), who looked into the factors that contributed to building delays in Ethiopia and found labor-equipment that is related to the substance. Moreover, one of the main factors contributing to project delays in the Malaysian construction sector was the labor supply, according to Samba Siva et al. in 2007. The UNRWA (2006) assessment found that local construction projects had inadequate performance, particularly with regard to contractor’s performance, for a variety of reasons, including a lack of materials and lack of leadership skills. Any problem associated with this will have negative effect on construction performance.

With a RII of 0.7942, respondents rated labor productivity Seventh factor. The availability of productive labor aids in project completion on schedule and aids supporting components in implementing their projects successfully and appropriately, making it the most significant element for respondents. The efficiency of labor as a whole may not be shown by this way of assessing labor productivity,

Table 10 Time Factor on Contractor

		TCN1	TCN2	TCN3	TCN4	TCN5	TCN6	TCN7	TCN8	TCN9	TCN10
N	Valid	104	104	104	104	104	104	104	104	104	104
	Missing	0	0	0	0	0	0	0	0	0	0
Mean		4.26	4.37	4.30	3.85	4.01	3.96	4.15	3.62	4.17	3.97
Sum		443	454	447	400	417	412	432	376	434	413

Contractor	Mean	Sum	RII	Rank
Financial problems	4.26	443	0.8519	3
Subcontractor	4.37	454	0.8730	1
Site management	4.30	447	0.8596	2
Construction methods	3.85	400	0.7692	9
Improper planning	4.01	417	0.8019	6
Mistakes during construction	3.96	412	0.7923	8
Inadequate contractor experience	4.15	432	0.8307	5
Shortage of material	3.62	376	0.7230	10
Labor supply problem	4.17	434	0.8346	4
Labor productivity	3.97	413	0.7942	7

Source, own survey 2023

4.4.3 Consultant perspectives

Respondents ranked the absence of consultant site workers first factor, with a RII of 0.8711. This research suggests that a consultant's site staff's absence significantly affects a public construction project's timeliness. This means that it is impossible to monitor and challenge decisions to work in line with the document or work planning if a consultant is not present on the job site. This conclusion, which is in agreement with Algabari et al. (2007), states that the absence of the consultant's site staff, the consultant's lack of expertise, and the consultant's site staff's lack of experience were the main causes of project delays.

With a RII of 0.8480, respondents ranked the consultant's lack of experience as their third factor. This suggests that the consultant's lack of experience has a big impact on how quickly public construction projects are completed. Lack of experience is a significant barrier to project completion because consultant expertise is a crucial component of project performance and can provide timely and appropriate supervision. The primary reasons for project delays in Malaysian building construction projects, according to this conclusion, which is in agreement with Algabari et al., 2007, were determined to be a lack of consultant expertise and an incomplete document.

With a RII of 0.8538, the respondents selected contract management problem is second factor. This shows that the problem with contract management affects how quickly public construction projects are completed. This conclusion was supported by Sambasiva and Soon (2007), who carried out research to determine the reasons behind project delays in the Malaysian construction sector.

With a RII of 0.7923, respondents placed quality assurance/control fifth factor. This illustrates that the timely completion of public construction projects is not significantly impacted by quality assurance or control. Our findings are supported by Ugwu and Haupt's (2007) assertion that this aspect is irrelevant to contractors because there are no quality assurance evaluation procedures used in South African construction projects. Notwithstanding the fact that this component is crucial for contractor performance in construction projects in Tanzania and India, Samson and Lema (2002) and Iyer and Jha (2005) disagree with our findings. This can be the result of variations in geographical settings and managerial traits.

Results showed that respondents placed the waiting period for test and inspection approvals as Fourth factor, with a RII of 0.8134. This finding suggests that waiting for test and inspection approval does not significantly affect time performance.

Table 11 Time Factor on Consultant

		TCO1	TCO2	TCO3	TCO4	TCO5
N	Valid	104	104	104	104	104
	Missing	0	0	0	0	0
Mean		4.36	4.24	4.27	3.96	4.07
Sum		453	441	444	412	423

Consultant	Mean	Sum	RII	Rank
Absence of consultant' s site staff	4.36	453	0.8711	1
Lack of experience on the part of the consultant	4.24	441	0.8480	3
Contract management problem	4.27	444	0.8538	2
Quality assurance/control	3.96	412	0.7923	5
Waiting time for approval of tests and inspections	4.07	423	0.8134	4

Source, own survey 2023

4.5. The quality factor performance of public construction project

With RII values of 0.8192 and 0.8346, respectively, respondents placed the availability of educated and experienced Personnel third and second factor. This is the most crucial element for respondents since the availability of knowledgeable and skilled workers helps with the successful and suitable implementation of projects by various segments. Most site Managers in Ethiopia are civil engineers with substantial work experience but little formal management education or training. Because of its significant impact on construction quality performance, Samson and Lema (2002), Cheung et al. (2004), and Iyer and Jha (2005) all agree with our conclusion that this component is essential to quality performance.

With a RII of 0.8096, the respondents ranked the project's equipment and raw materials' quality fourth factor. When employed in their project, the parts typically seek materials that are of excellent quality and adhere to their criteria. A small number of producers create the vast majority of the materials that are readily available, and there is minimal difference in their quality. Arada Employee and consultants often want the materials used in monitored projects to adhere to the agreed-upon standards, so their project must be carried out in compliance with those standards. This result is comparable with those of Abu Shaban (2008) and Iyer and Jha (2005), who found that the availability of qualified and experienced individuals, as well as high-quality equipment and raw materials, are significant variables that affect quality.

Responders placed conformance to specifications as the fifth Factor, with a RII value of 0.8076. The quality of public construction projects is the focus of this aspect. In the construction business, projects are normally finished according to specifications. Iyer and Jha (2005) agree with our assessment that this component is critical for business owners since it has a positive impact on customer satisfaction.

With a RII of 0.8692, quality assurance training and follow-up received the highest ranking from respondents first Factor. In Ethiopian construction projects, quality assurance training and follow-up are infrequently attained or applied. Samson and Lema (2002) disagree with this result since this element significantly affects building quality.

Table 12 Quality Factor

		Q1	Q2	Q3	Q4	Q5
N	Valid	104	104	104	104	104
	Missing	0	0	0	0	0
Mean		4.10	4.17	4.05	4.04	4.35
Sum		426	434	421	420	452

Quality factor	Mean	Sum	RII	Rank
Educated personnel	4.10	426	0.8192	3
Experienced personnel	4.17	434	0.8346	2
Quality of materials and equipment used in the project construction	4.05	421	0.8096	4
Conformance to specifications	4.04	420	0.8076	5
Quality assurance training and follow up	4.35	452	0.8692	1

Source, own survey 2023

4.6. The performance of public construction project

The cost factor, with a RII of 0.8302, to having a most significant and the first factors of performance indicator for public construction projects this indicates that cost performance affects the success of public construction projects, the duration and quality of public construction projects make this aspect more significant than others in terms of time and quality. Because cost groups have a substantial impact on the performance of public construction projects and might be one of the most crucial metrics for measuring performance, Cheung et al. (2004). Iyer and Jha (2005) agree with our finding since cost is viewed as a crucial indicator of how well a building project performs. Construction cost is a crucial indicator of project performance, according to almost all studies on the subject (Chan and Chan, 2004; Zou, 2004). In their study, Khosravi and Afshari (2011) ranked cost as the second-most important measure of project performance.

The time factor, With RII equal 0.8299, is considered to be the second factors of performance indicator for public construction projects, the schedule stability of building projects has an impact on time performance, according to Samson and Lema (2002). According to Cheung et al. (2004), time group has a significant impact on how well construction projects function and might be one of the most important indicators of measuring performance. Project completion time is the primary factor for project success, according to Lim and Mohamed (2000). Some researchers' findings about time (Kamrul and Indra, 2010) Khosravi and Afshari in 2011) is the most important factor in measuring the performance of construction projects. The first significant factors is the Time factor.

The quality factor, With RII equal to 0.8280, is considered to be the third factors of performance indicator for public construction projects among the three performance criteria, this aspect is crucial in determining how well public construction projects operate. Several academics, such as Jha and Iyer (2006), Palaneeswaran et al. (2007), Love et al. (2010), and The significance of quality in the performance measurement of public construction projects has been discussed by Yung and Yip (2011). (2010). Khosravi and Afshari (2011) placed this measure of project performance third in their analysis of success measurement among power plant, utility, and cogeneration building projects. That the project will serve its purpose. Poor quality in projects results in numerous reworks, which unnecessarily undermine other project performance indicators.

Table 13 Summary

Factors of performance	Combine Mean	Sum	Combine RII	Rank
Cost factor	4.153	330	0.8302	1
Time Factors	4.151	336	0.8299	2
Quality Factor	4.142	327	0.8280	3

Source, own survey 2023

4.7. The principal issues and performance gaps in public construction projects

In addition to the mentioned reasons, other factors have had an impact on public construction projects. According to data from an open-ended questionnaire (interview), the following criteria were identified:-

- Exit of talented and knowledgeable personnel from the project office
- Client and project team incompetence
- Insufficient involvement of stakeholders
- Unclear procurement
- Three parties lack project management training.
- The unwillingness of government officials to oversee
- A lack of political fervor
- Misunderstandings between the parties

People frequently point the finger at one party (the contractor, the consultant, or an Arada Employee), most frequently the contractor, without considering all of the project parties. As a result, each stakeholder should be fully informed about the issues found during the construction process in order to ensure that public construction projects function smoothly and without delay.

The respondents' open-ended questionnaire (interview) revealed that a lack of stakeholder integration is one of the factors contributing to the public construction project's weakness and failure to advance at the proper rate. Public construction projects' activities reflect the inefficiency and ineffectiveness of the construction sector because they are stakeholders in the project. Because the availability of water and roads, as well as the supply of electricity, are significant project site factors that affect project time, cost, and quality, the difficulties of border enforcement and compensation are significant. As a result, a lack of infrastructure and a failure to integrate stakeholders will seriously hinder the project's completion. To reduce the issue of public construction projects, the relevant authority should focus on providing enough infrastructural services and improving stakeholder integration.

The open-ended question (interview) mentioned that one of the causes of project delays was a right-of-way, compensation-related problem, which is a result of stakeholder involvement in the project execution and even in the planning and activity of the project. Therefore, the absence of stakeholder involvement in the Monitoring & Evaluation program can contribute to project delays.

The lack of careful identification of capable contractors at the early stage of bidding has a negative impact on the practice and performance of the project in terms of ineffective planning and scheduling, poor site management and supervision, poor technical staff qualification, and difficulties in financing projects because there are many contractors who participate in the project in terms of space, money, and time. The most frequent reasons for cost overruns were lack of cost management, inability to detect issues and take appropriate action in a timely manner, inflation or a rise in the cost of construction supplies, a change in the foreign exchange rate (for imported materials), and a change in inflation.

One of the problems with public construction projects is corruption. This has been a demanding but concealed part of the public construction project system ever since the program's start. According to survey responses from employees of the Arada sub-city construction office, corruption is pervasive in the program as a result of restrictions or the lack of an effective control

mechanism, an organized finance management system, or a monitoring mechanism. Several employees, consultant, contractors, and suppliers have been charged with serious wrongdoing in connection with public construction projects, In April 2018, the Federal Ethics and Anti-Corruption Commission of Ethiopia conducted a study that concluded that corruption is to blame for the underwhelming results of public project.

CHAPTER FIVE
SUMMERY, CONCLUSION AND RECOMMENDATION

5.1. Summary of major findings

The following findings are formed in the analysis of the study's data and respondents' interview responses. The investigation looked at all of the public construction projects in Arada Sub-city, and they all had poor cost performance. To determine the most important performance indicators, the findings were analyzed and discussed. Here, the cost, time, and quality factors of the relative importance of the key performance indicators were determined using the relative importance index approach (RII).

Several topics pertaining to the performance of public construction projects have been explored in the research. Issues pertaining to the Ethiopian construction project's performance in the Arada sub-city have been discussed, and the public construction owner (Arada sub-city construction office), contractor, and consultant as a discipline have also been examined from the perspective of diverse local performance conditions.

The distinction between project management and construction performance elements was also covered in the literature review. Also, a summary and a gap analysis were provided. The third section went into great detail about the research methods, while the fourth section went into great detail about the findings and debate. Conclusions and suggestions are offered at the end.

The main contributions of this study are the customary emphasis on three parties as well as the endeavor to experimentally state the degree of performance of public construction projects and investigate the quality, time, and cost elements of project outcomes. It assists in filling the current research gap. According to the table and figure for these projects, respondents were questioned about the type of organization they were a part of, and frequencies and percentages were used for analysis using spss software.

Fluctuations in material costs, supplier monopolies for certain materials, and design modifications are the most frequent factors influencing the cost performance of public construction projects. Due to delays in providing information to the contractor during the construction stage, a lack of cost planning and monitoring during the pre- and post-contract stages, and the impact that design

changes will have on the project's budget, materials needed, and labor requirements, public construction projects require pre- and post-planning to monitor costs and evaluate contract stage performance. Unpredictable weather conditions and contractual claims, such as time extensions with cost claims, are the seventh factors, respectively, according to a survey and case study on the causes of cost overruns conducted by Woinshet (2017). Lack of cost planning during the pre- and post-contract stages has the highest impact on the performance of project costs from the perspective of the Arada sub-city construction office, consultants, and contractors.

RII is above financial issues, subcontractor, site management, construction methods, improper planning, and mistakes during construction, insufficient contractor experience, material shortages, labor supply problems, labor productivity, the absence of the consultant's site staff, and a lack of experience on the project. All of these factors affect time performance because the contractor is a factor in the project. Because all of these variables RII are above three delays in furnishing and supplying the site (right of way problem), financing, etc., the first through fifth factors, as well as the Arada sub-city construction office perspectives, are crucial to finishing the public construction on time. In public construction, time management is a crucial component that needs to be carefully prepared for. The financial issues associated with public buildings should be kept to a minimum in order to gauge how quickly the project will be finished. Some required activities take longer to approve when financial capabilities are granted on time. To encourage contractors to finish their jobs as soon as possible, owners should make sure that their payments are made on time. This indicates that although time performance affects the success of public construction projects.

Lack of quality assurance training and follow-up has contributed to issues with public construction project quality, which is a crucial element and a significant contributor. One element that affects project quality performance, conformance to specifications, and material quality was identified as low-experienced and educated employees, which are the main common bottlenecks of project quality performance.

Cost, timing, and quality are the three main determinants of how well public construction projects work. The most frequent reasons for cost overruns were lack of cost management, inability to detect issues and take appropriate action in a timely manner, inflation or a rise in the cost of construction supplies, a change in the foreign exchange rate (for imported materials), and a change in inflation.

5.2. Conclusions

Cost, time, and quality are the three key performance indicators for public construction projects, according to the study. The most frequent reasons for cost overruns were lack of cost management, inability to detect issues and take appropriate action in a timely manner, inflation or a rise in the cost of construction supplies, a change in the foreign exchange rate (for imported materials), and a change in inflation. Public construction projects are prone to a variety of problems during the building phase, which lead to unnecessary delays, insufficient budget allocation, arbitrary timing of the starting period, cost overruns, and poor project performance.

The primary objectives of the study was to determine what variables affected how much public construction projects in Arada sub-city construction office, cost. The Arada sub-city's public construction projects not finished on schedule and within budget. The study's findings include variations in the cost of materials, project materials monopolies by some suppliers, design changes, the volume of materials required, the type of materials required, and the labor requirements; delays in providing information to the contractor during the construction stage; and a lack of cost planning and monitoring during the pre- and post-contract stages for public construction projects.

The study's second objectives was to look at characteristics that affected in terms of time public construction projects in Arada sub-city construction office. Time is one of the most crucial elements in public construction projects. The factors that affect how quickly public construction projects are completed include financial issues, subcontractors, site management, construction techniques, improper planning, mistakes made during construction, a lack of contractor experience, a lack of materials, problems with labor supply and productivity, a consultant's lack of site staff, a lack of experience, quality assurance and control, and the length of time required for approval of tests and inspections.

The third objective of the study was to identify factors affecting the quality of public construction projects in Arada sub-city. An important consideration in public construction projects is quality. Low-experienced and educated personnel are the major common bottlenecks of project quality performance, and they were identified as one factor that affected the performance of projects' quality, conformance to specifications, and quality of materials and equipment used in the project's construction. These deficiencies all contributed to the problems with public construction project quality.

Finding the biggest problems and gaps in the performance of public construction projects at the Arada sub-city construction office was the study's fourth objective. The main issues with the Arada Sub-City Public Construction Project include the lack of skill in project staff and client skill, the lack of stakeholder integration, unclear procurement, the lack of project management training for three parties, the unwillingness of government officials to monitor, the lack of political commitment, and poor communication between the parties. One of the problems with funding public construction projects is corruption. Lack of stakeholder integration, which prevents the project from progressing at the proper rate, is one of the factors contributing to the public construction project's weakness. Since the construction industry is an integral element of the project, the activities of public construction projects show their inefficiency and ineffectiveness. The Arada Sub-City Construction Office encounters these difficulties and gaps in its public development projects.

5.3. Recommendations

In order to improve the poor performance of public construction projects in Addis Ababa's Arada sub-city, a number of recommendations were made based on the study's findings and the responses of respondents during personal interviews. Based on the stakeholders, including the Arada Employee, contractor, and consultant, the researchers divided these recommendations into three categories.

5.3.1. Recommendation for Arada sub-city construction office

According to the investigation, one of the major factors affecting the cost and time performance of public construction projects was the change in material prices. As a result, the construction office are advice to consider adequate inflation when estimating costs. Because the price of construction supplies, equipment, labor, and other costs may fluctuate while the project is being built, To minimize time and cost issues, Arada sub-city construction office are encouraged to set up stores for their needed building materials, especially if they are hard to find or only available in limited supply. Cost impacts can be reduced through aggressive value engineering for replacement materials, developing an order-on-time culture, stockpiling regular materials, early purchases of those materials subject to variable risk, identifying critical materials whose production and procurement take a long time, and acting on early supply commitments Arada sub-

city construction office, supervisors, and Contractors should seek out the early involvement of specialty contractors and their collaboration with the design team in order to use such methods effectively.

Both the project manager and top-level management should employ appropriate project management practices, such as proper planning, scheduling, and monitoring; proper cash flow and resource scheduling; and stringent monitoring. Because they supply the materials for the project, clients are advised to deliver high-quality materials and equipment as well as ensure that the project complies with the specification. Leaders and team members need to be trained in new skills in order to perform better. The government should give choosing qualified experts and reputable contractors top priority in order to carry out the activities of a public construction project. Additionally, it should guarantee that, during the course of the project, relationships and constant coordination among project participants are essential for problem solving and project success. In order to reduce project time delays, cost overruns, and poor construction quality, the study advised clients to closely monitor the construction of public projects. Furthermore, in order to prevent delays, disagreements, and claims, Arada sub-city construction office are urged to facilitate contractor payments.

5.3.2. Recommendation for Contractors

Contractors are urged to properly plan and set up a site management system for the various project activities in order to avoid errors that could necessitate reworking those activities, leading to problems with cost, schedule, and quality performance. Contractors should be very competitive when submitting bids for projects so that they can accurately estimate the cost rather than offering a low price in an effort to win the bid, take the down payment, and then vanish. In order to prevent cost overruns, performance concerns, and disagreements, proper planning and scheduling are continual activities that must be integrated with the resources and time available to complete the task.As soon as the project is granted, administrative and technical staff should be allocated to prepare plans for completion within the specified time frame, with the required quality, and at the projected cost. This will ensure good site management and monitoring. Contractors should handle advance payments wisely and create a financial management plan for each project if they want to avoid financial issues. Also, avoid moving project funds from one to another. To inspire employees and raise productivity, set up some incentives and offer training.

5.3.3. Recommendation for Consultant

This study advice that consultants give the Arada sub-city construction office orientation, and the effects on project construction, including quick approval of payments, changes, and additional work, as well as price fluctuation, are enhancing project performance. To effectively execute the public construction of the proposed projects on schedule, approve the required payments, additional works, variation orders, and so forth in compliance with the contract's rules and regulations. I am advised that consultants employ qualified technical staff to manage and enhance the projects' timely completion while maintaining their cost and quality. To minimize issues with cost, time, and quality of performance, it is also essential that the consultant have excellent qualifications to provide appropriate training at the appropriate time and be able to respond to any questions put forth by the contractor. To prevent communication gaps, consultants are recommended to agree on an effective information delivery platform. To avoid delays, cost overruns, and other misunderstandings that could ultimately affect schedule, cost, and quality performance, answer contractor and owner inquiries and requests for clarification as soon as you can.

Finally, the three parties should take action:-

- Apply modern project management.
- Stakeholders' collaboration.
- Experience sharing and information capitalization.
- Enhance project finances.
- Application of construction management practices.
- Modify regulations set by the government.
- Allocate sufficient time for design and planning.
- Build capacities of all stakeholder

REFFERENCE

Abebe, D. (2003). *Construction Management and Finance.* Addis Ababa: Addis

Abubeker Z.k (2015), Time and Cost Performance in Construction Projects in Southern and Central Regions of India

Ajayi, I. I., Olawuyi, O. J., & Ayodele. (2022). VARIABILITY STUDIES ON QUALITATIVE AND QUANTITATIVE CHARACTERS OF Mangifera indica Linn. (MANGO) IN OYO STATE, NIGERIA. Ife Journal of Science, 24(1). https://doi.org/10.4314/ijs.v24i1.12

Ajayi, O. M., Ogunsami, O. E., Ajayi, A. K and Ofili, C.M. (2010). *Factors Affecting Performance of Contractors on Construction Projects in Lagos State. Proceedings of the Construction,* Building and Real estate Research Conference of the Royal Institute of Chartered Surveyors, Paris 2-3 September 2010.

Aje, O.I. Odusami, K.T., &Ogunsemi, D.R. (2009). *The impact of contractors' management capability on cost and time performance of construction projects in Nigeria*. Journal of Financial Management of Property and Construction, Vol. 14 Iss: 2, pp.171– 187.

Akintoye, A. &Takim, R. (2002). *Performance indicators for successful construction project performance.* In: Greenwood, D (Ed.), 18th Annual ARCOM Conference, 2-4

Al-Emad, N., & Rahman, I. A. (2021). Construction Workers' Issues from Worldwide and Saudi Arabia Studies. International Journal of Sustainable Construction Engineering and Technology, 12(4), 85–100. https://doi.org/10.30880/ijscet.2021.12.04.008

Al-Momani Ayman H., (2000), Examining service quality within construction processes, Technovation, Vol. 20, PP. 643-651

Alvarado, C. M., Silverman, R. P., & Wilson, D. S. (2005). *Assessing the performance of construction projects*: Implementing earned value management at the General

Arditi D., Akan G., and Gurdamar S., 1985, Incentive/disincentive contract: Perception of oweners and contractors, Journal of Construction Engineering and Management, 124 (5): 361 373.

Bui, Ling, Florence & Thuy Dung, Thi. (2010). *Factors Affecting Construction Project Outcomes:* A Case Study of Vietnam. Journal of Professional Issues in Engineering Education and Practice - J PROF ISSUE ENG EDUC PRACT.

Chan Daniel w. m. and Kumaraswamy Mohan M., (2002), *Compressing construction durations: lessons learned from Hong Kong building projects*, International Journal of Project Management, Vol.20, PP. 23.35

Chan, A. P. C., Scott, D., & Chan, A. P. L. (n.d.). Factors Affecting the Success of a

Chen, et al (2009). *Local Operations of Chinese Construction Firms in Africa*: An Empirical

Cheung SO, Suen HCH, Cheung KKW, 2004. PPMS: a Webbased construction Project

Don Elger, 2010, Theory of Performance, University of Idaho (also available at www.webpages.uidaho.edu) Faridi, A. and El-Sayegh, S. (2006). Significant *dynamic e-Reporting system for contractor' s performance appraisal*, Advances in Engineering Software, Vol. 33, PP. 339.349 Environment, Vol. 34, PP. 31- 42

Faridi, A. S., & El-Sayegh, S. M. (2006). Significant factors causing delay in the UAE

Fetene, N. (2008). *Causes and Effects of Cost Overrun on Public Building Construction*

for infrastructure sustainability-a South African construction industry perspective. Building and Environment, 42(2), 665–680. https://doi.org/10.1016/j.buildenv.2005.10.018

Global construction 2020, (2011). *A report of Global construction perspectives and*

Grace, F.M., (2010*). Types of Construction Projects* Article Source:http://EzineArticles.com/? Expert Grace_F._M. Accessed o7/06/2013. Higgins, G.E.(2009).Quantitative versus Qualitative

Methods: Understanding Why Quantitative Methods are Predominant in Criminology and Criminal Justice. *Journal of Theoretical and Philosophical Criminology*

Hosseini, A., Lædre, O., Andersen, B., Torp, O., Olsson, N., & Lohne, J. (2016). Selection Criteria for Delivery Methods for Infrastructure Projects. Procedia - Social and Behavioral Sciences, 226, 260–268. https://doi.org/10.1016/j.sbspro.2016.06.187 Institute, New Square, PA, USA.

Iyer, K. C. &Jha, K. N. (2005) *Factors affecting cost performance: evidence from Indian*

Journal of Managerial Studies and Research (IJMSR), 2 (9),175-186.

Journal of Project Management, Vol. 25, PP. 189-197

Kerlinger, F.N. (1986) Foundations of Behavioral Research. 3rd Edition, Holt, Rinehart and

Kerzner H., (2006). *Project Management; A Systems Approach to Planning, Scheduling, and Controlling*, Ninth ed. John Wiley & Sons, Inc., Hoboken, New Jersey.

Kerzner, H., & Saladis, F. P. (2009). Project management workbook and PMP/CAPM exam study guide. J. Wiley & Sons.

Khan R.A., (2008). *Role of Construction Sector in Economic Growth: Empirical*

Kim et al, (2008), *Structuring the prediction model of project performance for international construction projects Research methods*: A comparative analysis, Expert Systems with Applications Leedy,P.D. and Ormrod,J.E.(2005), Practical Research: planning and design.8thEd.New Jersey: Pearson Prentice Hall.

Lehtonen Tutu Wegelius, (2001), *Performance measurement in construction*

Lepartobiko, W. (2012). Factors that influence success in large construction projects: the case of Kenya Urban Roads Authority projects. Msc thesis, Retrieved October

Ling et al, 2007. Key project management practices affecting Singaporean firms. Project performance in China, International Journal of Project Management,

Ling, F. & Bui, T., (2010) *Factors Affecting Construction Project Outcomes*: Case Study of *logistics,*International Journal of Production Economics, Vol. 69, PP.107-116

Love et al., (2005), *Time-Cost Relationships in Australian Building Construction Projects,* Journal of Construction Engineering and Management, Vol. 131, No. 2, PP. 187-194

Love PED, Holt GD, Shen LY, Irani Z, 2000. *Using systems dynamics to better* Master' s thesis, University Technology Malaysia, Faculty of Civil Engineering. Puspassari, T.R. (2005). Factors causing poor Performance of Construction Projects. An Unpublished Master project Report, submitted to the Faculty of Civil Engineering,

Mbugua, L., Harris, P., Holt, G., & Olomolaiye, P. (1999). A framework for determining critical success factors influencing construction business performance. Paper presented at the Proceedings of the Association of Researchers in Construction Management 15th Annual Conference. Cordero, 1990, The measurement of innovation performance in the firm: An overview Research Policy,

Meng, X. 2011, *The effect of relationship management on project performance in construction*, School of Planning *Empirical Assessment of Nigerian Construction Industry Consultancy Services Innovation Practices*, Architecture and Civil Engineering, Queen's University Belfast, David Keir Building, Stranmillis Road, Belfast, BT9 5AG, UK

Mohammad, A. Y., Yusof, N., & Kamal, E. M. (2014). Empirical Assessment of Nigerian ndreyer. (2010). Good ReseArch for Comparative Effectiveness OBSERVED Prepared by the GRACE Initiative 1. www.graceprinciples.orgcoordinator@graceprinciples.org

Nega, F. (2008). CAUSES AND EFFECTS OF COST OVERRUN ON PUBLIC BUILDING CONSTRUCTION PROJECTS IN ETHIOPIA In partial fulfillment of the requirement for the Degree of Master of Science in Civil Engineering (Construction Technology and Management).

Nuhamin getachew(2018), *Performance of Construction Consultants in Addis Ababa*: A Study of Current Practices, A.A*Oxford Economics*.www.globalconstruction2020.com (Accessed 27/03/2012).Performance Monitoring System. Automation in Construction, 13: 361-376. Chitkara, K.K. (2004), Construction project management, planning, scheduling, and controlling, Tata McGraw Hill Publishing Company Ltd.Construction Industry Task Force (1998). Rethinking Construction. Department of the Environment, Transport and the Regions, London

Pheng Low Sui and Chuan Quek Tai, (2006), *Environmental factors and work performance of project managers in the construction industry*, International Journal of Project Management, Vol. 24, PP. 24-37PMI, (2008). Guide to Project Management Body of Knowledge. Project Management

Pheng, L. S., & Chuan, Q. T. (2006). Environmental factors and work performance of project managers in the construction industry. International Journal of Project Management, 24(1), 24–37. https://doi.org/10.1016/j.ijproman.2005.06.001

Puspasari, T.R., (2006). *Factors causing the poor performance of construction project*.

Reichelt Kimberly and Lyneis James, (1999), *The dynamic of project performance*: Benchmarking the drivers of cost and schedule overrun, European management journal, Vol. 17, No.2, PP. 135-150 Samson M and Lema NM, (2002), *Development of construction contractors performance measurement framework*, 1st International Conference of Creating a Sustainable

Sambasivan, M., & Soon, Y. W. (2007). Causes and effects of delays in Malaysian construction industry. International Journal of Project Management, 25(5), 517–

Scott, S. &Wiguna, I. P. A. (2005).Nature of the critical risk factors affecting project performance in Indonesian building contracts. In Khosrowshahi, F (Ed.), 21st Annual ARCOM Conference, 7-9 September 2005, SOAS, University of London. Association of Researchers in Construction

Management, Vol. 1,225-35.September 2002, and University of North Umbria. Association of Researchers in

Shenhar, A. J., Dvir, D., Levy, O., & Maltz, A. C. (2001). Project Success: A Multidimensional Strategic Concept. In long range planning (Vol. 34). www.lrpjournal.com

Shenhar, A.J., (2001). One size does not fit all projects: Exploring classical contingency

Survey. *The International Journal of Construction Management,* PP. 569- 578

Tangen Stefan, (2004), *Professional practice performance measurement*: from philosophy to practice, International Journal of Productivity and Performance Management, Vol. 53, No. 8, PP. 726-737 Thomas S. Ng, Palaneeswaran Ekambaram and Kumaraswamy Mohan M., (2002),

Ugwu, O. O., & Haupt, T. C. (2007). Key performance indicators and assessment methods

understand change and rework in construction project management systems. International Journal of Project Management, 20: 425-36.University of Technology, Malaysia.

Vietnam. J. Prof. Issues Eng. Educ. Pract., 136(3), 148– 155.

Wa‟el A., Mohd. Razali A. Kadir, Azizah Salim and Ernawati, (2007). The significant factors causing delay of building construction projects in Malaysia, Engineering, Construction and Architectural Management Vol. 14 No. 2,2007 pp. 192-206

Wondie, B. (2016). The Challenges of Management Consultancy Profession in Ethiopia

APPENDIX 1

Instructions: This research is conducted for academic purposes, so please try to fill it carefully and truthfully. For each of the questions, please tick [√] in the provided box the most suitable answer using the given scale. Please also answer all the questions to enhance the objectivity of the research.

SECTION 1: GENERAL RESPONDENT INFORMATION

1. Job title.....
2. Gender of Respondent ☐ Male ☐ Female
3. Your position on the project: ☐Arada Employee ☐ Consultant ☐ Contractor
4. Level of education: ☐ Certificate ☐Diploma ☐ BA/BSC ☐ MA/MSC
5. Organization role of respondent: ☐Project manager ☐Site Supervisor ☐engineers ☐Arada employee
6. Please indicate how long you have been involved in the public construction of Projects?

☐1-2 years ☐ 2 – 3 year's ☐over 3 year's

7. The average quantity of building construction projects you handle per year in the public.

☐Up to 3 projects ☐ 4– 6 projects ☐ 7 – 9 projects ☐ 10 projects and above

8. Please indicate the procurement approach employed for this project

☐Design/Bid/Build ☐Design/Build ☐Competitive bid Negotiated

☐General contract ☐ Build– Own– Operate– Transfer ☐ Turnkey contract

SECTION 2: ASSESSMENT THE PERFORMANCE OF PUBLIC CONSTRUCTION PROJECTS IN ADDIS ABABA. ARADA SUB-CITY

Please indicate the significance of each factor by ticking (√) the appropriate boxes. Add any remarks relating to each Factor on the last column

Strongly Disagree	1
Disagree	2
Neutral	3
Agree	4
Strongly agree	5

1.	**Cost Factor**	1 (Strongly Disagree)	2 (Disagree)	3 (Neutral)	4 (Agree)	5 (Strongly agree)	Remarks
1.1.	Lack of cost planning/monitoring during pre and post contract stages						
1.2.	Design changes						
1.3.	Unpredictable weather conditions						
1.4.	Delays in issuing information to the contractor during construction Stage						
1.5.	Contractual claims, such as, extension of time with cost claims.						
1.6.	Fluctuations in the cost of materials						
1.7.	Project materials monopoly by some suppliers						
2.	**Time Factors**						
	Arada Sub-city Construction Employees						
2.1.	Delay to furnish and deliver the site (Right of way problem)						
2.2.	Finance and payments of completed work						
2.3.	Slow decision-making by Arada Sub-city Construction Administrator.						

2.4.	Unrealistic imposed contract duration						
2.5.	Design change by Arada Sub-city Construction Office						
	Contractor						
2.6.	Financial problems						
2.7.	Sub-contractor						
2.8.	Site management						
2.9.	Construction methods						
2.10.	Improper planning						
2.11.	Mistakes during construction						
2.12.	Inadequate contractor experience						
2.13.	Shortage of material						
2.14.	Labor supply problem						
2.15.	Labor productivity						

	Consultant						
2.16.	Absence of consultant' s site staff						
2.17.	Lack of experience on the part of the consultant						
2.18.	Contract management problem						
2.19.	Quality assurance/control						
2.20.	Waiting time for approval of tests and inspections						
3.	**Quality Factor**						
3.1.	Educated personnel						
3.2.	Experienced personnel						
3.3.	Quality of materials and equipment used in the project construction						
3.4.	Conformance to specifications						
3.5.	Quality assurance training and follow up						

If you have any additional comments and ideas regarding the gap and challenges of the performance of public construction Projects please write here ----------

---

THANK YOU

SECTION3: INTERVIEW QUESTIONER ASSESSMENT THE PERFORMANCE OF PUBLIC CONSTRUCTION PROJECTS IN ADDIS ABABA CITY ADMINISTRATION ARADA SUB-CITY

Interview Questioner prepared for respondents for the assessment of factors affecting the performance of public construction projects. The case of Arada Sub-City Construction Office.

Dear Respected Respondents

My name is Yared Tadesse and I am carrying out a project work to assess the factors affecting the performance of public construction projects the case of Arada Sub-City Construction Office. The information you provide is used for research purpose only, and will be kept confidential at all levels. Considering your experience in project works, your participation in this survey will significantly contribute to the accuracy and usefulness of the research outcome. I appreciate taking your time to complete the survey. I kindly request you to remember that the quality of this work is completely dependent up on your frank opinions. Please consider each statement carefully before you give it an evaluation.

The interview questions for consultants

• What are the basic reasons for projects scope and design change?
• How do you evaluate the cost and time overrun of projects?
• How about the relation among three parties at construction site?
• How can contractors overcome the problem of time & cost overrun of projects?
• How do you evaluate the project management practice of Arada sub-city office?

The interview questions for Arada Sub-city Employee

• Is there project management office at the head office and project level?
• How do you monitor & evaluate projects and the practice of giving feedback?
• Your project experienced the cost and schedule overrun. What are the reasons for cost & time overrun of your project
• How do you manage the performance of consultant?
• Is there a regular joint meeting at project site and head office level?

• Most of the time there is a delay in making payment to contractor. This is creates a cash flow problem for contractor. Why payments delay?

• The write-off way is the major problems of contractor. What is the problem to solve the issue in concerned projects?

The interview questions for Contractors

- Your entire project exhibits time and cost overrun. What is the problem associated with this?
- Is there the practice of claim management for the time lost?
- How about the practice of project management in your sector?
- How do you manage problems related to contractors?
- Why project managers leave the project?

• Timely delivery of resource to the project is the main problem. What are the problems? How can this problem be solved?

APENDIX 2

COST FACTOR FREQUENCIE TABELS

C1

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Disagree	4	3.8	3.8	3.8
	Neutral	21	20.2	20.2	24.0
	Agree	41	39.4	39.4	63.5
	Strongly Agree	38	36.5	36.5	100.0
	Total	104	100.0	100.0	

C2

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Neutral	25	24.0	24.0	24.0
	Agree	32	30.8	30.8	54.8
	Strongly Agree	47	45.2	45.2	100.0
	Total	104	100.0	100.0	

C3

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Disagree	1	1.0	1.0	1.0
	Neutral	23	22.1	22.1	23.1
	Agree	54	51.9	51.9	75.0
	Strongly Agree	26	25.0	25.0	100.0
	Total	104	100.0	100.0	

C4

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Disagree	6	5.8	5.8	5.8
	Neutral	23	22.1	22.1	27.9
	Agree	35	33.7	33.7	61.5
	Strongly Agree	40	38.5	38.5	100.0
	Total	104	100.0	100.0	

C5

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Disagree	2	1.9	1.9	1.9
	Neutral	24	23.1	23.1	25.0
	Agree	51	49.0	49.0	74.0
	Strongly Agree	27	26.0	26.0	100.0
	Total	104	100.0	100.0	

C6

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Neutral	15	14.4	14.4	14.4
	Agree	30	28.8	28.8	43.3
	Strongly Agree	59	56.7	56.7	100.0
	Total	104	100.0	100.0	

C7

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Neutral	18	17.3	17.3	17.3
	Agree	38	36.5	36.5	53.8
	Strongly Agree	48	46.2	46.2	100.0
	Total	104	100.0	100.0	

TIME FACTOR FREQUENCIE TABELES

ARADA EMPLOYEE RESPOND

TAE1

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Neutral	17	16.3	16.3	16.3
	Agree	35	33.7	33.7	50.0
	Strongly Agree	52	50.0	50.0	100.0
	Total	104	100.0	100.0	

TAE2

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Neutral	15	14.4	14.4	14.4
	Agree	35	33.7	33.7	48.1
	Strongly Agree	54	51.9	51.9	100.0
	Total	104	100.0	100.0	

TAE3

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Neutral	9	8.7	8.7	8.7
	Agree	61	58.7	58.7	67.3
	Strongly Agree	34	32.7	32.7	100.0
	Total	104	100.0	100.0	

TAE4

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Neutral	16	15.4	15.4	15.4
	Agree	38	36.5	36.5	51.9
	Strongly Agree	50	48.1	48.1	100.0
	Total	104	100.0	100.0	

TAE5

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Neutral	20	19.2	19.2	19.2
	Agree	46	44.2	44.2	63.5
	Strongly Agree	38	36.5	36.5	100.0
	Total	104	100.0	100.0	

CONTRACTERE RESPOND

TCN1

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Neutral	16	15.4	15.4	15.4
	Agree	45	43.3	43.3	58.7
	Strongly Agree	43	41.3	41.3	100.0
	Total	104	100.0	100.0	

TCN2

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Neutral	14	13.5	13.5	13.5
	Agree	38	36.5	36.5	50.0
	Strongly Agree	52	50.0	50.0	100.0
	Total	104	100.0	100.0	

TCN3

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Neutral	15	14.4	14.4	14.4
	Agree	43	41.3	41.3	55.8
	Strongly Agree	46	44.2	44.2	100.0
	Total	104	100.0	100.0	

TCN4

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Neutral	35	33.7	33.7	33.7
	Agree	50	48.1	48.1	81.7
	Strongly Agree	19	18.3	18.3	100.0
	Total	104	100.0	100.0	

TCN5

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Neutral	29	27.9	27.9	27.9
	Agree	45	43.3	43.3	71.2
	Strongly Agree	30	28.8	28.8	100.0
	Total	104	100.0	100.0	

TCN6

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Neutral	29	27.9	27.9	27.9
	Agree	50	48.1	48.1	76.0
	Strongly Agree	25	24.0	24.0	100.0
	Total	104	100.0	100.0	

TCN7

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Neutral	21	20.2	20.2	20.2
	Agree	46	44.2	44.2	64.4
	Strongly Agree	37	35.6	35.6	100.0
	Total	104	100.0	100.0	

TCN8

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Disagree	4	3.8	3.8	3.8
	Neutral	39	37.5	37.5	41.3
	Agree	54	51.9	51.9	93.3
	Strongly Agree	7	6.7	6.7	100.0
	Total	104	100.0	100.0	

TCN9

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Neutral	21	20.2	20.2	20.2
	Agree	44	42.3	42.3	62.5
	Strongly Agree	39	37.5	37.5	100.0
	Total	104	100.0	100.0	

TCN10

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Neutral	29	27.9	27.9	27.9
	Agree	49	47.1	47.1	75.0
	Strongly Agree	26	25.0	25.0	100.0
	Total	104	100.0	100.0	

CONSULTANT RESPOND

TCO1

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Neutral	15	14.4	14.4	14.4
	Agree	37	35.6	35.6	50.0
	Strongly Agree	52	50.0	50.0	100.0
	Total	104	100.0	100.0	

TCO2

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Neutral	17	16.3	16.3	16.3
	Agree	45	43.3	43.3	59.6
	Strongly Agree	42	40.4	40.4	100.0
	Total	104	100.0	100.0	

TCO3

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Neutral	17	16.3	16.3	16.3
	Agree	42	40.4	40.4	56.7
	Strongly Agree	45	43.3	43.3	100.0
	Total	104	100.0	100.0	

TCO4

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Neutral	26	25.0	25.0	25.0
	Agree	56	53.8	53.8	78.8
	Strongly Agree	22	21.2	21.2	100.0
	Total	104	100.0	100.0	

TCO5

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Disagree	4	3.8	3.8	3.8
	Neutral	21	20.2	20.2	24.0
	Agree	43	41.3	41.3	65.4
	Strongly Agree	36	34.6	34.6	100.0
	Total	104	100.0	100.0	

QUALITY FACTOR FREQUENCIE TABELES

Q1

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Disagree	5	4.8	4.8	4.8
	Neutral	15	14.4	14.4	19.2
	Agree	49	47.1	47.1	66.3
	Strongly Agree	35	33.7	33.7	100.0
	Total	104	100.0	100.0	

Q2

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Disagree	5	4.8	4.8	4.8
	Neutral	12	11.5	11.5	16.3
	Agree	47	45.2	45.2	61.5
	Strongly Agree	40	38.5	38.5	100.0
	Total	104	100.0	100.0	

Q3

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Neutral	23	22.1	22.1	22.1
	Agree	53	51.0	51.0	73.1
	Strongly Agree	28	26.9	26.9	100.0
	Total	104	100.0	100.0	

Q4

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Neutral	22	21.2	21.2	21.2
	Agree	56	53.8	53.8	75.0
	Strongly Agree	26	25.0	25.0	100.0
	Total	104	100.0	100.0	

Q5

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Neutral	12	11.5	11.5	11.5
	Agree	44	42.3	42.3	53.8
	Strongly Agree	48	46.2	46.2	100.0
	Total	104	100.0	100.0	