



**ADDIS ABABA UNIVERSITY SCHOOL OF COMMERCE
DEPARTMENT OF PROJECT MANAGEMENT POSTGRADUATE
PROGRAM**

**The Effect of Project Monitoring Practice on Project Success: The Case of
Koye Feche Condominium Housing Road Construction Projects**

By:

Meseret Girma Taye

A Project Work Submitted To The Department Of Project Management In
Partial Fulfillment Of The Requirements Of The Degree Of Master Of Arts In
Project Management In School Of Commerce, Addis Ababa University

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Addis Ababa, Ethiopia

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Advisor:

Bantie Workie, (PhD)

Student's Declaration Sheet

I, Meseret Girma Taye declare that the projects work under the title “The Effect of Project Monitoring Practice on Project Success: The Case of Koye Feche Condominium Housing Road Construction Projects” is my own original work, all materials and sources used for this project work have been properly credited, and this work has not been submitted to any educational institutions for the purpose of receiving an award.

Signature

Date

Advisor's Approval Sheet

This is to certify that Meseret Girma has carried out her research work on the topic “The Effect of Project Monitoring Practice on Project Success: The Case of Koye Feche Condominium Housing Road Construction Projects” in partial fulfillment of The Requirements Of The Degree Of Master Of Arts In Project Management In School Of Commerce, Addis Ababa University.

Approved by:

Advisor	Signature	Date
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Certification Sheet

This is to Certify that the project work prepared by Meseret Girma Taye, by the title “The Effect of Project Monitoring Practice on Project Success: The Case of Koye Feche Condominium Housing Road Construction Projects” submitted in partial fulfillment of Requirements Of The Degree Of Master Of Arts In Project Management In School Of Commerce, Addis Ababa University, Complies with the regulations of the University and meets the accepted standards with respect to originality and quality.

Signed by the Examining Committee:

Advisor	Signature	Date
Internal Examiner	Signature	Date
External Examiner	Signature	Date

Acknowledgment

First and foremost, I would like to praise and thank God, who has blessed me with numerous blessings, knowledge, and opportunities, allowing me to finally complete this project work.

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Abstract

Due to the sheer economic and social consequences of failing to deliver projects within the specified quality, time, and cost constraints, effective project monitoring remains an important project management function. The study was conducted to evaluate current project monitoring practices and their impact on the project success of Koye Feche Condominium Housing Road Construction Projects. To achieve these goals, the researcher used a descriptive research design as well as quantitative and qualitative research methods. Primary and secondary data sources were used in the data collection, and the data collection instruments were questionnaires and an interview guide. The participants in this study came from two projects (projects 11 and 18) under the Koye Feche condominium housing road construction projects, which included top management and functional management of the project owner, resident engineers, key staff of the consultant and project managers, and key personnel of the contractors. Because the target population was manageable in size, a census type of sampling was used, and 64 questionnaires were distributed. The study's main findings revealed that there is good project progress tracking, progress reporting, and progress documentation practice in the projects under study, indicating that there is overall good project monitoring practice, but there is relatively poor project status meeting practice. The results also revealed a positive correlation between project progress tracking, project status reporting, and project status meetings. However, there is no significant relationship found between project documentation and project success. Regression results show that the combined effect of project progress tracking, project progress reporting, project status meetings, and project documentation accounts for 55% of changes in project success. The study concludes that there is a good project monitoring practice that contributes to the projects' partial success under the study. It is said to be partial because the projects were delayed and only the success parameters of cost and quality were met. Future researchers may consider both project monitoring and project control practices to investigate the causes of time delays and assess the impact on project success.

Key Words: *Project Monitoring, Housing Road Construction, project success, Project Performance*

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Acronyms

AACRA- Addis Ababa City Road Authority

ERA- Ethiopian Road Authority

PMI- Project Management Institute

PMBOK Guide- Project Management Body of Knowledge Guide

APM- Association for Project Management

RE- Resident Engineer

PM- Project Manager

EEPCo- Ethiopian Electric Power Corporation

AAWSA- Addis Ababa Water & Sewerage Authority

1. Introduction

The researcher introduces the development of the research idea in this section of the study. It includes the study's background, background of organization, the problem statement, the research questions and objectives, the significance of the study, the scope of the study, Definition of terms, the study's limitations, and the study organization.

1.1 Background of Study

The Project Management Institute (PMI, 2013) formally defines project management as follows: "The application of knowledge, skills, tools, and techniques to project activities to meet the project requirements." Project management is an organized common-sense approach that utilizes the appropriate client involvement to meet sponsor needs and deliver expected incremental business value (Wysocki, 2014). The project management process consists of 5 process groups, project initiating process group, planning process group, executing process group, project monitoring and controlling process group, and closing process group. Each process group contributes to the successful complication of a project. **Project Monitoring** is a management method to measure the project's actual progress and its current performance concerning cost and time. Detection is made through monitoring, while a correction is the objective of control actions (De Marco, 2018). This study focuses on the monitoring aspect of a project.

Effective project monitoring remains an important project management function because of the economic and social implications of failures to deliver projects within the specified quality, schedule, and cost constraints (Bekele, 2019). The Performance and success of projects are measured by the triple project constraints (Cost, time, and quality) and Project success is measured by completing on time within the estimated cost and quality (Tadewos & Patel, 2018).

Yu and Kwon (2011) recognized that without a shared understanding of a project's success factors, it is extremely difficult to effectively monitor and control project success. As a result, determining appropriate success criteria is critical for project owners and managers, who require a specific and measurable framework for tracking key project outcomes.

A well-developed road transport sector in developing countries is assumed to fuel up the growth process through a variety of activities in the development endeavors of a nation (Worku, 2011). However, because of its limited road network, the provision of infrastructure has remained one of the formidable challenges for Ethiopia in its endeavor toward socio-economic development and poverty reduction (ERA, 2008a).

In Ethiopia, several roads are constructed from time to time. The number of road networks is increased over time despite that the historical data of completed road projects shows that none of the projects were completed as planned and within the estimated cost (Tadewos & Patel 2018).

Addis Ababa Road Authority (AACRA) is responsible to construct, maintain and administer the road works in Addis Ababa. Housing Road construction contract administration Directorate is one of the departments in AACRA which is responsible for administrating contracts for housing road construction in Addis Ababa city. According to Godifaye (2017), 100% of Addis Ababa road construction projects suffered both time and cost overruns. The rate of time overrun ranges from a minimum of 25% to the maximum of 264.38% of the contract amount and cost overrun ranges from a minimum of 4.11% to the maximum of 135.06% of the contract amount.

This research attempts to investigate the effects of the project monitoring practice on the project success of Koye Feche Condominium Housing Road Projects.

1.2 Background of Organization

The history of Road construction in Addis Ababa city dates back to the city's establishment by Minellik II and Empress Taitu in 1887(AACRA, 2021). But Addis Ababa city roads Authority was established on March 15, 1998, by regulation no 7/1998 to be administrated by a board of directors to construct, maintain and administer the road works in Addis Ababa. The Addis Ababa city roads authority has done remarkable progress in the expansion and upgrading of the city roads since its establishment and currently, the city roads length has reached 6573k.m (AACRA, 2021). AACRA moves forward intending to provide asphalt, cobblestone, and gravel road infrastructure through the construction of quality, low-cost, and safe roads to create interchangeable road transport and with the vision of achieving 25% road coverage by 2020 through the construction of reliable, quality, and low-cost roads (AACRA, 2021).

Housing Road Construction Directorate is one of the departments Under Addis Ababa City Road Authority which is responsible for administrating contracts of housing road construction in Addis Ababa city. Koye Feche Condominium Housing Road Project is one of the projects that are administered by this directorate.

The project is in Addis Ababa City, in the newly constructed condominiums of Koye Feche, located around Kilinto, in front of Addis Ababa Science and Technology University. The Project starting place can be accessed by an existing 3km asphalt road, which branches off to the Tirunesh Dibaba Hospital and traverses through “Kilinto Detention Center (Kilinto Maremiya Bet)”. The project consists of Asphalt and Gravel Road construction will serve as feeder road by creating a link between many condominium houses.

In this research, the researcher tries to investigate the **project monitoring practice** of Koye Feche Condominium Housing Road Project and its effect on the project’s success.

1.3 Statement of Problem

Monitoring a project entails tracking its metrics, progress, and associated tasks to ensure that everything is completed on time, within budget, and per project requirements and standards. Project monitoring also entails recognizing and identifying potential roadblocks or issues that may arise during the project's execution and taking corrective action. Li & Wang (2014) investigated the importance of project monitoring and control in construction projects and stated that monitoring is essentially a means of obtaining feedback on project progress. They concluded that tracking the project's schedule and updating the status is useful for making informed decisions.

Despite limited literature connecting project success and monitoring practice, regular monitoring of budgets for respective projects and implementing corrective actions are suitable courses of action for successful project implementation (Noah Mwelu, Peter R. Davis, Yongjian Ke, Susan Watundu & Marcus Jefferies, 2019).

Ethiopia is investing a significant portion of its limited resources to improve the living standards and the socioeconomic conditions of its people. Under the management of the Addis Ababa City Administration, condominium housing projects are being designed and launched with the expectation that they will be well-managed. And Providing the connecting

asphalt or cobblestone roads and utilities (Tele, EEPECO & AWSSA Lines) to these houses is the responsibility of AACRA, specifically the Housing Road Construction Directorate.

In his study of *Analyzing The Causes And Effects Of Delay In Addis Ababa Condominium Housing Asphalt Road Construction Projects*, Abate (2018) mentions that most of Addis Ababa City's road projects are not completed within the original contract price and original contract time, and the rate of time delay (overrun) ranges from a minimum of 2% to a maximum of 243% of the contract time, and there is a time delay (overrun) in condominium housing road projects as well. Despite the fact that there may be several factors contributing to the project's delay and cost overrun, the researcher is interested in investigating how the project monitoring practice influences the project's success.

In his dissertation research, Gebremariam (2008) conducted an in-depth assessment of the problems in the existing system of road construction projects in Addis Ababa, with regard to monitoring and evaluation (M&E). The study's findings revealed that the monitoring and evaluation system has strength in attempting to follow international consultancy and contract standards, developing standard specifications, publicizing tenders, and regularly preparing reports. On the other hand, the study discovered some flaws in contract terms, problem-solving, having shallow objectives and performance indicators, the absence of a computerized project information system, citizens participating in project evaluation, and other areas.

A review of studies related to the topic under study was carried out. Various studies on project monitoring have been conducted, but available studies are limited to building construction projects, banking sector projects, and federal road projects. The majority of these studies were carried out as part of a company-based project. Sebelewongel (2020) looked into the impact of project monitoring and control practices on project success in Information Network Security Agency (INSA) Commercial Software Development Projects. According to the study, overall project monitoring and controlling practices have a significant impact on project success. This means that practicing effective project monitoring and control results in higher levels of project success.

Similarly, Rediet Tadesse (2020) investigated whether there is a monitoring and controlling practice in the Ethiopian Airline Construction Projects Office, specifically changes control, project status meetings, project status reporting, and the impact of the practice on project

success criteria. The study revealed that project status reports have a strong causal relationship with project success.

The empirical evidence presented in the aforementioned sections besides the day-to-day exposure around the researcher`s workplace provided the context to conduct or explore the practice of project monitoring in Koye Feche Condominium Housing Road Projects; how the project progress tracking, project status reporting, project documentation, and project status meeting affect the successful delivery of the project. Hence, the very reason for conducting this research was to fill the gap that existed in this regard.

1.4 Research Questions

- What are the current monitoring tools and techniques used in Koye Feche Condominium Housing Road Project?
- How do project monitoring practices affect project success in Koye Feche Condominium Housing Road Project?
- How does the project progress tracking practice affect project success Koye Feche Condominium Housing Road Project?
- How does the project status reporting practice affect project success in Koye Feche Condominium Housing Road Project?
- How do the project status meetings affect project success in Koye Feche Condominium Housing Road Project?
- How does the project documentation practice affect project success in Koye Feche Condominium Housing Road Project?

1.5 Objectives of study

1.5.1 General objective of study

The general objective of the research is to investigate the effect of project monitoring practice on project success in the case of Koye Feche Condominium Housing Road Construction Project.

1.5.2 Specific objective of study

- To assess currently used project monitoring tools and techniques in Koye Feche Condominium Housing Road Project.

- To determine the effects of project monitoring practices has on project success in Koye Feche Condominium Housing Road Project.
- To examine the effects of project progress tracking practice on project success in Koye Feche Condominium Housing Road Project.
- To assess the effects of project status reporting practice on project success in Koye Feche Condominium Housing Road Project
- To determine whether the project status meeting affects project success in Koye Feche Condominium Housing Road Project
- To investigate the effects of project documentation practice on the project success in Koye Feche Condominium Housing Road Project.

1.6 Research Hypothesis

To confirm the achievement of the specific research objectives, the following research hypotheses were developed.

- (H₁): Project progress tracking practice has positive significant effect on the project success.
- (H₂): Project progress status reporting practice has positive significant effect on the project success.
- (H₃): Project progress documentation practice has positive significant effect on the project success.
- (H₄): Project monitoring practice has positive significant effect on the project success.

1.7 Significance of study

The research finding will help the organizations participating on the projects under the study by providing tangible and concrete evidence about what their current project monitoring practice looks like, and what effect the monitoring practice has on the project's success. This will help the project owner to identify the area of weakness and strength related to the monitoring process, design a strategy to deliver successful projects, which can complete within the planned time, budget and meet customer expectation, and finally works toward improving the overall monitoring practice.

On the other hand, the findings from this study can provide inputs for further research works such as an impact assessment of Condominium Housing Road project delays.

1.8 Scope of study

Due to time and cost limitations, the scope of this research was limited to investigating the effect of the project monitoring practice on project success of housing road construction projects of AACRA, on Koye Feche site only which is found in the southern part of Addis Ababa. Two projects (Project 11 & Project 18) in the Koye Feche site were covered under this study.

1.9 Definition of terms

Project: - A unique process, consisting of a set of coordinated and controlled activities with start and finish dates, undertaken to achieve an objective conforming to specific requirements, including constraints of time, cost, and resource (Lester, 2017).

Work breakdown structure (WBS):- Hierarchical decomposition of a project into various levels of management and work packages (Lester, 2017).

Contractor: - An individual or a firm that undertakes a contract to provide the deliverables stated in the contractual agreement.

Consultant: - is a firm with a set of professionals typically appointed by a client to perform expert tasks like contract document preparation, design work, or inspecting the work of the contractor on a project.

Client: - means a person or an organization for which a project is carried out. The Client is the person or company, with the controlling interest in the project.

Condominium housing: - are multi-storied housing units for several households where communal areas are jointly owned and managed (UN-HABITAT, 2010).

Project monitoring: - is the ongoing process by which stakeholders obtain regular feedback on the progress being made towards achieving their goals and objectives (Chege & Bowa, 2020).

1.10 Organization of the paper

This research paper is organized into five chapters: the first chapter contains the background of the study, the background of the company, the problem statement, general and specific objectives of the study, research questions, Significance of the Study, Scope (delimitation) of

the Study, Limitation of the Study, definition of terms and organization of the study. Chapter Two explains relevant literature about project monitoring and project success, as well as the empirical reviews and show the conceptual framework of the study.

In the third chapter Research Approach, Research Design, study area and target population, Sample Design, Sample Size, Data Collection, Data Analysis, Reliability and Validity, and Ethical Considerations were explained and discussed. Chapter four deals with the analysis, presentation and interpretation of the data while chapter five presents the summary of finding and gives conclusion and recommendation.

2 Literature Review

2.1 Introduction

In this section of the study, the researcher presents the review of relevant works of literature in the area of project monitoring practice relating to project success. Thus, both theoretical and empirical evidences of various researchers related to project monitoring and project success were reviewed.

2.2 Theoretical Review

2.2.1 The Project Monitoring Process

As Haynes (2002) states, a project is an undertaking that has a beginning and an end and is carried out to meet established goals within cost, schedule, and quality objectives. Project management brings together and optimizes the resources necessary to complete the project. These resources include the skills, talents, and cooperative efforts of a team of people; facilities, tools, and equipment; information, systems, and techniques; and money.

Wysocki (2014) describes project management as an organized common sense. The PMBOK Guide (2017) definition of project management is crisp, clean, and clearly stated. It has provided a solid foundation on which to define the process groups and processes that underlie all project management. But the definition “project management is an organized common sense” transcends the PMBOK Guide (2017) definition and is far more comprehensive of what project management entails. According to Kerzner (2017), Project management is the planning, organizing, directing, and controlling of company resources for a relatively short-term objective that has been established to complete specific goals and objectives and the Project management life cycle model that is used must contain all of the following Process Groups:

- Scoping Process Group (which PMI calls the Initiating Process Group)
- Planning Process Group
- Launching Process Group (which PMI calls the Executing Process Group)
- Monitoring and Controlling process group
- Closing group

In this study, the researcher focuses on the monitoring and controlling process group, particularly on project monitoring practices, tools, and techniques.

The Monitoring and Controlling Process Group includes all processes related to answering the question, “How will you know you did it?” The Monitoring and Controlling Process Group includes all processes related to the ongoing work of the project. But the scope of this research is limited to project monitoring. According to Wysocki (2014), the processes that relate to project monitoring are:

- Establishing the project performance and reporting system
- Monitoring project performance
- Monitoring risk
- Reporting project status
- Processing scope change requests
- Discovering and solving problems

Monitoring can be defined as the set of procedures and management practices used to collect information about the performance achieved or forecasted in a project, based on a set of performance metrics (De Marco, 2018). Monitoring includes performance analysis of the project, which is the process of determining performance variances. Project monitoring is a process that must be carried out after planning all along with the project execution.

2.2.2 Construction Projects and Monitoring

Construction entails large, complex, and non-standard activities where quality can be difficult to assess. A large number of people are involved in projects such as the client, consultant, engineer and architects, financier, insurers, a main contractor and scores of subcontractors, and beneficiaries.

For the monitoring of construction activities to be a manageable task, the scheduled items must be organized rationally. One common means by which projects are organized is by work breakdown structures (WBS) (Li & Wang, 2014). Important components of an effective monitoring system are a detailed work breakdown structure (WBS) and schedule for accurate measurement of job progress, the establishment at the planning phase of a useful representative performance metrics, a management scheme organized for honestly and accurately identifying and reporting performance, the involvement of responsible and

knowledgeable people in the reporting scheme, as well as project reviews, meetings, inspections, and audits (Ritz, 1994; Meredith & Mantel,2006).

According to De Marco (2018) Regardless of the accounting system used, project monitoring is based on the following main steps:

1. Measurement of actual cost and schedule progress,
2. Calculation of the discrepancy between actual statuses versus scheduled progress (Trend),
3. Estimation of cost and time at the completion of the project (based on trend).

Hazır (2014) puts it formally, a project monitoring and control system works to minimize the deviations from the project plans and consists of identifying and reporting the status of the project, comparing it with the plan, analyzing the deviations and implementing the appropriate corrective actions Hence it includes the set of policies, methods, and tools that would ensure the achievement of the project targets. As Hazır (2014), an effective system should clearly define the following policies:

- (a) Monitoring policy: what, how, where, when and by whom to monitor,
- (b) Intervention and control policy: what, how, where, when and by whom to prevent, intervene, and correct.

In the quality assurance and quality control manual of the projects under this study, Product Control is related to monitoring of the soundness of the finished work item or work component with respect to the desired Function, the Technical Specification and the Engineering Drawings. The Process Control, on the other hand, is the follow-up of the soundness of each step of the continuous production process with respect to the desired function. Therefore, process control is more of Inspection whereas product control is more of in-situ testing.

2.2.3 Types of monitoring

A project may include several deliverables. The performance of a project is thus to be viewed from various angles using various parameters. As a result, various types of monitoring can be used to track progress against a plan (Bekele, 2019). Kultar Singh, Dharmendra Chandurkar and Varun Dutt (2017) defined two kinds of project monitoring.

Progress monitoring

Progress monitoring aims to assess a project's progress toward its objectives and target milestones to ensure that the project stays on track, it is best to conduct progress monitoring concurrently or intermittently with project implementation. Progress monitoring is an ongoing process that involves collecting and analyzing project-related output or outcome level indicators to determine whether the project is on track to deliver the expected results.

Process monitoring

Process monitoring involves keeping track of the processes and activities carried out as part of the project's execution. Its goal is to concentrate on the quality of implementation rather than the project's targets or milestones. Process checklists are commonly used for process monitoring. The activities and processes are documented on the checklist. Any deviation from the ideal required process is noted and recorded.

According to the AACRA quality assurance and quality control manual, Product Control is concerned with monitoring the soundness of the finished work item or work component in relation to the desired Function, the Technical Specification, and the Engineering Drawings. Process Control, on the other hand, is the monitoring of the soundness of each step of the continuous manufacturing process in terms of the desired function.

2.2.4 Monitoring Tools and Techniques

2.2.4.1 Performance Measurement

Performance measurement is the regular collecting and reporting of information about the inputs, efficiency, and effectiveness of projects (Takim et al, 2002).

Al-Jibouri (2003) investigated some commonly used monitoring systems for effectiveness in assessing project Performance, and in detecting deviations from the planned cost and performance. The monitoring systems used in the study were:

i. Leading parameter technique

The leading parameter is a technique based on the idea of choosing one or more of the major types of work as measures of the performance of the whole project. This technique can also be used for a project which consists of many sections with different kinds of work in each of

them. In this situation, it is possible to use a different parameter as a measure of performance for each section.

ii. Variances and Earned Value Analysis method

The use of Variances to measure project performance is perhaps one of the oldest and most commonly used techniques.

Variances are differences between two values. In project measurement and control they are usually differences between two expenditures—the planned and actual, although the incomes or any other values could be used.

Performance variance = Budget value of work done - budget expenditure to date

Efficiency variance = Incurred cost - Budgeted value of work done

The ‘Performance Variance’ indicates that the progress of the project is ahead of schedule if it is positive or behind schedule if it is negative. The ‘Efficiency Variance’ on the other hand indicates over-spending if the variance is positive, and under-spending if it is negative. This technique is relatively popular. However, it requires rather more data and effort to calculate than the other systems described so far. It also produces a large number of parameters to describe the state of the project. This makes it more difficult to use and rather more difficult to communicate to all levels of staff.

iii. Activity-based ratios technique

This is a financial control technique that employs the ratios between the earnings and expenditures of the project activities as measures of performance. The three ratios the system relies on for the calculation of performances are:

Planned Performance = Planned Earning/ Planned Expenditure

Actual Performance = Actual Earning/ Actual Expenditure

Efficiency = Actual Performance/ Planned Performance

The measures used by this technique are both simple to calculate and simple to interpret. They require relatively little data and can be applied at a range of levels on a project.

In conclusion, Al-Jibouri (2003) indicated that the 'Activity-based ratios' and the 'Variances' techniques have both shown the effect of cost factors on the system better than the 'Leading Parameter' technique. It has also been found that the 'Activity-based ratio' technique gives a simpler and clearer indication of the overall progress of the work than the other two systems.

iv. Earned value management (EVM)

EVA in its various forms is the most commonly used method of performance measurement. It integrates scope, cost (or resource), and schedule measures to help the project management team assess project performance. EVA involves calculating three key areas for each activity; the planned value, the actual cost, and the earned value. These three values are used in combination to provide measures of whether or not work is being accomplished as planned. The most commonly used measures are:

The cost of variance, $CV = EV - AC$

Schedule variance, $SV = EV - PV$

The challenge here is to measure and forecast the project cost and time performance using monetary information. As discussed, the problem of traditional comparison between actual costs versus scheduled costs does not take into account the progress status of the project (De Marco, 2018).

Earned Value Management Systems allow the project manager to answer the following three questions, as they relate to the project (Reichel, 2006):

1. Where have we been?
2. Where are we now?
3. Where are we going?

Earned Value Analysis is an extremely effective way to overcome the problem (PMI 2016). Earned Value Analysis (EVA) integrates cost, schedule, and work performed by assigning monetary values to each. EVA is a method for measuring project performance.

2.2.4.2 Project Performance Reporting

Project reporting involves recording, editing, and distributing documents containing information about the budget, status, and performance of several aspects of a project, such as a scope, time, cost, cash flow, quality, safety, etc. (De Marco, 2018). De Marco also

mentioned that Performance metrics typically are defined in preparation for project monitoring before project control. Reporting has to facilitate project communications and enable effective project control processes at various organizations and management levels involved in the project development.

Performance reporting involves collecting and disseminating performance information to provide stakeholders with information about how resources are being used to achieve project objectives (Gudda, 2011). This process includes:

- *Status reporting*: - describing where the project now stands, for example, status related to schedule and budget metrics.
- *Progress reporting*: - describing what the project team has accomplished—for example, percent complete to schedule, or what has been completed versus what is in process.
- *Forecasting*: - predicting future project status and progress.

Common formats for performance reports include Gantt charts, S-curves, histograms, and tables. The most useful monitoring documents report on time and cost performance. These are of two types, namely internal reports, and contract reports. Contractors use internal reports to monitor the project status concerning cost, time, and future trends. An internal periodical report (usually prepared monthly) is composed of a Cost Control Report and a Risks/Opportunities Report, which investigates the challenges that are likely to incur over the next period (De Marco, 2018). Typically, a monthly Cost Control Report describes the project status at the current date and contains information about:

- Cost performance: budget cost, actual cost, earned value, cost variances, indexes, or any other cost updates claimed by the contractor;
- Schedule performance and revised schedule;
- Financial status: accounted cost, revenues, and cash out, payments, and cash-in;
- Estimates to completion (De Marco, 2018).

The contractor first estimates the cost of a task or deliverable; the consultant then compares the estimated cost to standard specifications and the contract document and finally approves the estimated cost. All of the above information will be reviewed and analyzed by the consultant and presented to the client in the monthly cost control report (Own, 2022).

De Marco (2018) describes Contract reports as tools used to monitor the financial status of the contract between the owner and contractor. It usually contains a schedule review, a schedule of value and the inherent certificate of payment, and a request for extra works, if a change order is applicable. In more detail:

- The Revised Schedule contains a detailed progress report (individual activity, total progress), progress s-curves (actual, scheduled, forecast), resource-load profiles (actual, scheduled, forecast);
- The Schedule of Values is made of the Quantities Book, the Account Register, the Main Summary Account Register, and the Certificate of Payment of work done, which states the amount of money the contractor can charge (once deducted the value-retention guarantees and liabilities);
- If this is the case, a Change Order for extra scope or extra works includes a Request of Extra Works, a Report of extra works, and an Extra Work Schedule of Values with the inherent Certificate of Payment

2.2.4.3 Types of Project Status Reports

There are five types of project status reports current period, cumulative, exception, stoplight, and variance (Wysocki, 2014).

Current Period Reports: - These reports cover only the most recently completed period. They report progress on activities that were open or scheduled for work during the period. Reports might highlight activities completed, as well as the variance between scheduled and actual completion dates. If any activities did not progress according to plan, the report should include the reasons for the variance and the appropriate corrective measures that will be implemented to fix the schedule slippage.

Cumulative Reports: - These reports contain the history of the project from the beginning to the end of the current report period. They are more informative than the current period reports because they show trends in a project's progress. For example, a schedule variance might be tracked over several successive periods to show improvement. Reports can be at the activity or project level.

Exception Reports: - Exception reports indicate variances from the plan. These reports are typically designed for senior management to read and interpret quickly. Reports that are produced for senior management merit special consideration. Senior managers do not have a

lot of time to read reports that tell them everything is on schedule and there are no problems serious enough to warrant their attention. In such cases, a one-page, high-level summary report that says everything is okay is usually sufficient.

Stoplight Reports: - Stoplight reports are a variation that can be used on any of the previous report types. When the project is on schedule and everything seems to be proceeding as planned, put a green sticker on the top-right corner of the first page of the project status report. This sticker will signal to senior managers that everything is progressing according to plan, and they need not even read the attached report.

Variance reports: - do exactly what their name suggests they report differences between what was planned and what happened. The tabular version of the report has the following three columns: The planned number, the actual number, and the difference, or variance, between the two.

- **According to the researcher's document review of the project contract documents, the following are common reports that are used in road construction projects :**

Inception report: - this report outlines the consultant's initial findings and confirms the methodology and detailed work program proposed for adoption in the light of initial findings while also identifying constraints and proposed solutions together with any action required by the public body (AACRA) to facilitate the successful implementation of the service.

Design review report: - outline the recommendation and appropriate changes if necessary or modification to the design standards, design documents....etc.

Contractor's mobilization Report: - the consultant shall report on the contractor's mobilization, organization, and correspondence, contractor's detailed work program, proposed resources schedule, proposed cash flow, schedule of site meetings, and consultant mobilization.

Monthly progress report: - progress reports are prepared using a standard report format to detail progress against the program in respect of all project elements and hard outputs. The report will cover the activities performed during the reporting period. These will allow a permanent record of progress.

Quarterly progress reports: - these will be similar to the monthly progress report but will be more detailed and include record photographs. This report among other information shall include an update of the project cost estimate keeping in view variations, price escalations, and the contractor's claim entitlement for additional money.

Contract completion report: - the contract completion report shall include demobilization details, a description of the project, project implementation, financial cost details, contractor's performance of the contractor, and a critical study of important technical problems which may have arisen during the construction, and other construction records.

And other types of reports like environmental management reports, special reports, and consultancy completion reports are also defined on the contract document of the consultant and the client (AACRA).

2.2.4.4 Project Progress Tracking and Documentation

Project tracking is the process of monitoring a project's progress against the original project plan. The goal is to make corrective actions as soon as you spot deviations (or occurrences that may lead to deviations) so the team stays on track. Tracking project progress involves a combination of several approaches: milestones, percent complete (Gantt charts), and earned value analysis (Slack, 2021).

There are several approaches to project progress tracking (Slack, 2021):

- **Gantt charts**

Definition from APM body of knowledge, A Gantt chart is a graphical representation of activity against time. A Gantt chart is a project management tool assisting in the planning and scheduling of projects of all sizes, although they are particularly useful for simplifying complex projects. Gantt charts are useful for monitoring a project's progress once it's underway, too and we can immediately see what should have been achieved by a certain date and, if the project is behind schedule, take action to bring it back on course (MindTools, 2021).

Source: (SAP help portal)

- **Earned value analysis charts**

Earned Value Analysis (EVA) is a method that allows the project manager to measure the amount of work performed on a project beyond the basic review of cost and schedule reports and provides a method that permits the project to be measured by the progress achieved (Reichel, 2006).

Earned Value Management measures progress against a baseline. It involves calculating three key values for each activity in the WBS (Cullen, 2016):

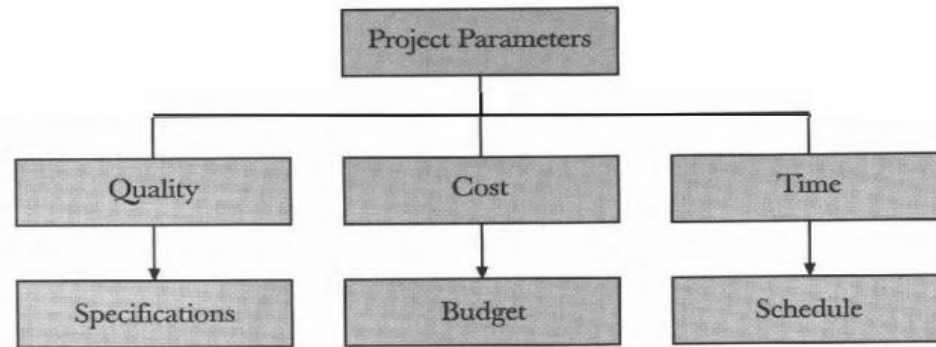
1. The Planned Value (PV):- that portion of the approved cost estimate planned to be spent on the given activity during a given period.
2. The Actual Cost (AC):- the total of the costs incurred in accomplishing work on the activity in a given period. This Actual Cost must correspond to whatever was budgeted for the Planned Value and the Earned Value (e.g. all labor, material, equipment, and indirect costs).
3. The Earned Value (EV):- the value of the work actually completed.

$$\text{Cost Variance (CV)} = \text{EV} - \text{AC}$$

$$\text{Schedule Variance (SV)} = \text{EV} - \text{PV}$$

2.2.5 Project success

Historically, project success has been defined as a project that meets its objectives on time and within budget (Rodolof, 2015). In many industries, this evaluation criterion has remained the most common measure. However, for a development project (project designed to deliver a specific output aiming to improve the economic and social conditions of a group of people), success includes more than just meeting deadlines and budgets; it also includes meeting the expectations of beneficiaries, stakeholders, donors, or funding agencies. However, defining these dimensions of success is more difficult, and some cannot be assessed until years after the project is completed (Rodolof, 2015). As described by Kerzner (2017), Project success is often measured by the “actions” of three groups: the project manager and team, the parent organization, and the customer’s organization. In the case of this research, the three groups are the contractor, the client (AACRA), and the consultant.



Sources: (Haynes, 2002)

Figure 3 project success parameters

Project success can be defined as a level of effectiveness, with project deliverables measured in terms of benefits and stakeholder satisfaction, or the extent to which the project's ultimate objectives are met. The level of efficiency attained by the project to achieve the project objectives defines project management success. Efficiency refers to how a project manages its limited resources to achieve its objectives while maintaining positive relationships with internal and external stakeholders. On the other hand, there are numerous ways for a project to fail. For example, a project can fail to meet the budget, schedule, and scope goals while succeeding in meeting the development objectives. Similarly, a project can meet the budget, schedule, and scope goals while failing to meet the final development objectives.

Silva, Warnakulasuriya & Arachchige (2016) state that Construction project execution efficiently and effectively is a key strength of project-based organizations. The project success criterion can be one of the following: Time, Cost, Quality, Safety, Client Satisfaction, Employees Satisfaction, Cash-flow Management, Profitability, Environment Performance, and Learning and Development.

2.2.6 Construction project success

Construction projects are naturally high risky and complex due to their wide divergence of project sites, high pressure on demanding construction time and cost, involves many project participants with different objectives as well as the increasing complexity of construction techniques (Silva, Warnakulasuriya & Arachchige, 2016).

Construction project success is defined by Silva et.al, (2016) as the perceived degree of achievement of predetermined performance objectives and participants' expectations of the execution of a construction facility or a service. So monitoring construction projects involves

making measurements as the project proceeds and comparing those measurements with the desired or expected values.

2.2.7 Effective monitoring and project success

Project success can be defined based on predefined success parameters. The most common ones are completion within the scheduled time, completion within budget, quality of deliverables, meeting technical requirements, user satisfaction, and course profitability. For this to be realized effective monitoring and control system is needed.

According to Li & Wang (2014), Effective monitoring consists of receiving or maintaining accurate reports of the events that have taken place on the project and the specific work items that have been accomplished and it's essentially a means by which feedback is obtained on the progress on the project. The proper implementation of project monitoring tools and techniques will contribute to the assessment of early signs of project success or failure (Gudda, 2011).

2.3 Empirical Review

Noah Mwelu, Peter R. Davis, Yongjian Ke, Susan Watundu & Marcus Jefferies (2019) conducted a study on investigating The Success Factors for Implementing Uganda's Public Road Construction Project and the findings show that, among other things, monitoring activities is one of the success factors of construction projects. Monitoring activities on public road construction projects have a significant positive relationship with project success. This implies that effective monitoring of public road construction projects improves their success. This contradicts Tabish and Jha (2015) who discovered no relationship between monitoring and project success. Jha and Misra (2007) on the other hand, argue that regularly supervising public construction projects ensures that staffs are directed toward meeting set objectives that define the successful implementation. Furthermore, monitoring public road construction activities prevents undesirable behavior among implementation team members, ensuring that the project meets government requirements and provides good value for money (DiMaggio and Powell, 2015; Van Slyke, 2006).

Gebrehiwot Gebremariam (2008) investigated and assessed the problems in the existing system of road construction projects in Addis Ababa, in terms of monitoring and evaluation (M&E). The study's findings revealed that the monitoring and evaluation system has some strong qualities that must be maintained and nurtured. For example, strength can be seen in

attempting to adhere to international consultancy and contract standards, developing standard specifications, publicizing tenders, and preparing regular reports. The study, on the other hand, discovered some flaws in the system that must be addressed. This has been observed in contract terms, problem-solving solving on time, having shallow objectives and performance indicators, the absence of a computerized project information system, citizens partaking in project evaluation, and other areas.

Nega, Sebelewongel (2020) looked into the impact of project monitoring and control practices on project success in an information network security agency (INSA). The study's findings revealed a strong positive correlation between project progress tracking, project progress reporting, project change control, and project documentation practice and project success. According to the study, overall project monitoring and controlling practices have a significant impact on project success. This means that practicing effective project monitoring and control results in higher levels of project success.

Despite the limited literature connecting project success and activity monitoring, regular monitoring of budgets for respective projects and implementing corrective actions are suitable courses of actions for successful project implementation (Noah Mwelu, 2019). According to Papke-Shields et al. (2010), the likelihood of achieving success in projects is enhanced, among other factors, by constant monitoring of the project (Ernest Kissi et.al, 2019).

2.4 Project Monitoring Practice in the Projects under the Study

The following information was gathered from the observations on project documents and sample reports of Koye Feche Condominium housing road construction projects (Project 11& 18). As a result, it has been observed that tools such as quality control and quality assurance manual, contract management, monthly reports, and specifications are used to monitor project activities. Contracts for each project are also documented. Reports on each project are also kept track of, in the form of monthly progress reports, quarterly reports, completion reports, and so on. The majority of project reports are similar in appearance and content. They are prepared by consultants and distributed in five copies to AACRA departments, including the General Manager.

The Monthly, Quarterly and Annual reports of the projects show:

- Contractual matters, (obstruction status and summary of claims)

- Progress of the work with the aid of bar charts and S-curve
- Narrative report of the progress of work
- Site meeting held and key correspondences
- Environmental and social issues
- Metrological reports
- Manpower required in contracts and actually deployed (mobilized) by the contractor
- Original cost amount, revised contract amount and actual cost incurred (Financial statements)
- Equipment's required and actually deployed
- Original completion schedule, revised and percentage of elapsed time using a format given for this purpose

Moreover, these progress reports include information such as activities completed, percentage of work completed, meetings held, start and completion dates, and problems encountered... Furthermore, actions taken to alleviate or mitigate problems are included in the report, which is a positive trend that should be encouraged.

It is customarily understood that the three main elements of any project are **time, cost** and **quality**. In the Quality Assurance and Quality Control Manual of the projects explains that quality assurance is termed as achievement of quality of civil works in this case, which is one of the essential requirements of conditions of the Contract. In order to achieve quality, various specified managerial techniques have to be applied. Thus Consultant's activities in the civil engineering practices should be tied with the close managerial follow up and monitoring of the procedures according to which the related tasks are performed. By applying quality assurance techniques, the Firm can effectively monitor the schedule of the work, which will insure the completion of the project within the contract time limit and will also ensure that the works fully meet the specified technical standards and specifications as stipulated in the Contract Documents.

In the process of monitoring, the consultant staff shall focus on

- A checklist and guideline for each staff to undertake at each stage of the work will be prepared and the staff members will be required to follow the same to achieve the required goals.

- Communication between the different sections/working groups and transfer of information is disseminated within the Engineer's office so that all concerned staff is informed of the ongoing status of the project activities.
- Weekly staff meetings will be held to discuss recommend and decide on all projects related issues
- Meetings will also be held with the Contractor, the Supervision Consultant and AACRA, as required, to brief the project status, to discuss on the problems encountered, if any, and to discuss on possible solutions. Any problem that arises and solutions proposed will be dealt with as soon as possible in order to ensure that the right approaches are followed.

To monitor the quality of materials, suitable laboratory facility along with suitable equipment for testing of materials is essential. The Contractor will provide, maintain and staff his own site material laboratory throughout the Contract period to the satisfaction of the Engineer.

The contractor is responsible for quality of the works at all level of the periods till the final acceptance of all the works, and the construction supervision consultant monitors the contractor's process of testing to make sure that the executed works are adequate and accurate since ensuring production of a quality work of a durability and uniform performance by the consulting organization.

The contractor's part of the process is referred as quality control (QC), while the construction Supervision Consultant's part of the process is referred as Quality Assurance (QA), the contractor is responsible to mobilize competent personnel to perform quality control as per our quality control action plan, and the consultant is responsible to provide competent personnel to perform the quality Assurance plan accordingly.

Among the Duties and responsibilities of the project manager, strictly monitoring the progress of work for timely completion of the project and Checking monthly progress reports and among the roles of the consultant it is mentioned that Monitor the progress of works and implementation of proper management technique, Follow-up of work and monitor operations including adherence to safety and environmental requirements and strictly monitors the executions of site instructions.

The technical office that is led by the consultant organization has the tasks of Monitoring the progress of specified performance objectives and Computing budget status and analyzing the implications of variance future expenditure.

Table 1 The project related responsibilities and duties of the above organization

NO.	TASK DESCRIPTION	PROJECT MANAGER	CONSTRUCTION ENGINEER SUPERVISORY	OFFICE ENGINEERIN SUPERVISORY	MATERIAL ENGINEERING SERVICE SUPERVISORY
1.	MONITOR, CHECK AND REVIEW CONSTRUCTION PROCESS	•	o	o	o
2.	DOCUMENTATION & PROGRESS REPORTS	•	o	o	
3.	ORGANIZE COORDINATION MEETINGS	•	o		
4.	PERMANENT RECORD OF CORRESPONDENCE	•	o		

- Primary Responsibility
- o Secondary Responsibility

(Source: Project Document)

Guide Lines for Monitoring Work Progress:

- There always will be a baseline program. If changes to the baseline programs are required an updated baseline program (baseline program no.2, etc. will be created.
- The consultant must monitor the progress of works, and jointly with the contractor will update the completion percentage using the Time distance chart.

Reporting

The Monthly Report shall contain the necessary information to enable the Engineer assesses the progress of the works at the end of each month against the work program. . This report

shall comprise accurate information regarding the progress of all activities, the equipment and man power used and shall highlight achievement, as well as areas of concern, problems encountered and delays. The Monthly Statement shall contain all information regarding values of work done during the reporting period and will be the bases for the interim payment certificate.

Documentation

Every incoming and outgoing project correspondence, record of action, record of discussions and minutes of meetings are documented filing electronic and hard copy correspondence and that back up of electronic data is undertaken.

Status Meetings

Site meeting shall be made at regular time table however, at times; it can also be made accidentally as required for close follow up of the construction activities. Participants are the resident engineer and the project manager including responsible staff of the consultant as well as the contractor. The site meeting shall be made every week at a convenient time and place. During the weekly meeting, performance and problems encountered during the week shall be discussed for a better planning and performance in the coming week.

Monthly progress meeting among clients Representative, the resident engineer, Assistance Resident Engineer, Project Manager and , Assistance Project Manager are as well as other concerned staff of each parties shall be done to evaluate progress of the project, programming and for amicable settlement of outstanding issues.

Weekly staff meetings will be held at the PM office to discuss daily and weekly performance of the supervision activities, problems encountered and the remedial measures taken. The minute of meeting will be filed. More frequent meetings could also be conducted as required.

2.5 Conceptual framework

From the above-related pieces of literature reviewed the following conceptual framework can be drawn. This research aims to investigate the relationship between project monitoring practice and project success. The conceptual framework below will serve as a road map for the research by illustrating the parameters to be observed and later making an inference.

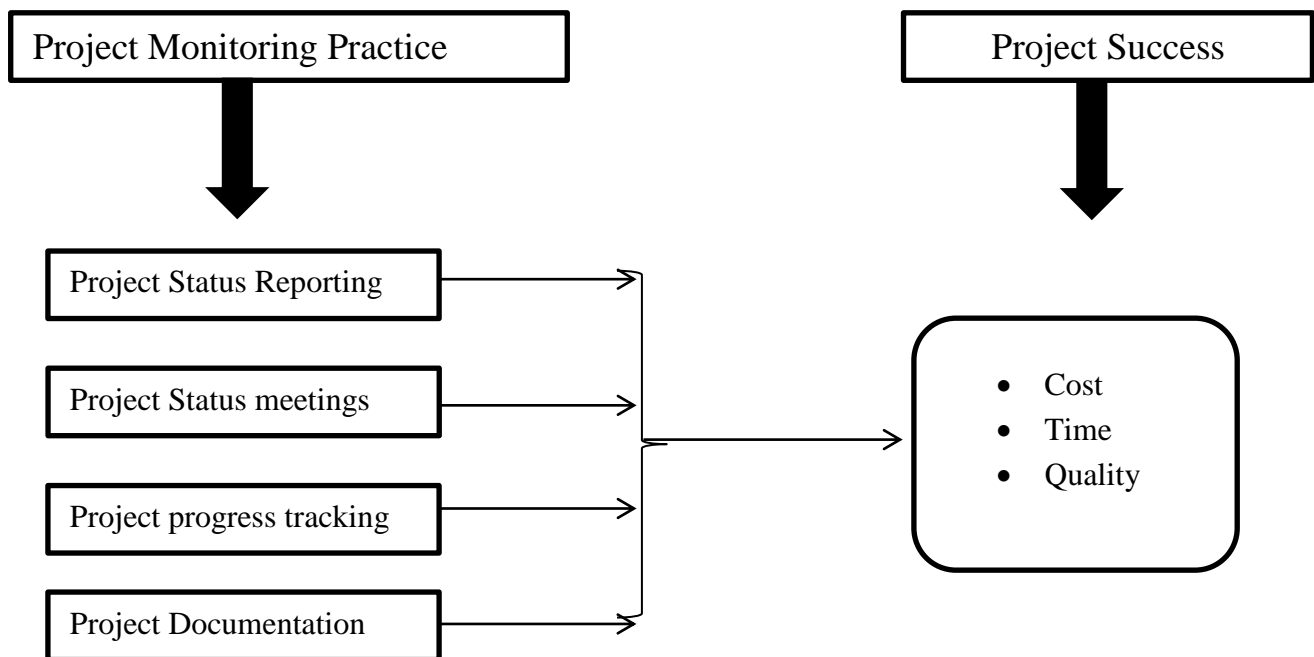


Figure 4 research conceptual framework

Source: (Own, 2022)

3 Research Methodology

3.1 Introduction

In this chapter, the researcher describes the research methodologies to be employed in conducting the research. This chapter aims to define the research design, the target population, sampling techniques, data collection tools and techniques used as well as the validity, reliability, and the ethical considerations made. It outlines the specific procedures required for gathering data, analyzing, and drawing conclusions from the findings.

3.2 Research Approach

This study intends to use a mixed research approach that combines the traits of both quantitative and qualitative approaches. Mixed methods research is an approach to an inquiry involving collecting both quantitative and qualitative data, integrating the two forms of data, and can provide a more complete picture than a standalone quantitative or qualitative study because it combines the benefits of both methods (Creswell, 2009). According to Shorten (2017), mixed methods research requires a purposeful mixing of methods in data collection, data analysis, and interpretation of the evidence.

The researcher believes that by using a mixed research approach an in-depth insight into the case under the study will be gained and by using different data collection methods a more credible result can be found. The qualitative data were gathered from key informants (top management staff from the client, the contractor, and the consultant.) using interviews. The Quantitative data were collected from employees under the client, the contractor and the consultant involved in Koye Feche Condominium Housing Road Projects using a structured questionnaire.

3.3 Research Design

Research designs are research plans and procedures that range from broad assumptions to detailed methods of data collection and analysis (Cresswell, 2009). This study employs a descriptive and an explanatory research design. In this research the researcher try's to describe the current project monitoring practice of the projects to achieve this a descriptive research design was used as it is a suitable method to identify the features of the subject under the study. The primary goal of descriptive research is to provide an accurate and valid

representation of (encapsulate) the factors or variables relevant to the research question (Kothari, 2004).

The researcher also investigates the cause and effect relationship between project monitoring practice and project success in Koye Feche Condominium Housing Road construction projects in this study. Therefore, an explanatory research design was followed to study the relationship between the variables and to seek causal relation between project monitoring and project success.

3.4 Sampling Design

Sampling design refers to the techniques or procedures the researcher would adopt in selecting some sampling units from which inferences about the population are drawn (Dubey & Kothari, 2022).

3.4.1 Population

The populations under this study are the projects under the Koye Feche Condominium Housing Road construction project, as the research title indicates. This site is home to four projects (projects 11, 18, 17, and 16), each of which is run by a different contractor and consultant.

3.4.2 Target Population

The target population, according to Casteel and Bridier (2021), is the specific, conceptually bounded group of potential participants to whom the researcher may have access that represents the nature of the population of interest. The researcher can only gain access to the two projects that are currently in active progress among the population of interest mentioned previously. As a result, the active projects under Koye Feche Condominium Housing Road Construction Projects, Project 11 and Project 18, are the target population. The Unit of analysis of this study is the two projects in Koye Feche housing road construction project namely Project 11 and Project 18.

The study aims to investigate the project monitoring practice and its effect on project success in Koye Feche condominium housing road construction projects which are **project 11** and **project 18**. These two projects are administered separately with a different contractor and consultant but with a common client or employer which is AACRA. Therefore in this study, we have 1 client or employer, 2 contractors, and 2 consultants.

3.4.3 Sampling Frame

As defined by Dubey & Kothari (2022), sampling frame is a list of all sampling units belonging to the population to be studied with their proper identification and available for selection. The sampling frame for this study consists of were the individuals that participate in these two projects under the client, the contractors, and the consultants organizations.

On the client (AACRA) side 10 employees were identified from the housing road contract administration directorate who has direct contact with the two projects. The contractor of **Project 11** has employed 100 permanent employees from which only members of the management and technical staffs were included in the sampling frame because of the technicality of the concept under the study. Therefore 15 of the employees in the management and technical staff were chosen. On the consultant side of the project, 11 employees from the site and 3 employees at head office were identified as participants in this project. The contractor in project 18 has 12 employees permanently involved in the management and technical aspect of the project. And the consultant has 10 employees on-site and 3 at the head office that has actively engaged in the supervision work of project 18. Therefore the total number of employees in the two projects under the client, the contractors, and the consultants is **64**.

3.4.4 Sample Size

A census method of sampling was used because the number of employees in the sampling frame was manageable. As a result, all of the employees in the sampling frame are used as a sample.

Table 2 Description of Sample frame and sample size

No.	Groups Or Organizations In The Target Population	Number Of Employees In Each group	Samples Of Employees/Respondents In Each group
1.	Client (AACRA)	10	10
Project 11			
2.	Contractor	15	15
3.	Consultant	14	14

Project 18			
5.	Contractor	12	12
6.	Consultant	13	13
Total		64	64

3.5 Data Source

According to Kothari (2004), Data collection is the method of gathering data on specific variables. There are two types of data sources: primary and secondary. Primary data are those collected for the first time and thus original. Secondary data are that have been collected and passed through a statistical process by someone else. Observation, interview, questionnaire, and focus group discussion are some of the primary data collection methods used in the survey and descriptive research. Secondary data can be published or unpublished and can include: technical and trade journals, books, magazines, newspapers, reports, and publications of various business and industry associations, reports prepared by research scholars, universities, economists, and others in various fields; public records and statistics; and historical documents.

Both primary and secondary data sources are to be used in this study. The primary data were collected from the project participants (employees) under the three organizations, the client/employer, the contractor, and the consultant through a structured questionnaire and interview. The secondary data were collected from contract documents, project documents, articles, journals, and academic research conducted in the area.

3.6 Data Collection Instruments and Procedure

The sources of data to be used by the researcher are both primary and secondary sources, so data collection methods of both data source types are going to be used. A questionnaire and interview guide for primary data collection was used.

The questionnaire to be distributed to respondents consists of 37 questions categorized into 2 sections, the first part is the background of respondents (give personal information about respondents) (9 questions), and the second part focus on project monitoring processes (project progress tracking, project status reporting, project status meeting, change control and documentation) and on project success (28 questions). Of all the questions few are adopted with modifications from earlier studies (Seblewongel, 2020) and a five-point Likert scale

(1=strongly disagree, 2=disagree, 3= neutral, 4=agree, and 5=strongly agree) were used to show the level of agreement on the practice of monitoring process. Interviews were held with top management people.

3.7 Data analysis methods

After collecting the data, it must be processed and analyzed to obtain findings, test hypotheses, and conclude. The two main types of analysis are descriptive analysis and inferential analysis. To analyze the quantitative data, descriptive statistics such as percentage, frequency, measures of central tendency, and measures of dispersion were used in tables and charts. SPSS (Statistical Package for Social Science) version 23.0 was use to conduct the descriptive analysis. The qualitative responses obtained through interviews, data obtained through researcher observation, and data obtained from secondary sources were analyzed, described, and interpreted in the form of a statement.

3.8 Validity and reliability

3.8.1 Validity

The degree to which a test measures and what it claims to measure is referred to as its validity (Dubey & Kothari, 2022). An instrument can measure what it is designed to measure. Attempts were made to help the respondents of this study understand the questionnaire, and they provided valuable information. Inconsistencies in understanding contexts may occur when respondents had their perceptions, which may affect the true value measured in the survey.

3.8.2 Reliability

The term reliability refers to consistency over time, across items (internal consistency), and researchers. Reliability is also a measure of how well a research result can be replicated with the same outcome if the research is replicated. Furthermore, the researcher should use the same template as much as possible and use static methods to increase reliability. To avoid confusion, ambiguous terms are not used in questionnaires. As a result, ensuring validity and reliability is one of the most important factors in obtaining valuable results from research work. In addition the Cornbach' Alpha reliability test was performed to see if the Likert scale questions in the questionnaire are reliable. Cronbach's Alpha score of more than 0.70 indicates that the instrument is reliable.

Table 3 below revealed that the reliability of variables included in this study is acceptable, as a Cronbach's Alpha score greater than 0.70 indicates that the instrument is reliable. The Cronbach's Alpha value for the overall variable and for each question item is presented below. The result shows that the reliability of the research variables is with the acceptable level which is > 0.7 .

Table 3 Cronbach's Alpha Test Results

Variables	Cronbach's Alpha	Cronbach's Alpha Based on Standardized Items	N of Items
Project Progress Tracking	0.707	0.744	7
Project Progress Reporting	0.741	0.761	8
Project Status Meeting	0.708	0.788	4
Project Documentation	0.812	0.847	5
Project Success	0.730	0.745	4
Combined Result	0.841	0.847	28

(Source: Own survey, 2022)

3.9 Research Ethics

Maintaining high ethical standards is essential throughout the research. Respect for privacy and confidentiality is essential for establishing trust with participants. The information provided by participants was kept private and confidential. Participants were given a survey questionnaire with a brief explanation of the survey's purpose and benefits, as well as information about participant confidentiality. To maintain privacy, respondents were not permitted to enter their names in the questionnaire. Respondents were free to provide honest responses because anonymity was guaranteed. During data collection, consent was also obtained. The greatest possible care was taken to avoid plagiarism.

4 Data presentation, Analysis & Interpretation

4.1 Introduction

In this chapter the researcher presents the analysis performed on the data collected together with their interpretations. Using SPSS version 23, a descriptive analysis was performed, and the results and interpretations are presented in tables and graphs below.

4.2 Analysis of Demographic Information

Basic information questions were used to collect the demographic data of respondents. This type of information will describe the work and social characteristics of each respondent.

Of the total survey participants, 21 of the respondents or 37.5% are female and the remaining 35% are male according to the assessment made on the gender distribution of the data collected. The analysis of the educational background of respondents shows that 75% of them have a Bachelor's Degree (BA/BSc) and 8.9% have a Diploma with the remaining 16.1% having a Master's degree. Of the total survey participants 60.7% of them have specialized in Civil Engineering, 17.9% have studied construction technology and management (COTM), 7.1% have studied Hydraulics and water resource Engineering (HWRE), 5.4% have studied Building technology and the other remaining 5.4% studied surveying technology. In addition, the respondent's overall year of work experience was also assessed. The details of the data are presented as follows.

4.2.1 Response rate and respondents characteristics

The study was conducted in Koye Feche Condominium Housing Road Projects namely 'Project 11' and 'Project 18'. To collect data an interview guide and a printed out questionnaire have been used. Total of 64 questionnaires were distributed to respondents working on both projects. However, only 56 questionnaires were returned, which have a response rate of 87.5%. The information gained through interview of key staff of the project was also insightful in explaining the details of the project.

Table 4 Distribution of respondents,

		Type of Organization			Total
		Client (AACRA)	contractor	consultant	
Project Sites	project 11	3	11	14	28
	project 18	6	9	13	28
Total		9	20	27	56

(Source: Own survey, 2022)

The above table shows the distribution of respondents in the two projects were 50-50.out of the returned questionnaires 9 were from the client (AACRA), 20 were from contractor and 27 were from the consultants.

4.2.2 Educational Status

The analysis on the educational back ground of respondents shows that 75% of them have a Bachelor's Degree (BA/BSc) and 8.9 % have a Diploma and the remaining 16.1% of the respondents have a Master's degree. Among the respondents none were PhD holder.

Table 5 Educational background of respondents

Educational Level	Frequency	Percent
Diploma	5	8.9
BA/BSc	42	75.0
MA/MSc	9	16.1
Total	56	100.0

(Source: Own survey, 2022)

4.2.3 Gender Composition

Out of the total returned questionnaires, 21 of the respondents or 37.5% are female while the remaining 35 or 62.5% are male according to the assessment made on the gender distribution of the data collected.

Table 6 Gender distribution of respondents

Gender Of Respondents	Frequency	Percent
Female	21	37.5
Male	35	62.5
Total	56	100.0

(Source: Own survey, 2022)

4.2.4 Filed Of Specialization

From the total survey participants 60.7% of them have specialized in Civil Engineering, 17.9% have studied construction technology and management (COTM), 7.1% have studied Hydraulics and water resource Engineering (HWRE), 5.4% have studied Building technology and the other remaining 5.4% studied surveying technology.

Table 7 Respondents filed of specialization

Filed of specialization	Frequency	Percent
Building Technology	3	5.4
Civil ENG	34	60.7
COTM	10	17.9
GeoTech Eng	2	3.6
HWRE	4	7.1
Surveying Technology	3	5.4
Total	56	100.0

(Source: Own survey, 2022)

4.2.5 Work Experience of Respondents

Respondents' percentage of work experience on the projects shows that (23) which is 41.1% of the respondents have 5-11 months of experience, (22) representing 39.3% of the respondents have 12-17 months of work experience and (11) or 19.6% of the respondents have 18-24 months of work experience.

Table 8 Respondents on Project Experience

On Project Experience (In months)	Frequency	Percent
5-11	11	19.6
12-17	22	39.3
18-24	23	41.1
Total	56	100.0

(Source: Own survey, 2022)

In addition respondents over all year of work experience was also assessed. Twenty six (26) of the respondents or 46.4% have total year of work experience between 1 year and 4 years, (13) or 23.2% of the respondents have 5-8 years of total work experience, (12) or 21.4% of the respondents have 9-12 years of total work experience, (3) or 5.4% have 13-16 total years of work experience and the remaining (2) or 3.6% have total year of work experience above 16 years.

Table 9 Total Year of Experience

Total Year Of Experience	Frequency	Percent
1-4	26	46.4
5-8	13	23.2
9-12	12	21.4
13-16	3	5.4
Above 16	2	3.6
Total	56	100.0

(Source: Own survey, 2022)

4.3 Descriptive Analysis

4.3.1 Analysis of Project Monitoring Practice and Project Success Elements

A total of 28 Linkert Scale questions were include in the questionnaire with the intention to assess the insight of respondents on the effects of project monitoring practice on project success in the case of Koye Feche Housing Road Construction (Project 11 & Project 18). Respondents were requested to indicate their level of agreement on the statement provided on project progress tracking. Project status reporting, project status meeting, project change control and project documentation. A five point Linkert scale was used in which 5-Strongly Disagree, 4-Disagree, 3-Neutral, 2-Agree and 1-Strongly Agree. The mode (frequency) and percentile for each items is calculate and presented in the table 10 below.

Table 10 Respondent's Insight on the Practice of Project Progress Tracking

SNo.	Statements	SA		Agree		% Agree	Neutral		SD		D		% Disagree
		Freq.	%	Freq.	%	(%SA+%A)	Freq.	%	Freq.	%	Freq.	%	(%SD+%D)

1	Assessment of project performance is regularly and continuously conducted from the beginning of the project to the end	20	35.7	30	54	89.3	0	0	0	0	6	10.7	10.7
2	Tool and techniques for project progress tracking is well assessed, selected, and implemented (millstone review)	10	17.9	24	43	60.8	18	32.1	0	0	4	7.1	7.1
3	Participatory review and progress review meeting (status meeting) approaches are used to determine performance	14	25	22	39	64.3	12	21.4	4	7.1	4	7.1	14.2
4	The actual Projects progress on schedule, cost, and quality regularly compared against the planned schedule, cost, and quality to check variance	12	21.4	32	57	78.5	2	3.6	0	0	10	17.9	17.9

5	Personnel is assigned who can monitor changes in the project	6	10.7	30	54	64.3	8	14.3	0	0	12	21.4	21.4
6	There is an expert for internal and external monitoring and controlling processes	10	17.9	30	54	71.5	6	10.7	2	3.6	8	14.3	17.9
7	There is effective project status/progress tracking practice or System	6	10.7	32	57	67.8	6	10.7	2	3.6	10	17.9	21.5
Mean		3.7381											
Standard Deviation		0.6052											

(Source: own survey, 2022)

Note: Freq. = Frequency, %= Percentile, SA= strongly agree, A=agree, SD= strongly disagree, D=disagree.

According to the data in the table above, a higher percentage of respondents agree with the project progress tracking practice statements, with percentile agreements of 89.3%, 60.8 %, 64.3 %, 78.5 %, 64.3 %, 71.5 %, and 67.8 % for questions 1-7, respectively. The remaining 10.7 %, 7.1 %, 14.2 %, 17.9 %, 21.4 %, 17.9 %, and 21.5 % disagreed with the statements from questions 1 to 7.

On the statement “Assessment of project performance is regularly and continuously conducted from the beginning of the project to the end”, 89.35 of the respondents agreed and 10.75 disagreed. 60.8% of participants agreed that the tool and techniques for project progress tracking were well assessed, selected, and implemented (e.g. millstone review) and 32.1 were neutral, and 7.1 disagreed. In response to the inquiry, 64.3% agreed that participatory review and progress review meetings (status meetings) are used to determine performance, 14.2 percent disagreed, and 21.4 percent were neutral. 78.5% of the participants

agreed with the actual Projects progress on schedule, cost, and quality regularly being compared against the planned schedule, cost, and quality to check variance, 3.6% were neutral and 17.9% disagreed. On the inquiry of whether or not personnel are assigned to monitor project changes, 64.3% agreed, 21.4% disagreed, and 14.3% were neutral. 71.5% of the respondents agreed on the existence of an expert for internal and external monitoring and controlling processes. 10.7% were neutral and 7.9% disagreed with this statement. There is an effective project status/progress tracking practice or system, according to 67.8 percent of participants, while 21.5 percent disagreed and 10.7 percent responded neutrally.

As the interviewee from AACRA indicated about an organization responsible for the monitoring of the projects:

“The consultant is the organization assigned for the monitoring process of the project. The consultant staff are each responsible for the progress control and inspection.”

AACRA staff

The Contractor’s Project Manager also indicated that *The contractor is responsible for quality of the works at all level of the periods till the final acceptance of all the works, and the construction supervision consultant monitors the contractor’s process of testing to make sure that the executed works are adequate and accurate since ensuring production of quality work of durability and uniform performance by the consulting organization.*

An interviewee from the consultant responded about the project current status that no quality issue was reported on the deliverables and no project cost overrun but the project is not progressing as planned regarding schedule. This implies that the progress monitoring has managed to deliver a quality deliverables on budget and there may be more factors contributing to the schedule overrun. (Annex V) shows the sample progress Gantt chart used to track the progress of deliverables in the project.

The mean value for project progress tracking items is 3.738. According to Aynalem Getasew (2020) mean value between 3.14 & 4.20 implies ‘agree’. The standard deviation value 0.605 implies that the data values are clustered around the mean not much depressed.

Table 11 Respondent's insight on Practice of Project Status Reporting

SN o.	Statements	SA		Agree		% Agree	Neutral		SD		D		% Disagree
		Freq.	%	Freq.	%	(%SA +%A)	Freq.	%	Freq.	%	Freq.	%	(%SD+% D)
1	There is a well-defined and structured reporting procedure.	14	25	36	64	89.3	4	7.1	0	0	2	3.6	3.6
2	Project status reports are regularly Conducted	22	39.3	32	57	96.4	0	0	2	3.6	0	0	3.6
3	Project status reports are timely, complete, accurate, clear, up-to-date, and simple to understand	22	39.3	24	43	82.2	4	7.1	4	7.1	2	3.6	10.7
4	Tool and techniques for project status reporting are well assessed, selected, and implemented	8	14.3	32	57	71.4	12	21.4	2	3.6	2	3.6	7.2
5	Internal Project status update is conducted within reasonable intervals	6	10.7	30	54	64.3	8	14.3	0	0	12	21.4	21.4
6	Project status reports shared	18	32.1	14	25	57.1	14	25	0	0	10	17.9	17.9

	among all stakeholders and team members												
7	Project status updated data are available to track projects and their performance, to identify problems early (to give an early warning system)	8	14.3	24	43	57.2	14	25	4	7.1	6	10.7	17.8
8	There is an effective project status reporting practice or system	6	10.7	30	54	64.3	12	21.4	2	3.6	6	10.7	14.3
Mean		3.808											
Standard Deviation		0.572											

(Source: own survey, 2022)

Note: Freq. = Frequency, %= Percentile, SA= strongly agree, A=agree, SD= strongly disagree, D=disagree.

According to the data in the preceding table, a greater number of respondents agree with the project status reporting practice statements, with percentile agreements of 89.3 %, 96.4 %, 82.2 %, 71.4 %, 64.3 %, 57.1 %, 57.2 %, and 64.3 % for questions 1-8, respectively. Other than that, 3.6 %, 3.6 %, 10.7 %, 7.2 %, 21.4 %, 17.9 %, 17.8 %, and 14.3 % disagreed with the statements from questions 1 to 8.

From a total of 56 respondents, 89.3 % of them agreed with the existence of a well-defined and structured reporting procedure. 3.6% of the respondents disagreed on the same issue and

7.1% were neutral. On the statement "Project status reports are conducted on a regular basis," 96.4% of participants agreed, and the remaining 3.6% disagreed. 82.2% of the participants agreed that Project status reports are timely complete, accurate, clear, up-to-date, and simple to understand. 10.7% were in disagreement with this statement and 7.1% were neutral. On the statement of whether or not tools and techniques for project status reporting are well assessed, selected, and implemented, 71.4% agreed, 7.2% disagreed, and 21.4% were neutral. 64.3% agreeing, 14.3% neutral, and 21.4% disagreeing with internal project status updates being performed at reasonable intervals. On the assertion "Project status reports shared among all stakeholders and team members," 57.1% agreed, 25% were neutral, and 17.9% disagreed. 57.2% of the participants agreed that project status updated data should be available to track projects and their performance, identify problems early (to provide an early warning system), 25% were neutral, and 17.8% disagreed. 64.3% of all respondents agree that an effective project status reporting practice or system exists, 14.3% disagree, and 21.4% are neutral.

The mean value of the item on project status reporting is 3.80 which is between 3.14 & 4.20. According to Aynalem Getasew (2020), mean value between 3.14 & 4.20 implies 'agree'. The standard deviation value 0.572 implies that the data values are clustered around the mean not much depressed.

Regarding project status reporting practice, the data from the interviewees indicates that a good reporting practice exists.

Table 12 Respondent's insight on practice of project status meeting

SNo.	Statements	SA		Agree		% Agree	Neutral		SD		D		% Disagree
		Freq.	%	Freq.	%	(%SA+%A)	Freq.	%	Freq.	%	Freq.	%	(%SD+%D)
1	Project status meeting is conducted regularly with reasonable time interval	12	21.4	6	11	32.1	18	32.1	10	17.9	10	17.9	35.8
2	Project status meetings are efficient and	2	3.6	20	36	39.3	10	17.9	2	3.6	22	39.3	42.9

	effective												
3	In the meeting, all participants have adequate information about the status of the project	8	14.3	22	39	53.6	12	21.4	0	0	14	25	25.0
4	The minutes of the meeting are well documented for future reference	10	17.9	34	61	78.6	8	14.3	0	0	4	7.1	7.1
Mean		3.321											
Standard Deviation		0.782											

(Source: own survey, 2022)

Note: Freq. = Frequency, %= Percentile, SA= strongly agree, A=agree, SD= strongly disagree, D=disagree.

According to the data in the preceding table, a higher percentage of respondents disagree with items 1 and 2, with disagreement percentiles of 35.8 % and 42.9 %, respectively. Furthermore, the respondents have an agreement percentile of 53.6 % for item 3 and 78.6 % for item 4. This indicates that the project status meeting practice on the projects is weak.

On the statement “Project status meeting is conducted regularly with reasonable time interval”, 32.1% of the respondents agreed, 35.8% disagreed and 32.1% were neutral. The Project status meetings were deemed efficient and effective by 39.3% of participants. 42.9% of respondents disagreed with this statement, while 17.9% were neutral. 53.6% of the respondents agreed on all participants having adequate information about the status of the project in the meetings and 25% of them disagreed and 21.4% were neutral. Regarding the minutes of the meeting being well documented for future reference, 78.6% agreed, 7.1% disagreed and 14.3% were neutral

The mean value of the items on practice of project status meeting is 3.321. According to Aynalem Getasew (2020) a mean value between 2.61 & 3.40 implies moderate agreement or “true to some extent”. The standard deviation value of 0.782 indicates that the data values are clustered around the mean not much depressed.

Table 13 Respondent’s insight on Practice of Project Documentation

SNo.	Statements	SA		Agree		% Agree	Neutral		SD		D		% Disagree
		Freq.	%	Freq.	%	(%SA + %A)	Freq.	%	Freq.	%	Freq.	%	(%SD+ %D)
1	Documentation will be made at the beginning of the project and continue to be updated on regular Meetings	10	17.9	36	64	82.2	2	3.6	4	7.1	4	7.1	14.2
2	The time scale, budget, and customer requirements of each project are clearly defined and documented.	18	32.1	32	57	89.2	2	3.6	0	0	4	7.1	7.1
3	Project progress reports and meetings are well documented	14	25	30	54	78.6	12	21.4	0	0	0	0	0.0
4	Requirement for any project changes are well documented	10	17.9	34	61	78.6	12	21.4	0	0	0	0	0.0
5	Decisions to approve or reject changes are well documented	16	28.6	34	61	89.3	4	7.1	0	0	2	3.6	3.6

Mean	4.014
Standard Deviation	0.595

(Source: own survey, 2022)

Note: Freq. = Frequency, %= Percentile, SA= strongly agree, A=agree, SD= strongly disagree, D=disagree.

The data in the table above show that a higher percentage of respondents have a positive response for items 1-5 under the project progress documentation practice, with percentile agreements of 82.2 percent, 89.2 percent, 78.6 percent, 78.6 percent, and 89.3 percent, respectively. This indicates that the project under study follows good project progress documentation practices.

From the total of 56 respondents, 82.2% agreed that documentation will be created at the start of the project and updated at regular meetings, with 14.2% disagreeing and 3.6% neutral. 89.2% of the participants agreed that the time scale, budget, and customer requirements of each project are clearly defined and documented. 7.1% of them disagreed and 3.6% were neutral with this statement. Regarding project progress reports and meetings being well documented and the requirement for any project changes being well documented, 78.6 % of respondents agreed and 21.4% were neutral. On the inquiry whether or not decisions to approve or reject changes are well documented, 89.3% agreed, 3.6% disagreed and 7.1% were neutral.

The mean value of the items on practice of project documentation is 4.014. According to Aynalem Getasew (2020) a mean value between 3.40 & 4.20 implies 'Agree'. The standard deviation value of 0.595 indicates that the data values are clustered around the mean not much depressed.

A consultant staff interviewee mentioned that *“The tools, techniques & systems of project monitoring are partially defined on the project contract document and the consultants implement their project monitoring system in adaption with the nature of the works and the contract document”*. 78.6 % of respondents agreed on project progress reports and meetings being well documented and the requirement for any project changes being well documented. Likewise, an interviewee from AACRA added that *the types of reports to be prepared are clearly stated on the contract documents. But the sites and meetings are arranged accordingly after the commencement of the project.*

Table 14 Respondent's insight on Project's Success

SNo.	Statements	SA		Agree		% Agree	Neutral		SD		D		% Disagree
		Freq.	%	Freq.	%	(%SA+%A)	Freq.	%	Freq.	%	Freq.	%	(%SD+%D)
1	Project under your supervision/management has been completed on or below the planned budget	10	17.9	26	46.4	64.3	6	10.7	0	0	14	25.0	25.0
2	The project under your supervision/management has been completed within the expected time frame	0	0	20	35.7	35.7	6	10.7	4	7.1	26	46.4	53.5
3	The project under your supervision/management has been completed according to the planned quality	2	3.6	34	61	64.3	8	14.3	0	0	12	21.4	21.4
4	The project under your supervision/management has been completed with user satisfaction.	2	3.6	30	54	57.2	14	25	0	0	10	17.9	17.9
Mean		3.3036											
Standard Deviation		0.708											

(Source: own survey, 2022)

Note: Freq. = Frequency, %= Percentile, SA= strongly agree, A=agree, SD= strongly disagree, D=disagree.

As per the data in the table above, a higher percentage of respondents have a positive response for items 1, 3, and 4 of the project success indicator statements, with an agreement percentile of 64.3 percent, 64.3 percent, and 57.2 percent, respectively. However, item number 2 received 53.5 percent of the disagreement percentile. This indicates that the project success under consideration only met the cost and quality success factors while falling short on schedule.

Concerning Project being completed on or below the planned budget, 64.3% of the respondents agreed that under their supervision project has been finalized on or below the planned budget, 10.7% were neutral and 25% of them disagreed. 35.7% of the participants agreed that project under their supervision/ management has been completed within the expected time frame, 10.7 were neutral and 53.5% disagree. Regarding the project under their supervision/ management being completed according to the planned quality, 64.3% of the respondents agreed, 14.3% were neutral and 21.4% disagree. 57.2% of the respondents agreed that project under their supervision were completed with user satisfaction, 25% were neutral and 17.9% disagreed.

All the interviewees agreed on the project success parameters being cost, time and quality. And they also agreed on the projects current status being on planned cost and quality.

The project success parameter for this project is quality as per the required specification timely completion (extension of time not more than 25% of the contract period and cost (variation not exceeding 15% of the contract price”

Project coordinator/supervisor

The mean value of the items on practice of project status meeting is 3.303. According to Aynalem Getasew (2020) a mean value between 2.61 & 3.40 implies moderate agreement or “true to some extent’. The standard deviation value of 0.708 indicates that the data values are clustered around the mean not much depressed.

Table 15 Summary of mean and standard deviation

Variables	Mean	Std. Deviation
Project Progress Tracking	3.7381	.60541
Project status reporting	3.8080	.57256
Project Status Meeting	3.3214	.78293
Project Documentation	4.0143	.59557

Project Success	3.3036	.70825
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(Source: own survey, 2022)

The descriptive statistics result (mean and standard deviation) of each variable can be obtained from the table above. Thus, the mean for Project Progress tracking practice is 3.738, with a standard deviation of 0.605. The mean for project status reporting is 3.808 with a standard deviation of 0.572. The mean for documentation is 4.0143, with a standard deviation of 0.595, and the mean for project success is 3.303, with a standard deviation of 0.708.

The mean values for Project progress tracking, Project status reporting and Project Documentation are greater than 3.41 which implies “agree” and that these project monitoring tools are well practiced in Koye Feche Hosing Road Construction Project (project 11& project 18) . But the mean values for project status meeting and project success lays between 2.61-3.40 which implies “ neutral”, this indicate that the project status meeting practice and the project success rate is weak in Koye Feche Housing Road Construction Projects (project 11& project 18).

Effective project monitoring, as all interviewees stated, leads to successful project delivery.

Project monitoring affects success in many ways. Monitoring the progress, reporting variations and problems encountered will facilitate the decision making towards achieving the time, quality and cost success parameters.

Project Coordinator/Supervisor

Project monitoring affects success in many ways. Monitoring the progress, reporting variations and problems encountered will facilitate the decision making towards achieving the time, quality and cost success parameters. AACRA

4.4 Correlation Analysis

Correlation analysis investigates the linear relationship between variables. The correlation coefficient, which ranges from -1 to +1, determines the strength of the correlation. The correlation direction can be either positive or negative. When higher values of one variable are accompanied by higher values of another variable, there is a positive correlation (0&1). Negative correlation occurs when higher values of one variable are accompanied by lower values of another (-1&0).

Table 16 Pearson Correlation among independent and dependent variables

Variables	Project Progress Tracking	Project status reporting	Project Status Meeting	Project Documentation	Project Success
Project Progress Tracking	1				
Project status reporting	.727**	1			
Project Status Meeting	.750**	.741**	1		
Project Documentation	.290*	.643**	.427**	1	
Project Success	.546**	.289*	.669**	.024	1

(Source: own survey, 2022)

** . Correlation is significant at the 0.01 level (2-tailed).

* . Correlation is significant at the 0.05 level (2-tailed).

According to the Pearson correlation coefficient table above, project progress tracking has a moderately positive relationship with project success ($r=0.546$, sig. value=0.000). Project status meetings have a strong positive relationship with project success ($r=0.669$, sig. value=0.000). There is a weak but positive relationship between project status reporting practice and project success ($r=0.289$, sig value=0.031) and a very weak or no relationship between project documentation practice and project success ($r=0.024$, sig value=0.861).

As per the correlation analysis, project progress tracking, project status reporting, and project status meetings all have a positive impact on the Koye Feche Condominium Housing Road Projects (projects 11&18), while project documentation has no significant impact on project success.

4.5 Regression Analysis

After the Correlation analysis was performed, a regression analysis was done to investigate the effect of the project monitoring on the project's success. In the case of a bivariate population, regression is the determination of a statistical relationship between two variables, or between one variable on one side and two or more variables on the other side in the case of a multivariate population. Before performing a linear regression analysis the researcher have checked the necessary assumptions were not violated.

 **Normality**

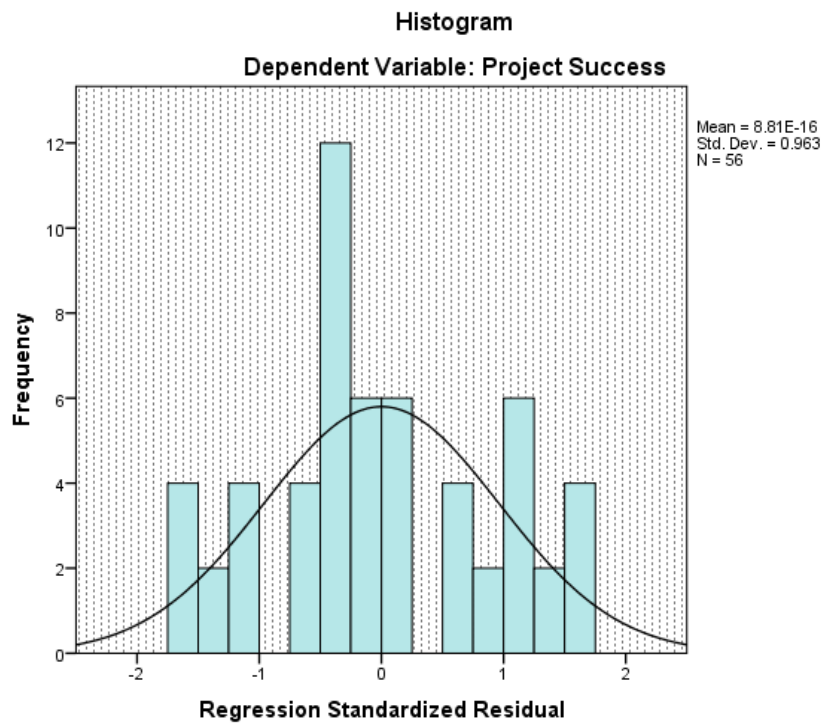


Figure 5 Histogram to check normality of data.

Source: (own survey, 2022)

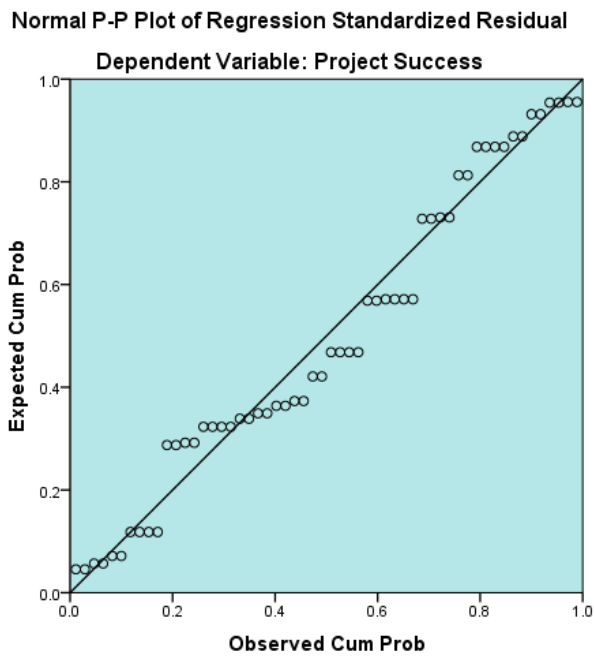


Figure 6 Normal P-P plot of regression standardized Residual

(source: own survey, 2022)

Linearity

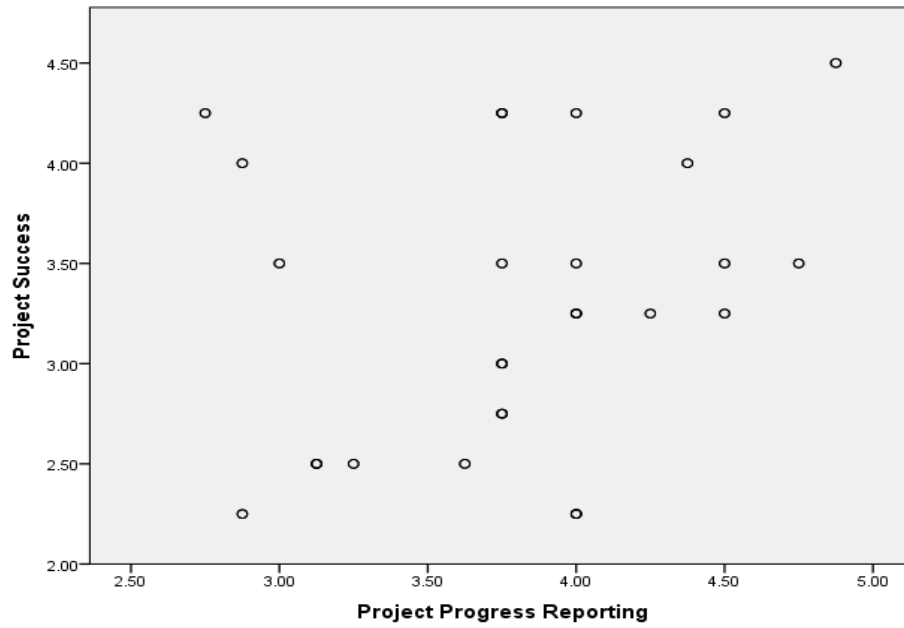


Figure 7 Scatter plot between project success and project progress Reporting
(Source: own survey, 2022)

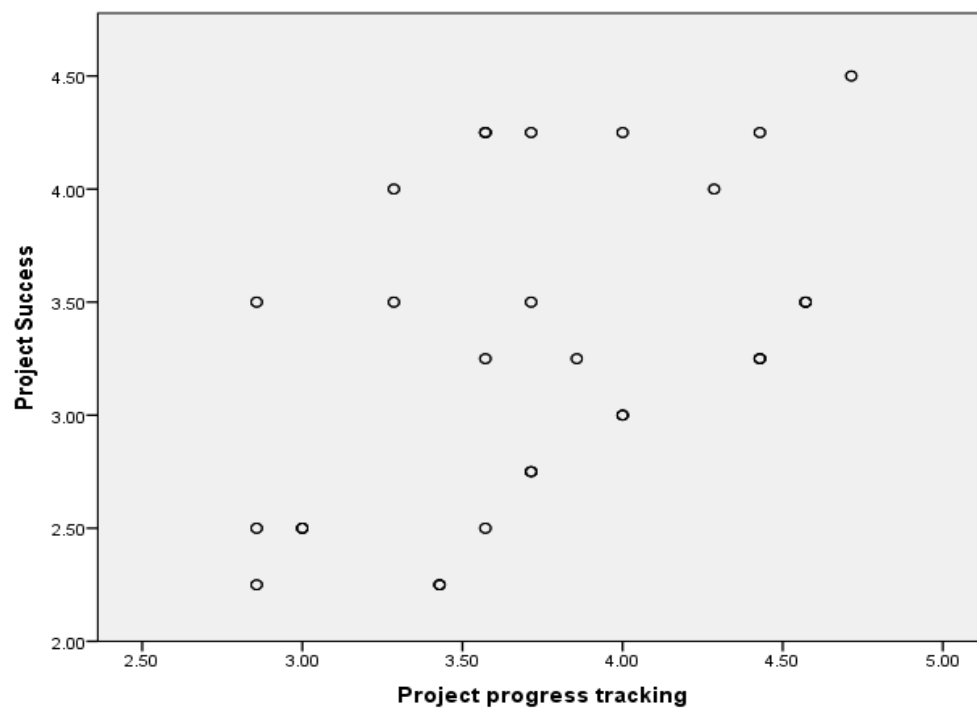


Figure 8 Scatter plot between project success and project progress tracking
Source: (own survey, 2022)

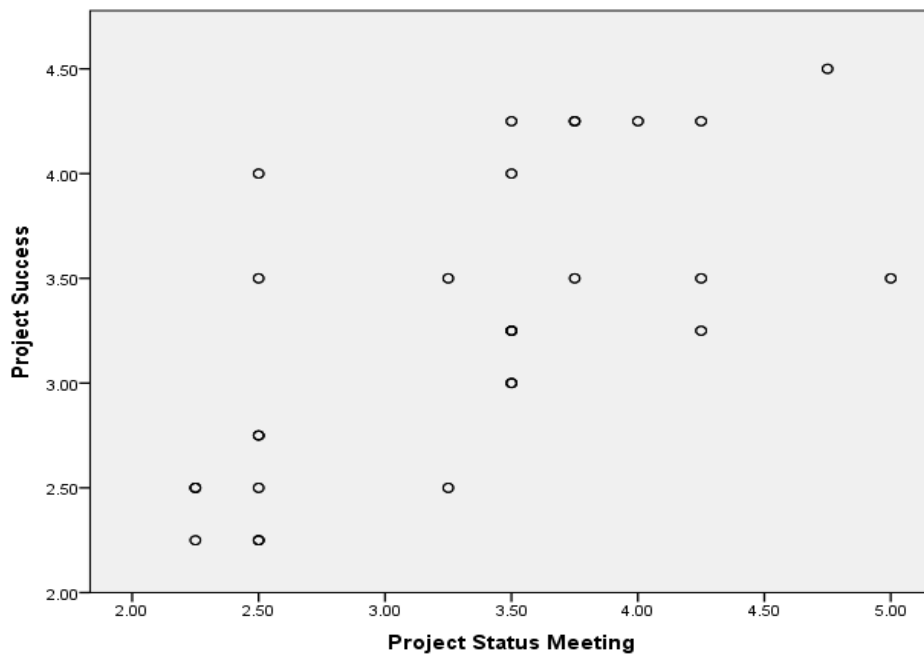


Figure 9 Scatter plot between project success and project status Meeting

Source: (Own survey, 2022)

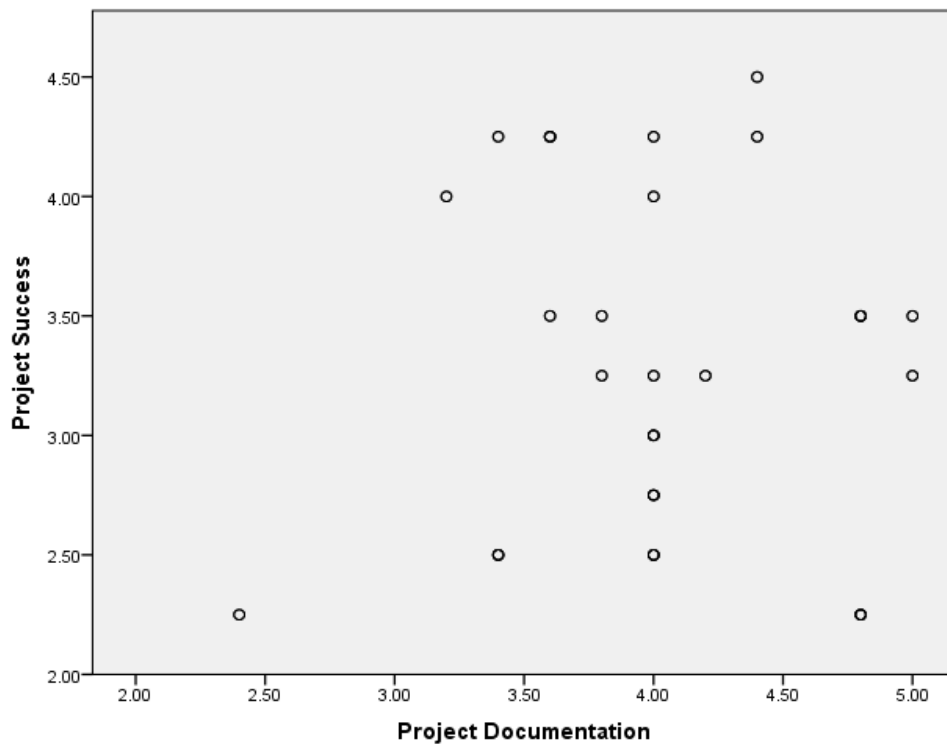


Figure 10 Scatter plot between project success and project documentation

Source: (Own survey, 2022)

Homoscedasticity

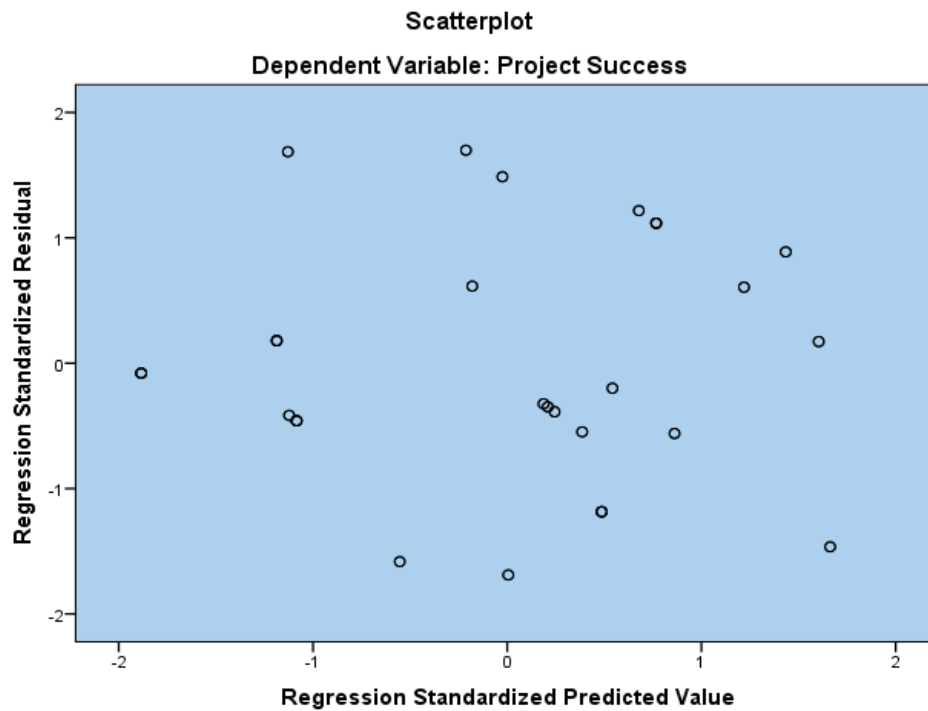


Figure 11 Scattered plot showing the Homoscedasticity

Source: (own survey, 2022)

4.5.1 Multicollinearity test

The assumption of multicollinearity suggests that the independent variables are not overly correlated with one another. To test this, the researcher examines bivariate correlations. According to Menard (1995), Tolerance must be > 0.2 and the Variance Inflation Factor (VIF) should be < 10 . All of the correlation coefficients for this study are less than 0.80 (as shown in table 14) and the VIF value is less than 10, indicating that there is no multicollinearity.

Table 17 Multicollinearity test results

Variables	Collinearity Statistics	
	Tolerance	VIF
Project progress tracking	.274	3.646
Project Progress Reporting	.218	4.589
Project Status Meeting	.367	2.727
Project Documentation	.551	1.815

Source: (Own survey,2022)

4.5.2 Multiple Linear Regressions Analysis

Multiple regression analysis was used in this study to determine the effect of project monitoring practice on project success. There are two or more independent variables and one dependent variable in multiple linear regressions. The multiple regression models for this study are:

$$Y = \beta_0 + \beta_1 X_1 + \beta_2 X_2 + \beta_3 X_3 + \beta_4 X_4 + \epsilon$$

Where: Y = Project Success

β_0 = estimated Y-intercept (the value of Y when all the independent variables (X1 through X4) are equal to zero)

$\beta_1, \beta_2, \beta_3$ and β_4 = estimated slope (estimated regression coefficients for X1, X2, X3 and X4 respectively), Each regression coefficient represents the change in Y relative to a one-unit change in the respective independent variable

X1 = Project Progress tracking

X2 = project progress reporting

X3 = project status meeting

X4 = Project Documentation

ϵ = Standard Error

Table 18 Model summary of the multiple linear regressions test.

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.761 ^a	.579	.546	.47737

a. Predictors: (Constant), Project Documentation, Project progress tracking, Project Status Meeting, Project Progress Reporting

b. Dependent Variable: Project Success

(Source: own survey, 2022)

From The model summary it is implied that 54.6% of the variation in the dependent variable (project success) can be explained by the independent variables (project Progress Tracking, project progress reporting, and project status reporting and project documentation).

Table 19 ANOVA result table from the multiple regression test

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	15.967	4	3.992	17.518	.000 ^b
	Residual	11.622	51	.228		
	Total	27.589	55			

(Source: own survey, 2022)

From the ANOVA table above Sig. value =0.000 which is less than 0.05 indicating that the regression relationship is highly significant at 95 % confidence interval in predicting how project monitoring and controlling practice influenced project success. Additionally, the critical F-value is 17.518 at 99% level of confidence. Thus, the model is statistically significant that means the overall regression model is a good fit for the data.

Table 20 The coefficient table result from the multiple regression test

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	2.421	.544		4.450	.000
	Project progress tracking	.296	.222	.231	1.332	.029
	Project Progress Reporting	.576	.241	.466	2.392	.021
	Project Status Meeting	.817	.136	.903	6.017	.000
	Project Documentation	.184	.146	.155	1.267	.031

(Source: own survey, 2022)

The coefficients table above revealed that project progress tracking(X1), project progress reporting(X2), project status meeting (X3) and project documentation(X4) are significant with (sig-value = 0.029, 0.021, 0.000 and 0.031 respectively, which is < 0.05) in influencing project success (Y). The findings also indicate holding all variables at zero will result project success to 2.421. Similarly keeping all other independent variables constant, a unit change on project progress tracking would lead to a change in project success by a factor of 0.296. A unit change in project progress reporting would lead to change in project success by a factor of 0.576. A unit project status meeting would lead to change in project success by a factor of

0.817 and a unit change in project documentation would lead to change in project success by a factor of 0.184.

4.6 Summary of Findings

Based on the analysis performed on the survey data, document review and interview the following findings can be summarized as follows.

Table 21 Performance Level of the Projects

Projects	Physical				Financial		Time
	work planned to date		work complete to date		Planned to date %	Actual to date %	Percentage of time elapsed to date
	%	km	%	km			
Project 11	95.19	11.54	29	3.44	99.9	29	100%
Project 18	97.73	8.76	92.38	8.10	99.26	72.93	109.53%

Source: (Project Monthly progress Report documents)

- **Project monitoring tools and techniques being used on the projects**

It is evident that project progress tracking, status reporting, status meetings and documentation are all employed on the projects under the study. Actual tool being used in the day today activities of the project were mentioned by the interviewees. These are: Weekly progress tracking using Gantt chart, Monthly progress reports, S-curve, Site visits, Meetings, Cash flow(financial) monitoring, Quality control, Project schedule monitoring Health and safety plan & implementation, Project progress tracking against set milestones and Environment impact monitoring.

From the document review it was found that the projects have progress monitoring system that will provide information and warning. Here progress falls behind schedule within the framework of the construction period. The tools and techniques used are: Project Scheduling, S-Curves, Tracking of elements, Financing and status, Documents tracking, Cost control, Task Managements control, Warnings, Effect of delays, Corrective and preventive actions.

- **The effects of Project Progress Tracking Practice on project success in Koye Fече Condominium Housing Road Project.**

As depicted on the descriptive analysis a significant number of respondents agreed with all of the Projects progress tracking practice statements. This indicates that the projects have a good Projects progress tracking practice. From the correlation analysis it can be conclude that project progress tracking practice have a positive effect on project success of the projects under the study with ($r=0.546$, sig. value= 0.000). In addition to the quantitative data, the information gathered from document review and interviewees' shows that project progress tracking practice is being used to track the quality and schedule of the projects.

The linear regression analysis results also showed that project progress tracking practice have a positive significant effect on project success with (β value= 0.296 with Sig. value= $0.029 < 0.05$). Therefore the hypothesis H_1 ; Project progress tracking practice has positive significant effect on the project success is supported by sufficient evidence at 5% significance level. In addition to the quantitative data, the information gathered from interviewees' shows that project progress tracking practice is being used to track the quality and schedule of the projects.

- **The effects of project status reporting practice on project success in Koye Feche Condominium Housing Road Project**

As clearly presented on the descriptive analysis most of the respondents agreed with the project status reporting practice statements. This implies that the projects have effective status reporting system. The document analysis also corroborates this. Every month the consultant prepares a monthly progress report that contains progress of the work with the aid of bar charts and s-curve, narrative report of the progress of work, and site meeting held and key correspondences which will be send to the client for a review. Moreover, these progress reports include information such as activities completed, percentage of work completed, meetings held, start and completion dates, and problems encountered... Furthermore, actions taken to alleviate or mitigate problems are included in the report, which is a positive trend that should be encouraged. The analysis results of the survey data also support the existence of good project status reporting practice. Respondents on average agreed on the statements predicting effective project reporting practice. From the correlation analysis it can be conclude that project status reporting practice have a positive effect on project success of the projects under the study ($r=0.289$, sig value= 0.031). The linear regression analysis results also implies that project progress reporting practice have a positive significant effect on project success with (β value= 0.576 with Sig. value= $0.021 < 0.05$). Therefore the hypothesis

H₂; Project progress status reporting practice has positive significant effect on the project success is supported by sufficient evidence at 5% significance level.

- **The effect of project status meeting on project success in Koye Feche Condominium Housing Road Project**

As for the project status meeting practice of the projects, respondents moderately agreed with the project status meeting practice indicator statements which implies that there is less satisfactory (weak) practice of project status meeting on both projects. But From the correlation analysis it can be conclude that Project status meetings have a strong positive relationship with project success ($r=0.669$, sig. value= 0.000). The linear regression analysis results on the other hand showed that project status meeting practice have a positive significant effect on project success with (β value= 0.817 with Sig. value= $0.000 < 0.05$). Therefore the hypothesis H₃; Project status meeting practice has positive significant effect on the project success is supported by sufficient evidence at 1% significance level.

On the contrary some the interviewees argue that Monthly progress meeting among clients Representative, the resident engineer, Assistance Resident Engineer, Project Manager and , Assistance Project Manager are as well as other concerned staff of each parties is held to evaluate progress of the project, programming and for agreeable settlement of outstanding issues. From the document review it is observed that the quality assurance and quality control manual of the projects sates that Site meeting shall be made at regular time table however, at times; it can also be made accidentally as required for close follow up of the construction activities. Participants are the resident engineer and the project manager including responsible staff of the consultant as well as the contractor. The site meeting shall be made every week at a convenient time and place. During the weekly meeting, performance and problems encountered during the week shall be discussed for a better planning and performance in the coming week. The interviewee from AACRA also indicated that accidental site visits and meeting are among the monitoring practices they use.

- **The effects of project documentation practice on the project success in Koye Feche Condominium Housing Road Project**

In the assessment of the project documentation practice of the projects, respondents on average agreed with the project documentation practice indicator statements which imply that there is good practice of project documentation practice on both projects. However the

correlation analysis shows that project documentation has no significant effect on project success. ($r=0.024$, sig value= 0.861). The linear regression analysis results also showed that project documentation practice have a positive significant effect on project success with (β value= 0.184 with Sig. value= $0.031 < 0.05$). Therefore the hypothesis H_4 ; Project documentation practice has positive significant effect on the project success is supported by sufficient evidence at 5% significance level.

From Table 12 it is observed that 82.2% of respondents agreed that documentation will be created at the start of the project and updated at regular meetings and 89.2% of the participants agreed that the time scale, budget, and customer requirements of each project are clearly defined and documented.

From the observation made through document analysis, it was found that all the correspondences made, minutes of meetings, monthly reports, quarterly reports and annual reports were documented both in hard copy and soft copy. Also the projects contract document and other specification documentation were available for the reference and to make fast decision for issues. All the findings show that there is an effective practice of documentation.

- **The Project Monitoring and Project Success**

The survey data analysis on the project success indicating statements shows that with a mean value of 3.303 the projects are partially successful. The interview data also indicates that the projects met the specified quality and didn't face any cost overrun but the projects have faced delay. Other factors may have influenced the schedule of the projects which can be an area for future researches.

When asked about the effect of monitoring on project success an interview respondent answered, when a project is administered and monitored well its success is highly efficient and effective conversely its success is adversely affected when it is not monitored well.

Monitoring the day to day progress of a project will contribute to its timely completion, but we don't have to solely focus on the monitoring aspects, the action we take after we encounter a problem of dalliance or defects is also important for project timely completion.

5 Conclusion and Recommendation

5.1 Introduction

The researcher summarizes the research findings and draws conclusions in this chapter. The research findings are in line to the research questions and objectives. In this chapter, the researcher also made recommendations and suggested future research areas.

5.2 Conclusion

The study concludes that Koye Feche Condominium Housing Road construction projects (project 11 & project 18) have effective project progress tracking; progress reporting and documentation practice however the projects status meeting practice is weak. The study also concludes that there exists a good project monitoring practice which contributes to the partial success of the project. It is said partial because the projects faced a schedule delay and only the success parameters cost and quality were met.

From the linear regression analysis it can be concluded that project progress tracking, project status reporting, project status meeting practice and project documentation practice have positive significant effect on project success.

5.3 Recommendation

Based on the summary of major findings and conclusions the researcher has made the following recommendation.

- The contractor's should update project progress monitoring plan and keep up with efficient tools for effective monitoring practice.
- Project status meetings needs to be conducted on regular schedule and must be participatory between stake holders.
- Defining the tools and techniques to be used for project monitoring in detail on the contract document.
- Reports should get response (feedback) and decision from those concerned, and authorities should allocate of time and resource for validity and reliability of reports.

5.4 Limitation and Suggestion for Future Studies

Time was the biggest challenge on this research and due to that the study scope was limited to assessing only the project's monitoring practice in Koye Feche Condominium Housing Road Projects. Study the project monitoring practice together with project control practice would give a wider insight on the project. Therefore future researchers may consider both the project monitoring and project control practice and assess the effect on project success. Additionally there are many Housing road projects sites in Addis Ababa, increasing the unit of analysis can be another area of research in the future.

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Annexes

Annex I: Questionnaire

Addis Ababa University
College of Business and Economics
School of commerce
Masters of Arts in Project Management

Dear respondents,

Thank you for agreeing to take part in conducting the research under the title” The Effect of Project Monitoring Practice on Project Success: The Case of Koye Feche Condominium Housing Road Construction Projects.”

My name is Meseret Girma, currently pursuing my master's in project management at Addis Ababa university school of commerce. By assuring you that your information will be used only for academic research purposes and that confidentiality of your response is 100% granted, I kindly request you to answer the entire questions provided below believing that the quality of this research findings highly depends on your honest and accurate information. The Estimated time take is 10 to 15 minutes.

Thank you again for your generous time!

Meseret Girma

Email:Meseretyegirma@gmail.com

General direction:

- Please check that the paper has two sections and six pages
- Please do not write your name
- Please Put the "X" mark on your choice
- If you cannot get a satisfying choice among the given alternatives, please write your answer in the space provided at the end of the questionnaire.

1.	Assessment of project performance is regularly and continuously conducted from the beginning of the project to the end.					
2.	Tool and techniques for project progress tracking is well assessed, selected, and implemented (millstone review)					
3.	Participatory review and progress review meeting (status meeting) approaches are used to determine performance					
4.	The actual Projects progress on schedule, cost, and quality regularly compared against the planned schedule, cost, and quality to check variance					
5.	Personnel is assigned who can monitor changes in the project					
6.	There is an expert for internal and external monitoring and controlling processes.					
7.	There is effective project status/progress tracking practice or System					
Statements on project status reporting						
8.	There is a well-defined and structured reporting procedure.					
9.	Project status reports are regularly Conducted					
10.	Project status reports are timely,					

	complete, accurate, clear, up-to-date, and simple to understand					
11.	Tool and techniques for project status reporting are well assessed, selected, and implemented					
12.	Internal Project status updates Conducted within reasonable intervals					
13.	Project status reports shared among all stakeholders and team members					
14.	Project status updated data are available to track projects and their performance, to identify problems early (to give an early warning system)					
15.	There is an effective project status reporting practice or system					
Statements on project status meeting						
16.	Project status meeting is conducted regularly with reasonable time interval					
17.	Project status meetings are efficient and effective					
18.	In the meeting, all participants have adequate information about the status of the project					
19.	The minutes of the meeting are well documented for future reference					
Statements of documentation						
20.	Documentation will be made at					

	the beginning of the project and continue to be updated on regular Meetings					
21.	The time scale, budget, and customer requirements of each project are clearly defined and documented.					
22.	Project progress reports and meetings are well documented					
23.	Requirement for any project changes are well documented					
24.	Decisions to approve or reject changes are well documented					
Statements of project success						
25.	Project under your supervision/ management has been completed on or below the planned budget					
26.	The project under your supervision/ management has been completed within the expected time frame					
27.	The project under your supervision/ management has been completed according to the planned quality					
28.	The project under your supervision/ management has been completed with user satisfaction.					

Thank you for your valuable time and assistance!

Annex II: Interview Guide

Project Monitoring Practice Interview Guide

1. Work History

- a. Role
- b. Experience
- c. Educational background
- d. Specialization

2. Project monitoring practice

- a. Describe the project monitoring practice employed in the project.
- b. What types of project monitoring practices are being used?
- c. Are the tools, techniques & systems defined in the contract document?
- d. Is there an assigned responsible organization or personnel for the monitoring process of this project?
- e. Is the monitoring practice participatory?

3. Project success

- a. What are your project success parameters for this project?
- b. How do you relate project monitoring and project timely completion?
- c. Is the project on the planned schedule, budget & expected quality?
- d. How do you see the effect of monitoring on project success?

4. Concluding questions

- a. What are the major challenges you face in project monitoring practice?
- b. Is there any mechanism for a lesson learned?

Please forward any additional comments (ideas) you have on the practice of project monitoring process in the housing road projects undertaken by AACRA.

Annex III: Sample Weekly Progress Tracking Excel Sheet

WEEKLY REPORT-Project 11 - 20220603 - Microsoft Excel (Product Activation Failed)

File Home Insert Page Layout Formulas Data Review View Foxit PDF

Clipboard Font Alignment Number Styles Cells Editing

99%

	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q	R	S	T	U	V	W	X	Y	Z	AA	AB	AC	AD	
13									Clearing	Top stripping	Earthworks	Platform	Capping Layer	Subbase	Base Course	Cobble Stone	AC	Remark													
14		ACTUAL							1	2	3	4	5	6	7	8	9														
	ROAD ID	From	To	Activity	ID	% Completed to date	LENGTH (km)	5.22	5.22	5.00	4.65	4.11	3.21	0.00	2.41	0.00															
15																															
16	R1	0+000	0+200	Clearing and Grubbing	1	0%	0.20	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	AC													
17	R1	0+200	0+240	Earthworks	3	50%	0.04	100%	100%	50%	0%	0%	0%	0%	0%	0%	0%	AC													
18	R1	0+240	0+903	Capping Layer	5	70%	0.66	100%	100%	100%	100%	70%	0%	0%	0%	0%	0%	AC													
19	R3	0+000	0+140	Clearing and Grubbing	1	0%	0.14	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	Cobble													
20	R3	0+140	0+214	Earthworks	3	50%	0.07	100%	100%	50%	0%	0%	0%	0%	0%	0%	0%	Cobble													
21	R4	0+000	0+230	Clearing and Grubbing	1	0%	0.23	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	Cobble													
22	R4	0+230	0+330	Earthworks	3	50%	0.10	100%	100%	50%	0%	0%	0%	0%	0%	0%	0%	Cobble													
23	R5	0+000	0+140	Clearing and Grubbing	1	0%	0.14	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	Cobble													
24	R5	0+140	0+220	Subgrade	4	90%	0.08	100%	100%	100%	90%	0%	0%	0%	0%	0%	0%	Cobble													
25	R5	0+220	0+430	Cobble Stone Pavement	8	99%	0.21	100%	100%	100%	100%	100%	100%	100%	0%	99%	0%	Cobble													
26	R5	0+430	0+460	Capping Layer	5	95%	0.03	100%	100%	100%	100%	100%	95%	0%	0%	0%	0%	Cobble													
27	R5	0+460	0+701	Cobble Stone Pavement	8	95%	0.24	100%	100%	100%	100%	100%	100%	100%	0%	95%	0%	Cobble													
28	R6	0+000	0+237	Cobble Stone Pavement	8	90%	0.24	100%	100%	100%	100%	100%	100%	100%	0%	90%	0%	Cobble													
29	R7	0+000	0+123	Cobble Stone Pavement	8	99%	0.12	100%	100%	100%	100%	100%	100%	100%	0%	99%	0%	Cobble													
30	R8	0+000	0+040	Capping Layer	5	60%	0.04	100%	100%	100%	100%	100%	60%	0%	0%	0%	0%	Cobble													
31	R8	0+040	0+370	Cobble Stone Pavement	8	99%	0.33	100%	100%	100%	100%	100%	100%	100%	0%	99%	0%	Cobble													
32	R8	0+370	0+407	Capping Layer	5	90%	0.04	100%	100%	100%	100%	90%	0%	0%	0%	0%	0%	Cobble													
33	R9	0+000	0+219	Cobble Stone Pavement	8	90%	0.22	100%	100%	100%	100%	100%	100%	100%	0%	90%	0%	Cobble													
34	R10	0+000	0+160	Clearing and Grubbing	1	0%	0.16	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	Cobble													
35	R10	0+160	0+320	Earthworks	3	90%	0.16	100%	100%	90%	0%	0%	0%	0%	0%	0%	0%	Cobble													
36	R10	0+320	0+520	Cobble Stone Pavement	8	99%	0.20	100%	100%	100%	100%	100%	100%	100%	0%	99%	0%	Cobble													
37	R10	0+530	0+770	Cobble Stone Pavement	8	99%	0.24	100%	100%	100%	100%	100%	100%	100%	0%	99%	0%	Cobble													
38	R10	0+780	0+980	Cobble Stone Pavement	8	99%	0.20	100%	100%	100%	100%	100%	100%	100%	0%	99%	0%	Cobble													
39	R10	0+980	1+220	Cobble Stone Pavement	8	99%	0.24	100%	100%	100%	100%	100%	100%	100%	0%	99%	0%	Cobble													
40	R10	1+220	1+260	Capping Layer	5	99%	0.04	100%	100%	100%	100%	99%	0%	0%	0%	0%	0%	Cobble													
41	R10	1+260	1+360	Cobble Stone Pavement	8	95%	0.10	100%	100%	100%	100%	100%	100%	100%	0%	95%	0%	Cobble													
42	R10	1+360	1+372	Capping Layer	5	50%	0.01	100%	100%	100%	100%	100%	50%	0%	0%	0%	0%	Cobble													
43	R11	0+000	0+080	Subgrade	4	98%	0.08	100%	100%	100%	98%	0%	0%	0%	0%	0%	0%	Cobble													
44	R11	0+080	0+260	Earthworks	3	46%	0.18	100%	100%	46%	0%	0%	0%	0%	0%	0%	0%	Cobble													
45	R11	0+260	0+360	Subgrade	4	98%	0.10	100%	100%	100%	98%	0%	0%	0%	0%	0%	0%	AC													

Ready

