SCHOOL OF GRADUATE STUDIES

DEPARTMENT OF PROJECT MANAGEMENT

IMPACTS OF PROJECT MANAGEMENT TECHNIQUES ON COMPLETION OF BUILDING CONSTRUCTION PROJECTS

BY

TEMESGEN GOA

A Thesis Submitted to School of Graduate Studies in Partial Fulfillment of the Requirement for the Degree of Master of **Art** in Project Management

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DECLARATION

This is to certify that the thesis entitled "Impacts of Project Management Techniques on Completion of Building Construction Project", submitted in partial fulfillment of the requirement for the degree of Master of Art in Project Management, Addis College is a record of original work carried out by me and has never been submitted to this or any other institution to get any other degree or certificates. The assistance and help I received during this investigation have been duly acknowledged.

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I hereby certify that I have supervised, read, and evaluated this thesis titled "Impacts of Project Management Techniques on Completion of Building Construction Project" by Temesgen Goa prepared under my guidance. I recommend the thesis be submitted for oral defense.

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As members of the board of examiners, we examined this thesis entitled "Impacts of Project Management Techniques on Completion of Building Construction Project" by Temesgen Goa. We hereby certify that the thesis is accepted for fulfilling the requirements for the award of the degree of ''Master of Art in Project Management''.

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ABSTRACT

Project management techniques are very useful for the building construction so that the project can be completed without spending much resource and time. Maintaining a suitable project management technique was necessary for the success of the project. Project Management techniques refers to a technique, tool, method, or approach used effectively to arrive at the desired outcome. The objective of this study is to analyze the impacts of project management techniques on the completion of high-rise building construction projects in Addis Ababa, Ethiopia. The specific objectives include assessing the current application of project management techniques, identifying the challenges affecting their implementation, investigating their impact on project completion, and suggesting strategies for improvement. To achieve these objectives, the study targets 10 high-rise building projects across selected sub-cities of Addis Ababa, utilizing a mixed-methods approach involving both qualitative and quantitative data collection. Data were gathered from professionals such as engineers, contractors, consultants, and clients through a combination of random and purposive sampling techniques and analyzed using descriptive statistics with SPSS software. The findings indicate that while project management techniques are applied, their effectiveness is limited due to several challenges, including inadequate human resources, financial constraints, technological barriers, and communication issues. The study concludes that enhancing the application of project management techniques is critical for improving the success and efficiency of building construction projects. Based on these findings, the study recommends targeted strategies to overcome the identified challenges and ensure better project outcomes.

Keywords; **Project, project management, project management Techniques, impact, Building construction,** ***Addis Ababa***

Table of Contents

List of Table

List of Figure

CHAPTER-ONE

1. INTRODUCTION

This chapter is introductory part of the entire study. It states background, statement of the problem, objectives, significance, scope, limitation, and organization of the study. Accordingly, it begins with background of the study.

1.1. Background of the study

Project management can be defined as the achievement of project objectives through people and involving the organization, planning and control of resources assigned (Harrison and Lock, 2004).The PMBOK Guide definition of project management is "application of knowledge, skills, tools, and techniques to project activities to meet the project requirements .Project Management and its techniques play an important role in construction project as it is the all steps from foundation to end project completion in each construction project. Project management is the process by which project manager plays a main role of planning to control of all activities during the construction period which includes employees, building materials, work schedules, time period, cost, skills and knowledge, equipment and machinery at the site and many other responsibilities to achieve and meet the client's demand in project to be submitted in accordance with the prescribed period, reasonable cost and satisfactory quality of work (SOLOMON ASSEFA , 2017) .

Project management processes comprising in five Process Groups: initiating, planning, executing, monitoring and con-trolling, and closing" .Without effective project management, projects are often running into troubles and risking failures (Heagney, 2012). Lack of understanding of the basic concept behind managing any projects leads to missed deadlines, over budget, costly changes, frustrated project managers, team members and other stakeholders (Ibid).

Researchers continued to improve the practice of project management using several applicable methodologies on project management. Project Management Institute (PMI) developed "The Guide to the Project Management Body of Knowledge (PMBPK) " now in its fourth edition, a leading guide of PMI standards for project managers worldwide (Stackpole, 2010).The PMBOK guide is not a methodology itself, but also promotes several key components that good methodologies must contain. The use of a specific methodology, or procedure, gives project managers a directive on undertaking their projects that

can help achieve the goals they desire to ultimately accomplish. However, during the implementation process there are hurdles that organizations might face. These impediments are the reasons why most project management practices fail. Understanding the common challenges of implementing project management and ensuring that you have solutions to them or ways around them will help increase the success factor of your project management practices (Choudhuri, 2015).

Hence, this study is therefore to investigate deeply the practice of Project Management, Factors that affects and impacts of poor building construction management and benefits of project management practices or Techniques on Building Construction projects in Addis Ababa, Ethiopia.

1.2. Problem Statement

The rapid growth of the construction industry has made a positive impact on the achievement of the national economy. However, these positive effects were contaminated with a variety of unimpressive achievement, especially in terms of inefficient and poor management systems. Current rapid development of the construction sector has left the side effects to society and the economy.

Most organizations with less experience and do not have a strong financial position could not handle the project offered. Poor in management has created many problems. Problems such as project delays, contractual problems, financial problems and else also occur and affect the development of a project and caused a lot of abandoned projects. There is numerous construction projects were facing problems because of poor management systems and non-effective management. The construction industry has various problems because of its complicated nature of operation (Kanji and Wong, 1998). Although with high technology system use and innovation in working methods for each construction project implemented, there are many run projects still begins and ends with problems because the problem cannot be managed properly. This can be seen through the current situation of construction industry in our country, where there are many projects which cannot be completed on schedule. In addition, there are also projects being abandoned and some of them are complete but do not meet the required quality of work. problems may arise due to poor organization's management system, non-systematic management system and does not have a proper way to solve the problem. A weak and non-organized management is also one of the factors which contribute to this problem.

A good and thorough management will yield to excellent results. Many companies are only good in finding project but in terms of manages the project are somewhat neglected. This will give an adverse effect to the company. When delay occurs, they have to bear all losses. As an effort to overcome the problem in the

construction industry, the management in construction should be emphasized and should be solved. Therefore, the flow of a project would become smooth while improving the quality of work at the same time.

These problems may arise due to poor organization's management system, non-systematic management system and does not have a proper way to solve the problem. A weak and non-organized management is also one of the factors which contribute to this problem.

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As an effort to overcome the problem in the construction industry, the management in construction should be emphasized and should be solved. Therefore, the flow of a project would become smooth while improving the quality of work at the same time.

1.3. Objective of the study

1.3.1. General Objective

The Objective of this study is to analyses the Impacts of project management techniques on completion of building construction project in Select High rise building construction project.

1.3.2. Specific Objective

Based on the general objective of the study and the research questions above, this study has the following specific objectives.

1. To assess the current application of project management techniques in building Construction projects

2. To identify challenges for the implementation of project management techniques

3. To investigate the impacts of project management for the completion of building construction.

4. To forward intervention strategies on the application of project management Techniques for the completion of Building construction Project.

1.4. Research questions

1. What is the current application of project management techniques in building Construction projects?

2. What are the most significant Factors that make building construction project management and leads to Poor Project management?

3. What are the impacts of Building construction project management for the completion of building construction?

4. How does the Poor project management to be improved and brings to Efficient Building construction Project management

1.5. Scope of Study

I. Thematic Scope

The Study was on the Impacts of project methods on selected high Rise Building construction projects. In this study it has been seen construction project method is a process which focuses on construction techniques. It would centered on construction to Success been described as a way to produce more, better , quality project in less time . the study also seen better modern construction methodology which is about the use of innovative tools , materials , processes to improve the construction process in multitude of ways , get project done faster , safer and more efficiently .

II. Spatial scope

This paper focuses on the assessment of the construction management's methods for selected high Rise Building construction in Addis Ababa, Ethiopia.

The study would use descriptive approach Study design, Quantities and Qualitative Research analysis Approach using primary data sources collected through Questionnaires and Secondary Data sources. This research was carried out based on research information gathering and working time retrieval throughout the period of the study from February 2024 to August 2024 G.C,

Finally, this study has carried on selected High rise Building construction Geographically to Construction sites selected sub cities of Addis Ababa, Ethiopia

III. Temporal scope

The Study was on assessment of the Project management methods in Building construction in Addis Ababa, Ethiopia. Constructions project management methods incorporate basically on advanced construction methods, techniques supported by technology and are implemented updated construction

methods. As construction project management is better construction management processes and have different step wise to evaluate and to give immediate step wise correction to maintain projective optimum objective.

1.6. Significance of the Study

This research project paper will particularly help to look in to challenges encountered while implementing project management in High Rise Building construction projects undertaken in Selected Sub cities of Addis Ababa, Ethiopia.

This study aims to point out these difficulties and thus improve the project management practice in order to benefit from the findings. Project managers and project teams who are involved in the planning, designing, implementation and control of High rise Building construction projects could make use of the obtained information of this study. The finding of this study is important to increase the quality of management the construction industry from perspective of effective management such as supervision and monitoring. This also helped to coordinate the management system thus able to plan the initial framework and systematic work plan in construction.

Besides that, this study increased the awareness of all the parties involved and helped to improve their Building construction management by knowing their roles and responsibilities.

Finally, it will also contribute for project management knowledge in that the research paper follows a different approach in categorizing the challenges with project management knowledge areas that can be used as a baseline for further study.

1.7. limitations of the study

The limitation of this study would be :-

i. The study limited on the study topic of the impacts of project management techniques (Study title) .
ii. The study focus on the High rise building construction (Types of project)
iii. The study survey would be in Selected High rise building in selected Sub cities of Addis Ababa
iv. It would use descriptive methods of research approach , Quantitative and Qualitative study design using data collected from Professionals (Engineers) from stake holders of projects

1.8. Organization of the Paper

This research paper is organized in to five chapters. The first chapter deals with the introduction part which encompasses the background of the study, the statement of the research problem, objectives of the study, significance of the study, scope of the study and limitations of the study. The second chapter deals with the review of related literature. Chapter three focused on the research methodology, data collection and

procedures, sample and sampling techniques, whereas the fourth chapter presented the result analysis and discussion of the data. Finally, conclusions and recommendations were presented under fifth chapter

1.9. Expected Outcome

After doing this study,

- It is expected that all the objectives of the study can be achieved.
- Factors that affects Building construction project management and Poor project management will be determined
- Effects of Building construction project poor management on construction performance will be determined
- Solutions to the problems will be determined

CHAPTER –TWO

LITERATURE REVIEW

2.1 Introduction

This chapter presents the theoretical foundations of project management as well as project management practices. Furthermore, it introduces both theoretically and empirically focused literature revised on project management techniques on Building construction project.

2.2 Definitions of Basic Terms

Project : Project is defined as a temporary endeavor undertaken to create a unique product, service, or result (Luis emilio alvarez-dionisi, 2013).According to (Muszynska, 2016), a project can be considered to be any series of activities that have a specific objective, with a focus on the creation of business value, to be completed within certain specifications, have defined start and end dates, have funding limits (if applicable), consume human and non-human resources (i.e., money, people, equipment).

Project: A temporary endeavor undertaken to create a unique product or service. It is often organized under the direction of Project Manager, who will ensure that the project achieves its objectives. (PWG.Morris, 2006).

According to PMI (PMBOK, 2013) a project is defined as a temporary endeavor undertaken to create a unique product, service, or result. The temporary nature of projects indicates that a project has a definite beginning and end. Temporary does not necessarily mean the duration of the project is short. It refers to the project's engagement and its longevity. Temporary does not typically apply to the product, service, or result created by the project; most projects are undertaken to create a lasting outcome. Every project creates a unique product, service, or result. Although repetitive elements may be present in some project deliverables and activities, this repetition does not change the fundamental, unique characteristics of the project work. Because of the unique nature of projects, there may be uncertainties or differences in the products, services, or results that the project creates.

According to (Kerzner, 2013) A project can be considered to be any series of activities and tasks that: have a specific objective, with a focus on the creation of business value, to be completed within certain specifications, have defined start and end dates, have funding limits (if applicable), consume human and

non-human resources (i.e., money, people, equipment), are multifunctional (i.e., cut across several functional lines).

Project Management (PM) : PM as "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 objective(Kerzner, 2006) . (PWG.Morris, 2006) defined PM as "the application of knowledge, skills, tools and techniques to project activities in order to meet or exceed stakeholder's needs and expectations from a project"

Project Management: - the application of knowledge, skills, tools and techniques to project activities in order to meet or exceed stakeholder"s needs and expectations from a project" (PWG.Morris, 2006)

Project management according to (Kerzner2017) 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. Project management as defined as PMI (PMBOK 2013) is the application of knowledge, skills, tools, and techniques to project activities to meet the project requirements.

Managing a project typically includes, but not limited to: Identifying requirements; addressing the various needs, concerns, and expectations of the stakeholders in planning and executing the project; setting up, maintaining, and carrying out communications among stakeholders that are active, effective, and collaborative in nature; managing stakeholders towards meeting project requirements and creating project deliverables; Balancing the competing project constraints, which include, but are not limited to: Scope, Quality, Schedule, Budget, Resources, and Risks.The specific project characteristics and circumstances can influence the constraints on which the project management team needs to focus. The purpose of project management is to predict, plan, organize, and control activities and resources so that projects are completed successfully in spite of all the difficulties and risks. This process should start before any resource is committed, and must continue until all work is finished (Triant and Dennis, 2008).

Construction project management: defined as "The planning, Co-ordination and control of a project from conception to completion on behalf of a client requiring the identification of the client's objectives in terms of utility, function, quality, time and cost, and the establishment of relationships between resources, integrating, monitoring and controlling the contributors to the project and construction projects output, and evaluating and selecting alternatives in search of the client's satisfaction with the project outcome".(Douglas c.bower, 2007)

Project performance measurements: (Daniel w.m.chan, 2002), remarked that project performance measurement include time, budget, safety, quality and overall client satisfaction. (kuprenas, 2003), stated that project performance measure an improvement of cost, schedule and quality for design and construction. Project Performance is traditionally evaluated using schedule, cost and quality performance, also known as the "iron triangle" (Anton Zandhuis R. s., 2013).

Project Management Effectiveness: - A measure of the quality of attainment in meeting objectives. It is the extent to which the goals of a project are attained or the degree to which a system can be expected to achieve a set of specific requirements (Wideman, 2002)

Critical success factors (CSFs): - are characteristics, conditions, or variables that can have a significant impact on the success of the project when properly sustained, maintained, or managed,(Zarina alias, 2014).

2.3 project management

2.3.1 Project Management process

Project management according to (Kerzner2017) 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. Project management as defined as PMI (PMBOK 2013) is the application of knowledge, skills, tools, and techniques to project activities to meet the project requirements.

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According to (Luis emilio alvarez-dionisi, 2013), project management is divided into ten areas; integration, scope, time, cost, quality, human resources, communication, risk, procurement and stakeholder management.

Project management process groups include initiating, planning, executing, monitoring, and closing. Initiating involves determining the project's nature and scope, preparing documents, and gathering necessary standards and regulations. Planning involves determining project details, identifying work breakdown structures, and establishing a procurement plan. Executing involves coordinating resources and integrating activities, producing deliverables as outputs. Monitoring involves tracking the project, identifying potential problems, and managing changes using the change control process. Closing involves evaluating the project's performance using a project closure report. This report communicates the project's performance against its original business case, quality measures, cost, and duration. Procedures include delivering necessary documents to the client, conducting procurement audits, and documenting lessons learned from the project. Effective project management ensures the project's success and meets business needs.

2.3.2 Importance of Project Management:

Project management is designed to control the main important elements that provide practical information for achieving project objectives in an efficient way. Walker defined project management as "The use of resources in the company on a certain activity within time, cost and performance. A fourth key factor is good customer relations" (1) . Walker added customer relations as a fourth important factor with time cost and performance. But still we need to know the main drivers for project success, which are the most important elements for companies to make a difference in this highly competitive environment.

The construction sector is a vital part of industry and in the gross income; for example in terms of value output, the construction industry is the largest single production activity in the U. S. economy, accounting for almost 10 percent of the gross national product (2).

The construction sector is a critical sector in the country's economy, providing one of the most important sources of income for families also Construction created jobs for citizens. To be effective contribution of construction sector Project management is more important than ever, as the key indicator of how projects are conceived, designed and built.

2.3.3. Project failure

Projects are needed to be completed within the time frame, budgeted cost and required Quality. A project is considered as a failure one if a project fails to meet the expectation in line with the stakeholders and the failure incident of project is associated with consideration of cost, quality and time (B. Prakash Rao, 2016).

Poor project management in terms of cost or time overruns may result in the non-attainment of product success such as profitability or market share (baccarini, 2004). (atkinson, 1999), reported that project management has cost quality, and time as its critical factor. According to the study conducted by (Akewushola, 2012), finds out that if these project management techniques are well managed, there is a very high possibility of having a viable project that will guarantee a sound business success. Which include work scope, time, resources, costs, quality, communication, risk, and contracts procurement(k.wysocki, 2003), finds out that there are five constraints operate on every project; these are scope, quality, time, cost and resource. According to the research and literature review conducted by (Tesfaye Hailu Zewdie, 2016), showed that significant numbers of projects in Ethiopia are under failed category.

As the study shown (https://pmweb.com>using –technology); One and basic for project failure was if construction managed poorly.

The Effects of Poorly managed construction can lead to ; Delay , Additional cost , Lower quality , Create dispute and increase confusion while jeopardizing the project' s design intent . Construction is putting into place a building or structure. Construction project management is the process of planning, designing, founding to completion of building structure . Construction manager oversee that construction operations go on smoothly from beginning to end through monitoring, supervision, and resource allocation Poor project management can lead to delayed project completion due to inadequate budgets, poor supervision due to unskilled project managers, and increased costs due to miscalculations in resource estimation, posing risks to the project's future success and potential collapse.

2.3,4 Project Success

In traditional project management, projects are often measured in terms of budget, schedule, scope, or quality. Benefits management as a concept, however, focuses more on the actual value that the projects are able to deliver to the end customer (Kerzner, 2018). PMI, (2017) also states that traditionally, the project management metrics of time, cost, scope, and quality have been the most important factors in defining the success of a project. More recently, practitioners and scholars have determined that project success should also be measured with consideration toward achievement of the project objectives. Project stakeholders may have different ideas as to what the successful completion of a project will look like and which factors

are the most important. It is critical to clearly document the project objectives and to select objectives that are measurable. Three questions that the key stakeholders and the project manager should answer are:

- ☞ What does success look like for this project?
- ☞ How will success be measured? And
- ☞ What factors may impact success?

The answer to these questions should be documented and agreed upon by the key stakeholders and the project manager (PMI, 2017). Hence it is possible for a project to be successful from a scope, schedule and budget viewpoint, and to be unsuccessful from a business viewpoint (PMI, 2017).

Triant and Dennis, (2008) holds that in aviation project management The success of the contractor and the project manager will usually be judged according to how well they achieve the three primary objectives, which are; project completion within the cost budget; the project delivered or handed over to the customer on time; and good performance, which requires that all aspects of the project are finished in accordance with the project specification. Further Triant and Dennis, (2008), identified the following factors necessary for achieving these three objectives: good project definition and a sound business case; appropriate choice of project strategy; strong support for the project and its manager from higher management; availability of sufficient funds and other resources; firm control of changes to the authorized project; technical competence; a sound quality culture throughout the organization; a suitable organization structure; appropriate regard for the health and safety of everyone connected with the project; good project communications; well-motivate staff; and quick and fair resolution of conflict.

This will lead us to the concept of critical success factors(CSFs); (Kerzner, 2018) holds that success factors are defined at the initial stages of the project or program, even before they become actual contracts, and are a direct consequence of the strategic goals allocated to the project or program. CSFs vary with projects and intent here is some that apply over a large variety of projects (Kerzner, 2018): Early customer involvement; High-quality standards;

Defined processes and formalized gate reviews; Cross-functional team organizational structure; Control of requirement, prevention of scope creep; Commitment to schedules; disciplined planning to appropriate level of detail and objective and frequent tracking; Commitment of resources; right skill level at necessary time; Communication among internal teams and with customer; Early risk identification, management, and mitigation; no surprises and Unequaled technical execution based on rigorous engineering.

Critical success factors (CSFs) are inputs to project management practice which can lead directly or indirectly to project success (Alias et al., 2014). From a Project Management perspective, critical success factors (CSFs) are characteristics, conditions, or variables that can have a significant impact on the success of the project when properly sustained, maintained, or managed (Alias et al., 2014).

Effective and efficient management of critical success factors is the basic requirement of project success (Iram, 2016). Alias et al., (2014) stated that to increase the chances of a project succeeding it is necessary for the organization to have an understanding of what are the critical success factors, to systematically and quantitatively assess these critical factors, anticipating possible effects, and then choose appropriate methods of dealing with them.

There are many researchers who conducted different researchers in order to find out various critical success factors for the project success (Frefer et al., 2018).

Frefer et al. (2018) identified ten critical success factors related to successful implementation from Pinto (1998), six critical success factors for successful projects from Kerzner (1987), and studied ten critical success factors at each of the four stages of the project lifecycle from Pinto and Prescott (1988). Frefer et al. (2018) stated that the development of is related to answers the following questions: "what factors lead to project management success?", "what factors lead to a successful project?" and "what factors lead to consistently successful projects? "

Collins and Baccarini (2004) differentiated between success criteria and success factors by stating that "criteria are used to measure success whilst factors facilitate the achievement of success. Further Collins and Baccarini (2004) holds Project success criteria consists of two components product success and project management success. Project Management Success focuses upon the project process and has three criteria: Meeting time, cost and quality objectives, Quality of the project management process, and satisfying project stakeholders' needs where they relate to the project management process (primarily project owner and project team). Product Success deals with the effects of the project's final product and has three criteria: Meeting the project owner's strategic organizational objectives (goal), Satisfaction of users' needs (purpose), and Satisfaction of stakeholders' needs where they relate to the product (primarily customer/user).

Project Management Success influences Product Success - Project management success can influence the achievement of product success. Good project management can contribute towards product success but is unlikely to be able to prevent product failure. For example, project management may help to identify the

unfeasible nature of the project, and indicate that it should be abandoned or change. Poor project management in terms of cost and/or time overruns may result in the non-attainment of product success such as profitability or market share (Collins and Baccarini, 2004).

A project is considered as a failure one if a project fails to meet the expectation in line with the stakeholders and the failure incident of project is associated with consideration of cost, quality and time (Saxena, 2016). According to Saxena (2016) the significant part of a project failure is associated with the consideration with not meeting specific targeted benefit for business case. Major reason behind the failure of the project not only associated with only one reason. There are several reasons that contribute to the failure of the project. It is clear that anything opposite to success indicator of project work can be considered as failure (Saxena, 2016). VR.Montequin et al, (2016) explains 'failure' as the systematic and widespread noncompliance of the criteria which defines a successful project

2.4 Project Management Techniques

Maintaining a suitable project management methodology is necessary for the success of the organization. While organizations use processes that are repeatable on projects, adopting and maintaining an appropriate project methodology is crucial.

Achieving project management excellence, or maturity, is more likely with a repetitive process that can be used on each and every project. This repetitive process is referred to as the project management methodology. If possible, companies should maintain and support a single methodology for project management (Kerzner, 2017).

Good methodologies are best practices and can lead to sole-source contracting based on the ability of the methodology to continuously deliver quality results and the faith that the customer has in the methodology (Kerzner, 2018).Project Management Methodology refers to a technique, tool, method, or approach used effectively to arrive at the desired outcome. In this sense, project management body of knowledge (PMBOK) and projects in controlled environment (PRINCE2) are some of the effective project management Methodologies. According to (Kerzner 2017) the characteristics of a good methodology based upon integrated processes include: A recommended level of detail, Use of templates, Standardized planning, scheduling, and cost control techniques, Standardized reporting format for both in house and customer use, Flexibility for application to all projects, Flexibility for rapid improvements, Easy for the customer to understand and follow, Readily accepted and used throughout the entire company, Use of

standardized life-cycle phases (which can overlap) and end of phase reviews, Based upon guidelines rather than policies and procedures.

Hence choosing the right project management methodology to execute projects in an organization is a vital step. There are many different and, in some cases, overlapping methodologies and approaches to managing project complexities. Some of the most popular project management techniques include agile, waterfall, PRINCE2, WBS, CPM , PERT ,Gantt chart etc.

A work breakdown structure (WBS) is a group oriented to the project elements delivery that organizes and defines total project scope. Each descending level represents an increasingly detailed definition of a component of the project. The WBS has six main purposes: It enhances project objectives; it is the project organization chart; creates the logic of tracking costs, time, and performance; it can be used to communicate the project status; it can be used to improve the project global communications; It shows how the project will be contracted. The technique used to carry out the WBS is the decomposition into which the project scope and deliverables are divided and subdivided into smaller and more manageable parts.

The Gantt chart is a graphical tool whose objective is to expose the expected dedication time for different tasks or activities over a given total time. Despite this, the Gantt chart does not indicate the relationships between activities. In 1896, Karol Adamiecki invented a new medium of interdependent processes that are presented in order to improve the visibility of production programs. With minor modifications, Adamiecki's letter is now more commonly known as the Gantt chart. Given the position of each task over time makes it possible to identify relationships and interdependencies. Since its introduction, Gantt diagrams have become a basic tool in the projects management of all kinds, in order to represent the different phases, tasks and activities programmed as part of a project or to show a timeline in the different activities making the method more efficient. The Milestones Diagram is a simple tool for a project plan development graphic representation. It consists of a table that relates the milestones with the start and / or end date of them. This technique has the advantages of simplicity and ease of preparation. And as a disadvantage, it does not reflect the interrelationships between the different activities, generating uncertainty. The milestone diagram is used to summarize project calendars. It is a basic technique next to the Gantt diagram. But when the need to plan and control complex projects arises, other techniques such as those based on CPM precedence networks, PERT diagrams and the critical chain are also required. These networks relate the activities so that the project critical path can be visualized and allow to reflect a time scale to facilitate the allocation of resources and the determination of the budget. The Gantt chart, however, is useful for the relationship

between time and workload. The "S" curve is a tool that helps to know, control and apply the necessary corrections.

2.4 Challenges to implementation of Project Management Techniques

Challenges in project management practice are derived from critical factors that lead to project success or failure. Building construction projects majority of activities are related to construction projects. Among the different types of construction projects, airports projects are recognized as being some of the most complex (Baghdadi and Mohammed, 2015).

Challenges and difficulties of managing construction project increases when the context is related to Building Construction Context (Nasser, 2013). The challenges are categorized based on the knowledge areas that include the five constraints: Scope, Quality, Schedule, Budget, Resources, and Risks and additional factors specific to Building construction projects. The challenges identified are not challenges of specific projects undertaken by the organization rather than perceived challenges believed to be encountered while undertaking practice of project management in the organization.

2.4.1 Challenges of Enterprise Environmental Factors

Enterprise environmental factors (EEFs) refer to conditions, not under the control of the project team, that influence, constrain, or direct the project. These conditions can be internal and/or external to the organization. EEFs are considered as inputs to many project management processes, specifically for most planning processes. These factors may enhance or constrain project management options (PMI, 2017).In fact this study stress on the factors internal to the organization supposed to have a constraining effect on Building construction project**.** These projects require high design knowledge and technical skills, competent human resources, professional managerial capabilities and large financial investment. In contrast, developing countries have shortage in many of these requirements, which ultimately hindered the development of these essential projects.

Ayman and Ezzat, (2013) identified challenge factors related to Performing Organization Structure such as “Insufficient experience of performing organization in managing complex undertakings”. He also holds that in mega construction projects in developing countries the main contractor or consortium of contractors are usually privately owned, financed and often from various countries with variety of cultural differences, backgrounds, political systems, and languages, seeking success with different objectives.

Kerzner (2017) characterize Mega projects as having a different set of rules and guidelines from those of smaller projects. For example, in large projects: Vast numbers of people may be required, often for short or intense periods of time; Continuous organizational restructuring may be necessary as each project goes through a different life-cycle phase; and The matrix and project organizational form may be used interchangeably.

2.4.2 Project Integration Management Challenges

Project integration management includes the processes and activities to identify, define, combine, unify, and coordinate the various processes and project management activities within the Project Management Process Groups (PMI, 2017). Project Integration Management includes seven major processes from the start of the project through completion of the project. Hence most of the challenges identified from various literature fall in this knowledge area.

Failure to assign and identify Project Manager early in the project is the first challenging factor in identified in this category. Project Integration Management is specific to project managers. Whereas other Knowledge Areas may be managed by specialists (e.g., cost analysis, scheduling specialists, risk management experts), the accountability of Project

Integration Management cannot be delegated or transferred (PMI, 2017). Hence A project manager identified and assigned as early as possible, preferably while the project charter is developed and always prior to the project prior to the start of planning is an important element (PMI, 2017).

Skill, competency and leadership of the project manager is also important an important factor. According to XABA, (2011), in most organizations, project managers are accountable for the successful delivery of complete projects. Increasingly, this success depends on project managers' possessing and utilizing skills and competencies.

Project Management is the process of defining, preparing, and coordinating all subsidiary plans and integrating them into a comprehensive project management plan. The project management plan defines how the project is executed, monitored and controlled, and closed (PMI, 2017). Lack of proper planning is one of a challenge factor that inhibits the successful completion of projects (Stephen, 2018). Poor planning does not provide any coherent mechanism by which the project would be implemented. Therefore employers and team members at certain points of the projects do not have a clear direction as what to do, when and how (Stephen, 2018).

There should be detailed project plan documented this include how the Project Manager maintain information about each project example project time, cost, duration, client name, start and end date, requirements changes, and client's comments and feedback against each project. Project manager use project management planning tool to plan the project management activities.

An effective means of learning from experience that combines explicit and tacit knowledge to the continuous improvement of project management processes and practices is one of a success factor Davies (2002). According to Cooke (2002) continuous improvement represents the fifth and highest stage of project management maturity in an organization. Knowledge is commonly split into "explicit" (knowledge that can be readily codified using words, pictures, and numbers) and "tacit" (knowledge that is personal and difficult to express, such as beliefs, insights, experience, and "know-how"). Knowledge management is concerned with managing both tacit and explicit knowledge for two purposes: hence Lack of Process for project knowledge management and capturing lessons learned is an important challenge factor in this study. Budgeting for monitoring and evaluation tasks and overall responsibilities must be listed and analyzed where necessary. Items associated with each task must be determined, including their cost, and there must be a budget for staffing, including full-time staff, external consultants, capacity building/training, and other human resource expenses (Tengan and Aigbavboa, 2016). If the objectives of monitoring and evaluation are not measurable, cannot be used to evaluate project performance and achievements or to communicate project results (Tengan and Aigbavboa, 2016). Hence Limited resources and budgetary allocations for monitoring and evaluation and poor data quality, data gaps and inconsistencies are important challenging factors identified for this study.

2.4 .3 Challenges from Scope Management

Project scope management is one element of project management. Project scope management includes the processes required to ensure that the project includes all the work required, and only the work required, to complete the project successfully (PMI, 2017). Managing the project scope is primarily concerned with defining and controlling what is and is not included in the project. Mirza, Pourzolfagha and Shahnazari (2013) a major contribution to unsuccessful projects is the lack of understanding or defining project and product scope at the start of the project. A properly defined and managed scope leads to delivering a quality product, in agreed cost and within specified schedules to the stake-holders. Mirza et al.

(2013) a project scope deals with the required work to create the project deliverables. The scope of the project is specific to the work required to complete the project objectives. A product scope, on the other hand, is the attributes and characteristics of the deliverables in the project creation. The product scope is measured against requirements, while the project scope is measured against the project plan. Without an agreed upon and documented vision, there is little hope of achieving success. It is essential for each project to clearly define and document its scope so that the project can move forward in a coordinated manner and requirements can be written (Mirza, et al., 2013). Hence the factors that affect Scope management would be challenges to Project management techniques implementation.

2.4. 4 challenges to Quality Management

Project quality management includes the processes and activities of the performing organization that determine quality policies, objectives, and responsibilities so that the project will satisfy the needs for which it was undertaken (PMI, 2017).

Quality control at preparation period is the key point for project quality control. Based on the project management practice, the following main control measures can be taken during the preparation period.

During construction Quality control measures can be

1. Use all kinds of instruction, such as rectification, working stop, delay payment, change construction team and major responsible person as control measures.

2. Jointly check the quality per month. The project management team, together with members from client, main contractor and construction team to check the quality and evaluate the quality.

At completion acceptance stage, the quality control work includes check the scope of contract, rectification, check as-built drawings and technical documents, writing quality review reports about the whole project work and assist the client to organize completion acceptance work and relative authorities confirmation.

Amalraj et.al, (2007), holds that quality assurance and quality control should be managed by the parent company, not by a contractor or other third party. It is also required that the parent company should review and approve job specific construction contractor quality plans prior to the work being started. Montequin et.al, (2016) survey identified Quality checks badly performed or not performed at all as constraining factors in project management. The factors that affect Quality management or challenges that affect Quality management would affect project management techniques implementation in construction project.

2.4. 5 Challenges to Time Management

Project time management includes the processes required to manage the timely completion of the project (PMI, 2017). Scheduled time frame is extremely crucial in projects. And the odds of successfully completing a project under unreasonable deadlines are generally not feasible expectations. Inadequate planning by contractors and project managers, improper site management by contractors, inadequate experience handling projects, and delays in payments to contractors by clients are factors that result in schedule delays (Ikediashi, et.at, 2014).

In their study (Hong and SUN, 2006) identified control measures for the effective project time management of construction. Review the overall construction progress organization submitted by main contractor and critical path and milestones of schedule network. Dynamically check the execution of schedule planning according to review the annual, seasonal and monthly schedule reporting. In addition, use computer aided system to manage the schedule network control and check construction progress records every day analyze every week and summarize and adjust every month. Reasonably arrange the lag relationship between the activities. Hence as project management techniques would be important to manage time of construction to complete the project within scheduled time frame hence time management challenges also affect project management techniques implementation.

2.4. 6 Challenges from Cost Management

As defined by (PMI, 2017) project cost management includes three major functions called cost estimating, budgeting and cost control . The task for the cost management function is to produce information for internal users who need accurate, detailed and frequent economic information for making decisions (Kujala et al., 2014). Project management practice depends a lot on forecasting in planning for the projects and the organization and a lot of project failures known in literature are mostly due to wrong estimate or costing problem .(Abdulrahman, 2016). Kujala et al. (2014) on their empirical study on challenges of complex projects identified major cost management challenges as highlighted below.

Project uniqueness leads to inaccurate pricing and contingency planning, while resource prices can vary, complicating cost estimation. Complex projects have more project management and integration engineering costs, making it difficult to calculate product costs. High uncertainty leads to large contingencies, impacting cost management techniques.

2.4. 7 Challenges from Human Resource Management

If human resource management was not properly managed as it is workmanship that take responsibility of taking running and operating all activities of project ,then the project management techniques has not been properly implemented. Project human resource management includes the processes that organize, manage, and lead the project team (PMI, 2017). The human resource need of project management is the biggest challenge of project management practice in the 21st century (Mir and Pinnington, 2014). It is the human resource that plan and execute the project, and ensuring that project teams are competent enough to successfully manage the project to exceed stakeholders' expectation is crucial. Every project has different human resources needs with different skills. Most time it is difficult to get the right employees on the project and this staffing problem may therefore have several implications on the success of the project (Abdulrahman, 2016).

The successful achievement of organizational objectives relies on delivering various projects within a scheduled time frame, budget estimate and expected quality. However, it is argued that the traditional drivers of successful project management are no longer adequate to guarantee project success and eventually reach organizational goals and objectives (Shenhar and Dvir, 2007). Instead, the implementation of effective project management and human related strategies is the most appropriate approach for the current business environment where most projects are associated complexity and uncertainly (ALNASSERI et.al, 2013).

According to Alsseri et.al, 2013, project managers who follow traditional ways of managing and executing projects often give little attention or even disregard the allocation of human related factors within their management agendas.

2.4. 8 Risks Management Challenges

According to PMI (2017), project risk management includes the processes of conducting risk management planning, identification, analysis, response planning, and controlling risk on a project.

2.4. 9 Challenges from communication

Project communication among workers and project management and between stakeholders was one of the factors that affect project management techniques implementation. Project communications management includes the processes that are required to ensure timely and appropriate planning, collection, creation, distribution, storage, retrieval, management, control, monitoring, and the ultimate disposition of project

information (PMI, 2017). Communication is the most important element to project success and yet it remains a challenge throughout the engagement (Prassad and Reddi, 2017). According to eds. Trocki and Bukłaha, (2016) the Primary objective of Communication Management is to provide the relevant stakeholders with the right information at the right time using properly selected measures. According to McManus and Wood, (2007) communication problems are one of the key factors contributing to failures in a project or to significant problems in the project. This may include various aspects related to the

preparation, execution or completion of the project. In the case of initiating a project most often points to the problems related to the lack of identification of stakeholders, communication needs and their sources, and inadequate communication with key stakeholders. During the planning phase of the project difficulties arise due to the lack of planned communication in the project, selective communication of plan to stakeholders and lack of commitment of key stakeholders. In the implementation phase there is often a lack of information about the status of the project or changes, insufficient exchange of information and number of meetings with stakeholders, the lack of a detailed review of the project, inadequate stakeholder management, the lack of communication when making decisions, And during completion no formal communication of the project, no process of communicating project experiences and best practices. However, elements of communication and communication management can be found in a much larger number of indicated success factors in the project, including: support from management, or customer/user engagement requires proper communication. Proper planning, or effective monitoring and control also include communication planning process. Leadership requiring effective communication skills and effective teamwork requires the ability to communicate.

2.4. 10 Challenges from stakeholders

Project stakeholder management includes the processes required to identify the people, groups, or organizations that could impact or be impacted by the project, to analyze stakeholder expectations and their impact on the project, and to develop appropriate management strategies for effectively engaging stakeholders in project decisions and execution (PMI, 2017). Stakeholder challenges in terms of company profile in Work experience, workmanship or labor , Financial capacity , Capacity in construction Equipment's and machines It is critical for project success to identify the stakeholders early in the project or phase and to analyze their levels of interest, their individual expectations, as well as their importance and influence (PMI 2013).s

Hence, there are many factors that obstruct project management techniques that would for benefit for better project performance of construction. Delay in construction which is from construction time management defect, cost overrun or failure in construction productivity and quality. Therefore delays because of materials shortage; unavailability of resources; low level of project leadership skills; escalation of material prices; unavailability of highly experienced and qualified personnel; and poor quality of available equipment and raw materials all would affect construction management techniques to properly implement (A. Enhassi. 2009). Many construction industry sectors have been experiencing chronic problems such as poor safety, inferior working conditions and insufficient quality. These problems have been identified as factors that affect construction productivity and challenges to project management techniques and would affects companies construction performance (S. Alwi. 2003).

The success of construction project depend on its performance, which is measured base on timely completion, within the budget, required quality standards and customers satisfaction (A. Omran.2012).

2.5 Empirical Literature

Different Literatures or Researchers assessed the effectiveness of project management methods on different projects locally internationally and in the Ethiopian context.

(Akewushola, 2012), discovered that for a project to be successful there must first be an improved appreciation of the role of project management and different techniques applied within projects, and this role must be placed within the context of a wider project alongside other outside criteria and long term expectations. This study also finds out that if these project management methods are well managed, there is a very high possibility of having a viable project that will guarantee a sound business success. Which include work scope, time, resources, costs, quality, communication, risk, and contracts procurement (k.wysocki, 2003), finds out that there are five constraints operate on every project; these are scope, quality, time, cost and resource.Tesfaye hailu zewudie (2016) made study on project management techniques or processes has showed that a significant number of projects in Ethiopia fall into the failed category. Therefore, the author of this study pays close attention during the execution of the project, as effective project management techniques are the main driving forces behind the success of the building construction project.As revealed in study report of Wubishet (2006), the main problems of Ethiopia's construction projects are intervention of owners or stakeholders with traditional approach to project design, planning without the consent of required professional and not using applicable guidelines of project management. project performance measurement includes time, budget, safety, quality and overall client satisfaction

(Daniel w.m.chan, 2002), that project performance measurement means an improvement of cost, schedule, and quality in design and construction stages (kuprenas, 2003), stated .The theoretical part of this paper shows project management processes and techniques are very important instrument in project management. It is impossible to determine what is needed for projects to be completed as per the defined budget, cost, time and quality if there is no a properly defined project plan, Monitor and Evaluation. When we come to the empirical literature review, a paper by Ashenafi (2008) indicates that project success is highly determined by the quality of the project plan, Organize, control, monitor and evaluation. The probability of successfully completing a given project will be high if it has a well-established plan, Monitor and Evaluation. A research paper by Garg and Yadav (2014) states that project planning and Project management is a key framework for successful completion of any project. Project management processes are very essential for any project with its tools and techniques. So, from the reviewed literature project Planning, Monitoring and Evaluation and project management processes are an aggregate of specific developed from each knowledge area. In addition preparing a sound project planning, monitoring and evaluation are a very important factor for successfully completing of any project.

2.6 Conceptual Framework

It has been learnt from the literature review that construction projects often necessitate project management knowledge, tools and techniques. It is also understood that project management process in project cycle which entails all knowledge areas; such us project integration, scope, time, quality, cost, human resource, communication, risk and procurement. This study derived its conceptual framework in relation to the above nine Project Management knowledge areas that are supposed to be applied during the project management processes of a project cycle with the application of different project management tools and techniques. To this effect; the study will assess the project planning, Monitoring and Evaluation practices of the Building construction project.

2.6 Knowledge gap

Previous literature on the effectiveness of project management techniques for project performance does not cover all aspects of project management challenges and techniques implementation and its practice in a single study. Most of these studies focus on a single aspect of project management, including stake holder management, risk management, planning, monitoring, and assessment and there were gap in study on knowledge in construction project methodology in particularly . However, challenging factors in one area have a significant impact on all other related areas. Therefore, as there are many challenges on productive

which is optimum production, in this study in line with project management methodologies and techniques and their impacts on project Execution are assessed. In order to come up with a better recommendation, and because this topic is understudied and literatures are scarce, it will provide a lesson for other projects. In line with, the study intended to fill this research gap, the effectiveness of the project management method on the performance of Building Construction in Addis Ababa would be critically evaluated in this study.

Further research is needed to assess the value of the construction management methods . This study examines the theoretical framework for the effectiveness of the project management process on project performance, based on previous studies. Analyze empirical results against a theoretical framework. This study explores the relationship between the key factors behind project management methods in respect with its impacts on project success and failure and the background variables of these organizations.

CHAPTER-THREE

METHODOLOGY

This chapter includes the research design, study location, Study population and sample size, sources and methods of data collection, the selection of the sample, the research process, validity and Reliability, the type of data analysis, and the ethical considerations.

3.1 Study location

The study would be done in Addis Ababa on the Project management techniques of Selected Building construction project.

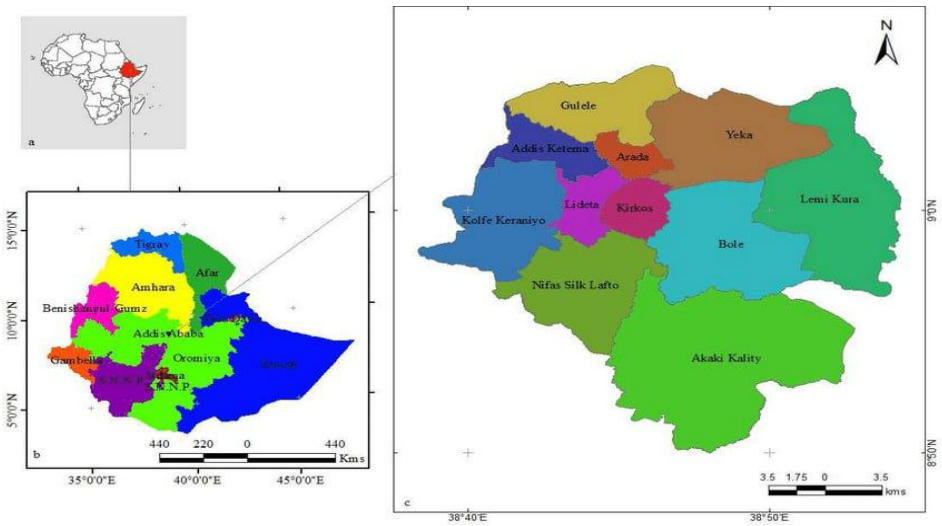


Figure 2.1. Sources-Ethio-GIS-2022Map-of-Addis-Ababa-with-Sub-Cities

3.2. Research Design

Based on the purpose of the study a descriptive research design is employed by the researcher assuming it will help to portray accurately the characteristics of the situation. According to Kothari (2008); the major purpose of descriptive research is description of the state of Affairs as it exists at present. Moreover, Based on the process of the research and the type of data involved, both quantitative and qualitative approach is followed by the researcher.

3.3. Population Sample Size and Sampling Technique

3.3.1. Target Population

The target population were from 10 High rise building with Basement + ground + 17 floors and above building construction 3 from Bole, 3 from Nifas silk , 2 from Kirkos , and 2 from Yeka sub cities of Addis Ababa with 10 contractors , 10 consultants and 10 clients stakeholders who are direct involve on construction of projects . On construction of projects there were 78 workers who were project manager , site engineers/ site supervisors , resident engineers , office Engineers and other professionals from contractor, consultants and clients on High Rise Building construction .

3.3.2 Sample Size

Engineers and managers and related professions would be used as a source of data for qualitative data collection and therefore are used as a unit of analytics. To determine the sample of the study used both probability and non-probability sampling techniques (purposive and simple random methods). The sample size of the study selected simple random method will be calculated office and appropriate numbers of samples representing the district was selected by purposive sampling methods in proportional to population size using Yamane formula (1967) shown in equation 3.1 below .

$n=N/ [1+N (e^2)]$ ……..Equation-3.1

Where, n = the sample size;

N = 78 =the target population size

e = the level of precision (5%)

Using the equation, Sample size is calculating

Hence, Total sample size of our study is 65

3.3.3. Sampling Techniques

The sampling techniques that will plan to implement Random sampling for the study in particularly for distribution of Questionnaires. Random sampling is the techniques used to select the respondents from population from bias. Purposive sampling was also used sampling method which allows a researcher to get information from a sample of the population that one thinks knows most about the subject matter. In this type of sampling, the choice of the sample items depends exclusively on the engineers, project managers and related from all workers to have detail collection on the study. Purposive sampling techniques include hand picking of the subject cases that the researcher thinks that possesses rich information to accomplish the researchers'

objective. Hence study uses both random and purpose sampling techniques to select sample of study from population

3.4. Types of Data and Instrument of Data Collection

3.4.1. Type and Source of Data

Both primary and secondary data were obtained using different data collection methods and instruments. The source for primary data is the sample group which is using staff members in particularly from professionals at High Rise Building construction in Selected sites of Addis Ababa from contractors , Consultants and clients on construction activities in city and Secondary data on the other hand would be obtained through the use of published and unpublished documents from thesis papers, journals websites etc.

3.4.2. Instruments of Data Collection

Questionnaire Survey

A closed- ended questionnaire or open ended Questionnaire would be developed and the response options for a closed-ended question or open ended questions would be exhaustive and mutually exclusive. For this purpose nominal scale such as yes or no and a Likert scale measurement will be considered. For the likert scale, the items will be scored on the 5 point Likert scale ranging from strongly agree/ Highly Significant (5) to strongly disagree/ Highly insignificant (1). The researcher has chosen to use the questionnaire survey because it is thought to be cheap and fast to administer; and even it increases the degree of reliability as well enhances the chances of getting valid data.

Documentary Review

Secondary data is obtained through the use of published and unpublished documents. These include various reports, thesis papers, Journals, websites, books , etc.

3.5. Procedure of Data Collection

The following data collection procedure has been followed by the researcher.

Data collection instrument questionnaire has been developed by the researcher. The instrument is given to selected persons or respondents of study selected from construction projects for review and updated /improved as per the comment and response of respondents forwarded. Then with the final questionnaire the researcher has made a short briefing on objectives of the research and its confidentiality. Finally, the survey instruments distributed to respondents after a short briefing about the objective of the assessment.

3.6. Method of Data Analysis

Data is analyzed using both quantitative and qualitative techniques of data analysis. For the quantitative analysis, data is sorted using the Statistical Package for Social Scientists (SPSS) version 20 and the analysis rely on descriptive statistics. The descriptive statistics includes use of frequency tables, charts, and graph. Qualitative data on the other hand is analyzed based on the description summaries from the responses against the thematic area of the study. The instrument of Analysis will be Percentage , Mean (weighted mean) of the scales (1 to 5).

The degree of occurrence/Significance /Agree and application are assessed with, 5= Very high Significance/agree, 4=Highly significance/ Agree , 3=Significance/ Low, 2=insignificance/ Very Low and 1= Highly insignificance/ Never . The mean value Arithmetical calculations are stipulated with the following formula

$$M.S = \frac{5*X_5+4*X_4+3*X_3+2*X_2+1*X_1}{5*N}$$ .....Equation 3.2

Where N = Number of respondent, X_i = degree of importance, i=1, 2,3,4,5

3.7 Validity and Reliability

The validity of the research was taken into consideration, as questionnaires was developed and checked by benchmarking the literature review in order to generate a valid and comparable response. The Linkert scale questionnaire items were tested for reliability by taking four sample respondents using Cronbach-Alpha test, which scored in 0.84 for the data collected from 4 respondents on 21 variables. Cronbach's α value of more than 0.9 is considered excellent and value more than 0.7 is generally considered acceptable for internal consistency of data therefore, the score supports the presence of good internal consistency among the items and promise the reliability and acceptability of the items for the study (George and Mallery, 2005)

3.8 Ethical Consideration

The goal of moral philosophy in research is to ensure that no one is harmed or suffers on the adverse consequences of the research activities (Crane, 2012). Thus, the ethical issues need to be studied in a scientific research were also weighed in this survey. The study results depend on the data supplied by the respondents and the qualitative data obtained from the consultation and that document the review process will be realistic and bias free. In addition, the researcher asked for the consent of the respondents and pledged to maintain the confidentiality of the data collected to guide this work, as well, the researcher will be liable for any consequences to respondents due to their participation in this research.

CHAPTER-FOUR

RESULT AND DISCUSSION

4.1 INTRODUCTION

The study would be mainly to see of impact of project Management Techniques on completion of building construction in Selected Building in Addis Ababa. In this regard, this chapter presents the Data analysis results and findings of the study as collected from the sample population. The data has been presented by tabulation, Graphs or charts. The chapter covers respondents 'general information based on demographic information and the analysis of the study based on the objective of the study practices , Challenges and effects of Project management techniques for Building construction project in Addis Ababa. The Data analysis was from the data collected from the Questionnaires with literatures from the response of respondents

4.1 Questionnaire Administration & Respondents Information

4.1.1 Questionnaire Administration

65 Respondents were taken as sample size of the study and 65 questionnaires were distributed to these respondents and 60 valid questionnaires (92.3 % from distributed) as shown in table 4.1 below were returned or collected by researcher. The returned questionnaires were satisfactory as it was 92.3 % of total distributed Questionnaires.

Table 4.1 Questionnaire administration (Distributed vs Returned)

organization from Respondents belongs	Questionnaire distributed	Questionnaire Returned	
		in number	in percentage
Client	5	4	80.0
Contractors	32	30	93.8
consultants	28	26	92.9
Total	65	60	92.3

(source ; own survey ,June 2024)

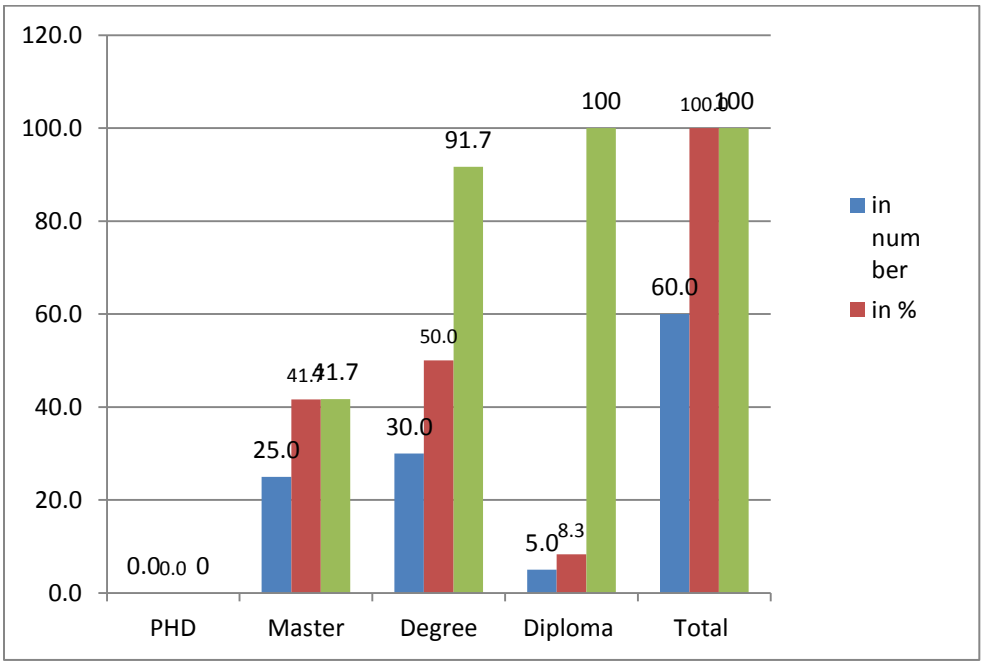
Hence it was valid and would help to use the number of respondents Response to the questionnaires.

4.1.2 Respondents Information

General Information of the respondents which are relevant to the study is summarized in the tables 4.2 and figures 4.1 and 4.2, indicated in below and the frequencies and percentages are calculated and described. In sub section of 4.2.2 , the respondents educational level (table 4.2 and figure 4.1) , their position (figure-4.2), and relevant work experience (figure 4.3) are discussed.

4.1.2.1 Respondents Educational Background

Out of the 60 respondents Concerning the Educational Background of the respondents in the organization, out of the returned questionnaires , as in figure 4.1 that 8.3 % (5 from 60 respondents) were Diploma and Degree 50% (30 from 60 respondents) , while 41.67 % were Masters holder s and therefore the majority that 91.7 % of respondents (55 of 60 respondents) were degree and above holders. This shows that the respondents were well educated and could understand on the objective of the study and hence can give response to the questionnaire.



(source; own survey ,June 2024)

Figure 4.1 Educational background of Respondents (source; own survey, June 2024)

4.1.2.2 Respondents Job position /Title

Table 4.2 shown below indicated 60 respondents position or Title and total number of respondents under positions from organizations. From collected 6o returned Questionnaires participated respondents were in a position of Project manager, Site engineers, Forman, site supervisors, office engineers and resident Engineers

Table 4.2 Title of respondents in organization

Position of Respondents	in number	in %
Project manager	8	13.3
engineer	26	43.3
Forman	4	6.7
Site supervisor	10	16.7
Office Engineer	6	10.0
Resident engineer	6	10.0
Total	60	100.0

(source ; own survey ,June 2024)

Out of the 60 respondents Concerning the position of the respondents in the organization, out of the distributed questionnaires, 13.8% were responded by project managers (8 of 60) , site Engineers 43.3 % (26 of 60) , 6.7 % forman (4 of 60) , Site supervisors 16.7 % (10 of 60), 10 % of office engineers (6 of 60) and 10 % of resident Engineers (6 0f 60) . These groups of respondents have a direct relationship with the study title of which was construction planning processes. Hence, it would make the reliability of the responses more trustworthy.

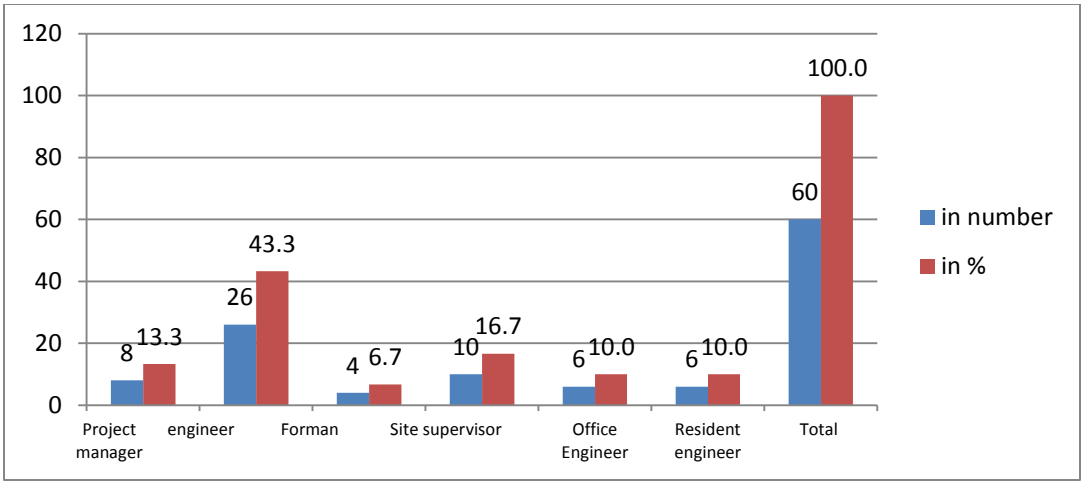


Figure 4.2; position or title of Respondents in Organization (source ; own survey ,June 2024)

4.1.2.3 Respondents work Experience

Analysis on respondents Work experience was analyzed (in number and in %) under three categories of years ; for less than 5 years , between 5 to 10, 16 and above 16 years as shown in table 4.3 below.

Table 4.3 Work experience of Respondents

Work Experience	in number	in %
Less than 5 years	0	0.0
5-10 years	20	33.3
11-15 years	30	50.0
16 and above years	10	16.7
Total	60	100

(source ; own survey ,June 2024)

As it is shown in Table 4.3 above, from the total valid respondents data analysis indicated All respondents were with more than five and above years' work experience. 33 % of them were in the work experience between 5 to 10 years. 30 respondents (50 %) have 10 to 15 years 'work experience and 16 and above were 10 (16.7%) and in general the respondents on study with significant years' work experience of 10 years and more than it which was taken and expected as one of experienced and deep in knowledge in topic of study

4.3 Current application of project management techniques in building Construction projects

Building construction Project

4.1.3 Use of project Management tools and techniques

The following table 4.4 showed the analysis result on the response of respondents on the tools for project management techniques in particularly for scheduling of project.

Table 4. 4 Respondents Knowledge of Project Management Techniques

Num	Project management techniques presenting or expression Tools	Number of respondents (frequency)	In percent (of total=60)
1	Work Break down Structure (WBS)	45	75%
2	Gantt Chart	48	80%
3	Critical Path Method (CPM)	54	90%
4	PERT	44	73%
5	Project management Ms Software	50	83%
6	Logical Frame Work Approach (LFA)	20	33%

(source ; own survey ,June 2024)

As shown in the above table 4.4 , when respondents asked which of the above tools for project planning are better familiar with CPM , Gantt Chart , WBS, Project Management Ms project , respectively 90 %, 80 %, 80% and 75 % answered these tools are familiar and significant in project planning processes and presentation while the least result 33 % from 60 said Logical Framework Approach . it implied that LFA was not significant and are not familiar .and for PERT 44 of 60 (73%) Agree that PERT is used alternatively for scheduling during construction planning process. Results of respondents 'survey in the above table indicates that Work Break Dawn Structure is used to decompose /define scope of construction projects. With 80% of respondents in agreement with the idea if WBS is used to define project scope, similarly, another project management tools used during activity scheduling and sequencing; such us, CPM, PERT, Gant Chart is found to be better significantly used Project Management Techniques in Addis Ababa Building Construction Project

4.1.4 Practices of Application of Project management techniques for Addis Ababa Building construction project

Construction project management Techniques have different Activities and hence this management activities would be managed by effective project management techniques or methods these were Analysis result by mean as the respondents response shown in Table 4.5 below .In the table 4.5 shown below Mean value of Scale 1,2,3,4 and 5 as defined in Appendix of respondents response on the practice of Project management techniques to run ,execute project of building construction

Table 4.5 descriptive statistics on Practices of Application of PM techniques

Activities in Project Management techniques application	M.S
Project planning activities are completed prior to project execution	4.06
Roles of stakeholders is identified	3.96
Project Managers/Team leaders are often capable of managing projects	3.89
Sufficient time is given for project design and quantity preparation/ development	3.86
Project activity schedule is determined well	3.86
Use of qualified personal	3.46
Project Management Plan (for construction projects) is developed during the planning phase	3.38
Team members/officers are motivated and committed to participate in PM process	3.36
Involvement of contractors	3.28
key stakeholders actively involved in project management processes	3.27
The project scope is well defined	3.26
There is strong integration between project departments and construction supervision unite	3.18
Involvement of competent professionals	3.16
Practice standard	3.16
Top level management actively involved during project activity	3.14
High technical knowledge	3.1
Communication management is significant	3.1
Project Human Resource Management is prepared during the planning phase	2.96
Communication plans and strategies are established during project planning process	2.96
Risk management plan is prepared	2.89
Project team is planned /allocated early in the planning stage	2.88

(source ; own survey ,June 2024)

(Mean Value ; below 2.5 =highly insignificant , 2.5-2.99= insignificant , 3.00-3.49= significant but not satisfactory/ , 3.50-3.99 = significant , 4.00-4.49=highly significant , 4.50-5.00 very highly significant) (Source; Own researcher survey, June 2024)

From the Mean Analysis result shown in table 4.5 above;

I. Project planning activities are completed prior to project execution with mean 4.06 was the top significant and better application among given PM techniques Basic activities in PM Techniques implementation in Building construction in Addis Ababa.

II. Following the 4 next better significant respectively were ; Roles of stakeholders is identified (Mean= 3.96) , Project Managers/Team leaders are often capable of managing projects (Mean=3.89) , Sufficient time is given for project design and quantity preparation/ development (Mean=3.86), Project activity schedule is determined well (Mean=3.86)

iii. At 3rd the Significant but not enough respectively were : Use of qualified personal (mean=3.46) , Project Management Plan (for construction projects) is developed during the planning phase (Mean= 3.38) , Team members/officers are motivated and committed to participate in PM process(mean=3.36) , Involvement of contractors (Mean=3.28) , key stakeholders actively involved in project management processes (Mean=3.27), The project scope is well defined (Mean= 3.26) , There is strong integration between project departments and construction supervision unite (Mean=3.18), Involvement of competent professionals (Mean=3.16) , Practice standard (Mean=3.16) , Top level management actively involved during project activity(Mean= 3.14) , High technical knowledge and Communication management is significant (Mean=3.1)

iv. At last the highly insignificant practice of Project management techniques application in Addis Ababa Building construction respectively were; Project Human Resource Management is prepared during the planning phase and Communication plans and strategies are established during project planning process with mean value of 2.96, Risk management plan is prepared (Mean=2.89) , Project team is planned /allocated early in the planning stage with mean 2.88

Hence the average weighted mean for all items were 3.3 which implied that PM techniques application was in low significance .it indicated there were the Application of PM techniques in Building construction in Addis Ababa Building Construction Project.

4.2 **Challenges that affect Implementation of Project Management Techniques Building construction Project**

Table 4.6 shown below indicates the analysis result by mean on the critical challenges that affect Project Management techniques implementation in Building construction in Addis Ababa.

The analysis mean result was from the response of respondents to scales 1 to 5 as expressed in the questionnaire shown in Appendix.

Table 4.6 Project management techniques Challenges

Challenges that affect PM techniques implementation	M.S
Problem in Identifying project management process and project management techniques	4.58
Human Resource Management	4.56
Resistance to new modern construction Techniques	4.55
Resistance to new changes	4.54
problem in Project management process implementation	4.52
problem in controlling and understand in Challenges from construction management Knowledge area	4.48
Impractical Project management processes	4.4
forecasting and strategies development practices	4.38
Projects face additional cost /variations/ due to change in scope, design	4.38
Poor communication	4.36
Lack of Leadership	4.35
Lack of commitment	4.32
Construction projects face design changes during execution phase	4.25
Organizational structure	4.2
Skill Gap/ limited skill/ inability to plan	4.15
Cash Flow problem/ Delayed in cash / Economy	4.14
Construction Environment	4.12
Limited Manpower to complete Tasks	4.08
Slow adoption	4.07
Lack of system	4.02

(Source; Own researcher survey, June 2024)

(Mean Value ; below 2.5 =highly insignificant , 2.5-2.99= insignificant , 3.00-3.49= significant but not satisfactory/ , 3.50-3.99 = significant , 4.00-4.49=highly significant , 4.50-5.00 very highly significant)

In table 4.6 above 21 critical challenges were identified and analysis was made . All 21 analysis result mean was above 4.00 as given mean value above indicated that highly significance of variable. Hence all challenges in table 4.6 above were highly and very highly significant challenges that affect implementation of Project Management Techniques in Building construction in Addis Ababa. From Result: The 4 top and most highly significant challenges respectively were; Problem in Identifying project management process and project management techniques (Mean =4.58) , Human Resource Management (Mean=4.56) , Resistance to new modern construction Techniques (Mean =4.55), Resistance to new changes (Mean=4.54) , problem in Project management process implementation (Mean=4.52)

The rest 17 identified highly significant challenges to Implementation of PM techniques respectively were ; problem in controlling and understand in Challenges from construction management Knowledge area (mean =4.48) , Impractical Project management processes (mean =4.4) , forecasting and strategies development practices (mean =4.38) , Projects face additional cost /variations/ due to change in scope, design (mean =4.38 , Poor communication (mean =4.36) , Lack of Leadership (mean =4.35) , Lack of commitment (mean =4.32) Construction projects face design changes during execution phase (mean =4.25), Organizational structure (mean =4.2), Skill Gap/ limited skill/ inability to plan (mean =4.15 , Cash Flow problem/ Delayed in cash / Economy (mean =4.14) , Construction Environment (mean =4.12) , Limited Manpower to complete Tasks (mean =4.08) , Slow adoption (mean =4.07) , Lack of system (mean =4.02)

Hence the above challenges were sum up under from Human Resources, Capital, Material resource, Time Technology, communication and related were challenges encountered in project management techniques implementation in Building construction in Addis Ababa, Ethiopia.

4.5 Impacts of Project Management Techniques implementation on Building construction project

Effective construction project management techniques implementation on Completion of building construction Studies investigated critical effects or Advantages of Project management techniques if effectively implemented and identified as shown in table 4.7 shown below with analysis result by mean of scales 1.2.3.4. And 5 (Appendix) .

Table 4. 7 impact of effective project management techniques

Positive Impact of PM Techniques implementation	Mean
Saves Resources	4.56
Reduces Costs	4.65
Improves company culture	4.14
Improve Employee Morale	4.2
Control Time within schedule	4.6
increase Quality	4.24
increase productivity	4.46
Develop workers and users moral	4
Encourage and initiate development	4.16

(Source; Own researcher survey, June 2024)

All impacts Analysis mean result were above 4 which showed that highly significant effects of Effective construction planning processes for the construction project performance and successes. Respondents Response result indicate that they understand as shown in different literatures that the effects of effective project management that are implemented result in success of Project performance. Project performance is indicated or measured in Cost of project, time completion of project without delay, increase or maintain Quality , in increasing productivity (controlling wastage and Delay to achieve in profit and increase in profit) . Under this to investigate the knowledge, understanding of Respondents on impacts of Effective project management techniques for successfully completing the building construction project. Also this was to investigate the impacts of Project management techniques for completion Building construction in Addis Ababa, Ethiopia.

As project completion success or project performance is measured in project cost, project consuming time, project quality ,customer satisfaction , productivity and therefore as shown in table 4.7 the analysis mean result of these performance indicators (cost, time, quality, productivity (profit), customer satisfaction) above 4 which revealed highly significant .

Hence the result showed that effective building construction project management techniques helps in Cost reduction , Maintaining construction or controlling construction time, controlling delay, for quality defect control or in maintain of quality , increase in productivity , satisfy customer satisfaction.

The study result showed that application of project management techniques helps in completing with better performance of Building construction projects.

4.6 Strategies on the application of project management Techniques for the completion of building construction

As assessed from the response of respondents the critical strategies to overcome project management techniques implementation challenges were ; Emphasize and give awareness and show them the Role of Project management techniques on project completion success , monitoring and Scheduling time for project management Techniques , Establish a budget to training and advancing workers on the principles and knowledge of Project management different modern techniques , Engage those involved , Assign roles and Responsibilities , Identify training Requirements , Test your contingency plans , Use the risk management tools .

CHAPTER FIVE

5. STUDY FINDING, CONCLUSION AND RECOMMENDATION

5.1. Study Finding

The thesis focuses on the impact of project management techniques on the completion of building construction projects in high-rise buildings in Addis Ababa. The study identifies several challenges that hinder the effective implementation of project management techniques, including human resource challenges, capital constraints, time management issues, technological limitations, communication barriers, and material resource management. The study also investigates the impacts of poor project management practices on building construction completion, including project delays, cost overruns, reduced quality, and increased conflicts. Poorly managed projects often exceed planned timelines due to inadequate planning and coordination, leading to substandard work and additional costs.

To improve the application of project management techniques and ensure successful completion, the study suggests training and development programs for project managers and team members, adopting modern tools for better planning, monitoring, and communication, developing comprehensive communication plans for timely and clear information exchange among stakeholders, and ensuring adequate allocation of financial, human, and material resources for effective project execution.

5.2. Conclusion

The study analysis result was driving the following conclusions:

1. Practice of Application of PM Techniques on Addis Ababa Building Construction Project

As shown in the above table 4.4 , Response of respondents on project management Techniques which were better familiar in project were CPM , Gantt Chart , WBS, Project Management MS project , respectively 90 %, 80 %, 80% and 75 % answered these tools are familiar and significant in project planning processes and presentation while the least result 33 % from 60 said Logical Framework Approach . it implied that LFA was not significant and are not familiar .and for PERT 44 of 60 (73%) Agree that PERT is used alternatively for scheduling during construction planning process. Hence Addis Ababa Building construction project management techniques are CPM, Gantt chart, WBS, Project Management MS project were practically used

1. Challenges that Affect PM techniques Implementation in Building Construction

In Study Analysis result of 21 critical challenges were identified and analysis was made. All 21 analysis result mean value was above 4.00 which indicated that highly significance challenges to PM Techniques implementation in Building construction. From Result: The 4 top and most highly significant challenges respectively were; Problem in Identifying project management process and project management techniques (Mean =4.58) , Human Resource Management (Mean=4.56) , Resistance to new modern construction Techniques (Mean =4.55), Resistance to new changes (Mean=4.54) , problem in Project management process implementation (Mean=4.52)

The rest 17 identified highly significant challenges to Implementation of PM techniques respectively were ; problem in controlling and understand in Challenges from construction management Knowledge area (mean =4.48) , Impractical Project management processes (mean =4.4) , forecasting and strategies development practices (mean =4.38) , Projects face additional cost /variations/ due to change in scope, design (mean =4.38 , Poor communication (mean =4.36) , Lack of Leadership (mean =4.35) , Lack of commitment (mean =4.32) Construction projects face design changes during execution phase (mean =4.25), Organizational structure (mean =4.2), Skill Gap/ limited skill/ inability to plan (mean =4.15 , Cash Flow problem/ Delayed in cash / Economy (mean =4.14) , Construction Environment (mean =4.12) , Limited Manpower to complete Tasks (mean =4.08) , Slow adoption (mean =4.07) , Lack of system (mean =4.02)

Hence the above challenges were sum up under from Human Resources, Capital, Material resource, Time Technology, communication and related were challenges encountered in project management techniques implementation in Building construction in Addis Ababa, Ethiopia.

2. Impacts of PM techniques implementation of Building construction

   From Respondents response result Analysis mean result which were above 4 which showed that highly significant effects of Effective Impacts of PM Techniques implementation on project performance on Project completion of Building construction project. Hence effects of effective project management that are implemented result in success of Project performance. Project performance is indicated or measured in Cost of project, time completion of project without delay, increase or maintain Quality , in increasing productivity (controlling wastage and Delay to achieve in profit and increase in profit) . Under this to investigate the knowledge, understanding of Respondents on impacts of Effective project management techniques for successfully completing the building construction project. Also this was to investigate the impacts of Project management techniques for completion Building construction in Addis Ababa, Ethiopia.
3. Strategies to overcome problems or challenges on planning processes in practical

Study investigated Emphasize the importance of planning , Schedule time for planning , Establish a budget , Engage those involved , Assign roles and Responsibilities , Identify training Requirements , Test your contingency plans , Use the risk management tools are some of the critical strategies to overcome the challenges to project management techniques to implement into practice .

5.3. Recommendation

Owing to the broader responsibility of the organization not only in managing and consulting number of construction projects every year, because of its role in directing the regional urban development activity; and the construction industry which require significant investment, it is recommended that the process based arrangement of the organization, should be modified to a form of separate metrics based arrangement so that it will be possible to install proper project management system that enable the study organization addresses consultancy needs the regional level public organization.

Since lack of project management knowledge, tools and techniques is identified in the assessment, it is recommended that the organization should equip project officers with the concept and application of project management knowledge through trainings.

It is recommended that an independent project risk management team /focal person is established/assigned so that it will be possible to effectively deal with construction project related risks are identified earlier and risk response planning system is adopted.

The contract administration department is further restructured to accommodate the responsibility of procurement planning and management of all construction projects that are under the management and consultancy of the study organization. This will help the organization in order to schedule and proactively work on how the procurement and solicitation processes for internal projects as well as external projects owned by other public bodies in the region whose procurement process is endorsed by the organization under the study.

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APPENDIX

QUESTIONNAIRE

Dear Respondents

I am student at Addis College from Project Management department**.** I have been working thesis paper for the fulfillment for MSc under the title of "impacts of construction project management techniques in Addis Ababa Building Construction". The study is focused on practicability, challenges in implementation construction project Management techniques to find out the benefit and effect for project completion performance on Building construction success. You have been selected to participate in the study by completing the questionnaire attached. Please be assured that the information provided will be used strictly for academic purposes by the researcher. Your assistance in completing the attached questionnaire will be greatly appreciated. You do not have to disclose your personal details.

SECTION –I: Respondents Information

1. **Personal information**
   a. **Educational level (Tick one)** Ph.D -------- Master Degree ----------Degree---------- Diploma other
   b. **Position in company** (tick one under corresponding title or position in table shown below)

Project manager	Site engineer	Forman	Site supervisor	Office Engineer	Quantity	Resident	Project	From finance	From	From contract Administration	From human resource	Others

   c. **Work experience in the company** (tick one under corresponding title or position in table shown below)

Less than 5 years	5-10 years	11-15 years	16 and above years

   d. **Your Organization Information** (tick one)

Client ○ , contractor ○ , consultant ○ finance institute ○ other----------

SECTION-2

On PROJECT MANAGEMENT TECHINIQUES

Key Scale 1=nill /Highly insignificant, 2=low / insignificant, 3=quite or medium/ significant , 4=highly significant , 5= very highly significant)

1. **Current application of project management techniques in building Construction projects**

Building construction Project

1.1 Which of the following of project management Techniques your company familiar with?

- Work Breakdown Structure (WBS) ----------
- Gantt chart ----------
- CPM ----------
- MS PM Software ----------
- PERT
- Logical Framework Approach----------
- Other (specify if exists)

1.2 Current application of Project management techniques in Addis Ababa Building construction

The following table indicates the application of project management Techniques practice in Addis Ababa Administration construction Activity

Give your Response under scales given for corresponding Application in the case of Current practices of Project management techniques Addis Ababa building construction projects

Please indicate your level of agreement with the following statements by ticking (√) the answer that best corresponds to your feeling. (1=nill /Highly insignificant, 2=low / insignificant, 3=quite or medium/ significant , 4=highly significant , 5= very highly significant) circle on of the five scales (1 to 5)

	Item	5	4	3	2	1
1	Project Management Plan (for construction projects) is developed during the planning phase					
2	key stakeholders actively involved in project management					

	processes					
3	Roles of stakeholders is identified					
4	There is strong integration between project departments and construction supervision unite					
5	Top level management actively involved during project activity					
6	The project scope is well defined					
7	Sufficient time is given for project design and quantity preparation/ development					
8	Project activity schedule is determined well					
9	Project planning activities are completed prior to project execution					
10	Use of qualified personal					
11	High technical knowledge					
12	Involvement of competent professionals					
13	Involvement of contractors					
14	Practice standard					
15	Communication management is significant					
16	Project team is planned /allocated early in the planning stage					
17	Team members/officers are motivated and committed to participate in the planning process					
18	Project Managers/Team leaders are often capable of managing projects					
19	Project Human Resource Management is prepared during the planning phase					
20	Communication plans and strategies are established during project planning process					
21	Risk management plan is prepared					

2. **Challenges for the implementation of project management techniques**

Challenges encountered in project management techniques implementation

Implementing Project management Techniques in Building construction may face challenges that affect project management techniques

The following challenges shown in the table below would be the critical challenges in construction project that affect project management Techniques implementation in Addis Ababa Administration construction Activity

Give your Response under the scale given and circle only one of scales 1,2,3,4,and 5 for each corresponding listed challenges that you would think that challenges that affect project management Techniques implementation in Addis Ababa Administration construction Activity

N	Challenges	Level of Significance				
1	Impractical Project management processes	5	4	3	2	1
2	forecasting and strategies development practices	5	4	3	2	1
3	Poor communication	5	4	3	2	1
4	Lack of Leadership	5	4	3	2	1
5	Lack of commitment	5	4	3	2	1
6	Organizational structure	5	4	3	2	1
7	Skill Gap/ limited skill/ inability to plan	5	4	3	2	1
	Cash Flow problem/ Delayed in cash / Economy					
8	Limited Manpower to complete Tasks	5	4	3	2	1
9	Slow adoption	5	4	3	2	1
	Construction Environment					
10	Lack of system	5	4	3	2	1
11	problem in Project management process implementation	5	4	3	2	1
12	Resistance to new changes	5	4	3	2	1
13	Problem in Identifying project management process and project management techniques	5	4	3	2	1
14	Resistance to new modern construction Techniques	5	4	3	2	1
15	problem in controlling and understand in Challenges from construction management Knowledge area	5	4	3	2	1
16	Projects face additional cost	5	4	3	2	1

	/variations/ due to change in scope, design					
17	Human Resource Management	5	4	3	2	1
18	Others (specify if exists)	5	4	3	2	1

5. . Impacts Of project Management techinques

N	Positive Impact	Scale				
1	Saves Resources	5	4	3	2	1
2	Reduces Costs	5	4	3	2	1
3	Improves company culture	5	4	3	2	1
4	Improve Employee Morale	5	4	3	2	1
5	Control Time within schedule	5	4	3	2	1

4. **Strategies on the application of project management Techniques for the completion of building construction**

What are Mitigations to overcome challenges on Planning procesess in practical

1. ----------2.----------3.---------- 4 ----------5----------
   ----------6.---------- 7 ----------

6. Additional Information

Write your Additional Comments on the Building construction project management techniques , processes practices, challenges and its impact on the construction project successes?

Thank you for Your Participation