EVALUATION OF MONITORING AND CONTROL PRACTICES IN MEGA PROJECTS OF ETHIOPIA: - *A CASE STUDY OF GRAND ETHIOPIAN RENAISSANCE DAM PROJECT (GERDP)*

BY

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Acronyms/ Abbreviation

GERD: Grand Ethiopian Renaissance Dam

FIDIC- is an acronym for the Federation Internationale des ingénieurs Conseils, often known as the International Federation of Consulting Engineers.

EPC- a type of construction agreement that is frequently utilized for large-scale projects that calls for the builder (the EPC contractor) to provide a turnkey project.

GD3: Genale Dawa

BSc: Bachelor of Science

KW: kilo watt

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Abstract

The aim of this study is to evaluate the performance of monitoring and control tools employed by Ethiopian Electric Power in mega hydroelectric projects particularly in Grand Renaissance Dam Project (GERDP). This study used a descriptive research methodology.

Basic monitoring and control tools and components used to evaluate the performance of the organization's practices range from enterprise environmental factors to initiation, and execution phases of the project life cycle.

The organization scored Low-performance level for tools in the initial phases such as; organizational readiness and integrating M&C design with an initial project plan. The performance comparatively improved to a level of Good for M&C tools in detail planning and execution, and for outputs of the M&C system. The relative progressive change in the performance level of the monitoring control system can be aligned to critical decisions made by higher management based on findings of monitoring and control in the execution phase.

The absence of a permanent monitoring team, failure to use software for monitoring, government intervention in project management practices, lack of skilled manpower for technical and professional project management, and corruption are the main problems identified.

The organization scored good results in using M&C tools such as; communication standards and procedures, working jointly with its partners, and quality-related measurements of output, and the knowledge gained from these actions should be documented and applied in the future.

A monitoring system for EEP should be established concurrently with the overall project's inception, planning, and schedule. To improve the overall performance of the monitoring system the organization should start change from the very beginning stage which is at organizational readiness level, and then the monitoring system can perform better in subsequent stages. To reduce the organization's shortage of trained labor, employees should receive ongoing project management training.

CHAPTER 1; INTRODUCTION

1.1 Background of the study

The monitoring and controlling process group includes the procedures required to oversee the performance of the project. These procedures also assist in identifying any places where the plan needs to be modified and in initiating such changes. The process of monitoring involves acquiring data on a project's performance, developing performance indicators, and disseminating performance information. Controlling includes, among other things, comparing actual performance to planned performance, examining differences, finding trends to drive process improvements, considering potential alternatives, and taking remedial action where appropriate (PMI 2017).

The main task of the evaluation and monitoring process is the ongoing collection of data and its review to see if advancement is being made towards predetermined goals and objectives. Three steps are used in the controlling process; to gauge progress towards a goal, assessing what needs to be done, and taking the appropriate corrective action to meet or surpass the goals (Kerzner, 2009). When we look at M&E in the context of (UNICEF, 2006), we see that it has been a critical performance management tool for planning, decision making, and economic policy management (Wuletaw A.2021).

In its analysis of Ethiopia's country strategic plan (2020–2025), the World Food Program (WFP) acknowledged that the Ethiopian government faces difficulties in institutionalizing and coordinating monitoring, evaluation, accountability, and learning systems. These difficulties include difficulties in defining and clarifying roles and leadership, aligning and coordinating among sectors and actors, and developing internal staff capacity (Abayneh L.2022). The Ethiopian government began building hydroelectric dams after realizing the value of affordable energy as a catalyst for industrial and economic growth. The Ethiopian government has constructed several big hydroelectric projects, including Gibe 3, GERD, GD3, and the

Koysha hydropower dam, to meet its strategic objective. Hydropower projects Gibe1, Gibe2, Gibe3, and

Genale Dawa3 are now in use. The hydropower projects Koysha and the Grand Ethiopian Renaissance Dam (GERD) are now in the development phase.

The Grand Ethiopian Renaissance Dam project is a civil engineering project by now being built on Blue Nile River in Ethiopia. Engineering, procurement, and construction (EPC) contractor SaliniImpregilo SpA was chosen by Ethiopian Electric Power (EEP).The Italian firm Studio Ing. G. Pietrangeli is in charge of designing the civil works.

Information presented below describes status of the projects in 2019.

Table 1.1 Status of Mega projects; Survey findings (Dawit Y.2019

Project Name	Estimated completion duration	Project durationat the study concerned	%complete d at study concerned	Planned for value the specified	Actualcost the for specified progress	Budget at project completion	Estimated to cost complete	Estimated to time complete
Gibe 3	5 Years	8.3 Years	100%	1.47 billion Euro	1.55 billion Euro	1.47 billion Euro	done	done
GERD	5Years	8Years	65%	52 billion birr	150 billion birr	80 billion birr	228.6 billion birr	12.5years
GD3	4Years	9.3Years	99.5%	48.75 mill. USD	582 million USD	451 million USD	584.955 mill. USD	9.5 years
Koysha	5 years	3.5 years	-	-	-	2.5 Billion Euro	-	-

EPC contract management is frequently challenging and demands specialized skill and experience. Everyday interaction between design, procurement, and construction staff brings concerns to the surface before design rework or before building is under way PMI (2017). A crucial success component is packaging design in the order that will support the construction effort. Research, studies, design, and construction are all crucial stages of a large hydropower project and are all produced concurrently as part of the fast Track implementation technique.

The Fast Track strategy was successfully applied to three Ethiopian projects, 420 MW Gibe II, 460 MWW Beles multifunctional, and 1,870 MW Gibe III, proving that the method offers a significant reduction of at least 50% of overall project implementation time and full control of project cost. The largest scheduling challenges for GERD are caused by the size of the accompanying works and their remote location (Bruno f, et al. 2015).

The researcher who is carrying out this study has experience with this project and has had the opportunity to see how the project monitoring techniques employed there effect the daily project management and the overall development of the project.

In light of the aforementioned argument, This study's objective is to assess the effectiveness of the monitoring and control procedures used by EEP (Ethiopia Electric Power) using the following elements: organizational readiness, the degree to which M&C is integrated into the evaluation of the entire project, and analysis of outputs.

1.2 Background of GERD project

The upper Blue Nile River water resources development plan was developed by the Bureau of Reclamation of the US Department of the Interior, which included a Border dam location, in the 1960s. The research and plans remained in place after that until 2010 when Salini-Impregilo and Studio Pietrangeli picked up their site investigations and studies (Bruno F. et al. 2015).

One of the biggest contributors to the production of renewable energy is recognized to be large-scale hydropower dams. Ethiopia Electric Power has decided to play a significant role in opening up renewable energy sources to regional markets, expanding cross-border electricity trading with neighboring countries and even further to other nearby countries, and enhancing regional and continental economic growth through the development of untapped hydropower and other renewable resources for electricity through the implementation of various mega

projects (Dawit Y.2019). The project is located 750 km by road from Addis Ababa (through Debre Markos and Changii) within the Abay River Basin in the western portion of Ethiopia. The reservoir spans three administrative zones and ten Weredas. The GERD scheme's dam, penstock, powerhouse, switchyard, construction camps, and access road are all being built, but all of the related work is being done in a region that is under the control of the Sirba Abay Wereda of Kamashi Zone of the Benshangul Gómez Regional State. EEP, which was founded in 2013 by Council of Ministers Regulation No. 302/2013, is in charge of producing, transmitting, and wholesale energy that will be used both domestically and in neighboring nations. The majority of technical development studies in the electricity sector are also carried out by EEP, which is regarded as the project's owner (client) in this study. The first storage dam, known as GERD, is being constructed on the main Blue Nile, upstream of the Roseires reservoir (located in Sudan), not far from the USBR's border crossing. Construction was in full swing in 2011 (Bruno F.et al 2015).

Figure 1.1 location of Grand Ethiopian Renaissance Dam.

1.3. Statement of the problem

The primary source of electricity for Ethiopian Electric Power has been hydropower-generating projects. The Ethiopian government built the hydropower projects Gibe1, Gibe2, Gibe3, and Genale Dawa3 in order to carry out the strategy, and all of them are currently operational. The hydropower projects Koysha and the Grand Ethiopian Renaissance Dam (GERD) are now in the development stage. With a 40-month delay from the anticipated completion date and an 80 million euro cost overrun, the Gibe3 hydropower project was finally finished in 2016 (Dawit A., 2019).

There may be significant variances between the actual performance and the projected performance during project planning. These deviations can have a wide variety of causes; including internal factors relating to the organization's monitoring procedures as well as external factors over which the company has little to no influence. One of the biggest causes of project delays is improper project monitoring procedures, and project delays have always costs. According to www.ena.et/web/eng/w/en_15607, the total economic costs of delays in the Grand Ethiopian Renaissance Dam (GERD) are anticipated to be more than six billion dollars annually.

In order to accomplish a nation's vision and goal, government and state organizations can improve how activities are carried out with the aid of powerful management tools like monitoring and evaluation.

The success of a project is greatly influenced by effective monitoring and evaluation, which is also essential to achieving the project's goals (Charles Guandaru Kamau and Mohamed, 2015). According to research by Wondwosen Y, (2021), the majority of Ethiopian initiatives and organizations lack a formal monitoring and evaluation department or unit. On the other hand, a trend toward employing monitoring and evaluation for the successful implementation and control of projects is unsatisfactory in some Ethiopian organizations with M&E systems. Even

when there is an M&E program or unit within the organizations, the practicality issue is the main problem.

Monitoring and evaluation are not part of a culture and not adequately used when public sector initiatives implemented in Ethiopia (Wuletaw A.2021).

Little is known about the M&E of mega projects in Ethiopia as the majority of studies conducted are on M&E of non-industrial and they are not on mega projects (Ayalew et al., 2016; Mengistu & Mahesh, 2019). Consequently, this study aims to evaluate the performance of monitoring and control practices implemented in mega hydroelectric projects, specifically in the Grand Renaissance Dam Project (GERDP).

1.4 Research Question

I. What is the effectiveness of the monitoring practices used by EEP in GERD?

II. What is the performance level of M&C tools and practices implemented in GERDP?

III. How have the M&C tools and practices used in GERDP integrated with overall project planning.

1.5. Objective of the Study

1.5.1 General Objective

- This study's goal is to evaluate the effectiveness of the monitoring and control procedures used by EEP in large-scale projects, particularly the Grand Renaissance Dam Project (GERDP).

1.5.2 Specific Objectives

- To analyze basic failures and successes of monitoring and control practices in Grand Renaissance Dam Project (GERDP).
- To evaluate the performance of M&C tools and practices implemented in GERDP.

- To measure the level that the M&C tools and practices integrated with overall project planning.

1.6 Definition of Terms

EPC- a type of construction agreement that is frequently utilized for large-scale projects that calls for the builder (the EPC contractor) to provide a turnkey project.

Contract- a contract between two or more parties that specifies what they will or won't do.

FIDIC- is an acronym for the Federation Internationale des ingénieurs Conseils, often known as the International Federation of Consulting Engineers.

GERD- represents the Grand Ethiopian Renaissance Dam.

Procurement- is a tactical procedure that focuses on locating and getting affordable things.

Turnkey project- projects where the supplier or provider is accountable to the client for the final product and delivers it to them fully finished and ready to use.

Contractor- A person or business that accepts a contract to provide materials or labor for a building's construction

Monitoring and Control; the process of tracking, reviewing, and controlling project activity order to fulfill the performance goals set in the project management plan.

1.7 Significance of the study

Project delays usually have a cost. The GERD project was expected to be completed in July 2017, however today six years after the planned completion date, the project's status is at 90%. Preliminary economy-wide Analysis of the cost of delaying the GERD estimated to be 41.7 billion dollar for five year (www.ena.et/web/eng/w/en15607). Improper project monitoring and control practices are amongst the main factors for delay of projects.

Findings and recommendations of this project work will help to understand appropriate monitoring and control practices which will be used in mega projects in future. Lastly this

research will help and initiate future researchers working to explore best monitoring practices that will benefit both contractor and client involved in mega projects.

1.8 Scope and limitation of the study

This study focuses on examining the monitoring and control parts of project management, which are the primary determinants of project success, rather than the performance of GERD's project management overall. The research is limited to examining and measuring the performance of monitoring and control practices used in GERD against basic monitoring and control tools selected. As the project under examination in this study is in the progress of construction there are no well-organized reports on leanings of management of the project hence contract agreement and progress reports are the main source of secondary data. Due to the nature and remoteness of the project, the number of key informants was limited as they are working on-site.

CHAPTER 2; LITERATURE REVIEW

2.1 Introduction

The literature review conducted in this chapter covers both theoretical and empirical elements and served as a guideline for the study. I have tried to concentrate on representative literature which discuss on project monitoring and control.

2.2 Theoretical Review

2.2.1 Overview of Monitoring and Controlling

According to (Robert K. W. 2014), monitoring progress and performance is all about reporting the progress and performance of one or more suppliers. You shouldn't expect a vendor to handle their own reporting. The vendor should be considered as a part of the project team. Vendors are also subject to the activities of obtaining status updates from project participants and holding project reviews to talk about development, dangers, issues, and further duties. Monitoring the request for a requirement change is one of the most crucial factors to take into account.

The main task of monitoring is assessing, and reporting overall progress in order to achieve the performance goals specified in the project management plan. The key benefit of this approach is that it allows stakeholders to understand the current project state and identify the steps taken to address any performance issues while also providing visibility into the future project status with cost and schedule predictions. In line with PMI (2017) a monitoring and evaluation system is made up of a number of connected tasks that must be carried out in unison in order to plan for M&E, gather and analyze data, provide information, and support decision-making and the implementation of improvements.

All initiatives in a dynamic setting are likely to alter as conditions change and as individuals gain knowledge during the design and execution phases. Project managers need the support of senior management to prevent "scope creep," which is the propensity for more items to be added to a project after people have agreed on the specification. The issue of project escalation, in which initiatives seem to use increasing amounts of resources while showing less and fewer signs of delivering the desired objectives, is also a result of inadequate monitoring (Drummond, 1996).

Process group involved in monitoring and control includes;

- Assessing modification needs and selecting the best solution;
- Advising remedial action in advance of potential issues;
- Maintaining a comparison between the continuing project operations and the project's baselines; and
- Having an impact on variables that could go around the change control procedure to ensure that only approved changes are put into practice.

Effective monitoring emphasizes results and follow-up, according to a study conducted in World Bank Projects. The other key characteristics of good monitoring are as follows. It focuses on "what is going well" and "what is not moving forward towards the intended results." The second monitoring premise is that effective design is essential. Even the best monitoring practices may not ensure a project's success if it is poorly conceived. The creation of a "realistic results chain of outcome, outputs, and activities" is crucial in this case. The third one is the routine check-in on the status of the work being done by CO employees and the Project Manager, which focuses on results and follow-up to confirm and validate progress (Wondwosen Y. 2021).

2.2.2 Result based management (RBM)

RBM is a program/ project management methodology that is built on results that are precisely specified, as well as the procedures and tools needed to measure and realize them. Designing, managing, and evaluating an intervention with a focus on the objectives you wish to achieve requires the use of a simple, logical structure. RBM supports better performance and greater accountability. RBM's monitoring and evaluation (M&E) process is essential. It serves as the

framework for transparent and accurate reporting on the accomplishments of a project. Results-based management handbook (UNDG) monitoring provides the opportunity to:-

- Check if the presumptions stated throughout the planning process are still valid.
- Determine whether the initial plans are still effective and whether they should be kept or changed;
- Craft the necessary changes to your financial and human resources.
- Monitoring and assessment typically involve financial data related to the Project. This makes it possible to evaluate a project's costs and advantages and choose the intervention that will yield the best rate of return.

2.2.3 Performance Management Systems and Performance Measurement

Performance management is a strategy that centers its efforts on transforming how firms operate around greater performance (better results). More specifically, creation of performance information is the focus of performance measurement (performance monitoring). It focuses on identifying indicators, setting targets, and gathering and examining data on results. Typically, results-based management systems include seven stages.

- **Seven steps of Performance management systems:**

I. **Creating objectives**; entails stating the desired outcomes in precise, quantifiable language and creating a conceptual framework for how they will be attained.
II. **Identifying indicators**: detailing precisely what will be measured along a scale or dimension for each target.
III. **Setting goals**: Identifying the expected results for each indication that must be attained by particular dates in order to be utilized as a performance indicator.
IV. **Results monitoring**: creating methods for tracking performance and gathering information on results on a regular basis.
V. **Reviewing and reporting Results**: Assessing Actual Results in Relation to the Objectives (or Other Performance Criteria)

VI. **Integrating assessments**: performing evaluations to get data that performance monitoring systems do not provide.

VII. **Utilizing performance data:** Making informed decisions, learning inside the company, and accountability utilizing data from monitoring and assessment.

2.2.4 PERFORMANCE INDICATORS

All project management advice includes a method for keeping track of how well things are doing relative to the initial plan. With the use of this knowledge, people may be able to maintain short-term control by modifying project operations in light of changing conditions. It can be equally beneficial as a source of knowledge to enhance performance on next initiatives (David B. 2014). Performance indicators are brief, readily trackable quantitative and qualitative measurements of program performance. Quantitative indicators track changes in both a percentage and a certain value (such as a number, mean, or median). Qualitative indicators shed light on alterations in people's attitudes, beliefs, motivations, and behaviors. Although crucial, gathering, measuring, and analyzing data on these indicators takes more effort, particularly in the early phases of a project's execution.

Indicators are hints, cues, or signals that gauge a program's performance in a particular area and reveal how close it is to achieving its goals. They serve as milestones for showcasing a program's accomplishments. Choosing the right indicators is one of the most important phases in building an M&E system. The indicators that will be used to track project implementation and goal and objective achievement should be described in the M&E strategy.

- ❖ Selection criteria for indicators;

•**Relevant**; Indicators must be representative of the most important aspects of implementation and of the outcomes and impacts intended.

•**Clear**; Indicators must be unambiguous and clearly defined in the project's context, and in a manner understood and agreed by all stakeholders. Any adjectives used to describe the qualities of an indicator need to be precisely defined.

•**Specific**; Indicators should measure specific changes, and be specific to a timeframe, location and target, or other stakeholder group.

•**Measurable;** there must be practical ways to measure the indicator, either in quantitative or qualitative terms, that are within the capability of the monitoring organization. It must be possible to collect process and analyze data in time and within budget.

•**Consistent**; the values of the indicators should be reliable and comparable over time when collected using the same methods. This is more likely when indicators are measured in a standardized way and with sound sampling procedures.

•**Sensitive**; Indicators should be sensitive to the expected changes. It is especially important that leading indicators are capable of revealing short-term movements. Indicators that require a long time series of values are practically useless for implementation decisions.

•**Attributable**; Based on an established or probable relationship expected to cause the intended change. In moving from inputs and outputs to outcomes and impacts attribution must typically rely less on direct observation of cause and effect and more on statistical evidence of change and its probable cause.

2.2.5 There are six primary parts of a project's M&E system

I. Specific and quantifiable objectives for the project and all of its parts.
II. A well-organized collection of metrics including inputs, procedures, products, effects, and external elements.
III. Tools for gathering data that can track advancement over time, such as baselines and ways to assess successes in relation to goals.
IV. In the event that it is appropriate, expanding on baselines and data collecting with an assessment framework and methodology that may prove causality (capable of attributing observed change to specific treatments or other variables).
V. Clearly defined procedures for reporting and incorporating M&E findings into decisions.
VI. Long-term organizational plans for data collection, administration, analysis, and reporting.

2.2.6 Common Types of Monitoring

a) **Results monitoring**; Monitoring and evaluation are combined in this instance to determine if the project is on track to create the outputs, results, and impacts it was intended to achieve as well as whether any unanticipated effects—whether positive or negative—may have happened.

b) **Process (activity) monitoring;** observes how inputs and resources are used, how activities are growing, and how goods are delivered. It examines how well activities are completed in terms of both time and resources.

c) **Compliance monitoring**; ensures compliance with ethical standards, grant and contract specifications, local governmental norms and laws, as well as donor requirements and desired outcomes.

d) **Context (situation) monitoring**; monitors the project's environment, specifically how it impacts the risks and presumptions that have been identified, as well as any unexpected issues that may arise. Along with the more broad political, institutional, financial, and policy framework, it encompasses the project's field.

e) **Beneficiary monitoring;** monitors the project's environment, specifically how it impacts the risks and presumptions that have been identified, as well as any unexpected issues that may arise. Along with the more comprehensive political, institutional, financial, and policy framework, it encompasses the project's field..

f) **Financial monitoring**; reflects costs by input and activity within pre-established categories of expenditure. It typically happens at the same time when compliance and process monitoring are being done.

g) **Organizational monitoring**; monitors the expansion of the Project's and its partners' institutional capacity and sustainability. It typically occurs in combination with the monitoring processes used by the larger, implementing organization.

2.2.7 Focus Areas of Project Monitoring

I. Project Physical Progress;

A. Measuring the activity's output in absolute terms. For instance, the quantity of wells built for a water supply project..

$$\frac{\text{Work Done}}{\text{Work Scheduled}} \times 100\ (\%)$$

B. **Valuing the yield** of the activity.

$$\frac{\text{Worth of work done}}{\text{T. Value of work scheduled}} \times 100\ (\%)$$

C. **Using time consumed** on the project/action.

$$\frac{\text{Time spent to date}}{\text{Total time to complete}} \times 100\ (\%)$$

II. Financial Progress /Expenditure/ Monitoring

The project manager will require a cost reporting and monitoring system to give information on real expenses once the budget has been created and the project has begun. We must determine from the information we have collected if the cost of the project's activities and outputs (for each component) has been in line with budget projections, less than the projections, or more than the projections. We can ask and provide answers to questions like the one above if there is a variant.

III. Project Quality Monitoring

Project managers are in charge of making sure that the products made or services offered by the program or project adhere to the criteria or guidelines set out in the project design. Project to project variations exist in quality monitoring.

In the event of physical building, a set system of oversight, testing, and comparison to the original specification will be in place.

2.2.8 Key M&C Terminology

Milestones; Important junctures in a project's lifecycle. a certain stage of the project by which a certain amount of progress was supposed to have been accomplished.

Inputs; The resources that will be utilized to carry out the project's activities and tasks, including people, money, knowledge, technology, and information,

Activities or tasks; the actions taken or the work performed as part of an intervention.

Outputs; these are the instantaneous effects of the project's actions. These outcomes may be felt directly by individuals who are the focus of the intervention.

Outcomes; these are the outcomes of an intervention that are seen in the short- and medium-term, and they typically call for collaboration amongst partners. Between the completion of outputs and the realization of impact, situations change, and these changes are represented by outcomes. As a result of a company simplification effort, there may be fewer steps or a lower registration fee. Evaluation of the results is customary.

2.3 Empirical Review

Research conducted by Abayneh L. (2022) outlined four major challenges of effective monitoring and control in sugar factory expansion projects in Ethiopia. The most challenging elements of institutionalizing a monitoring and evaluation system are stakeholder participation, tying monitoring and evaluation to objectives, and data management for monitoring and evaluation. The study discovered that data management for monitoring and evaluation, together with linking monitoring and evaluation to objectives, had a statistically significant beneficial influence on project success. An assessment study conducted by (Bezawit T. 2019) on construction projects contracted by Bamacon Engineering plc. Shows applied monitoring and control practices on projects. n M&E practices, monitoring of physical progress, technical progress, financial progress, and quality monitoring are used; monitoring of assumptions was not used on projects.

According to a study by Dawit Y. (2019), political influence to alter project scope and plans, lack of developing an integrated project management plan, inadequate project planning, inadequate project schedule management practices, and inability to develop project knowledge and project management methodology were identified challenges in project management of EEP.

Kotter (1996) recommended that successful monitoring requires adequate communication to take place. To influence people, project managers require powerful communication channels. In order to get resources, formulate and communicate the project goals, and gather data for monitoring and learning, they must be able to acquire ideas. They must engage in rigorous communication to get the cooperation of groups or functions over which they have little or no official power.

Doyle et al. (2000) found that communication remains problematic. This was especially notable in vertical and cross-functional.

According to David B. basic tasks of a project manager also depends on separate functions providing accurate information gathered from monitoring and control about current operations and likely future needs - otherwise, the most basic aspects of the project can be incorrectly designed. This takes time and commitment. Without that, other departments will not respond or will do so in an unhelpful way. When a project contains physically distinct procedures, it is more difficult to monitor and regulate occurrences. Knowing what is going on is more challenging, and it is simpler for things to go drastically wrong before the management notices them. The more a project depends on consistent action by separately managed functions, and the more distant these are, the more effort the project manager needs to put into getting their informed cooperation.

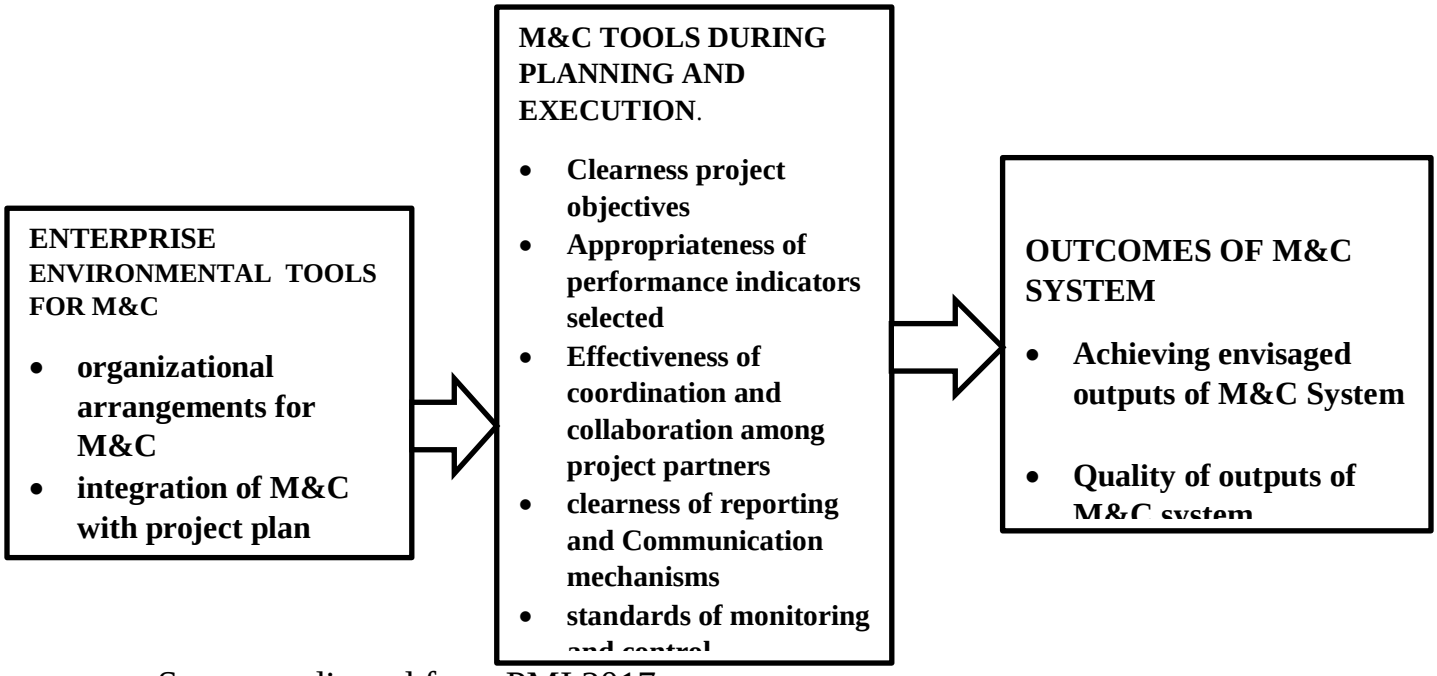
2.4 Research Gaps

Little is known about the M&E of mega projects in Ethiopia as the majority of studies conducted are on M&E of non-industrial and they are not on mega projects (Ayalew et al., 2016; Mengistu & Mahesh, 2019).Monitoring and evaluation are not part of a culture and not adequately used when public sector projects implemented in Ethiopia (Wuletaw A.2021).

This research conducted with an aim of filling the gap of unavailability well-established of monitoring and control system specially a system suitable for monitoring mega EPC projects implemented in fast-track scheme.

2.5 Conceptual framework

A monitoring and control system is composed of a number of connected tasks. Which start with organizational preparations including; developing project team processes, skill assessments, and lessons learned register. Activities must be undertaken in a coordinated way from institutionalizing the practice to proper planning for M&E, execution, and monitoring the output. In order to identify the least expensive way to accomplish the required goals, the design of an M&E system should begin concurrently with the planning and design of the entire project. It should also be exposed to the same economic and financial analysis. According to PMI (2017), the idea of project logic and logical framework analysis may serve as a guide for project M&E design. Whether stated expressly or implicitly, a solid project design will be built around a concise and comprehensible project plan. Measuring the level of enterprise environmental factors, the level of integration of monitoring and control practices with the initial plan, and evaluating the outcome is the intention of this study.



Source: adjusted from PMI 2017

CHAPTER 3-RESEARCH METHODOLOGY

3.1 Introduction

An outline of the research methodology for the study is provided in this section. The study's research design, questionnaire design, data collecting, sampling strategy, data processing and analysis, and instrument creation will all be covered in this chapter's discussion of methods and activities.

3.2 Research Design

The performance monitoring and control procedures employed by EEP, particularly in GERD projects, are carefully evaluated using a descriptive study design. Cross-sectional analysis was performed in the study since it allowed for the accumulation of all relevant data at a single point in time. The questionnaire, which was semi-structured and open-ended, provided the main primary data. Contractual clauses and project reports served as the primary sources for the secondary data.

3.3 Research Approach

Qualitative research technique has been used to collect, analyze, and interpret differing views of respondents and visually gathered secondary data to evaluate the performance level of chosen monitoring and control tools.

3.4 Sample Design

Due to the nature of their work and remoteness of the project’s location key informants (Project managers and site office engineers) of this study stay at project sites and this condition created additional challenges in getting adequate key respondents. In order to focus

the survey on a small number of key respondents and collect in-depth information respondents were selected purposively. For respondents at site, questionnaire was sent to using electronic means and communicated through mobile call before and after filled questionnaires received.

3.4.1 Target Population;

All employees of Ethiopian Electric Power constitute population of the study. The target population includes all full time employees of EEP at all levels. There have typically been 215 employees in EEP.

3.4.2 Sampling Frame

List of employees of Ethiopian Electric Power which include Managers, site engineers and coordinators, project engineers, Geotechnical engineers, supervisors, personnel officers, finance officers and administrative staff constitute the sampling frame of the study.

3.4.3 Sampling Unit

Individuals who took part in the GERD project's planning, design, procurement, construction, supervision, and contract administration activities are sample unit of this study is.

3.4.3 Sampling Technique

Purposive sampling employed in this study and criteria for selecting respondents were based on their technical, managerial background and level of involvement.

3.4.4 Determination of Sample Size

Using the formula presented by (Kothari2007), sample size was calculated.
As a result, the following formula is used to determine sample size:
Where: n= is the sample size for a finite population
Where: p=0.5 and
q=0.5 e=margin of error considered is 10% for this study

z=normal reduced variable at 0.05 level of significance z is 1.96

n= is the sample size for a finite population

N=215 is the number of workers in EEP

P=population reliability or frequency estimated for sample of size n.

$$n = \frac{0.5*0.5*(1.96)^2*215}{(215-1)0.1^2+((1.96)^2*0.5*0.5} = 5762.4/60.9504 = 94.54$$

n=68

3.5 Type of Data and Instruments of Data collection.

Both primary and secondary sources of information were used in the study.

3.5.1 Primary Data Sources

A structured, semi-structured, and open ended questionnaire distributed to people working in EEP who took part in the planning, design, procurement, construction, supervision, and contract administration activities of the GERD and related projects. Interviewing was not employed as a technique of data collection due to unavailability of several important respondents in Addis Ababa. Filled questionnaire with comments from respondents collected personally and using electronic communication means.

3.5.2 Secondary Data Sources

Contractual agreements and project reports make up a majority of the secondary data sources. In order to make the study successful, published and/or unpublished research papers, websites, and reports were evaluated.

3.6 Method of Data Analysis

The information was shown using a table and textually in the form of narrative descriptions. The replies are then categorized into primary themes using Microsoft Excel. The key topics and replies are then combined to determine the conclusion.

The data gathered through in-depth interviews, open-ended questions, and personal observations has been analyzed using the qualitative content analysis approach. To make analysis easier, the information gathered through observations and open-ended questions is presented in tabulations, graphs, and charts and explained using descriptive statistics like frequency and percentage.

The method of content analysis was applied. Given that the research is descriptive and systematic use of both qualitative and measureable data investigation approaches. To examine the data quickly, simple statistical methods like percentage, frequency, and tabulation have been utilized.

3.7 Instrument validity and Reliability

A well-designed survey questionnaire served as the finest tool for this investigation. Pilot testing was done to assess the validity and reliability using samples selected from nonparticipating individuals in the project under study. The principles of questionnaires, including the use of straightforward language, concise sentences, and proper punctuation, were taken into consideration when designing the questionnaire. Before the actual question on each questionnaire there is an explanation, which helps to provide the respondent with further context and ensures accurate data collection. The instruments used in this univariate analysis were created based on the research questions and study objectives, and they were then maintained in line with those objectives. Based on advice from the study's research adviser, the instrument's reliability and validity were examined.

CHAPTER FOUR- DATA ANALYSIS, RESULT AND DISCUSSION

4.1 Introduction.

49 out of the 57 questionnaires that were distributed were returned. One questionnaire was discovered to be unfinished and was thus disqualified. An analysis included the remaining 48 surveys, with an 86 percent response rate. Responses from open end questionnaires and information from secondary data sources were categorized and analyzed to identify their general trend.

4.1.1 Role and Level of Involvement of Respondent's

Information on the respondent's role and level of involvement in different phases of concerned projects was also collected and analyzed.

- **Site engineers include**; geotechnical engineers (Geologists), quality control engineers.
- **Supportive staff includes**; personnel officers, finance officers.

	Supervisor	Site engineer	Project manager	supportive staff
Role of respondents	7	16		15

Table 4.1.1 Showing Frequency distribution of role of respondents

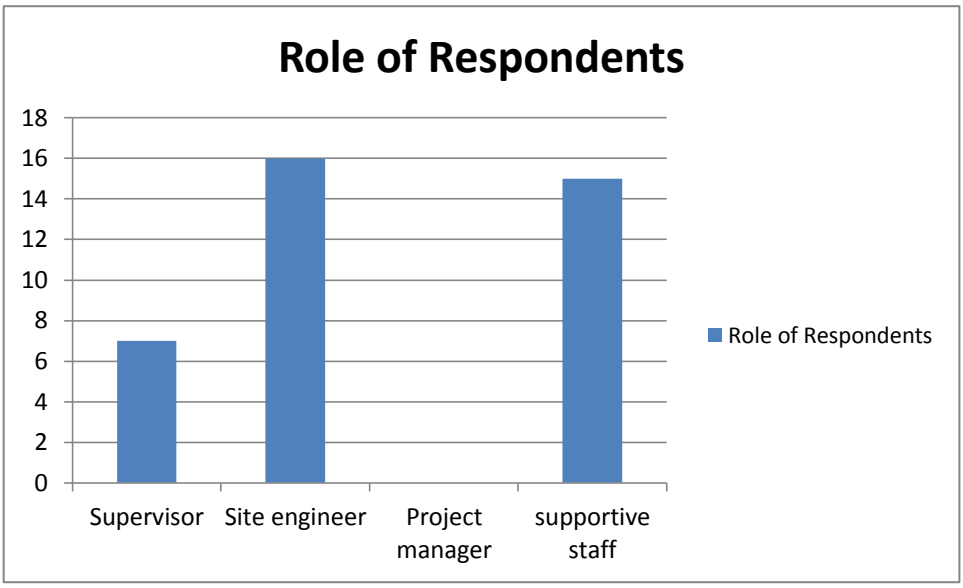


Figure 4.1.1 Graph showing relative number of roles of respondents

Phases of project	Level of Involvement			
	Not involved	Slightly involved	Moderately involved	Very much involved
Initiation of the project	7	28	9	
Planning of the project	15	31	4	
Monitoring and control of the project		16	22	10
Overall management of the project	15	19	9	5

Table 4.1.2 showing frequency of level of involvement of respondents at different phases of project

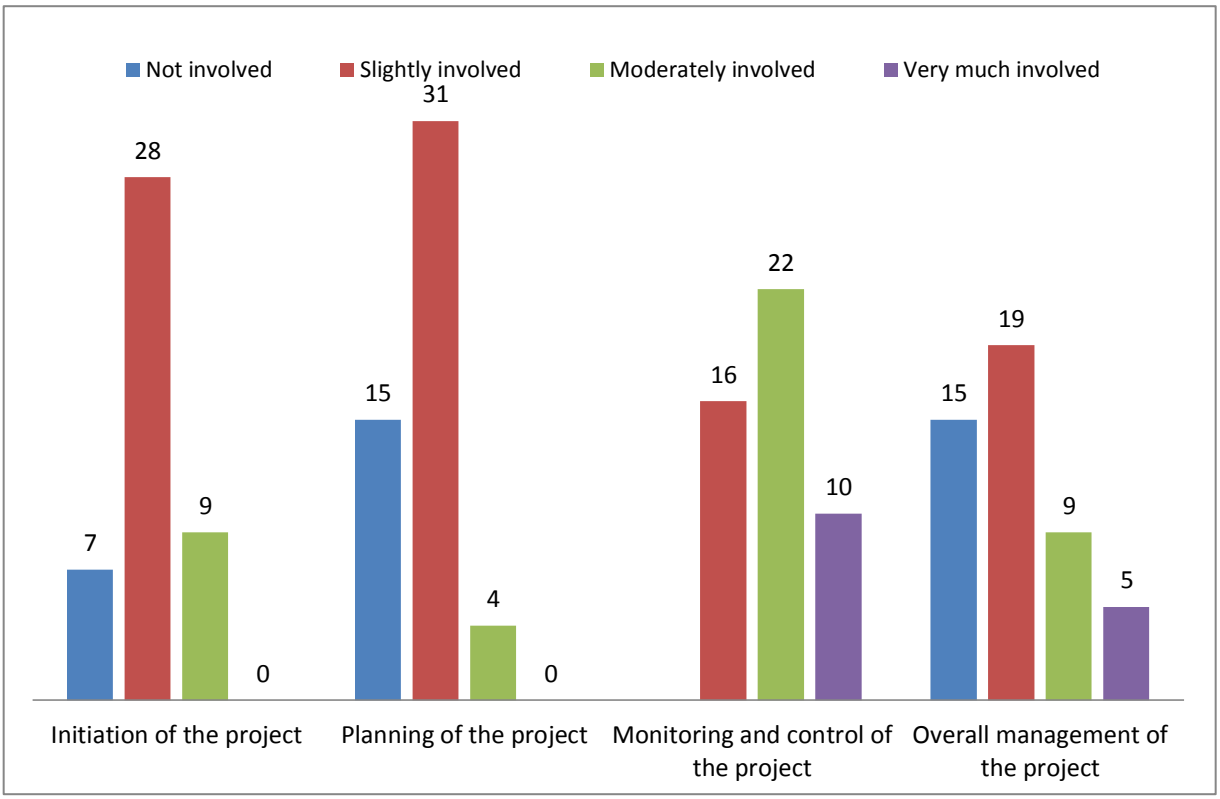


Figure 4.1.2 showing relative number of involvement at d\t phases of the project

4.2. **Primary Data from structured questionnaire and Secondary data**

To make data analysis simple frequency distribution of data collected from structured questionnaire presented in table below. Findings from observations from Secondary data collected from contractual clauses and performance reports which used to support the primary data presented in table and the finding was rechecked with findings of the primary data.

4.2.1 Primary Data from structured questionnaire

M&C tool evaluated	**Poorest**	**Low level**	**Good**	**Highest level**	**Remark**
Level of organizational arrangements for M&C	2	37	9		
Level of integration of M&C with project plan	1	35	12		
Clearness of M&C and project objectives		6	38	4	

Appropriateness of performance indicators selected		8	28	12	
Effectiveness of coordination and collaboration among project partners		11	33	4	
Level of Clearness of reporting and Communication mechanisms		5	34	9	
Level of monitoring and control standards		6	32	10	

Table 1.2.1 Showing frequency distribution of rates for tools evaluated

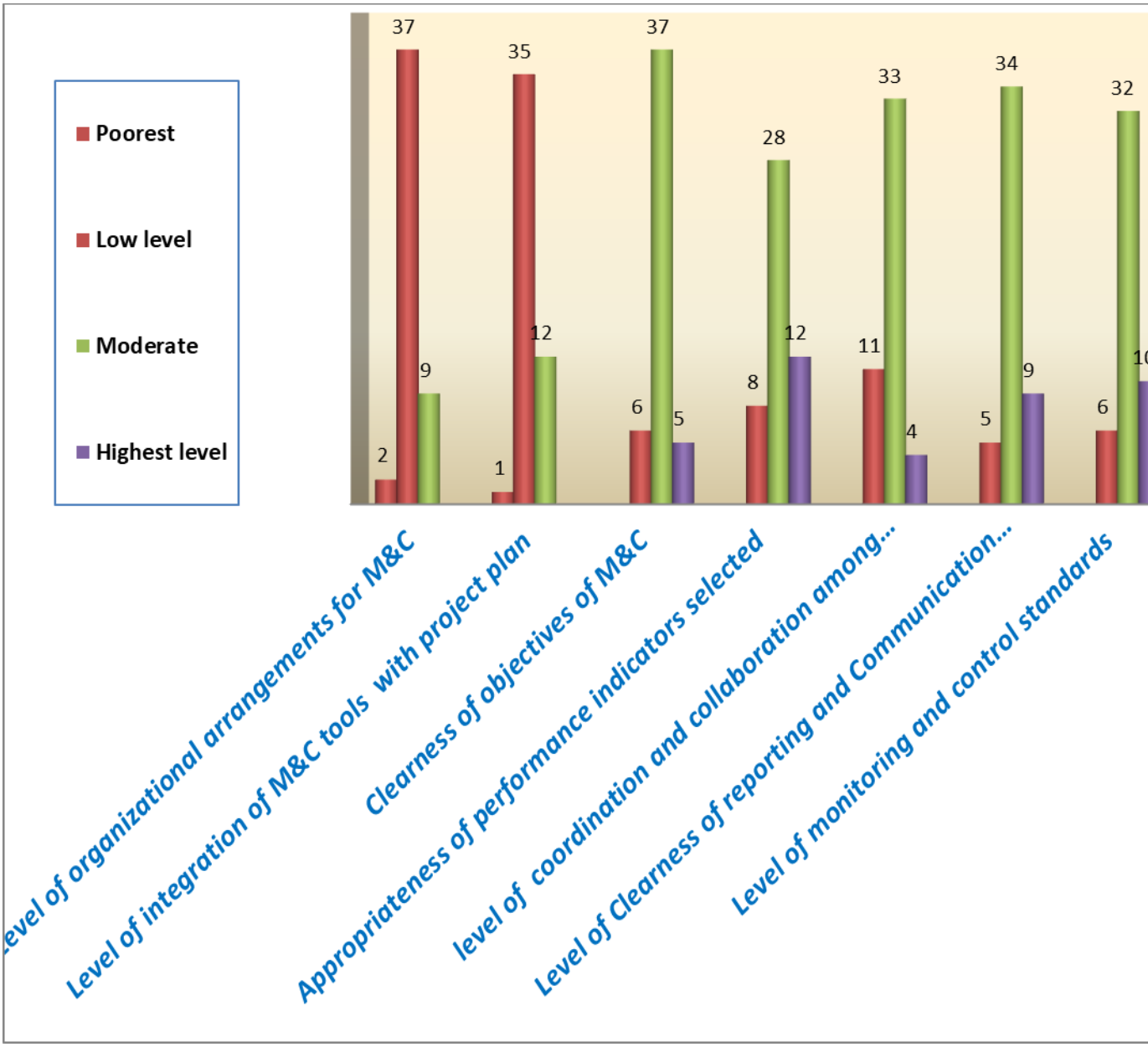


Figure 22.1 showing relative number of response for evaluated components of M&C

4.2.2 Secondary Data

In this section observations from contractual clauses and progress reports presented in table

Basic tool of M&C evaluated	Description in main contract agreement & section and page number in main contract agreement	Observation
Communication	Communication of approval, consents, determinations, notices and requests shall be; in writing delivered by hand, sent by mail, or transmitted using agreed system of electronic transmission as stated in the particular condition. 1.3 Communication p-1	Helpful to for M&C of time, type, and means of communication
Performance security	The contractor shall obtain (at his cost) a performance security for proper performance in the amount and currencies stated in particular condition. If an amount is not stated in particular condition, this sub-clause shall not apply. 4 .1 Performance security p-10	Very helpful to monitor the financial performance of candidate contractor from beginning
Quality Control	The contractor shall institute a quality assurance system to demonstrate compliance with the requirement of the contract. 4.9Quality Assurance p-10	This section is important to relate contract obligations with technical specification
Progress Reporting	Unless otherwise stated in the particular condition, monthly progress report shall be prepared by the contractor and submitted to employer in six copies. The first report shall cover the period up to the end of the first calendar month following the commencement month. 4.2.1 Progress report, page 10	During execution phase progress report is most used and helpful M&C tool; well used by the organization
Deliverables quality control	The design the contractor´s documents, the execution and the completed works shall comply with the country's technical standards, building construction and	The organization scored good in this component of M&C.

	environmental laws, laws applicable to the product being produced from the work. 5.4 Technical standards and regulation page 10	well explained tech. spec made the objective of M&C clear
Controlling quality of design document	The contractor shall submit samples to employer for review in accordance with the procedure for contractor's documents**.** Each sample shall be labeled as to origin and intended use in the work. **7**.2 Samples p-22	All Contractor documents to be evaluated before accepted; Helpful to monitor quality and legitimacy against local laws and standards.
Monitoring physical progress	The employer's personnel shall at all reasonable times; a. Have full access to all parts of site and to all places from which natural material obtained and b. During production, manufacture and construction be entitled to examine, inspect, measure and test the material and workmanship and to check the progress of production, manufacture of plant and material. Sec. 7.3 Inspection p-22	Monitoring and control activities need site visits by client team, this section help the team to collect information for their M&C process.
Controlling project outcomes	The contractor shall provide all apparatus, assistance, documents and other information electricity, fuel, consumables labor, material and suitably qualified and experienced staff as are necessary to carry out the specified test efficiently.; section 7.4 Testing p-23	Inspection and testing is common the quality of project deliverables
Controlling qualities of project end products	If, as a result of examination, inspection, test and measurement any plant, material, design or workmanship is found to be defective or otherwise not in accordance with the contract, the employer may reject the plant, material, design, or workmanship by giving notice to the contractor with reasons. Sec 7.5	This section of the contract gives the M&C team high power for everyday activities.

	Rejection p-23	

Table 4.2.2 Description in main project contract which relate the objectives of the M&C activities

4.3 Result and discussion

4.3.1 Level of organizational arrangements for project M&C

The plans, processes, rules, procedures, and knowledge bases that are unique to and utilized by the performing organization are referred to as organizational process assets (OPAs). These resources have an impact on how the project is managed. Respondents were asked to measure the level of organizational readiness to perform proper project M&C; 81% of respondents rated low level and 19% of respondents said good level. According to the findings, the organization does not have any written policies, and the project management office (PMO) or another department that is not involved in the project normally establishes processes.

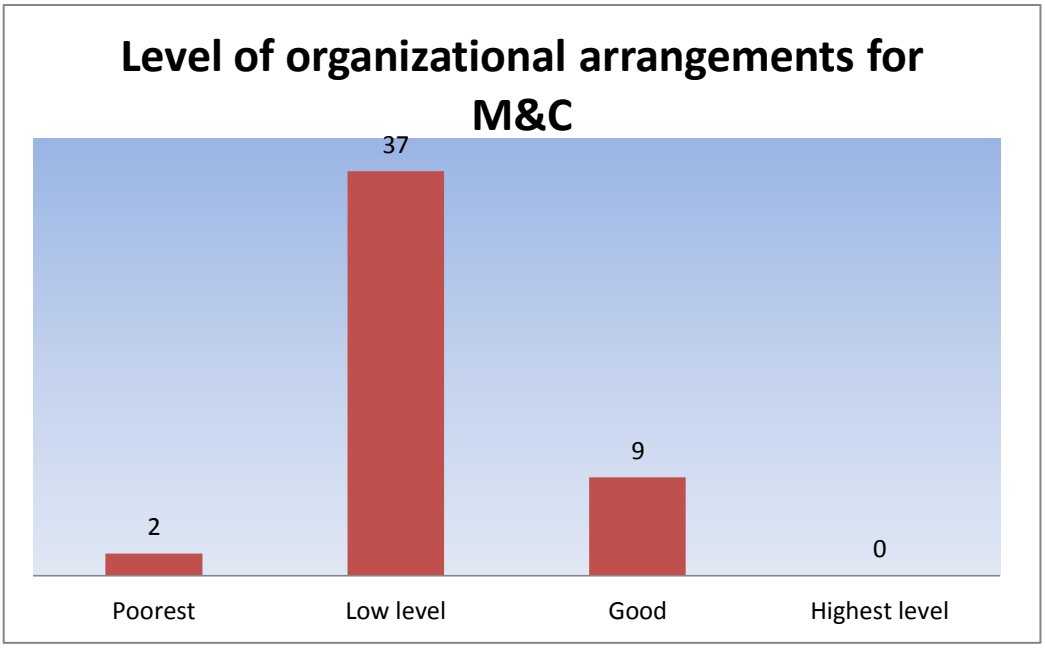


Figure 4.3.1 showing relative number of responses for different levels

4.3.2 Level of integration of M&C tools with initial project plan

The respondents were questioned regarding the integration degree of M&C. with the initial project plan; 75% of respondents said low level and 25% rated the organization good at this component. As the number of respondents who were involved during the initiation of the GERD project is small, secondary data was also used to support the evaluation of this component of M&C and the finding has been similar to the result of the analysis of primary data.

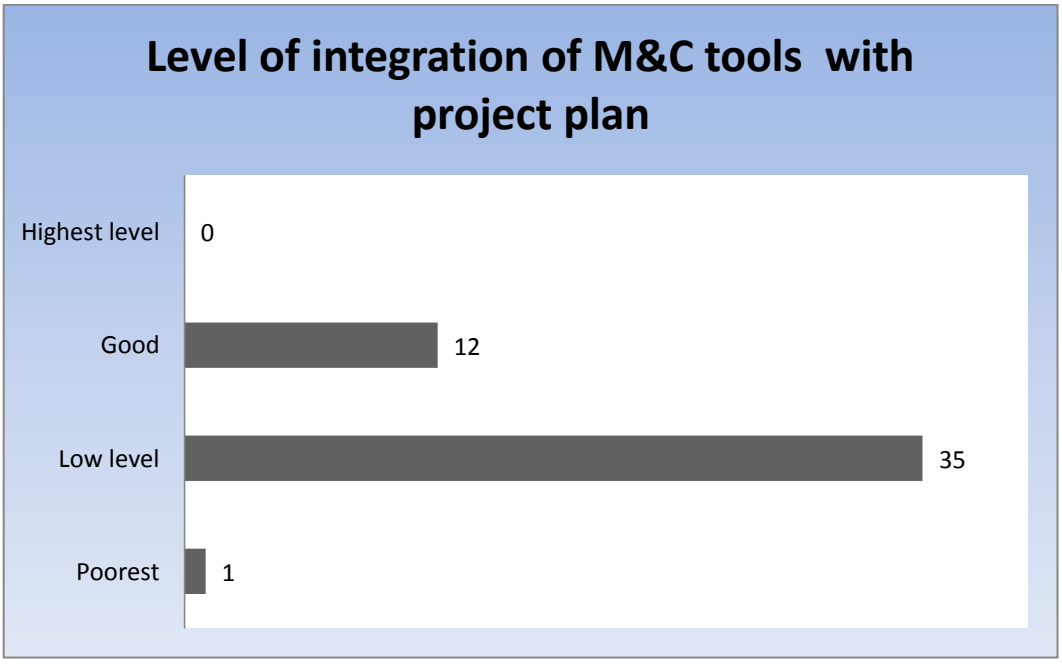


Figure 4.3.2 showing relative number of responses for different levels

4.3.3 Clearness of the M&C Objectives

Clear measurable objectives are important to determine the efficiency, legitimacy, and performance of the execution of the M&C process. The M&C process may be highly effective if the project team has defined objectives, is trusted to complete the work within the specified timeframes, and regularly reviews early warning indicators to spot emerging changes as soon as feasible..87% of respondent rate this component of M&C as good and above and the rest

13% rated this below good. This shows the organization has clearly defined objectives for M&C practices. This finding was also checked using secondary data, especially using the main contract agreement as the objectives of the M&C practices derived from the main contract agreement.

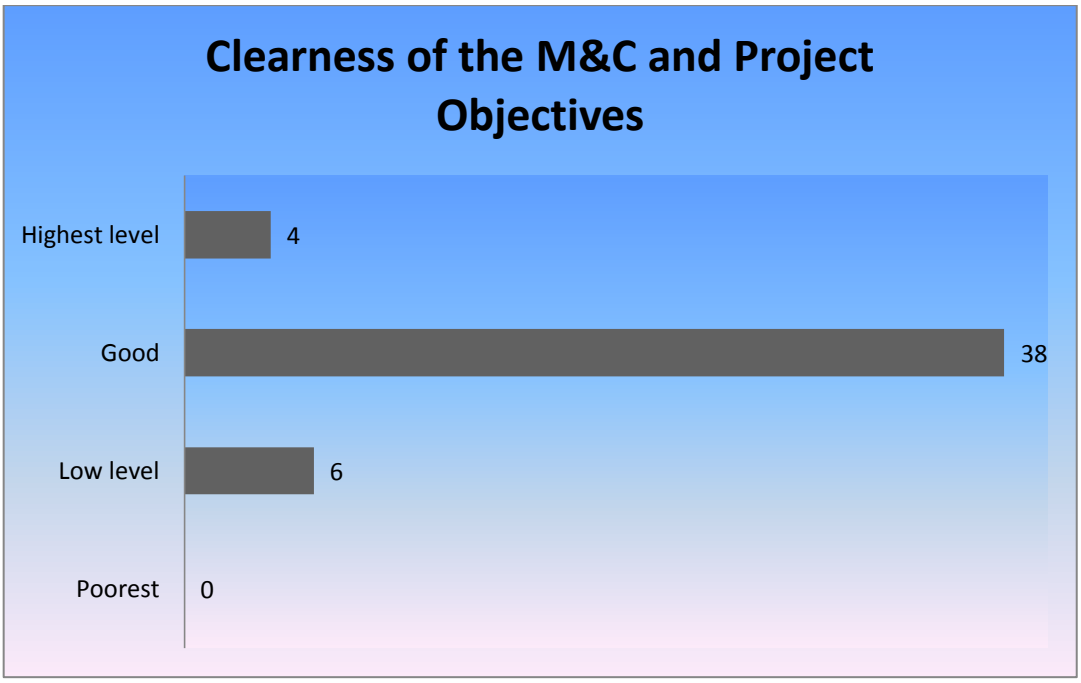


Figure4.3.3 showing relative number of responses for different levels

4.3.4 Level of Appropriateness of performance indicators selected

Measures known as performance indicators allow us to determine the extent to which project outputs have been met. Data on work performance are the unprocessed observations and measurements made during project-related activities. Data are sometimes seen as the lowest level of detail from which other processes might obtain knowledge. Through the process of carrying out work, data is captured and sent to the regulating processes for additional analysis. 73% of responses rated the appropriateness of performance indicators selected good and above and 17% rated below good. In addition to the primary data described, the information from secondary data sources shows the organization has a good stand in selecting performance indicators.

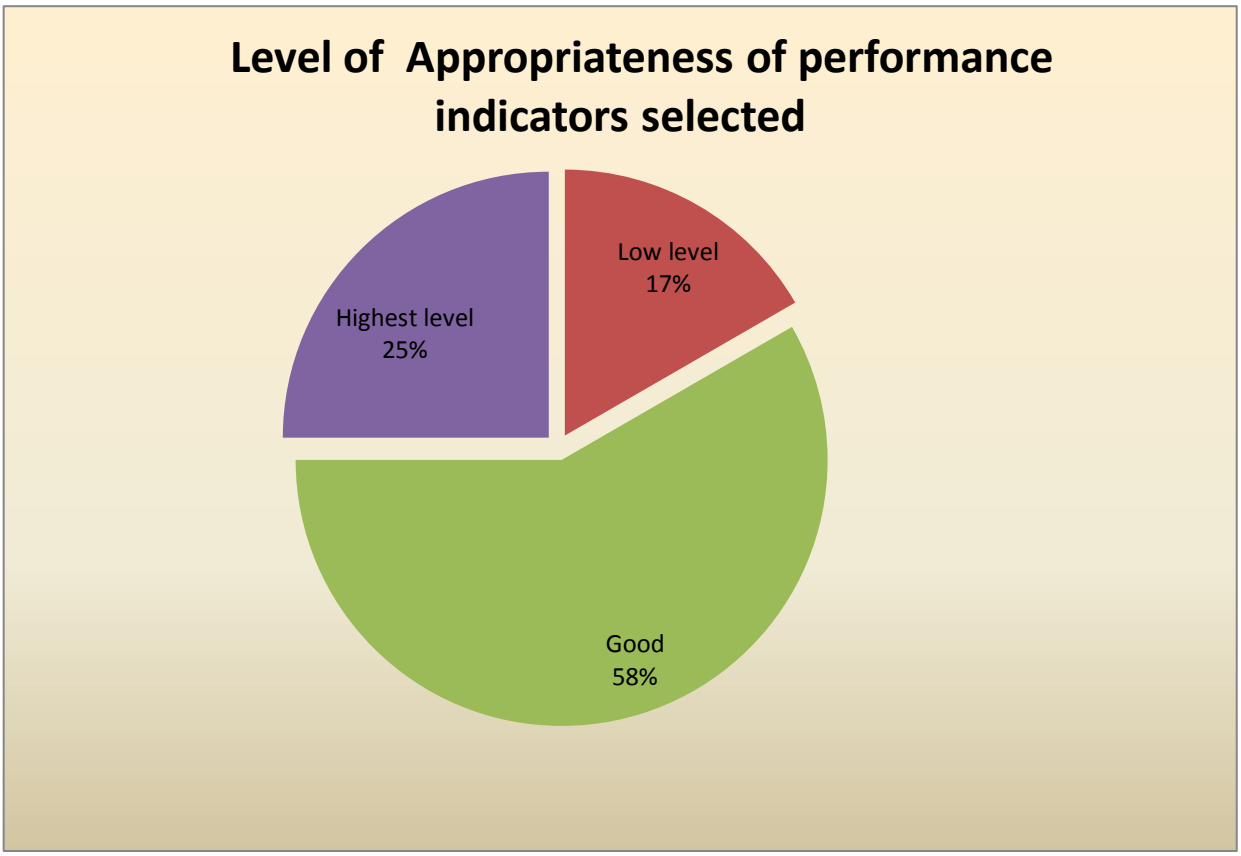


Figure 4.3.4 showing relative number of responses for different levels

4.3.5 Effectiveness of coordination and collaboration among project partner

Active stakeholder participation in the identification and breakdown of needs into project and product requirements has a direct impact on the success of the project. The sponsor's, the client's, and other stakeholders' measured and recorded needs and expectations are included in the requirements. Along with other benefits, collaborative teams may help coordinate and integrate various work tasks, enhance communication, boost knowledge sharing, and offer flexibility in job assignments.

Respondents were asked to evaluate the existing monitoring practices for coordination and collaboration among project partners; 76 % said good and good and 24 % said low level.

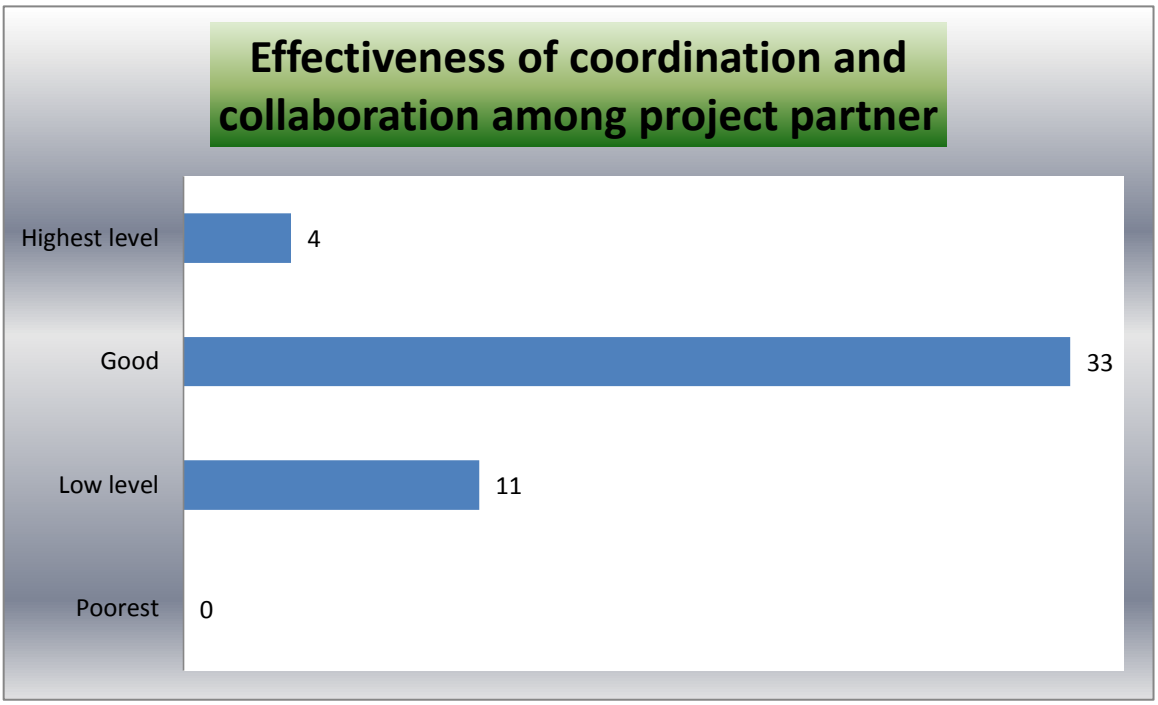


Figure 4.3.5 showing relative number of responses for different levels

4.3.6 Clearness of reporting and Communication mechanisms

Making sure the project's stakeholders' information demands are met is the process of monitoring communications. Improved understanding, trust, dedication, and communication among team members are just a few benefits of effective communication, which can also lead to more effective teams throughout the project.

Responses to the questionnaire on the Condition of communication and cooperation implemented in the project selected show; 89%of respondents rated the communication and reporting mechanism a good and above, and the rest 11%rated below good. 60 % described the communication structure as a “Fisherman's net" 20%of respondents described it as a “Spider’s web" and the rest of respondents selected it as a “Star".

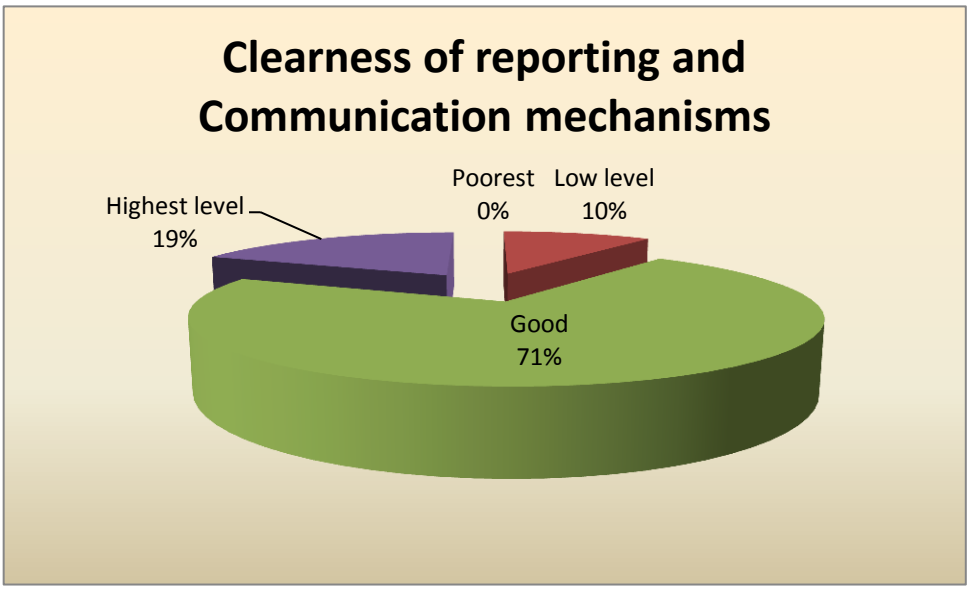


Figure 4.3.6 showing relative number of responses for different levels

4.3.7 Level of monitoring and control standards

Standards of Communication procedures are commonly described and documented in the communications management plan which is one component of the project management plan. Procedures describe include; Progress report timing, meeting arrangement procedures, and status report. The interviewees were asked to rate satisfaction with the standards and procedures of M&C. The finding shows 77.5% of respondents rate GOOD and above for satisfaction with M&C standards and procedures and the rest 22.5% rated the standard of M&C as low level.

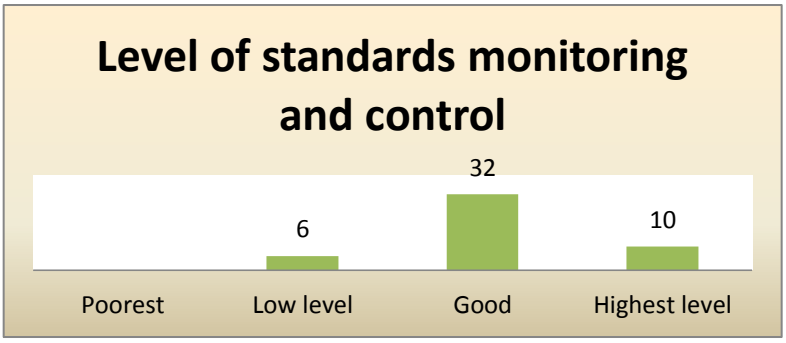


Figure 4.3.7 showing relative number of responses for different levels

4.3.8 Discussion of Data Collected from open end and semi structured questionnaire.

4.3.1 Achieving envisaged outputs of M&C System

Respondents were asked if the implemented monitoring systems achieved their envisaged outputs 62 % of respondents said "yes, completely", 20% said “only partially", and 18% said "did not meet our expectations" According to many of the respondents who satisfied by the outputs of M&C system implemented; changing the nominated subcontractor (METEC) is the result of close monitoring. Respondents whose answer "did meet expectation” claimed poor performance monitoring had been the problem related to managing the nominated subcontractor(METEC) this was a major reason for the delay and cost overrun.

Tool Evaluated	yes, completely	only partially	did not met our expectations
Achieving envisaged outputs of M&C System	30	10	8

Table4.3.8.1 showing frequency distribution of responses for expected outputs.

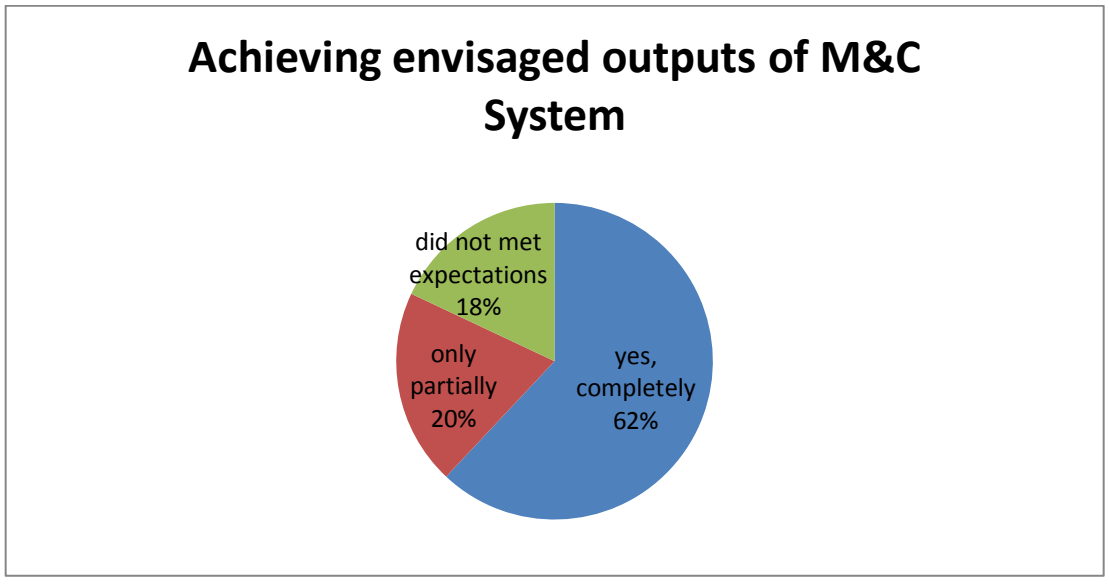


Figure 4.3.8.1 showing relative percentage of responses for different levels

4.3.8.2 Quality of outputs of Monitoring and Control process

Monitoring and managing quality is the process of keeping track of and documenting the outcomes of carrying out quality management tasks in order to evaluate performance and guarantee that the project's outputs are comprehensive, accurate, and up to par with client expectations. Respondents were asked to reflect their opinion on quality of output of M&C process as a system. 91 % of respondents said the met their expectation and only 9 % said they did not met their expectation.

According to respondents satisfied by the quality of the output of M&C system there were no major problems in Setting documenting quality standards, detail specification descriptions ,inspection and testing procedures. Although Problems encountered during execution caused project delay and cost overrun, their effect on quality of outputs of M&C and project deliverables was low.

Tool evaluated	Did not met expectation	Met expectation	Exceeded expectation
Quality of outputs of Monitoring and Control process	9	39	0

Table 4.3.8.1 showing frequency distribution of responses for quality of outputs

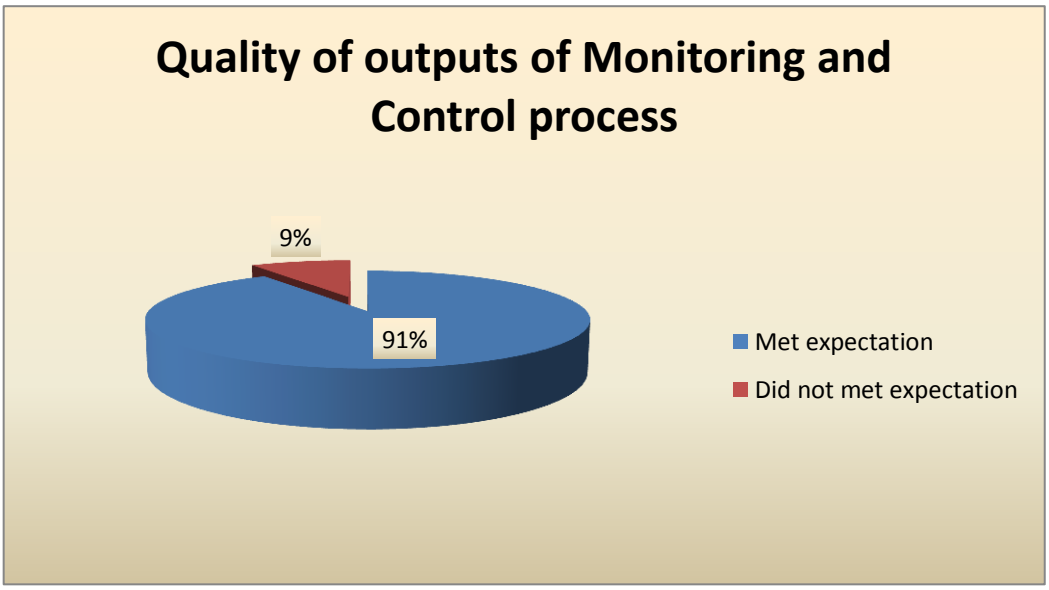


Figure 4.3.8.2 showing relative percentage of responses for different level

4.4 Statistical Analysis

Qualitative data collected was converted to quantitative using a four-point Likert scale. By categorizing the qualitative data (opinions and feelings), the Likert Scale Chart measures assigned value. Four points likert scale is ideal in certain cases in which a specific user opinion is essential and an evaluation result of 'LOW" or "GOOD" was sought from respondent without giving the neutral option "MODERATE" so that the organization under evaluation get a pass or fail results in specific tool measured. If respondents are willing to rate between low and good, an option of rating an average result of 2.5 has been possible during all primary data collection steps. Assigning point and scale range was performed based on the following table.

Point	**Rate Level**	**Scale Range**
4	Highest Level	Above 3.5
3	Good Level	2.5 to 3.5
2	Low Level	1.5 to 2.5
1	Poorest Level	0.5 to 1.5

Table 4.4.1 Showing rate levels and scale ranges used to convert qualitative data in to quantitative.

Statistical summary table presented below show performance levels for M&C tool evaluated and how the performance of monitoring and control system of the organization changed from low level to good level as the project phase move from initiation to execution.

4.4.1 Descriptive Data Analysis

Phases of project Mngmt.	M&C tool evaluated	Mean	Median	Mode	Final rate level	Phase average
Organizational readiness(Institutionalizing M&C)	Level of organizational arrangements for M&C	1.72	Low level (2)	Low level (2)	Low level	**1.97**
	Level of integration of M&C with project plan	2.22	Low level (2)	Low level (2)	Low level	
Detail planning and Execution	Clearness project objectives	2.95	Good(3)	Good(3)	Good Level	**3.008**
	Appropriateness of performance indicators selected	3.2	Good(3)	Good(3)	Good Level	
	Effectiveness of coordination and collaboration among project partners	2.8	Good(3)	Good(3)	Good Level	
	Level of clearness of reporting and Communication mechanisms	3.01	Good(3)	Good(3)	Good Level	
	Level of standards of monitoring and control	3.08	Good(3)	Good(3)	Good Level	
Measuring outcome of (M&C)	Achieving envisaged outputs of M&C System	3.2	Good	Good	Good	**3.15**
	Quality of outputs of M&C system	3.1	Good	Good	Good	
AVERAGE OF ALL PHASES						**2.7**

Table 4.4.2 showing summary result of descriptive analysis

4.4.2 Correlation Analysis

Covariance is a measure of the relationship between two random variables. A statistical indicator of the strength of a linear link between two variables is the **correlation coefficient.**

Correlation Coefficient = Cov(x,y) / std dev(x) std dev(y)

Two pairs of tools which belong to same phase of project management was selected and their coefficient of correlation was calculated and the result shows; there is strong relation between **levels of organizational readiness** and **level of integration of M&C with initial project plan** with correlation coefficient of 0.729.Strong correlation also observed in **Clearness of M&C and project objectives** and **Appropriateness of performance indicators selected** with correlation coefficient of 0.727.

	M&C tool evaluated	**Mean**	**Variance (p)**	**ST.Dev(p)**	**Covariance**	**Coefficient of Correlation (p)**
Phases of project Management Organizational readiness(Institutionalizing M&C)	Level of organizational arrangements for M&C	**1.72**	**0.207899306**	**0.46**	**0.1749**	**0.729**
	Level of integration of M&C with project plan	**2.22**	**0.218315972**	**0.53**		
Detail planning and Execution	Clearness of M&C and project objectives	**2.8**	**0.206597222**	**0.45**	**0.212**	**0.727**
	Appropriateness of performance indicators selected	***3.01***	**0.409722222**	**0.64**		

Table 4.4.2 showing correlation analysis

Strong positive linear relation between variables shown in figure4.4.1 below.

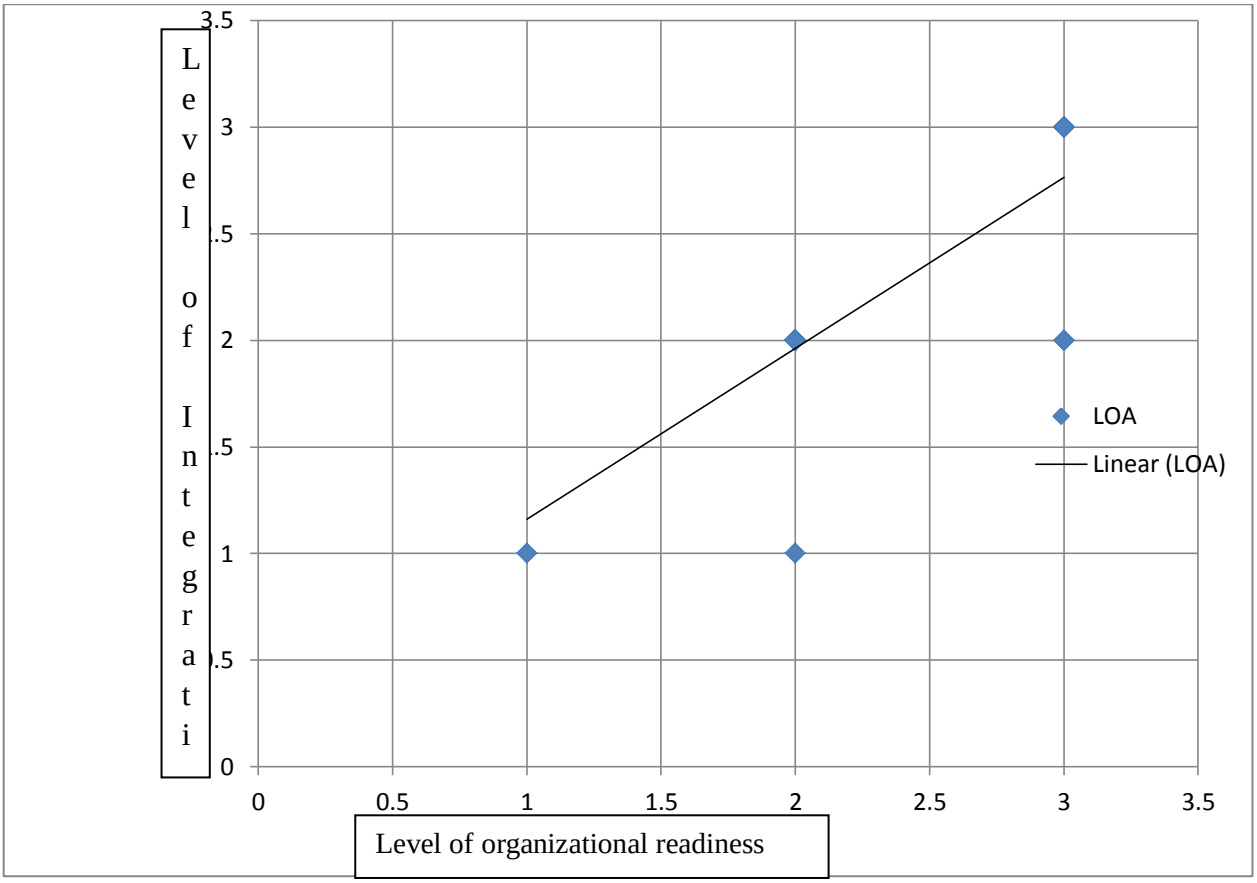


Figure 4.4.1 showing linear positive correlation between variables (Level of organizational readiness vs Level of integration)

CHAPTERFIVE –SUMMARY OF FINDINGS, CONCLUSION AND RECOMMENDATION

5.1 Summary of Findings

Basic monitoring and control tools evaluated in this study can be grouped into three basic phases; organizational readiness, planning, execution, monitoring, and evaluation. The finding shows; the organization scored low levels for tools under organizational readiness and early phases of planning and good and above level for detail planning and later phases.

Result of the correlation analysis showed the level of organizational readiness has a strong positive link with the degree to which monitoring and control tools are integrated into the project plan indicating that if an organization can raise this level, the monitoring and control tools will perform better in subsequent stages. Setting and documenting quality standards, detailed specification descriptions, inspection and testing procedures, and incorporating this with the main contract agreement has been described as useful M&C achievement. Project status report described as widely and effectively used M&C tool. Strong management decisions and good organizational structure were described as strong points. The absence of a permanent monitoring team, the assignment of inadequate vehicles and equipment for site monitoring, and the inability to use software for monitoring are described by respondents as weak points/failures of the M&C system implemented. Government intervention in project management practices, lack of skilled manpower (technical and professional project management), and corruption were also described by respondents as problems of monitoring and control.

Scope of this study was limited to evaluating the monitoring and control component of the project management against selected M&C tools thus the finding cannot represent the condition of the overall project management.

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5.2 Conclusion

Strong linear connections across tools suggest that if one tool performs well or poorly, the other tool will perform similarly. To improve the overall performance of the monitoring practice in all levels and stages; the organization should improve the system form the very beginning stage which is at organizational readiness level, then the system will perform better in subsequent stages.

Change in performance level of tools between project management phases can be related to Involvement of strong decisions by higher management based on findings of monitoring and control implemented during execution. Major findings of monitoring during execution were used for critical decisions and changed the overall performance of the monitoring system.

5.3 Recommendation

To implement effective monitoring for the M&C system, an organization under this study should start establishing the monitoring system at the same time as the overall project initiation, preparation, and plan.

Continuous project management training should be given to employees of the organization to lower the shortage of skilled manpower. Using an automated system can improve the effectiveness of the M&C system.

The organization under this study has scored good results in using M&C tools such as; communication standards and procedures, working jointly with its partners, and quality-

related measurements. The organization (EEP) should capture lessons learned from these practices and use them in the future.

Finally, the Process of M&C has its own outputs with its own qualities; the effect of this will then be reflected in the quality of the project deliverables. To improve the quality of project deliverables, and reduce elevated cost overruns and extended completion time delays; the organization should work hard to improve the performance of the M&C system.

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Appendix 1

Dear respondents

I'm a graduate student in my last year from department of project management at Addis Ababa University. I'm now working on my senior project, which evaluates the project monitoring and control methods used on the Grand Renaissance Dam project. Please participate in my study by responding to the survey questions below. The survey can take 10 to 20 minutes to complete. We will only utilize the research data for academic purposes, nevertheless. Furthermore, we'll keep your responses private and anonymous. Your assistance with my research will make it run as smoothly as possible.

Sincerely, Sadik Jemal

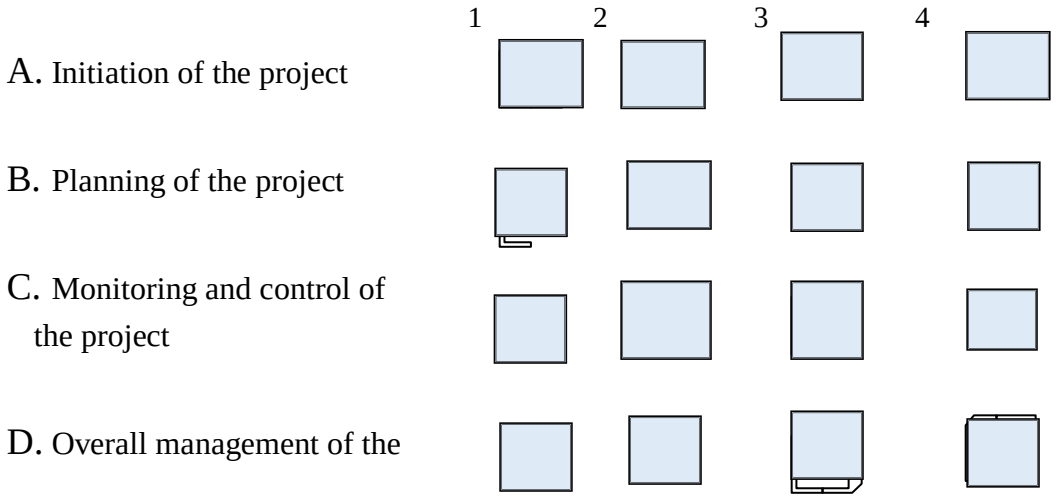
Section one; information on respondent

1. What is\was your role in EEP?

A) Site engineer B) Project manager C) Supervisor D) supportive staff E)Other

How do you rate the level of your involvement at different stages of GERD project? Please tick the suitable answer

1= Not involved, 2=slightly involved 3= goodly involved 4= Very much involved)



Section Two; information on planning and implementation of M&C

2. How do you evaluate the level of organizational preparations of EEP for data collection, management, analysis, and reporting?
   (Please tick the appropriate answer, 1= no arrangement at all, 2= arranged in low level 3=arranged in good level 4= arranged best)

1 ☐ 2 ☐ 3 ☐ 4 ☐

3. How do you evaluate the level of integration of M&C design with overall project appraisal and preparation?

   (Please tick the appropriate answer, 1= no integrated at all 2= integrated in low level, 3=integrated at good level 4= integrated best)

   1 ☐ 2 ☐ 3 ☐ 4 ☐

4. Clearness of objectives of the monitoring process is one of elements of effective monitoring and control of projects.

   How do you rate the clearness objectives of M&C system in GERD?

   (Please tick the appropriate answer, 1= not clear at all, 2= clear at low level 3=clear at good level 4= very much clear)

   1 ☐ 2 ☐ 3 ☐ 4 ☐

5. Performance Indicators are used to provide benchmarks for demonstrating the achievements in M&C system and ultimately of project. Selecting and describing appropriate indicators is one of the most critical steps in designing an M&C system.

   How do you rate the appropriateness of indicators selected and the level of their description?

   (Please tick the appropriate answer, 1= poorly appropriate, 2= appropriate at low level 3= appropriate at good level 4= appropriate at high level

   1 ☐ ☐ 2 3 ☐ 4 ☐

6. Effective coordination and collaboration among project partners requires clearly defined roles and responsibilities of partners.

How do you rate Clearness of the roles among partners at GERD project? (Please tick the appropriate answer, 1= not clear at all, 2= clear at low level 3= g clear at good level 4= clear at high level

1 ☐ 2 ☐ 3 ☐ 4 ☐

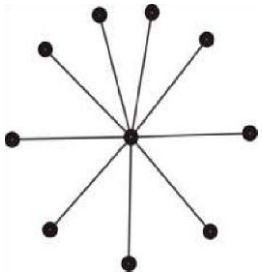
7. How do you evaluate Clearness of reporting and Communication mechanisms among partners in your organization?

   (Please tick the appropriate answer, 1= not clear at all, 2= clear at low level 3= clear at good level 4= clear at high level)

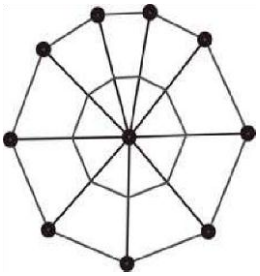
1 ☐ 2 ☐ 3 ☐ 4 ☐

8. Effective communication is key for successful monitoring and control practice. Which of the pictures below describes best the structures of communication and cooperation in partners of GERD project?

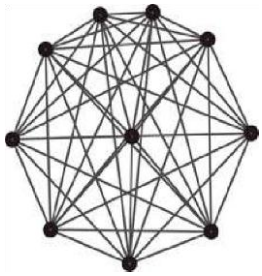
   (Please circle the appropriate answer)



(a)



(b)



(c)

   a) "Star": Most communication/cooperation between project leader and each of the project partners, very little direct communication/ cooperation between project partners

   b) "Spider's web": Most communication/ cooperation between project leader and project partners with some project partners also communicating/ cooperating directly

   c) "Fisherman's net": Direct communication/ cooperation between all project partners

Section Three; information on outcomes and conclusion

9. How do you rate your satisfaction as to monitoring and control standards and procedures? (Please tick the appropriate answer, 1= unsatisfactory , 2= satisfactory at low level 3= satisfactory at good level 4=satisfactory at high level)

   1 ☐ 2 ☐ 3 ☐ 4 ☐

10. Did M&C in your project achieve the envisaged outputs (for ongoing tasks: intermediate outputs)?

    (Please tick the appropriate answer)

    ☐ Yes, completely

    ☐ Only partially

    ☐ Not at all

11. How would you assess the quality of the outputs achieved?

    (Please tick the appropriate answer)

☐ They exceeded our expectations

☐ They met our expectations

☐ They did not meet our expectations.

12. Considering monitoring and control practices employed in your organization particularly at GERDP, what do you see as the most useful M&C achievements and failures at this stage?

    (Please describe in a few words)

    _____

    _____

    _____

What are in your opinion the two strongest and weakest points of monitoring and control system of the GERD project at this stage?

(Please describe in a few words)

1. _____

   _____

Declaration

I, Sadik JEMAL, declare that this project work entitled “EVALUATION OF MONITORING AND CONTROL PRACTICES IN MEGA PROJECTS OF ETHIOPIA: - A Case Study of Grand Ethiopian Renaissance Dam Project (GERDP)” is outcome of my own effort and that all source of materials used for the study have been duly acknowledged. I have produced it independently except the guidance and suggestion of my research advisor Tenkir S. (PhD). This study has not been summited for any degree in this University or any other University. It is offered for the partial fulfillment of the degree of Master of Arts in Project Management.