**ADDIS ABABA UNIVERSITY**
**DEPARTMENT OF PROJECT MANAGEMENT**

# The practice of project management in Ethiopian real estate industry and its contribution to project success: The case of selected company in Addis Ababa

**By: befkadu w/kidan**

**A Research Project Submitted In Partial Fulfillment of the Requirements for the Award of Master of Arts Degree in Project Management**

**Advisor: Teklegiorgis Assefa (Assistant Professor)**

**June, 2017**
**Addis Ababa, Ethiopia**

# ADDIS ABABA UNIVERSITY

# DEPARTMENT OF PROJECT MANAGEMENT

**The practice of project management in Ethiopian real estate industry and its contribution to project success: The case of selected company in Addis Ababa**

**By: befkadu w/kidan**

**A Research Project Submitted In Partial Fulfillment of the Requirements for the Award of Master of Arts Degree in Project Management**

**Advisor: Teklegiorgis Assefa (Assistant Professor)**

**Addis Ababa, Ethiopia**

**June, 2017**

## DECLARATION

I, the undersigned, declare that this research project is my own work and effort and it has not been submitted anywhere for any award. Where other sources of information have been used, they have been duly acknowledged.

Name of Candidate: Befkadu w/kidan Signature: _____

Place: Addis Ababa, Ethiopia Date: Jun, 2017

# CERTIFICATION

This is to certify that Befkadu W/kidan Dega has carried out his research work on the topic entitled "**The practice of project management in Ethiopian real estate industry and its contribution to project success: The case of selected company in Addis Ababa ".** The study is an original work and is suitable for the submission for the reward of MA Degree in Project Management.

Advisor: Teklegiorgis Assefa (Asst.Prof):_____

# Addis Ababa University

# Department of Project Management

**The practice of project management in Ethiopian Real Estate Industry and its Contribution to project success: The case of selected companies in Addis Ababa**

**By: befkadu w/kidan**

**Approved by the Board of Examiners:**

| | |
|---|---|
| _____ | _____ |
| **Advisor** | **Signature** |
| _____ | _____ |
| **Examiner** | **Signature** |
| _____ | _____ |
| **Examiner** | **Signature** |

**ACKNOWLEDGEMENT**

I am very thankful to God for the health and strength He provided me throughout this studying experience.

My special thanks go to my mother, Eyerusale Serak, for everything she has done to me in my life. My deepest respect and gratitude also goes to every member of my family who were by my side in each challenge.

I would like also to express my sincere and heartfelt gratitude to my thesis advisor Tekilegiorgies (Assistance professor) for his genuine professional and technical advices and criticisms.

I am indebted to w/ro Amarech Gebretsadik, and Gulilat Yohannes who extended their open and warm assistance by providing constructive idea, material and facilitating convenient situation. I also would like to extend my thanks to my friends' sister, Tigist G/medhin, for her contribution to this study by commenting on the questionnaires and editing up to the production of this final paper.

I also like to express my appreciation to my friend, Hilina Haile for his financial assistance. Especially, I would like to give my gratitude to my brother, Fasica Tibebe, who provided me with strong financial and material support up to the end this paper.

My sincere thanks to all that are not mentioned above but contributed to the study directly or indirectly.

**TABLE OF CONTENT**

## LIST OF ACRONYMS

AAiT- Addis Ababa Institute of Technology
BOT- Finance/ Build Operate System
CHRAJ- The Commission for Human Rights and Administrative Justice
CDD-Center for Democratic Development
CPI- Corruption Perception Index
CPI -Corruption Perception Index
CHRAJ -Commission for Human Rights and Administrative Justice
DB- Design-Build or Turnkey
DBB- Design-Bid-Build
EBCS- Ethiopian Building Code Standards
EC- Ethiopian Calendar
EII- Ethiopia Integrity Initiative
HRM- Human Resource Management
IJITEE- International Journal of Innovative Technology and Exploring Engineering
IT- Information Technology
MOUDC- Ministry of Urban Development and Construction
NCCE- National Commission on Civic Education
PLC- Project life cycle
PM- Project Management
PMBOK- Project Management Body of Knowledge
PMI- Project Management Institute
PMO- Project Management Office
PSC- Project Success Criterion
PSF- Project Success Factors
TJN-Tax Justice Network

## LIST OF TABLE

Page



## FIGURE

Page

## LIST OF CHARTS

## LIST OF APPENDICES

***ABSTRACT***

*The application of Project Management (PM) tools and techniques in public sector is gradually becoming an important issue in developing economies, especially in a country like Ethiopia where projects of different size and structures are undertaken. The paper examined the application of the project management practice in public sector in Ethiopia. There are different problems that are faced by Real Estate projects such as delay, nonperformance of projects, not meeting required specifications, and dissatisfaction of customers, etc. This study aims to assess the extent to which project management is applied in Ethiopian Real Estate projects and its contribution to success of these projects and to address the major causes of delay, cost escalation, and poor quality. Major data for the assessment are obtained from 24 Real Estate companies through questionnaire. Data are also gathered from 11 construction consultants, 3 instructors, and 44 Real Estate house owners for cross checking the information found from the Real Estate companies. Mean, standard deviation, correlation, regression, and other quantitative and qualitative analysis tools are used. IBM SPSS Statistics 20 computer applications is used to simplify long statistical computations. The findings reveal that Project integration, scope, time, HR, procurement, and claim are well managed in the Industry. In addition to this, Project initiation process groups and project closing process group are practiced well and consistently. On the contrary, the other knowledge areas and process groups are either poorly practiced or inconsistently applied or both throughout the Industry. It is also found that the practice of project management has significant contribution to success of Ethiopian Real Estate projects. Recommendations are forwarded for Real Estate companies to maintain their good project management practices that are mentioned above, to improve the other knowledge area and process group practices, to consider causes of delay, cost escalation, and poor quality while making project decisions, to continuously conduct customer satisfaction survey to cop up with the new dimension of project success, and to have project management Information Systems. It is advised to establish Real Estate Association at industry level and to set project management standards by government at national level. Finally, area for further study are indicated.*

**Key Words:** Project, project management, project management knowledge areas, project management process groups, Real Estate Industry, Project Success.

# CHAPTER ONE
# INTRODUCTION

Many definitions had been given to project by different authors, due to the fact that project is a multi disciplinary word that has different meaning from different perspective and orientations. Engineers, Architects, Managers and so on, have their definitions coined out from their experiences as far as their professions are concerned. Project according to Project Management Institute, PMI, (2000) cited in Pinto (2007) "is a temporary activity or end eavour undertaken purposely to create a unique output (product or service) within budget, time and standards. Turner and Muller (2003) in their own words defined project as "an organization of human materials and financial resources in a novel way, to undertake a unique scope of work, of given specification, within constraints of cost and time, defined by quantitative and qualitative objectives so as to achieve a beneficial change".

This chapter is introductory part of the entire study. It provides some insights about the ground and assumptions where the study is conducted. It states background, statement of the problem, objectives, significance, scope, limitation, definition of key terms, and organization of the study.
Accordingly, it begins with background of the study.

## 1.1 Background of the Study

Project management processes and project management knowledge areas are increasing in importance as more and more projects are becoming constrained to budgets, schedules and other performance factors. Project management brings structured and consistent performance resulting successes which ultimately bring about satisfaction of stakeholders.

Business leaders and experts have proclaimed that project management is a strategic imperative. Project management provides people with a powerful set of tools that improves their ability to plan, implement, and manage activities to accomplish specific organizational objectives. But, project management is more than just a set of tools; it is a results-oriented management style that places a premium on building collaborative relationships among a diverse cast of characters. Exciting opportunities await people skilled in project management (Larson and Grey, 2011: P3).

The need for elevating performance continues to challenge the project management profession. The waste on failed projects and cost overruns is estimated in the neighborhood of over billions of money. Most of the people who excel at managing projects never have the title of project manager. They include accountants, lawyers, administrators, scientists, contractors, public health officials, teachers, and community advocates whose success depends

upon being able to lead and manage project work. For them project management is not a title but a critical job requirement. It is hard to think of a profession or a career path that would not benefit from being good at managing projects (Larson and Grey, 2011: P4).

Particularly, in Ethiopia, the involvement of project management in different national strategic plans as well as in different levels of micro activities becomes more visible. Nowadays, the government of Ethiopia is on the way of implementing a five years strategic plan which is also part of the national 20 years visionary plan to transform the country to the level of middle income countries. Under this strategic plan, several projects are included such as Addis Ababa light railway project, national railway project, different national and state road projects, different mega hydraulic structures like dams and irrigations, and others. These projects have their own technical specifications, time and resource schedules as well as specified level of budget to pump.

With regard to the private sector, individuals set their social and private goals to accomplish by devoting the necessary resources. Up on the struggling for accomplishing their goals, the involvement of projects is vital tool to enjoy the bottom line of their efforts. Construction industry is one of the key areas that the government gives focus as one of the cornerstones of development. Significant amount of money is budgeted by the government for this sector which enables to involve the government itself as well as to facilitate the involvement of private entities.

Different construction companies and Real Estate companies are joining the sector to contribute their part in housing development beside to aiming to quench their goal of wealth maximization and profit maximization. These companies are involved in constructing and selling of houses. The Real Estate industry is on the way of growing even though its speed is not within the required range. There are different reasons that can be raised for the existence of this problem. Scarce resources mainly money, management inefficiencies, insufficient infrastructure facilities are among the reasons. For projects provided with sufficient budget and comprehensive infrastructures, project management inefficiencies took the lion part for the result of poor project performance and project failure. This study focuses on assessing the practice of project management and its contribution for success of Real Estate projects in companies that exist in Ethiopia, Addis Ababa.

## 1.2 Statement of the Problem of the Study

Projects, be it a government project, private project or NGO project, usually encounter many problems in developing countries in general and Ethiopia in particular. Since projects are mostly initiated to increase organizational capabilities, meeting new demands, realizing new opportunities or to overcome

the challenges faced due to very frequent change of organization's environment then it is more likely that problems could occur during execution of the project.

In Ethiopia, 79.06 percent of projects had failed to meet their objectives. Moreover, 72 percent of projects financed by Development Bank of Ethiopia (2013) were under failure category. Implementation delay, overestimation of project return and poor manpower quality of projects were found to be statistically significant cause of project failures to meet their objectives.

Project management is very crucial for proper planning, implementing and controlling of projects which can satisfy the required project performance in terms of time, cost, and technical performance requirements. Due to the nature of the business, companies that are engaged in Real Estate industry are expected to apply project management widely. Several house demands are covered by the involvement of these Real Estate developers. On the contrary, different problems are observed in Real Estate projects. Of the common problems, delay of projects, nonperformance of projects, not meeting of required specifications, and dissatisfaction of customers can be raised.

For instance, some Real Estate companies collected advance payment but couldn't deliver what they promised to their customers due to different reasons. In this case, only project initiation is done without following of the rest project management processes. There are other companies which are engaged in to contract with their customers, but transferred incomplete houses to customers because of financial constraints due to inefficient project execution management.

According to MOUDC (2012: P11) fourteen Real Estate companies, registered by Addis Ababa investment agency, took land for Real Estate development but resale and transfer the land to third person. These companies didn't even completely perform the processes of project initiation. MOUDC (2012: P14) also reported that significant number of companies received plot of land for Real Estate development. But, in mid time of their projects, they change project scope by redesigning of houses to smaller once for the sake of avoiding tide up of money by huge projects.

In this situation, there is a problem in project planning and execution managements. According to MOUDC (2012: P11), there are companies who performed slow construction of houses. There are also companies that stopped construction of houses after devoting huge amount of money and time, up to certain progresses.

Among the different problems observed by the researcher, the focus of this study is on problems that are encountered by Real Estate companies up on applying project management practices. To this end, Real Estate companies that are actively involved in the business are included in the study.

## 1.3 Objectives of the Study

The general objective of the study is "to assess the practice of project management in Real Estate Industry and its contribution for project success". Under the general objective, the following are specific objectives of the study:

a. To assess the practice of project management in Real Estate companies in terms of project management knowledge areas;
b. To assess the practice of project management in Real Estate companies in terms of project management process groups;
c. To measure contribution of the different project management knowledge areas to project success that are practiced by Real Estate companies;
d. To measure contribution of the different project management process groups to project successthat are practiced by Real Estate companies; and
e. To identify the major causes of delay, cost escalation, and poor quality in Ethiopian Real Estate Industry.

## 1.4. Research questions:

- Does the practice of project management knowledge areas in real estate companies help to improve their performance and success?
- To what extent does the practice of project management knowledge area in real estate companies contribute to project success?
- Does the practice of project management process group in real estate companies contribute to project success efficiently and effectively?

## 1.5. Significance of the Study

Considering the importance of project management in the construction companies, specifically in Real Estate companies, and the booming of construction activities in Ethiopia, it is assumed that these research output contributes in identifying which project management processes has effect on performance of building construction projects in Addis Ababa.

Since project management is an area with a growing body of knowledge, this research can contribute in adding some concepts to the existing body of knowledge with a particular emphasis on Real Estate Company's practices being currently implemented. Even though the research focuses on Real Estate projects, the findings and the outcome could be relevant to practitioners in other types of projects

- **Extending Knowledge**

Different project management related researches were conducted in the past. Particularly, there are some researches aimed to study project management in Real Estate sectors. Beside to the previous studies, this research is conducted on project management practice in Ethiopian Real Estate industry and also relationship between project management practices with project success.

- **For future Researchers**

This research paper can be used as background study for future researches on Ethiopian Real Estate industry project management and project success.

- **To All Real Estate Companies**

Findings from this study can be used by Real Estate companies as a spring board of where they are standing in terms of applying project management and also in terms of identifying the level of project success due to the practice of project management.

- **To Real Estate Companies that are Involved in the Study**

The Real Estate companies that are involved in this study will be benefited more than other Real Estate companies. This is due to the fact that the research findings are more or less mirrors of where they are standing. In addition to this, recommendations forwarded in the study can serve the companies to improve their project management practice.

## 1.6Scope of the Study

This study is conducted on project management practice on housing development projects. Among entities that are involved in housing projects, only private Real Estate companies that have completed and/or ongoing projects located in Addis Ababa are involved to assess the problem using available financial, labor, & time resources. Activities of selected companies that are not related with project management are not included. Project document review is not included in this study.

## 1.7 Limitation of the Study

There are some limitations of this study against achieving its objectives effectively. It was impossible to access some important documents like project schedules and project performance records. Accordingly, questionnaire and interviewed based data were obtained. To improve its validity, cross checking were made by obtaining information from customers, and from consultants,

using different data gathering techniques. The other limitation is, there were lacks of cooperation in some of respondent Real Estate house owners.

## 1.8 Definition of Key Terms (Operational Definitions)

a. **Project:** It is a temporary endeavor undertaken to create a unique product, service, or result (PMI, 2013: P 3).
b. **Project Management:** Chandra (1995) define Project management as an organized venture for managing projects, involves scientific application of modern tools and techniques in planning, financing, implementing, monitoring, controlling and coordinating unique activities or task produce desirable outputs in accordance with the determined objectives within the constraints of time and cost.
c. **Project Management Knowledge Area:** It stand for a complete set of concepts, terms, and activities that create a specialized professional field known as project management.
d. **Project Management Process Groups:** Are sets of processes that makeup project life cycle.
e. **Project Success:** It is completion of a project within the allocated time period, within the budgeted cost, at the proper performance or specification level, with acceptance by the customer/user, with minimum or mutually agreed upon scope changes, without disturbing the main work flow of the organization, and without changing the corporate culture ( Kerzner, 2009: P 7).
f. **Real Estate:** It involves ownership of real property such as land and houses.
g. **Real Estate Companies/Developers:** Companies that are involved in the construction and selling of houses.

## 1.9 Organization of the Study

This research paper is composed of five chapters. The first chapter is an introductory chapter. It includes background of the study which gives insight on project management and base for the study. Statement of the problem answers why this research was conducted. General and specific objectives of the study are also included in this chapter based on the research questions given in the statement of the problem. Significance of the study which is about who will be benefited from the fruits of this research is also part of this chapter. Scope and limitations of the study tells about areas to be included and areas not to be included as well as the reason for not having comprehensive research in the whole areas of project management. The second chapter is all about review of related literature. It contains theoretical and empirical parts that are used as frame work and supportive information for the study. It explains about Project Management and other related issues. Research methodology which is the third chapter emphasis on: which data source are used, what technique of sampling are the most appropriate and how

the gathered data are presented and analyzed. Chapter four contains the major parts of this research paper which are data presentation and data analysis. Data presentation has the collected data in an organized way. The data analysis is a bridge between the data presentation and the next chapter (chapter four). It gives meaning for the data gathered and presented. Chapter five is the last and the most important chapter. All findings of the study are included followed by conclusions and the recommendations.

## 1.10 Summary

As it is known, project is a temporary endeavor to achieve goals. Now a days, requirements from projects become higher and higher in terms of cost, time, quality, scope, customer satisfaction, etc. In this sense, project management plays vital role for efficient and effective accomplishment of projects. But, the extent of practice of project management affects the level of project successes. This paper also attempt to asses project management practice and its contribution to project success in Ethiopian Real Estate industry practically in Addis Ababa with the aim of having probable benefit for Real Estate industry, Real Estate companies and to be ground for further study. The study has some obstacles, such as lack of cooperation in data collection process. But, the study was conducted successfully by overcoming the different challenges.

# CHAPTER TWO
# REVIEW OF RELATED LITERATURE

## 2.1 Introduction

The second chapter of this Research paper is review of related literature which contains both theoretical and empirical parts which are used as a guide line throughout conducting the study. The first part is theoretical review which includes theories of published books and previous researches related with this study. The second part is empirical review. It has summary of some selected previous researches on the area of project management. In addition, this chapter also contains discussion on current situation of Ethiopian Real Estate projects and conceptual framework of the study.

## 2.2 Theoretical Review

Construction Industry is the backbone for economic development. The industry is involving increasing number of small companies and few big construction companies. Construction process is labour intensive and also requires good management style because of difficult site condition and bulky materials use.

In spite of all the best practices, predictability of project outcomes is still an issue of concern. Failure to achieve targeted time, budgeted cost and specified quality result in various unexpected negative effects on the projects. In the achievement of consecutive economic growth for the last twelve years in Ethiopia, the contribution of construction industry is very significant. As it is mentioned in a recently published Construction Magazine 8.5 percent of the growth domestic product (GDP) of Ethiopia is earned from construction industry. According to the magazine, some professionals who participated in this sector as well as some informal evidences remark that the contribution of construction industry even could reach 15% of the GDP.

Professionals and experts have stated that project management is a crucial strategic view. Project management provides entities with influential set of tools that develop their ability to apply managerial functions to accomplish specific organizational objectives. But project management is more than just a set of tools; it is a results-oriented management style that places a premium on building collaborative relationships among diverse cast of characters. Exciting opportunities await people skilled in project management (Larson and Grey, 2011: P3). In this section, issues related with project management, such as project, types of projects, project management processes, project management knowledge areas, and others are discussed.

### 2.2.1. Project

Many definitions had been given to project by different authors, due to the fact that project is a multidisciplinary word that has different meaning from different perspective and orientations. Engineers, Architects, Managers and so on, have their definitions coined out from their experiences as far as their professions are concerned. Their definition depends on their areas of studies and the point of view that each scholars used. But to have comprehensive understanding of a project, it is better to refer different definitions.

Eric Verzuh (2005:1 cited in Modesto &Tichapondwa, 2009:P19) stated "we live in a world where change and the rate of change is constantly increasing. In order to survive and prosper, organizations need to continually modify their products and services. Projects are the means by which these innovations are effected. Greater change = more innovations = more projects." In this context, Verzuh see project as a means to cop up with changes. Accordingly, Modesto &Tichapondwa (2009:P20) define project as initiative to bring about change in order to achieve specific objectives, within a timescale, in a given context with allocated budget.

The Project management Institute (2013: P3) define project as a temporary endeavor undertaken to create a unique product, service, or result. In this study, the PMI's definition of project is used as an operational meaning. Larson and Grey (2011: P5) stated, "Like most organizational effort, the major goal of a project is to satisfy a customer's need. Beyond this fundamental similarity, the characteristics of a project help differentiate it from other endeavors of the organization". The definition is given based on two key characteristics of project. All projects are temporary and undertaken to create a product, service, or result that is unique. These two simple concepts create a work environment that mandates different management approach from that used by an operations manager, whose work is oriented toward continuous improvement of existing processes over longer periods of time.

In contemporary business and science, Wikipedia (2015) defined a project as a collaborative enterprise involving research or design that is carefully planned to achieve a particular aim. Project can be further defined as temporary rather than permanent social system or work systems that are constituted by teams within or across organizations to accomplish particular tasks under time constraints. An ongoing project is usually called (or evolves into) a program (Wikipedia, 2015).

Many other scholars and books prefer to define and explain project by describing the common characteristics of projects instead of giving a direct definition so that anyone can define project by integrating these features of projects. Different scholars provide the unique features of projects. Nicholas

and Steyn (2008) provide comprehensive characteristics of projects. The following section is the discussion on these characteristics.

### 2.2.2. Characteristics of a project

Regardless of specific features of particular projects, below are some common characteristics forwarded by Nicholas and Steyn (2008: Pxxvi) for all projects:

**1.** A project involves a single, definable purpose and well-defined end-items, deliverables, or results, usually specified in terms of cost, schedule, and performance requirements. Larson & Grey (2011: P6) stated that this singular purpose is often missing in daily organizational life where employees carry out repetitive operations daily.

**2.** Every project is unique in that it requires doing something different than was done previously. A project is a one-time activity, never to be exactly repeated again. Lock (2001:P2) discussed about the uniqueness of a project that "The principal identifying characteristic of any project is its novelty. It is a step into the unknown, fraught with risk and uncertainty. No two projects are ever exactly alike, and even a repeated project will differ from its predecessor in one or more commercial, administrative or physical aspects. "In a “routine” project such as home
construction, variables such as terrain, access, zoning laws, labor market, public services, and local utilities make it unique.

**3.** Projects are temporary activities. Each is an ad hoc organization of personnel, material, and facilities assembled to accomplish a goal within a scheduled time frame; once the goal is achieved, the ad hoc organization is disbanded.

**4.** Projects cut across organizational and functional lines because they need skills and talents from multiple functions, professions, and organizations. Larson & Grey (2011: P6) stated that instead of working in separate offices under separate managers, project participants, whether they be engineers, financial analysts, marketing professionals, or quality control specialists, work closely together under the guidance of a project manager to complete a project.

**5.** Given that each project is unique, it also involves unfamiliarity and risk. It may encompass new technology or processes and, for the organization undertaking it, possess significant elements of uncertainty and risk.

**6.** The organization usually has something at stake when doing a project. The work calls for special scrutiny or effort because failure would jeopardize the organization or its goals.

**7.** A project is the process of working to achieve a goal; during the process, projects pass through several distinct phases called the project life cycle. The

tasks, people, organizations, and other resources involved in the project change as the project moves from one phase to the next.

### 2.2.3. Classification of a project

Projects can be classified in different bases such as based on type of works that projects involve, based on size (duration) of projects, and so on. Lock (2001:PP2-3) classify projects under four main headings based on type of works that projects involve as the following:

a. **Civil engineering, construction, petrochemical, mining and quarrying projects.** These projects are characterized by on site activities, remote from the contractors' head office which incur special risks, and involves massive capital investment. They deserve rigorous management of time, cost, and quality. If the projects are extra-large, they will involve several contractors working together as joint venture or in a form of other means, which makes the projects more complicated.

b. **Manufacturing projects.** Up on establishment of factories for producing goods, projects are often conducted. Different additional projects will also be executed after the establishment of a factory for different purposes such as new product development. These post-establishment projects are called manufacturing projects.

c. **Management projects.** Regardless of the size of a company, it will run at least few projects throughout its lifespan. These projects are required by a company in different situations such as: on plant/ service center relocation, on restructuring of a system and organization, in research & development, for feasibility studies, for executing special trainings, to plan & conduct celebrations, etc.

d. **Research projects.** These projects are independent research projects which consume huge amount of money and lasts for many years. They assume high level of risks so that it becomes difficult or impossible to define end results. These projects require effective time and cost management.

Real Estate projects involve the construction of houses for selling purpose. They also require huge capital investment with longer time and quality demands. Accordingly, they are under the first category of projects that are mentioned above.

### 2.2.4. Project Management

Project Management Institute, (2013: P5) defines Project management as an application of knowledge, skills, tools, and techniques to project activities to meet the project requirements. Similarly, Chandra (1995) define Project

management as an organized venture for managing projects, involves scientific application of modern tools and techniques in planning, financing, implementing, monitoring, controlling and coordinating unique activities or task produce desirable outputs in accordance with the determined objectives within the constraints of time and cost. This Chandra's definition of project management is used as operational meaning in this study. Project management is accomplished through the appropriate application and integration of the different logically grouped project management processes, which are categorized into five Process Groups. According to PMI (2013: P5), these five Process Groups are: Initiating, Planning, Executing, Monitoring and Controlling, and Closing. These Project management processes will be discussed below as an independent topic (section 2.1.5).

McNamara (2002: P1) stated that project management is a carefully planned and organized effort to accomplish a specific (and usually) one-time effort, for example, construct a building or implement a new computer system. Project management includes developing a project plan, which includes defining project goals and objectives, specifying tasks or how goals will be achieved, what resources are need, and associating budgets and timelines for completion. It also includes implementing the project plan, along with careful controls to stay on the "critical path", that is, to ensure the plan is being managed according to plan. Project management usually follows major phases (with various titles for these phases), including feasibility study, project planning, implementation, evaluation and support/maintenance. (Program planning is usually of a broader scope than project planning, but not always.)

Heerkens (2012: P11) Stated "The project management process calls for the creation of a small organizational structure (the project team), which is often a microcosm of the larger organization. Once the team has produced the desired outcome, the process then calls for the decommissioning of that small organizational structure."

### 2.2.5. Project Management Processes

Project management processes can be described in terms of the integration between the processes, their interactions, and the purposes they serve. As mentioned above, project management processes are grouped into five categories known as Project Management Process Groups (or Process Groups) (PMI, 2013: P3):

- **Initiating Process Group.** The processes in this grouped are used to define a new project or a new phase for ongoing project by having authorization for starting the project/phase.
- **Planning Process Group.** The processes in this group are used to set scope and objectives for a project as well as to list down course of actions used to achieve those objectives.

- **Executing Process Group.** The processes in this group are used to perform works of the project that are defined in the project management plan to achieve project requirements.
- **Monitoring and Controlling Process Group.** The processes in this group are used to follow, review, and facilitate the flow and performance of a project. The processes are also used to identify the need for changes and execute them.
- **Closing Process Group.** The processes in this group are used to finalize activities of a project or phase in a formal way

These project management process groups describe project in terms of phases. They involve several areas of project management applications. These areas refer to as 'project management knowledge areas.

### 2.2.6. Knowledge areas of Project Management

Projects are divided into components, and a project manager must be knowledgeable in each area. A Knowledge Area stand for a complete set of concepts, terms, and activities that create a specialized professional field known as project management. Project teams should use these Knowledge Areas and other extension Knowledge Areas for specific project types, as appropriate. There are ten general project management knowledge areas which are: project integration management, project scope management, project time management, project cost management, project quality management, project human resource management, project communications management, project risk management, project procurement management and project stakeholder management.

PMI (2013: P60) defines the important aspects of each knowledge area and how it integrates with the five Process Groups. As supporting elements, the knowledge areas provide a detailed description of the process inputs and outputs along with a descriptive explanation of tools and techniques most frequently used within the project management processes to produce each outcome.

#### 2.2.6.1. Project Integration Management

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. In the project management context, integration includes characteristics of unification, consolidation, communication, and integrative actions that are crucial to controlled project execution through completion, successfully managing stakeholder expectations, and meeting requirements (PMI, 2013: P63).

According to Saylor.org (2009: P25) Flowcharts, diagrams, and responsibility matrices are tools to capture the work processes associated with executing the project plan. The first draft of the project procedures manual captures the historic and intuitional knowledge that team members bring to the project. The development and review of these procedures and work processes contribute to the development of the organizational structure of the project.

Project integration management incorporates allocation of resources, prioritizing among objectives and alternatives, managing the interactions among the rest of project management Knowledge Areas and creating an environment that encourages team members to fully engage in the project and encourages innovative approaches to developing the project plan. Project integration management processes include the following (PMI, 2013: P63):

- Develop project charter
- Develop project management plan
- Direct and manage project work
- Monitor and control project work
- Perform integrated change control
- Close project or phase

#### 2.2.6.2. Project Scope Management

According to PMI (2013: P106), project scope management comprises the processes required to make sure that the project is armed with all the appropriate efforts to accomplish the project as need. In other word, the project scope is a document that describes the parameters that define a system and determine the behavior of the project, what work is done within the boundaries of the project, and the work that is external to the project boundaries (Saylor.org, 2009: P26). PMI (2013: P106) listed the following specific efforts as part of project scope management :

- Plan scope management
- Collect requirements
- Define scope
- Create WBS
- Validate scope
- Control scope

#### 2.2.6.3. Project Time Management

According to Saylor.org (2009: P26), the definition of project success often includes completing the project on time. The importance of ensuring work proceeds efficiently within individual tasks, along with the interfacing of related tasks, is a key message in project time management ( Hameri&Heikkila, 2002: P143, cited in Pasian, 2011: P19). The ultimate measure being project success,

based on effective control of time management processes, tools and practices. The development and management of realistic project schedule and project plan is a primary responsibility of the project manager to complete the project on time. Accordingly, project time management includes the processes required to manage the timely completion of the project such as the following (PMI, 2013: P141):

- Plan schedule management
- Define activities
- Sequence activities
- Estimate activity resources
- Estimate activity durations
- Develop schedule
- Control schedule

#### 2.2.6.4. Project Cost Management

The definition of project success often includes not only completing the project on time, but also completing the project within budget. Developing and controlling a project budget that will accomplish the project objectives is a vital project management skill. Project cost management includes the processes involved in planning, estimating, budgeting, financing, funding, managing, and controlling costs so that the project can be completed within the approved budget. Project cost management processes include the following (PMI, 2013: P193):

- Plan cost management
- Estimate costs
- Determine budget
- Control costs

#### 2.2.6.5. Project Quality Management

Hoyer & Hoyer (2001:PP55-59, Cited in Oschman, et al., 2006) defined quality as "the total composite product and service characteristics of marketing, engineering, manufacturing and maintenance through which the product and service in use will meet the expectations of the customer." 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. Project quality management uses policies and procedures to implement, within the project's context, the organization's quality management system and, as appropriate, it supports continuous process improvement activities as undertaken on behalf of the performing organization. Project quality management works to ensure that the project requirements, including product requirements, are met and validated (PMI, 2013: P227).

Project quality focuses on the end outputs that reflect the purpose of the project. The project manager is accountable for developing a project implementation mechanism that gives a clear understanding of the expected project outputs and the quality specifications. In order to do so, ( PMI, 2013: P227) listed the following project quality management processes :

- Plan quality management
- Perform quality assurance
- Control quality

### 2.2.6.6. Project Human Resource Management

Human resource management is a branch of management which deals with people at work in an organization. Armstrong (2006: P1) defined HRM as a strategic and coherent approach to the management of an organization's most valued assets – the people working there who individually and collectively contribute to the achievement of its objectives. Storey (1989, cited in Armstrong, 2006: P1) believes that HRM can be regarded as a 'set of interrelated policies with an ideological and philosophical underpinning'. Mathis and Jackson (2006: PP11-13) stated human resource management involves several activities such as HR Planning and Analysis, equal Employment Opportunity, staffing, HR Development, compensation and benefits, health, safety, and security, employee and labor/management relations. As one wing of human resource management, project human resource management includes the organizing, managing, and leading the project team. The project team consists of the people with assigned roles and responsibilities for implementation of the project. Staffing the project with the right skills, at the right place, and at the right time is an important responsibility of the project management team.

Although, roles and responsibilities are assigned for project team members, it is important to involve all of them in the process of project planning to add their experience to the process as well as to motivate them so that their commitment will be stronger. PMI (2013: P266) stated project human resource management processes as the following:

- Plan human resource management
- Acquire project team
- Develop project team
- Manage project team

### 2.2.6.7. Project Communications Management

Completing a complex project successfully requires teamwork, and teamwork requires good communication among team members. The processes of project communications management are required to ensure timely and appropriate

planning, collection, organization, storage, retrieval, and management of project information. Project managers devote most of their time to communicate with team members and other involved bodies, whether they are insiders or outsiders of the organization. Effective communication creates a hinge between the different involved bodies having different background, different experience, and different viewpoints which has significant impact on the bottom line of a project. Project communications management processes include the following (PMI, 2013: P287):

- Plan communications management
- Manage communications
- Control communications

#### 2.2.6.8. Project Risk Management

Risk is the probability of deviation of an out come from expectation. Risk exists on all projects. The role of the project management team is to understand the types and levels of risks on the project so that they can develop and implement plans to diminish these risks. The type and amount of risk varies by industry type, complexity, and phase of the project. The project risk plan will also reflect the risk profile of the project manager and key stakeholders. People have different position on facing risks which place on a continuum from risk averse to risk taker.

The key discipline of project risk management lacks the optimality that is assumed in best practice standards. Renn (1998: P64, cited in Kutsch, 2008: P2) argues in this context that the set of assumptions of a mainly objective analysis of risk "is a virtue as much as it is a shortcoming".

The highest ranked factor for project failure (Whittaker, 1999, cited in Kutsch, 2008: P2) is project risk management, the systematic process of identifying, analyzing, and responding to risks as project-related events or conditions which are not definitely known and which have the potential of adverse consequences on a project objective (PMI, 2013: P310). So, care has to be taken on the proper management of risk management.

The objectives of project risk management are to increase the likelihood and impact of positive events, and decrease the likelihood and impact of negative events in the project. Project risk management involves processes such as the following (PMI, 2013: P309):

- Plan risk management
- Identify risks
- Perform qualitative risk analysis
- Perform quantitative risk analysis
- Plan risk responses

- Control risks

### 2.2.6.9. Project Procurement Management

PMI (2013: P366) stated that Project Procurement Management includes the processes necessary to purchase or acquire products, services, or results needed from outside the project team. The organization can be either the buyer or seller of the products, services, or results of a project. But, as Saylor.org (2009: P37) explained, the procurement effort on projects varies widely and depends on the type of project. So that, Project Procurement Management includes the contract management and change control processes required to develop and administer contracts or purchase orders with variety of efforts. For a successful accomplishment of Procurement, Project

Procurement Management processes includes the following (PMI, 2013: P366):

- Plan procurement management
- Conduct procurements
- Control procurements
- Close procurements

Nasir (2011: P42) stated that there are six types of procurement and contract delivery systems.
These are:

- Force Account
- Design-Bid-Build (DBB)
- Design-Build (DB) or Turnkey
- Finance/ Build Operate System (BOT)
- Construction/Facility Management Consultancy, &
- Alliances and Outsourcing

Selection of the type of procurement and contract management delivery system is affected by size of a project, financial capability of the client, experience, previous performance of the contractor, and other factors.

### 2.2.6.10. Project Stakeholder Management

Stakeholder management has been one of the core soft skills area that has been highlighted as being necessary for PM to advance (Crawford, 2005; Morris et al., 2006; Winter et al., 2006, cited in Bourne & Walker, 2007: P129). The processes of project stakeholder management necessary to identify entities those could impact or be impacted by the project, to assess expectations of stakeholders, and to develop suitable managerial strategies to be well benefited from the involvement of stakeholders. Legris and Collerette (2006, cited in Pasian, 2011: P21) emphasize stakeholder management as a contribution that

can improve the implementation process. Sutter field et al. (2006, cited in Pasian, 2011: P21) echo this view when they argue that effective stakeholder management (possibly through a Strategic Management Framework) can minimize changes in project planning and increase quality specifications (as opposed to quantity specifications). It is implied in both research efforts that strategic management can impact cost control during project implementation.
Stakeholder management also give attention on smooth communication with stakeholders to recognize their expectations, deal with issues resolution of conflic of interests. Stakeholder satisfaction should be considered as the heart of any project. A well-structured project management involves the following processes (PMI, 2013: P391):

- Identify stakeholders
  Plan stakeholder
  management Manage
  stakeholder engagement
- Control stakeholder
  engagement

### 2.2.7. Additional Knowledge areas of Project Management for ConstructionExtension

Particular project types may include further knowledge areas where they are critical for them. For construction industry, in addition to the above ten project knowledge areas, Project management institute (2003) provides four knowledge areas. These are project safety management, project environmental management, project financial management, and project claim management. Each of them are discussed below.

#### 2.2.7.1. Project Safety Management

Accidents and personal injuries and deaths that result, have been, and are still a major concern in the construction industry both in terms of humanitarian losses and the direct and indirect costs to the industry (PMI, 2003: P101). The term safety generally applies to the protection from risk of injury and from avoidable accidents and the term health refers to the well-being from the immediate and long-term effects of exposure to unhealthy working condition (Fasil, 2011: P5). Health and safety are not only confined to construction works on-site. Engineers, architects and surveyors are exposed to hazards during the investigatory stage of a project and while carrying out inspection tasks during the construction phase and on completed works. Designers, in particular, carry both a moral responsibility and a duty of care for the safety of construction works, maintenance staff, demolition workers and the general public.

Fasil (2011: P6) stated that besides human tragedies, accidents could cause substantial economic cost to the industry due to the fact it could also cause

damage to plant and equipment, damage to work already completed, loss of productive work time while debris is cleared and damaged work rebuilt, increased insurance premiums, and, loss of confidence and reputation.

Safety management includes the processes required to assure that the construction project is executed with appropriate care to prevent accidents that cause or have the potential to cause personal injury or property damage. Studies have shown that every dollar spent on a good safety program can result in a four to eight dollar reduction in the losses from accidents (PMI, 2003:P101). Project safety management include the following (PMI, 2003: P101):

- Safety planning
- Safety plan execution
- Administration and reporting

#### 2.2.7.2. Project Environmental Management

Project environmental management includes the processes required to make certain that the impact of the project implementation to the environment will stay within the limits stated in legal permits. It is related with determining the environmental characteristics nearby the construction site and the possible impacts the construction may carry to the environment; planning the approach toward diminishing environmental impacts and achieving environmental conservation and improvement if possible (PMI, 2003: P107).

The project management team must clearly understand that environmental management doesn't mean causing no environmental impact. This is due to the fact that construction projects cause environmental impact by their nature. Rather, the aim of a good environmental management plan is to make the impact within the limits stated in the legal permits.

There must have effective communication to inform to all stakeholders what are the project objectives and the environmental changes its implementation will bring. The community is a major stakeholder more than any other for construction projects, and special notice must be given to their specific demand. Another major stakeholder is the environmental authority which may be established in different levels such as local, regional, and federal government. The project Management Team should work in collaboration with the different levels of environmental authorities. PMI (2003: P108) listed the following as major processes of project environmental management:

- Environmental planning
- Environmental assurance
- Environmental control

### 2.2.7.3. Project Financial Management

Generally, according to Paramasivian& Subramanian (2009: P3) financial management is an integral part of overall management and it is concerned with the duties of the financial managers in the business firm. Particularly, PMI (2003: P117) noted that financial management includes the processes to acquire and manage the financial resources for the project and is more concerned with revenue source and analyzing/updating net cash flows for the construction project than is cost management.

In traditional construction management projects the owner typically pays for the cost of the project by means of periodic (usually monthly) progress payments. The contractor thus has only to finance initial costs to set up and the first few months of work. Many contractors are able to finance this themselves or can obtain a short term loan to cover this initial period ( PMI, 2003: P117).

The construction industry has faced increasing requirements to finance the whole project due to the different procurement and contract delivery systems mentioned above in project procurement management section such as design-bid-build (DBB), design-build (DB), finance/build operate system (BOT), some with lease-back provisions, large projects with alliances and outsourcing, privatization of public projects and projects that are non-recourse financed; that is the project provides the sole collateral for the investors. This trend requires the contractor, who often leads any consortium involved, to be conversant and somewhat knowledgeable about the subject and techniques of the project financing.

Thus, financial management is distinctly different from cost management which relates more to managing day-to-day costs of the project for labor and materials. And the major processes involved in project financial management are as follows (PMI, 2003: PP117-118):

- Financial planning
- Financial control
- Administration and reports

### 2.2.7.4. Project Claim Management

Hughes and Barber (1983, cited in Nasir, 2011: P144) defined claim as a means simply a request, demand, application for payment or notification of presumed entitlement to which the contractor, rightly or wrongly at that stage, considers himself entitled and in respect of which agreement has not yet been reached. Hoare (2006, cited in Nasir, 2011: P144) agreed with the above definition and give simple definition to claim as a demand what is due. A claim is a declaration of a right to property, money or a remedy. Claim is legally

defined as an assertion to right. The nature of right may relate to time, financial, or other remedies. Claim is therefore a substantive demand, for example, by the Contractor against the Employer.

Claim management Describes the processes required to eliminate or prevent constriction claims from arising and for the expeditious handling of claims when they do occur. Claim management is, in some respects, similar to risk management and consists of the following four processes
(PMI, 2003: P125):

- Claim identification
- Claim quantification
- Claim prevention
- Claim resolution

### 2.2.8. Project Success

As Kerzner (2009: P7) stated, project success is defined as the completion of an activity within the constraints of time, cost, and performance. This was the definition used for the past twenty years or so. He forwarded the today's definition of project success in such a manner that has been modified to include completion:

- within the allocated time period
- within the budgeted cost
- at the proper performance or specification level
- with acceptance by the customer/user
- with minimum or mutually agreed upon scope changes
- without disturbing the main work flow of the organization
- without changing the corporate culture

In building construction, for the third element of Project success mentioned above, Fasil (2011:PP17-22) listed and described the following Design and Performance requirements: Strength andStability, Dimensional Stability, Comfort and Convenience, Resistance to moisture penetration, Fire Protection, Heat insulation, Day light and ventilation, Sound insulation, Durability, Security, and Economy. In addition to this aesthetics emerges as basic requirement in modern building construction.

Furthermore, Kerzner (2009: P7) explains the last three elements as the following:

> *Very few projects are completed within the original scope of the project. Scope changes are inevitable and have the potential to destroy not only the morale on a project, but the entire project. Scope changes must be held to a minimum and those that are*

*required must be approved by both the project manager and the customer/user.*

*Project managers must be willing to manage (and make concessions/trade-offs, if necessary) such that the company's main work flow is not altered. Most project managers view themselves as self-employed entrepreneurs after project go-ahead, and would like to divorce their project from the operations of the parent organization. This is not always possible. The project manager must be willing to manage within the guidelines, policies, procedures, rules, and directives of the parent organization.*

*All corporations have corporate cultures, and even though each project may be inherently different, the project manager should not expect his assigned personnel to deviate from cultural norms. If the company has a cultural standard of openness and honesty when dealing with customers, then this cultural value should remain in place for all projects, regardless of who the customer/user is or how strong the project manager's desire for success is.*

### 2.2.9. Relationship between Project Management and Project Success

It should be understood that simply because a project is a success does not mean that the company as a whole is successful in its project management endeavors. Excellence in project management is defined as a continuous stream of successfully managed projects. Any project can be driven to success through formal authority and strong executive meddling. But in order for a continuous stream of successful projects to occur, there must exist a strong corporate commitment to project management, and this commitment must be visible (Kerzner, 2009:PP7-8).

## 2.3. Empirical Review

As it is waved throughout the theoretical review part, effective project management is essential for accomplishing projects with achieving the requirements. Unfortunately, different problems are seen by scholars and researchers that projects encountered. As a result, different studies were conducted in this area. Among the many researches some studies with critical issues in the area of Project Management are reviewed in this section.

### 2.3.1. Project Management Maturity in the Construction Industry of Developing Countries (The Case of Ethiopian Contractors)

There was a study entitled as Project Management Maturity in the Construction Industry of Developing Countries (The Case of Ethiopian Contractors) conducted by Yimam, Abadir H. in 2011. This research has

studied the maturity of PM in the construction industry of developing countries; in the course, the research has also identified two major gaps in the existing maturity models and, proposed a PM maturity model to address the gaps and adapt it to the developing countries context. Using the model, maturity assessment of contractors in Ethiopia is undertaken and, low level of PM maturity (Informal practice of the basic processes) is found. Further, the research found ISO certified contractors‟ PM maturity to be higher than those which are not.

Similarly, the PM maturity of contractors which took part in Capacity Building Program is found to be higher than those which did not take part .Likewise, Road contractors PM maturity is found to be higher than Building contractors. Moreover, the research found higher maturity level for material, procurement, cost, financial, time, and human resource management. Risk and safety management are found to be the least matured PM areas.

### 2.3.2. Building construction project management success as a critical issue in Real Estate development and investment

The study named "Building construction project management success as a critical issue in Real Estate development and investment" was conducted by Nwachukwu and Emoh (2011). The study assessed Nigerian Project management practice on the area of building construction, particularly in Real Estate development and investment. The study tried to address project success factors that contribute to the achievement of project goals. In the paper project success and success test criteria are discussed as the following. According to Cleland et al (1975, Cited in Nwachukwu & Emoh, 2011: P59), a project is termed successful if it passes four success test criteria i.e. the time criterion – completed on time; the cost or money criterion – completed within budget; the effectiveness criterion – completed in accordance with the original set performance and quality standards; and client's satisfaction criterion – accepted by the intended users or clients whether the client is internal or from outside the organization. "The above success criteria call for successful project implementation by the utilization of proven management techniques of planning, organizing, directing and control. The issues on life cycle management, time management, conflict resolution and management, networking, contracts management, project choice and project quality are the key factors that contribute to project success" ( Nwachukwu&Emoh, 2011: P59).At the end of the study, Nwachukwu&Emoh (2011: P73) conclude the following**:**

> *Project management indexes have been described as the secret weapon of developed nations in attracting investors to investing in building development. Its methodologies, approach and principles have helped such world powers as United States of America guide their development processes; and in the United Kingdom where the office of government commerce devised the Prince II Methodologies to grow their*

*economy. Therefore, in driving our developmental targets, it has become imperative to institutionalize this world acclaimed solutions vehicle into our economy for the achievement of our nation's development goals. One of the major problems of project management in Nigeria is corruption. The question is how do we intend to tackle that? If project management is a policy thrust, it will create rules for everybody to play by.*

*As earlier stated, all the issues that relate to construction sector are very relevant and indispensable in the economy.*

*Construction sector is seen as the pivot on which every other activity in the economy rotates on. The significant importance of this sector is evidenced in the fact that every business or services of diverse kinds must have a shelter and a location in the environment. Therefore, any effort towards reducing or eliminating the noticeable and silent constraints that directly or indirectly affect project management success in this sector is a right step in the right direction. The stake holders in any complex building construction project are numerous and varied with parochial objectives different from the main objectives of realizing the cost, time, quality and materials targets of the proposed construction projects. Proper project management policy we believe, is the only solution in making sure that building construction and developments do not fail, collapse, or are abandoned at alarming rate in Nigeria as such threatens the foundation of economic growth and slim down the chances of realizing vision 20:2020 project of the federal government.*

Finally, according to the recommendations forwarded by (Nwachukwu&Emoh, 2011: PP73-74) the following should be under taken:

*It should be a national policy to be enshrined in the Constitution of the Federal Republic of Nigeria as we advocate for constitution amendment. Every organization in all the major and minor sectors of the nation's economy is encouraged to establish the department of project management, every building development must have a resident project manager and not one project manager handling the management of more than one project at a time for an organization, for this will create loopholes in realizing the development goal. For public building development projects, government should set up a Project Management Office (PMO) under the office of the President/Vice President or Governor/Deputy Governor to provide substantive professional project management support for national and state project planning, execution, monitoring/control and close out. If proper project management is institutionalized, it would bring about authenticity of data or information, timely release of funds, effective management of*

*project risks and realization of project benefits in both public and private sector of the economy. Intervention of academic researchers and major stakeholders from building construction industry for a scientific study on other factors constraining project management success in public and private sectors of the building development industry. Comparative study be undertaken to determine the level of building development project management performance between foreign and indigenous development firms. To this end, we are very optimistic that an empirical study in these areas may provide a level ground for all the stakeholders, clients, designers, contractors, users, financiers and sponsors to rub minds on how to drastically reduce if not eliminating these disastrous elements as constraining factors to building development project management success in Nigeria.*

### 2.3.3. Critical Factors Necessary for a Successful Construction Project

The study on "Critical Factors Necessary for a Successful Construction Project " was conducted by Jari and Pankaj (2013). The purpose of this study is to investigate the causes of project failure and how these can be prevented, managed, or controlled. As the same time, the study aimed to investigate the critical factors leading to construction company success.

According to Jari&Pankaj (2013: P332), the following are Project Success Criteria and Project Success Factors:

*Project success factors are the elements of a project that can be influenced to increase the like hood of success; these are independent variable that makes success more likely. Project success criteria are the measures by which we judge the successful outcome of a project; these are dependent variable which measure project success. Primal success criteria have been an integrated part of project management theory given that early definitions of project management included the so called „Iron Triangle' success criteria - cost, time and quality. Success factors are those inputs to the management system that lead directly or indirectly to the success of the project or business. Project success factors are not universal for all projects since different projects and different people prioritize different sets of success factors. Project success criteria also vary from project to project and what is acceptable in one project without impact on perceived success is deemed an abject failure in another project. For instance, taking a week delay in an IT project to ensure the objectives are achieved may have a minor impact for this project in terms of success. However, this delay might be a disaster in building a function center, which is supposed to be undertaken before its opening day.*

In addition to the above they also set the generic PSCs and PSFs as of the following which can influence most types of construction projects. The PSC are given Time, Cost, Quality, Project, Control, Project scope, Project change, Stakeholders' satisfaction, Project team, and Top management support. As Jari &Pankaj (2013: P333) stated in terms of the stages in project life cycle, critical success factors are the following:

1. **Project mission**-The initial clarity of goals and the general direction
2. **Top management support**-Willingness of top management to provide the necessary resources and authority/power for project success.
3. **Project Schedule/Plan**- A detailed specification of the individual action steps required for project implementation.
4. **Client consultation**-Communication, consultation, and action on behalf of all impacted Parties.
5. **Personnel**- Recruitment, selection, and training of the necessary personnel for the project team.
6. **Technical tasks-**Availability of the required technology and expertise to accomplish the specific technical steps.
7. **Client acceptance**-The act of "selling" the final project to its ultimate intended users.
8. **Monitoring and Feedback**-Timely provision of comprehensive control information at each stage in the implementation process.
9. **Communication-**The provision of an appropriate network and necessary data to all key actors in the project implementation.
10. **Trouble-Shooting-**Ability to handle unexpected crises and deviations from plan.

Particularly, (Jari&Pankaj, 2013: PP333-334) stated about Success Factors in a Construction Projects that, "Increasing uncertainties in technology, budgets and development processes create a dynamic construction industry. Building projects are now much more complex and difficult and the building project team faces unprecedented changes. The study of project success/failure and critical success factors (CSFs) is a means of understanding and thereby improving the effectiveness of construction projects." Accordingly, Several success factors for the construction process are Clarity/Definition of project objective, Scope of project, Project manager, Project Team Commitment, Capability and cooperation, Planning, Control, Appropriate size of work package and environment, Communication and information management, and Top management support and Health and safety.

Jari&Pankaj (2013: P334) also has drawn the following conclusion:

1. Success factors are those inputs to the management system that lead directly or indirectly to the success of the project or business.

2. The purpose of this study is to define project success criteria, clarify their difference with success factors and analyze their importance in project management methodology
3. Findings in this study asserted that the critical success factors perceived as most influential in avoiding or preventing critical delay factors can lead to better performance within construction industries and they are likely to improve success in building construction projects.
4. This study provides a forecasting tool to enable parties to rapidly assess the possibility of a successful project from their point of view.
5. Time, cost, quality, risk and finally scope control should be centralized under a general definition of "Project control", which was considered as a very important success criterion.
6. Identifying CSF's is important as it allows firms to focus their efforts on building their capabilities to meet the CSF's, or even allow firms to decide if they have the capability to build the requirements necessary to meet CSFs.
7. Identifying critical success factors would assist in taking proactive measures for successful project management of construction project. This study will benefit academicians and professionals involved with building projects.
8. The finding will also be useful for effective management for all type of construction projects, thus helping to raise the overall level of productivity in construction industry.

### 2.3.4. Critical Success Factors of Project ManagementforConstructionProjects: Improving Project Performance

A research was conducted in Brunei Darussalam by a researcher called Rohaniyati Salleh in 2009 to identify success and delay factors which can help project parties reach their intended goals with greater efficiency. Data were collected and evaluated by statistical methods to identify the most significant causes of delay and to measure the strength and direction of the relationship between critical success factors and delay factors in order to examine project parties' evaluation of projects' critical success and delay factors, and to evaluate the influence of critical success factors on critical delay factors.

According to the research the following are seven most important causes of delay which contributed to the failure of building construction projects:

1. Lack of communication between parties
2. Slow decision making
3. Change orders
4. Inadequate contractor planning
5. Finance and payment of completed work
6. Subcontractor performance
7. Inadequate contractor experience

On the other hand, the researcher has identified the most important critical success factors for building construction projects based on rank:

1. Project manager's capabilities and experience
2. Clarity of project scope and work definition
3. Organizational Planning
4. Use of control systems
5. Project manager's goal commitment
6. Project team motivation and goal orientation
7. Safety precaution and applied procedures

### 2.3.5. Project Management Success Factors for sustainable Housing: a frame work

A research conducted by Abu bakri, Abu Razak and Awang (2013) attempt to establish a theoretical framework for project management success factors in sustainable housing development. The methodology used was reviewing on past literature on the subject to build the existing research works on the area and to establish critical success factors of project management best practices. Accordingly, the following are list of critical success factors for project management practices for sustainable housing development based on priority:

1. Competent project team
2. Authority of the project manager/leader
3. Project understanding, top management support, client involvement, and project mission
4. Adequate resources, realistic cost and time estimates, and information/communication
5. Project ownership, monitor performance and feedback, planning/controlling, and risk management
6. Adequate project control and problem solving abilities

### 2.3.6. Project management in Ghana: expectations, realities and barriers to use.

Venter (2005) conducted a research in Ghana to assess project management practice and to identify causes of project management related problems. Consequently, the researcher forwarded causes of different project management problems as the following:

a. **Causes of problems related with project Conceptualization, Definition and Selection:**
   - Lack of a clearly stated project policy
   - Frequent design and modification changes
   - Insufficient consultation among players
   - Incomplete/inaccurate project description

- Protracted negotiations over project selection, objectives, etc.

**b. Causes of problems related with planning, Scheduling and Control**
- Ineffective use of project management tools
- Lack of an appropriate risk management function
- Lack of adequate and effective methods of control
- Untimely communication of pertinent information

**c. Causes of problems related with Human Factors**
- Non-existence of a project team
- Unavailability of trained personnel
- Poor managerial expertise in technical environment
- Ambiguous division of authority and responsibilities

**d. Causes of problems related with Monitoring, Termination and Evaluation**
- Lack of an inspection and quality assurance function
- Lack of an appropriate risk management function
- Lack of an adequate maintenance system
- Contradictions and inappropriate applications of codes and regulations

**e. Causes of problems related with Political, Social and Community Factors**
- Frequent policy changes by politicians
- Frequent attempts by officials to appoint various officers, suppliers, etc. to projects
- Corrupt practices that lead to theft, wastage, etc.
- Interference by officials and interested parties at various stages of projects

### 2.3.7. Project Management in Bayelsa: Issues and Challenges

A study by Ogege (2011) aimed at identifying and analyzing project management constraining factors to the expected success in the construction industry using Bayelsa as a model in the study of a developing economy. The researcher used questionnaires to collect data from 100 respondents using of convenience sampling technique. To give the data meaning and achieve the desire objective sought in the study the data gathered through were presented and analyze using SPSS version 16. Thus, the following discussion and findings were forwarded:

> *Responses to structured questionnaires from the recipients of the projects revealed that the major problems in projects are related with lack of clear definition of the project, and deliberate exclusion of local professionals during the tendering, ordering, procurement, installation and commissioning stages of projects. Other problems were*

*appointment of persons who were technically ill equipped to manage such projects poor tender documentation, and poor evaluation of the tenders. Procurement and location of projects on political consideration only and the noncommittal attitude of government functionaries to the implementation of its own budget plans, unpatriotic attitude of some policy makers who for the purpose of handsome kickbacks encourage over-invoicing and absence of built in planned maintenance affected the project a great deal. The Nigerian preference for imported machinery, equipment and even foreign expertise and the unpatriotic habits of many Nigerians who hold the view that what belongs to the government is nobody'sproperty and therefore deserves no special care led to major failure. It was found generally that most project beneficiaries and managers lacked the understanding of project management, that is, the procedure for its initiation, costing and execution. It is for this reason that we found it expedient to give some explanation on the term project and the procedure for its management.*

### 2.3.8. The role of project management in achieving project success

A study made in Dundy by A K Munns and B F Bjeirmi focused on the role of project management in achieving project success. This paper has highlighted the overlap that exits between projects and project management and the confusion that can arise from the common use of these terms. It has also attempted to highlight how the objectives of a project and project management are different and how the emphasis of project management is towards achieving specific and short-term targets compared to the wider aims of a project.

The conclusion is that to make the project management team totally responsible for success would appear to be inappropriate and that the client should take an increased interest in the development and use of the project. There also needs to be an improved distinction between success and failure for the project and project management interests. Project success could be assessed using three assessment criteria based not only on project management techniques but on other external criteria which are important for the successful implementation of projects, from conception through development and use, to the final closedown.

Thus, for a project to be successful there must, first, be an improved appreciation of the role of project management within projects, and this role must be placed within the context of a wider project alongside other outside criteria and long-term expectations. Second, the project manager must allow the client to contribute actively in the planning and production phases and at the same time the project team involvement has to be extended into the utilization phase. This would be accommodated properly in a project evaluation

technique that examines not only the implementation processes but also the economic and financial performance.

Finally, one must always bear in mind that successful project management techniques will contribute to the achievement of projects, but project management will not stop a project from failing to succeed. The right project will succeed almost without the success of project management, but successful project management could enhance its success. Selecting the right project at the outset and screening out potentially unsuccessful projects, will be more important to ensuring total project success.

## 2.4. Current Situation of Ethiopian Real Estate Projects

Like any developing counties, the Ethiopian construction industry plays major role and contributes highly to the development of the economy of the country. Next to agriculture, the industry provides one of the largest employment opportunities. Developing countries spend substantial amount of their budgets in infrastructure development that involve significant construction works in projects such as construction of roads, buildings, water works, telecom civil works, etc. This is also the case in Ethiopia. For example, the Ethiopian government has spent about 50% of its total budget in fiscal year 2007/2008 for capital projects out of which road construction accounts about 33 %. (Ministry of Finance and Economic Development (MoFED, 2008, Abadir, 2011: P36). From project expenses in other sectors, the construction part accounts for the major part as most socio economic projects such as school and healthcare involve significant construction component. Even though significantly large amount of money is being poured in to infrastructure development, the infrastructure of the country is still considered to be very poor, even when seen by the standards of the Sub-Saharan countries. For example, the country's passengers and freight traffic, road density is one of the lowest compared to other SubSaharan Countries. From the huge hydropower potential the country has, only less than 10% of it has been put in use (Ministry of Finance and Economic Development (MoFED), 2006, Yimam, 2011: P37). These all mean, enormous volume of infrastructure (construction) works is coming to the industry. Nevertheless, the construction industry of the country looks unprepared for these huge volumes of works to come. The industry is still in the beginning stage, growing unfortunately, slowly both technically and financially.

Like the industry in other developing countries, the construction industry in Ethiopia is plagued by many problems .According to Abadir (2011: PP37-38) , the description of the current state of the industry given in various studies is summarized here under as follow:

- An inadequate capital base.

- Old and limited numbers of equipment and low levels of availability and utilization.
- Severe shortage of construction materials, most notably cement
- Low level of management, especially project management knowledge and practice (Low level of Contract administration, Project planning and Project monitoring capabilities).
- Deficiencies in technical, financial management and entrepreneurial skills.
- Small-scale local contractors which lack experience in construction management.
- Limited experience and participation of the private sector in large construction project or the provision of related consulting services.
- Outdated technology (insufficient and ineffective labor-based construction technology).
- Inadequate and inappropriate project organization structures, which lead to problems of authority, responsibility, communication and coordination, etc.

Generally speaking, according to (Jekale, 2004 cited in Abadir, 2011: P38), there is no enough construction and management capacity in the country. The practitioners (in Ethiopia) are less experienced in project management. The management of construction project is highly influenced by the utilization of scarce financial and physical resource with controlling activities limited to cost and time monitoring dimensions only. Contractors cannot properly administer contract, most of them are not properly trained to prepare cost and schedule reports, quality records, safety reports, change order records, claims records, progress reports, payment requisition, etc. Most local contractors even don't have claim management knowledge or are not interested to pursue legitimate claim for fear of damaging working relationships and their reputation in the industry as they will be dealing usually with few public institutions.

Many studies in the area have indicated the need to improve the capacity of contractors in areas such as financial management, project estimating and costing, total quality management, change management ,claim management, business planning , personnel and general management skill, etc. which almost all can be included under the Project management knowledge areas given by PMI. This shows that improving the project management capacity of contractors can significantly improve the current status of the construction industry in the country (Abadir, 2011: PP38-39).

As Real Estate industry is part of the construction industry, the characteristics and project management problems discussed above are also the features of Ethiopian Real Estate Industry. Private investors become more and more involved in housing development of Ethiopia. Different regulations set by government backed the involvement of these private investors. For instance, a policy in 1997 E.C. which states about housing development in urbanization

that affordable and quality house development results rapid urban development, replacing old and unattractive houses, and improve saving culture. This can be achieved by to development directions. The first one is developing mortgage houses by Government. And the other option is through the participation of private Real Estate developers.

Nowadays, the number of companies involved in Ethiopian Real Estate sector is becoming higher and higher. For instance in Addis Ababa, 697 companies are recorded in Ethiopian Investment Agency and 382 of them are registered by Addis Ababa Investment Authority (Ministry of Urban Development, Housing, and Construction, 2012). The Ethiopian Real Estate development is not only limited to residential houses, but it also includes construction of offices, shops, amusement centers and others.

According to the study conducted by Ministry of Urban Development, Housing, and Construction (2012, PP13-14) the following are basic Problems related with Real Estate development projects in addition to the project management problems that are mentioned above:

- Utilization of Real Estate lands to other personal and illegal (such as selling of land without development) activities by some Real Estate developers.
- Most of Real Estate developers do not started their operation within eighteen months after they received land for development.
- Among Real Estate developers that started construction, only few of them progressed well as per the required level in terms of satisfying house demand at the right time.
- Significant number of Real Estate developers transfer less quality houses, as compared with approved plans, to house demanders.
- Some Real Estate developers offer expensive houses to house demanders as compared to the quality and amount of investment on the houses.
- The quality and amount of investment on the houses.

## 2.5. Conceptual Framework of the Study

In this study the PMI's definition of project is used; project is a temporary endeavor under takento create a unique product, service, or result. In this study, the temporary endeavors are the different Real Estate development projects carried out by different Real Estate companies in different sites. The unique product/services are the Real Estate houses and the construction efforts to be rendered to Real Estate clients (Real Estate house owners). To perform the Real Estate Projects effectively, there must be managerial efforts in the day to day activities.

Project Management Institute, (2013: P5) defines Project management as an application of knowledge, skills, tools, and techniques to project activities to meet the project requirements. This is also chosen by this study among the different project management definitions. This project Management practice can be described in several point of views. In this research, project management is viewed from two perspectives; using project management knowledge areas and from project management process groups.

The first one is using the project management knowledge areas in which the ten of them are obtained from PMI (2013) and the additional four project management knowledge areas for construction extension are obtained from PMI (2003). These project management knowledge areas together are project integration management, project scope management, project time management, project cost management, project quality management, project human resource management, project communications management, project risk management, project procurement management, project stakeholder management, project safety management, project environmental management, project financial management, and project claim management.

The second one is using the project management process groups which are obtained from PMI (2013). These project management knowledge areas are project initiation process, project planning process, project execution process, project monitoring and controlling process, and project closing process.

Project success measures are taken from Kerzner (2009: P7). Accordingly, a project to be considered as successful, it should be within the allocated time period, within the budgeted cost, at the proper performance or specification level, with acceptance by the customer/user, with minimum or mutually agreed upon scope changes, without disturbing the main work flow of the organization, and without changing the corporate culture. The Ethiopian Building standards and Code Standard (1995) is also used for identifying quality specification of construction projects. It stated that, a project to run in proper performance or specification level it should satisfy both ultimate limit states and serviceability limit states.

The ultimate limit states are those associated with collapse, or with other forms of structural failure which may endanger the safety of people. States prior to structural collapse which, for simplicity, are considered in place of the collapse itself are also treated as ultimate limit states.

The ultimate limit states which may require consideration include the following (EBCS, 1995):

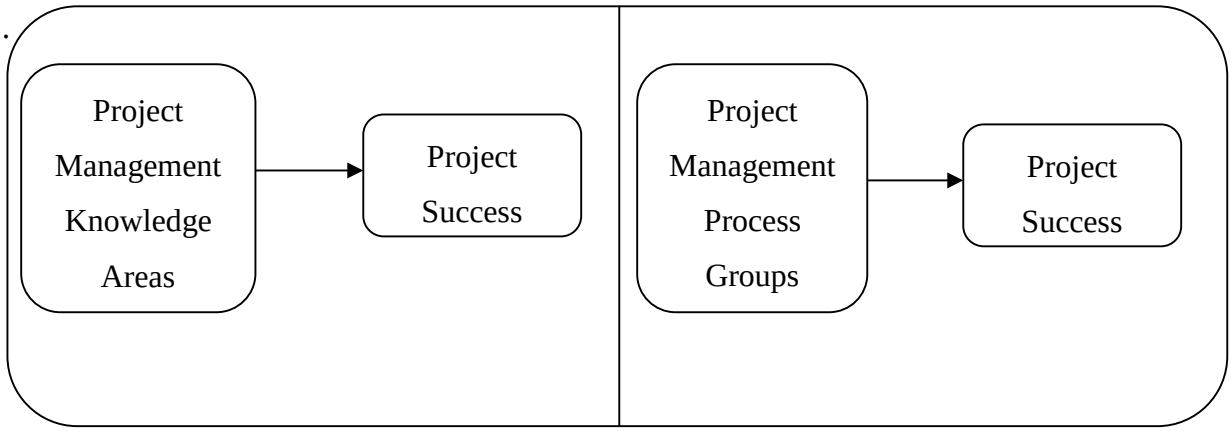
- Loss of equilibrium of a part or the whole of the structure considered as a rigid body

- Failure by excessive deformation, rupture or loss of stability of the structure or my part of it, including supports and foundations.

The serviceability limit states correspond to states beyond which specified service requirements are no longer met .Serviceability limit states which may require consideration include the following (EBCS, 1995):

- Deformation or deflections which affect the appearance or effective use of the structure (including the malfunction of machines or services) or cause damage to finishes of nonstructural elements.
- Vibration which causes discomfort to people, damage to the building or its contents, or which limits its functional effectiveness.
- Cracking of the concrete which is likely to affect appearance, durability or water tightness adversely.

Figure-2.1: Conceptual Framework of the Study




Project management practice has important role for success of projects. The contribution of project management is viewed in this study also using the above two perspectives which are the contribution of project management knowledge areas to success of Real Estate projects and the contribution of project management process groups to success of Real Estate projects. Figure-2.1 shows conceptual framework used in this research paper.

## 2.6 Ethical consideration of real estate companies in Ethiopia

### 2.6.1 Ethics and Professionalism in Project Management

Project managers have the responsibility to uphold and support the integrity and ethics of their profession. This involves ensuring that their actions are always in line with legal requirements and ethical standards. Heldman, Baca and Jenson (2005) indicate that ethics also relates to the proper use of project management. For example, it could be unethical to publish a project schedule that is not accurate. That it could be considered unethical to start a project without a project charter, or to start a project without a complete scope or a

plan to deal with the incomplete scope? They add that the lack of project management knowledge and lack of

Application of that knowledge causes project managers to act in ways that are unethical. In Addis Ababa ethics in the management of projects have not been perceived as serious as portrayed by Heid man, Baca and Jenson (2005). Some of the project factors identified as critical from this study imply that project ethics need to be strengthened in real estate Company of Addis Ababa. For example, factors such as lack effective project management techniques, ineffective monitoring and evaluation, lack of user involvement, inadequately defined task, unrealistic requirement, improper definition of specification, improper feasibility study is all ethical issues. Project Management Professionals, in the pursuit of the profession, affect the quality of life for all people in our society. Therefore, it is vital that Project Management Professionals conduct their work in an ethical manner to earn and maintain the confidence of team members, colleagues, employees, employers, clients and the public

(http://www.project-improvement.com/Code_of_Ethics.html)

Donelly (1987) refer to ethics *as those principles of behaviors that differentiate between "good, bad, right and wrong".* The purpose of a Code of Ethics is to enable Team Members to make choices between *"alternative behavior".* The importance of Ethics increases in direct proportion to the consequences of the outcome of a behavior or action. For example, in Addis Ababa a Police Station in the 1990's put together a team to use the problem-solving cycle to generate options to stop escapes from their holding cells. The project team identified the problem as being that it was too easy to break or bend the bars of the windows. They generated a number of options and the most cost-effective and easiest to implement was chosen. They simply sealed off all the windows in the holding cells with bricks.

This example illustrates how project managers and team members make decisions that have consequences for themselves, the institution that employs them and the society in which they and the institution exist. Project managers may make decisions that are good for them and resolve their problems and which can be bad for the institution and society. The police project team in this illustration forgot to apply ethical, human rights consideration and values to the decision that they had taken. While their proposal resolved the problem, it led to the institution coming under fire from Human Rights Groups. This example highlights the need for project managers and team members to be highly socio-ethically responsible when they make decisions.

In real estate companies of Addis Ababa ethical problems are the result of a problem in PM characteristics. Ethical considerations should not be seen as an afterthought when making a decision. Pinto (1996), proposes that *"they are an*

*integral part of the* decision-*making process; the best possible decision should be seen as being the best economically, technically, behaviorally and ethically".*

### 2.6.2 Corruption in Project Management Practices in Ethiopia

The potential for corruption in project management practice exists and none of the three sectors is free from risks of corruption in real estate companies of Addis Ababa. However, the Construction and real estate company sectors were recognized as being particularly exposed to corrupt project management practices. The factors "Demand on Project Resources" and "Delay in Release of project funds" identified in this study as project critical factors in the two sectors are linked to corruption. This section looks at the definition of corruption, challenges and approaches to curbing corruption in Ghana.

### 2.6.3 Definition of Corruption

According to (Azeem, 2009), there are rarely criminal code definitions of corruption. Rather, criminal codes normally contain a mix of crimes that all together are considered corruption, such as bribery of local or foreign government officials and private companies, facilitation payments, fraud, embezzlements, theft, collusion.

However, Berlin-based organization Transparency International (TI) defines corruptions "the abuse of entrusted power for private gain". The World Bank has a similar definition. "Private gain" must be interpreted widely to include gains accruing to an economic actor's close family members, political party and, in some cases, to an independent organization and charitable institution in which the economic actor has a financial or social interest. In recent times, some institutions have criticized these definitions and offered alternative definitions. For example, the Tax Justice Network (TJN) argues that the World Bank and TI definitions leave many with the impression that it is only people who occupy public office who are capable of abusing their office or power. To them, the definitions do not make any allowance for other forms of corrupt activities, including market rigging, insider trading, tax dodging, non-disclosure of conflicts of interest, illicit party funding, (Azeem, 2009).

Azeem continues that Corruption encompasses abuses by government officials such as embezzlement and nepotism, as well as abuses linking public and private actors such as bribery, extortion, influence peddling, and fraud. Corruption arises in political, bureaucratic and private offices and can be petty or grand, organized or unorganized. Corruption also facilitates criminal activities such as drug trafficking and even armed robbery.

Tax Justice Network suggests two alternative definitions of corruption: an abuse of the wider interest (or the public interest) by narrow interests; any activity that undermines public confidence in the integrity of the rules, systems and institutions, which govern society. Thus, corruption involves the betrayal

of public interest in exchange for a narrower benefit. It could be personal, partisan or some other social group interest. Corruption is often manifested in the siphoning of public resources that would have gone to the provision of hospitals and drugs, schools and books into private pockets (Azeem, 2009). It definitely leads to wastage as prices are inflated through over-invoicing, ordering of excess supplies, shoddy work or work not done but paid for.

Gyimah-Boadi (2002) indicates that, corruption is pervasive and has to do with motive and opportunity, and the opportunity (for corruption) usually comes about when there are weak systems and/or institutions of accountability, lack of checks and balances as well as a general state of moral decadence.

### 2.6.4 Corruption Challenges in Ethiopia

Transparency International research findings point to the fact that corruption is a serious problem in real estate Company of Addis Ababa. From 1999 – 2008E C, the Corruption Perception Index (CPI) has pointed to the fact that Ethiopia is far from winning the fight against corruption as a nation. The scores range from ten (squeaky clean) to zero (highly corrupt). A score of 5.0 is the number Transparency International considers the borderline figure distinguishing countries that do and do not have a serious corruption problem (TI, 2007) Ever since Ethiopia was included in the CPI reports in 1999, she has scored between 3.3 and 3.9 out of a clean score of 10. Ethiopia scored its highest of 3.9 in 2002 and 2008. The index defines corruption as *the abuse of public office for private gain and measures the degree to which corruption is perceived to exist among a country's public officials and politicians.* It is a composite index, drawing on 14 polls and surveys from 12 independent institutions, which gathered the opinions of business people and country analysts.

Other surveys on corruption in real estate companies of Addis Ababa including those conducted by Ethiopia Integrity Initiative (EII) and Ethiopia Center for Democratic Development (CDD) - Ethiopia have shown that corruption is a major problem in the country. Also, the Auditor-General's report on the 2006 Public Accounts submitted to Parliament and the follow-up public hearings held by the Public Accounts Committee in 2007 revealed that corruption among public officials was a serious problem. Ethiopia has serious corruption problems. In 2007, Ethiopia had a Corruption Performance Index (CPI) score of 3.7 ranking 69 out of 180 of the world's countries (TI, 2007)

According to Mensahet. (2003) and Gyimah-Boadi, (2002), corruption is a social phenomenon that fosters an anti-democratic environment; characterized by uncertainty *(Source:* Transparency International, 2007. Web:www.transparency.org) unpredictability and declining moral values and disrespect for constitutional institutions and authority. Larmour (2006) and Westring (1997), state that the implications of corruption related practices in

the procurement systems have manifold negative consequences, most of which are manifested in economic, financial and social dimensions.

Successive reviews have revealed substantial inefficiencies and concluded that value for money was not being achieved in the procurement of government and donor-funded projects because of corruption (Lengwiler and Wolf stetter, 2006; Mawenya, 2008, 2007; Shakantu, 2003; Philip, 2002). For example, the American Society of Civil Engineers claim that corruption accounts for an estimated $340 billion of worldwide construction costs each year. Mawenya (2008) estimated that corruption in Sub-Saharan Africa is almost up to 70 per cent of public procurement contracts. In such cases, bribes and fraudulent transactions inflate project costs by about 20-30 per cent (Mawenya, 2008). Again, the World Bank (2003) survey results reported that the cost of corruption in Africa is estimated at $148-billion a year (Mawenya, 2008).

Other studies have shown that corruption is pervasive in developing countries because of weak institutional infrastructures and the lack of effective monitoring mechanisms (Lengwiler and Wolf stetter, 2006).

Though significant progress has been achieved with the Public Procurement Act of the Republic of Ethiopia (Act 663), corruption has still continued in the public procurement processes (Westring, 1997). Notwithstanding, while corruption has long been recognized as a destructive social problem, the subject has not yet been given much attention in the literature of the management of procurement of infrastructure projects in Ghana.

One paper argues that each project's life cycle stage demands that the project team display specific virtues such as: intellectual, social, emotional, moral and political; that are appropriate for the typical activities and closure documents of that reticular stage (i.e. conceptual planning, process organization, implementation, controlling, and evaluation and system improvement) (Kloppenborg and Petrick, 1999).

Wilson (2004) describes criminal fraud and corruption in terms of Cressey'sfraudtriangle (Cressey, 1971). This model explains corruption and fraud as having three Antecedents that must all be in place to sustain corruption and fraud. These are opportunity, rationalization and pressure. The opportunity is offered by an ability to perpetrate the action, often with weak or ineffective systems in place that allow opportunities to be presented to engage in fraud or corruption. In real estate Company of Addis Ababa corrupt public officials administering public duties thrive in ineffective systems. They certainly have the advantage and with questionable structures in place. Rationalization is the human attitude that allows the perpetrators concerned to convince themselves that these actions are acceptable or at least not particularly harmful. In real estate Company of low pays induce fraud or corruption as it induces frauds or corrupt people to feel that petty or grand corruption is

recompense for being underpaid. Corrupt officials justify their actions to themselves as being a common practice, culturally accepted or a perquisite or not a harmful advantage to be taken. Finally, pressure is the need for the benefits offered through corruption and fraud. This could be associated with poverty, feeding a habit or even to gain status through sharing some of the "spoils" with others in a corruption chain that builds that person's credibility, status as a ***"big man"*** or develops a dependency in others.

### 2.6.5 Curbing Corruption in Ethiopia

Government has often cited the passage of laws like the Public Procurement Act, the Financial Administration Act and its Regulations, the Assets Declaration Act, the Whistleblower Act, the Anti-Money Laundering Act, as indications of its commitment to fighting corruption. Transparency-enhancing legislations are definitely essential in curbing corruption but such anti-corruption legislations must be enforceable and applicable to all and sundry if we are committed to ensuring that corruption does not destroy the moral fabric of society.

Ethiopia Integrity Initiative (EII) has always held the view that the problem in Ethiopia with promises to fight corruption is lack of enforcement due to weak political will. To support these laws, EII also calls for credible and enforceable codes of conduct and ethics for public officials and professional bodies, as well as the adoption of the guidelines on Conflict of Interest developed by the Commission for Human Rights and Administrative Justice (CHRAJ). In this direction, the Public Officers Liability Bill currently being discussed is a welcome development. Implementation is the logical next step and this must be done immediately. The government must enact the necessary laws that will also effectively empower freezing, seizure and confiscation of illicitly acquired wealth of officials not only as a deterrent to others but to restore public property to its rightful owners, the citizens.

The Commission for Human Rights and Administrative Justice (CHRAJ) and the National Commission on Civic Education (NCCE) have at various times undertaken public education and sensitization against corruption aimed at influencing ordinary citizens and policy makers to condemn and resist corruption. Lack of adequate resources has been the complaint of these anti-corruption institutions and a government committed to fighting corruption must ensure that these institutions get the required funding.

It is also proposed that the Serious Fraud Office (SFO) and the CHRAJ be given Prosecutorial powers to act as special prosecution offices for corruption. Admittedly, this may require reforms in anti- corruption policies and an upgrading of the skills and professionalism of these institutions. This should be accompanied by increasing remuneration and commensurate incentives for

the staff as well as putting in place additional accountability mechanisms and making sure they work.

Furthermore, Parliament's oversight role is often compromised by partisan and personal interest, making it less effective. Parliament needs the political will to enact strong anticorruption laws and hold the Executive accountable for enforcing Such laws in a non-partisan way.

There must be a political leadership that is clean, that leads by example and that has the will and commitment to condemn, investigate and sanction its own officials. There is a need for leadership that has the integrity to resign in the face of embarrassment and disgrace to have any hope to succeed in the fight against corruption.

The fight against corruption cannot and should not be left to the government alone. Ordinary citizens, traditional and religious leaders have a role and a responsibility to join the fight against corruption. The ordinary citizen must be willing and able to question leaders when they lead ostentatious lives. Advantage must be taken of existing laws such as the Whistle-blowers Act, 2006 (Act 720) and report corrupt practices to the appropriate authorities.

There is the need for the passage of the Right to Information law. This law will ensure transparency and accountability and hence serve as an effective anti-corruption tool while complementing the anti-corruption laws that are already in place.

## 2.7 Summary

Project is a temporary endeavor to achieve goals. It has different characteristics such as, uniqueness, unfamiliarity, having a specific objective, temporary activity, etc. Of the different categories of projects, Real Estate project is among the project in civil engineering and construction classes. To accomplish project effectively and efficiently, modern project management is essential. Project management passes through a serious of phases which are project intention, project planning, project execution, project monitoring and controlling, and project closing. Project management has also different knowledge areas which are complete sets of concepts, terms and activities that create specialized professional fields. There are ten project management knowledge areas stated by PMI (2013) and four additional project management knowledge area for construction extension by PMI (2013) . There are different studies conducted in the area of project management. Some of them are reviewed in the empirical literature part.

# CHAPTER THREE
# METHODOLOGY

## 3.1 Introduction

The third chapter of this study is methodology. Following to internalizing the problems to be studied and the knowledge area that backs the study in chapter one and chapter two, the methodology part attempt to describe the methods through which the objectives of the study can be answered. Accordingly, it states about the research design used, population and sampling procedures, data gathering methods and instruments, validity and reliability of the study, and finally procedures/models of data presentation.

## 3.2 Research Design

The type of research conducted in the study is descriptive research. The study is also both quantitative and qualitative by its nature. It is quantitative since it involves statistical models such as means, standard deviations, correlations, and regression analysis. On the other hand, it is also qualitative research since it describes the actual condition of project management practice in the Real Estate industry in a non-numerical ways aided by the quantitative approaches.

Main source of data are Real Estate companies. Accordingly, responses gathered through questionnaires from these Real Estate companies are used as a main ingredient for the analysis, such as for correlation, regression, standard deviation, mean, etc. calculations that describes the phenomenon in Real Estate projects. Data obtained from consultants, instructors/researchers, and Real Estate owners is used for cross checking purpose.

The actual practice of project management in Real Estate industry is described in terms of mean and standard deviation. Since there are no national or industry standards for construction and Real Estate project management, the mean and standard values are compared with the average mean and standard deviation of the project management knowledge areas/ process groups. The research contains correlation and regression analysis between the practice of project management (in terms of project management knowledge areas and project management process groups) and success of Real Estate projects.

## 3.3 Population and Sampling Procedures

### a. For Real Estate developer companies

In Ethiopia there are 697 Real Estate developers registered by Ethiopian Investment Agency. This 697 is the total population size. Of these Real Estate developers, the target population is 382 companies that are recorded in Addis Ababa Investment Authority. The difference occurs due to the regulation declared in 1995 E.C. that requires companies previously registered by

Ethiopian Investment Agency should be registered by Addis Ababa Investment Authority to confirm their activeness in the sector. Among the 382 companies recorded by Addis Ababa Investment, only 124 companies are registered by the previous 'lease office' the current 'Addis Ababa city Land Administration and Construction License Authority'. Accordingly, 124 is the accessible population size which includes active Real Estate companies that run Real Estate projects by receiving land from the concerned body.

To determine sample size of the study, the researcher use a method developed by Carvalho (1984, cited in Kelil, 2010: P8). Therefore, the following table is used to determine the sample size

Table-3.1: Sample Size Determination

| Population size | Sample size | | |
|---|---|---|---|
| | Small | Medium | Large |
| 51-90 | 5 | 13 | 20 |
| 91-150 | 8 | 20 | 32 |
| 151-280 | 13 | 32 | 50 |
| 281-500 | 20 | 50 | 80 |
| 501-1200 | 32 | 80 | 125 |
| 1201-3200 | 50 | 125 | 200 |
| 3021-10000 | 80 | 200 | 315 |
| 1001-35000 | 125 | 315 | 500 |
| 35001-150000 | 200 | 500 | 800 |

Source: Carvalho (1984 , cited in Kelil, 2010: P 8)

All the companies in population of the study are involved in the same industry which results some homogeneity. But, homogeneity of the population is not clearly known. So, it is preferred to use medium sample size. Accordingly medium sample size for 124 population become 20. To select 20 respondents among 124 companies, simple random sampling was used.

**b. For house Holders**

According to Ministry of Urban, House Development, and Construction and Government Building Construction office (2012, P11), there are 2232 Real Estate houses that are transferred to owners. The house owners are more or less homogeneous in terms of social status as well as economic status due to the fact that most Real Estate developers aim to serve high income group. This is reported by Ministry of Urban, House Development, and Construction and Government Building Construction office (2012, P11) in which "Houses developed by private investors require higher price and target part of the society with high income levels." Accordingly, small numbers of respondents are representatives of the entire house holders' population. To determine the

sample size, the above table-3.1 is used. Accordingly, 50 is used as sample size for Real Estate house owners. Convenient sampling technique is used to select available and willing respondents at the time of collecting data.

**c. For Consultants**

Information is collected from 11 consultants that have been working with Real Estate companies. This information is used to cross check responses forwarded by Real Estate companies. Snowball sampling technique is used. Which means, the researcher contacts few of the consultants and these selected consultants are the one inviting other consultants to fill the questionnaires?

**d. For Researcher in the area of Construction**

Information was gathered from three researchers through interview. This researchers conducted construction management research, and also are practitioners. Judgmental sampling technique is used to intentionally select instructors at Addis Ababa Institute of technology that are specialized on construction project management field.

## 3.4. Data Gathering Methods and Instruments

Both primary data and secondary data were used with their respective sources. Primary data are obtained using observations, questionnaires, and interviews. Observation was used to consider on ground problems about Real Estate sites, progress of selected projects, and external appearance of Real Estate houses. Questionnaires were used to gather data:

- From Real Estate companies about their projects. This questionnaire is a hybrid of open-ended and closed ended questions.
- From House owners about Real Estate houses they hold. This questionnaire is also a hybrid of open-ended and closed ended questions.
- From consultants about their observation toward Real Estate projects and project management practices. This questionnaire is composed of fully open-ended questions.

Interviews were conducted with researchers to acquire their opinion in Real Estate industry project management practice and to check validity of questionnaire responses given by Real Estate companies. In addition to conducting interview, some ongoing Real Estate projects were visited for having some practical understanding about their practices.

Secondary sources of the study are different published books, internet web sites, journals, and previous research papers. Published books were used to review related theoretical literatures, to set background for the study, also for interpretation of research findings. Journals and research papers were used as

bases for conducting this study to attempt adding some new findings on the existing knowledge. Internet web sites were the sources of unpublished as well as published books, journals, and research papers. They were also used as mediums for acquiring posted scholars' and individuals' opinion on the area of project management.

### 3.5 Validity and Reliability of the Study

To check internal consistency of measurements, Split-half method and standard of error were used. Under the split-half method, Spearce man-Brown Prophecy Formula is used. Responses for Likert scale based questions were divided in to two groups to apply spearceman-Brown Prophecy Formula so that relationship among the two groups is evaluated. Standard of error were used to determine the deviation of responses by respondents from the average.

The first method used to check validity of data measuring instruments was personal evaluation whether or not they accurately collect data. It is done by the researcher, its advisors, and some other individuals in which they evaluated whether the questioned included in the questionnaires and interviews enable to collect the necessary data or not. Content validity were also be traced to check the questions in the questionnaires are fairly distributed among the different areas of the study, particularly on project management.

For the sake of increasing both the reliability and reliability of data, triangular method was used. Accordingly data were collects from different stake holders to cross check among the responses from different sources. Different data collection techniques were also used such as questionnaire, interview, and observation to fill the weakness of one technique by the strength of the other. For instance, interviews were used to check the questionnaires' responses by having a face-to-face communication. In addition to this, facts on ground ( in sites) were observed.

### 3.6 Procedures/Models of Data Presentation and Analysis

After the data are collected from different sources, it is organized and presented in different forms. Important numerical results are presented using tables and charts. Data that are used for qualitative analysis are presented in statement forms as part of the interpretation. This study uses both qualitative and quantitative analysis.

Qualitative models are applied for describing and interpreting responses from different respondents. Microsoft Excel and Microsoft Word were used to support the descriptions using charts and graphs.

Quantitative models are also used in this study. For instance, Models such as means and modes were applied to measure central tendency so as to have representative values for responses of questionnaires. Correlation model was also used to measure strength and direction of relationship among the project management practices in terms of knowledge areas. For the quantitative analysis SPSS (Statistical package for social science) was used to simplify cumbersome mathematical efforts.

### 3.6 Summary

The type of research conducted in the study is descriptive with both quantitative and qualitative nature. Data were gathered from sample of 24 Real Estate companies, 44 Real Estate house owners, and 10 construction consultants via quaternaries. In additional to this, 3 construction management instructors was interviewed. For the four data sources mentioned above, simple random sampling, judgmental sampling, convenient sampling, and snowball sampling techniques were used respectively. Reliability of the study was tested using Spearceman–Brown prophecy formula and standard error of measurement. And, personal evaluation was used to check contact validity of data collection instruments. For the sake of increasing both reliability and validity, triangular method was used. Both qualitative and quantitative analysis were applied in the study. Correlation analysis, regression, standard deviation, and mean are among the quantitative techniques of analysis that are applied in the study.

# CHAPTER FOUR
# DATA PRESENTATION AND ANALYSIS

## 4.1 Introduction

In this chapter, the data that are collected through primary tools are presented and analyzed. Before the data were presented, negative closed-ended questions of questionnaires were reciprocated to positive questions so that their responses were reversed. Return rate of responses, checking of validity and reliability, profile of respondents, and presentation and analysis on issues related with the research questions are included in this chapter.

### Return Rate of Responses

Among the different primary data collection tools, questionnaire and interview were used in the study. After the required numbers of respondents were determined, questionnaires were distributed more than the required number to compromise for non-return questionnaires. Table-4.1 shows, the required number of questionnaire/interview response, the number of distributed questionnaires/interviews, and the actual questionnaire/interview collected/conducted.

Table-4.1: Return/response Rate of Questionnaires/Interview

| Data Collection Tool | Number of Questionnaires/Interview | | | | | |
|---|---|---|---|---|---|---|
| | Required | Distributed/ conducted | Collected | | | Valid |
| | | | In Number | As percentage of Distributed | As Percentage of Required | |
| Questionnaire for Real Estate Companies | 20 | 35 | 24 | 68.6 % | 120 % | 21 |
| Questionnaire for Real Estate House Owners | 50 | 70 | 43 | 61.43 % | 86 % | 43 |
| Questionnaire for Consultants | 10 | 20 | 11 | 55 % | 110 | 11 |
| Interview with Researchers and Instructors in the area of Construction | 3 | 3 | 3 | 100% | 100% | 3 |

( Source: Own Survey )

The above table shows that, number of questionnaires collected from Real Estate companies is more than the required number of responses. But, for the questionnaire of Real Estate house owners, only 88% collection is achieved. Since the responses from these questionnaires are used for cross checking response of Real Estate companies and also significant portion of the collection is achieved, it is acceptable.

### 4.2 Reliability and Validity

In this study, the main data sources are Real Estate companies. But, data were gathered from Real Estate owners, consultants, and researchers in order to cross-check the responses from Real Estate companies. For the sake of measuring the reliability of Real Estate questionnaire responses Spearman-Brown Prophecy formula and standard error of measurement (SEM) are used. The application of each methods in this study is discussed below.

#### 4.2.1. Spearman-Brown Prophecy formula

This method is used to check/determine the reliability of measurement (i.e. Real Estate Questionnaire), first by splitting the Likert-scale questions in to two groups as odd questions and even questions. The formula used in this method is:

$$r_{OE} = \frac{N\sum OE - \sum O \sum}{\sqrt{[N\sum O^2 - (\sum O)^2][N\sum E^2 - (\sum E)^2]}}$$

( Source: Yalew, 2014, P 207)
Where:

- $r_{OE}$= correlation between even and odd answers
- N = Number of respondents
- Σ = Summation
- ΣO = Summation of responses for odd questions
- ΣE = Summation of responses for even questions
- ΣOE = Summation of the multiplication of odd and even responses

In this study, for the questionnaire responded by Real Estate companies:

- N = 24
- ΣO = 3,633
- ΣE = 3,627
- ΣOE = 552,915
- $\Sigma O^2$ = 554,507
- $\Sigma E^2$ = 551,741

The above results are computed using MS-excel to minimize the cumbersome steps. By putting the above values in the formula, we get the following:

$$r_{OE} = \frac{24*552{,}915-3633*3627}{\sqrt{([24*554{,}507-(3633)^2][24*551741-(3627)^2]}}$$

$r_{OE}$= 93,069 / √(9,486,902,745)
= 93,069/97,400.7
= 955526692
$r_{OE}$= 95.55 %

The above $r_{OE}$shows the reliability level of half of the questionnaire. To compute for the full questionnaire, the following formula is used:

$$rxx' = \frac{2 * r_{OE}}{1 + r_{OE}}$$

Accordingly, $rxx' = \frac{2 * 0.95555}{1 + 0.95555} = 97.726\ \%$

The above result means, the reliability level of the responses from the Real Estate questionnaire is 97.73 %. According to Yalew (2014, P221), for opinion testing, a reliability level which is 65 % is acceptable. So, the reliability level in this study satisfies far more the requirement.

### 4.2.2. Standard Error of Measurement (SEM)

It shows to what extent each respondents deviate from the accurate results. The following formula is used in this method:

$$SEM = \sqrt{(Sx^2 * (1 - rxx')}$$

Where:

$S_x^2$ = Variance of each respondents' total answer

$$S_x^2 = \frac{\Sigma (X - Xbar)^2}{N-1}$$

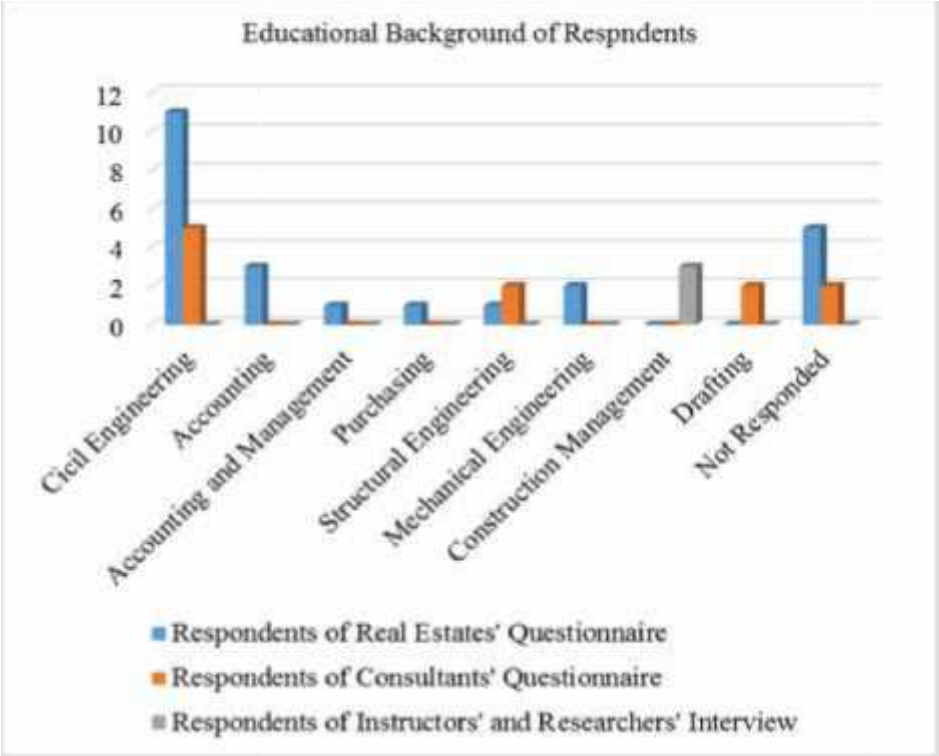
From MS-excel, $\Sigma (X - Xbar)^2$= 692.5217 and from the Spearman-Brown Prophecy calculation above rxx' = 0.97726. Accordingly, SEM becomes 4.255, which means, the sum of the answers of each respondents deviates from the accurate answers with an average of 4.255. So, the responses from Real Estate Questionnaires have small error.

### 4.3 Profile of Respondents

From the chart-4.1 shown below, majority of respondents of Both Real Estate Companies' Questionnaire and Consultants' Questionnaire are civil Engineers.

As construction project management is one wing of civil engineering, responses from these two questionnaires can have significant contribution for the study. In addition, all of the researcher's interviewees are specialized in construction project management. So, their response have vital role to cross check responses from Real Estate companies.

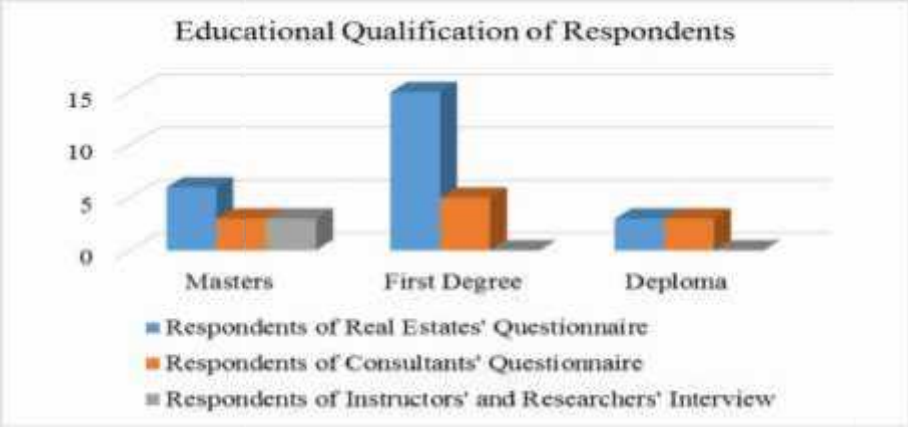
Chart-4.1: Educational Background of Respondents




( Source: Own Survey )

Chart-4.2 below indicates educational qualification of respondents. All of them holds at least diploma degree in their educational background. Accordingly, it is possible for them to fill self administered questionnaire easily.

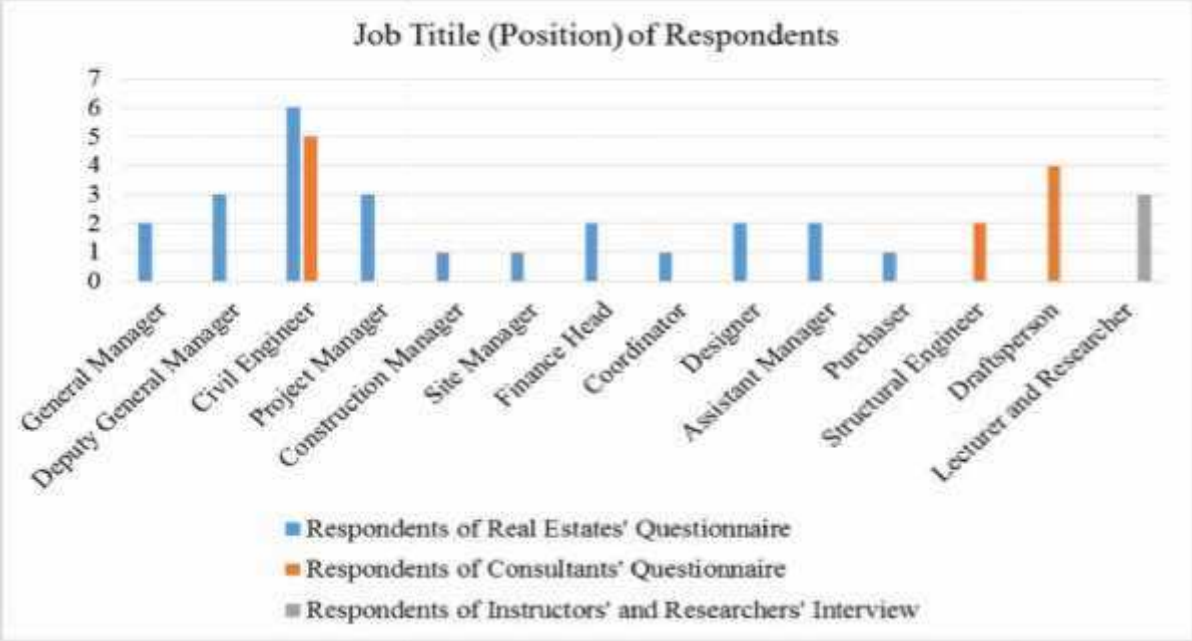
Chart-4.2: Educational Qualification of Respondents




( Source: Own Survey )

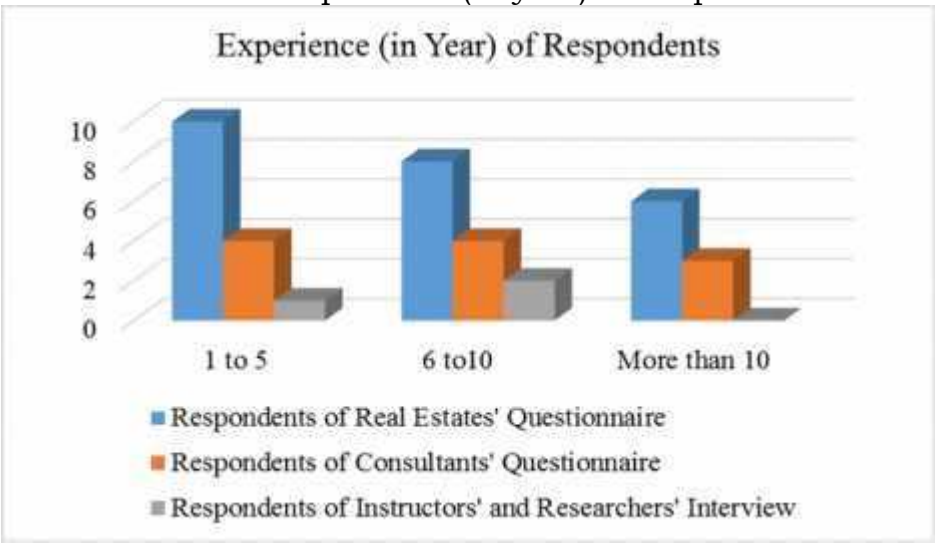
Most of the respondents are engaged in jobs related in construction related fields. This enable them to experience the different scenarios available in the construction industry including how projects are managed.

Chart-4.3: Job Titlt (Position) of Respondents




( Source: Own Survey )

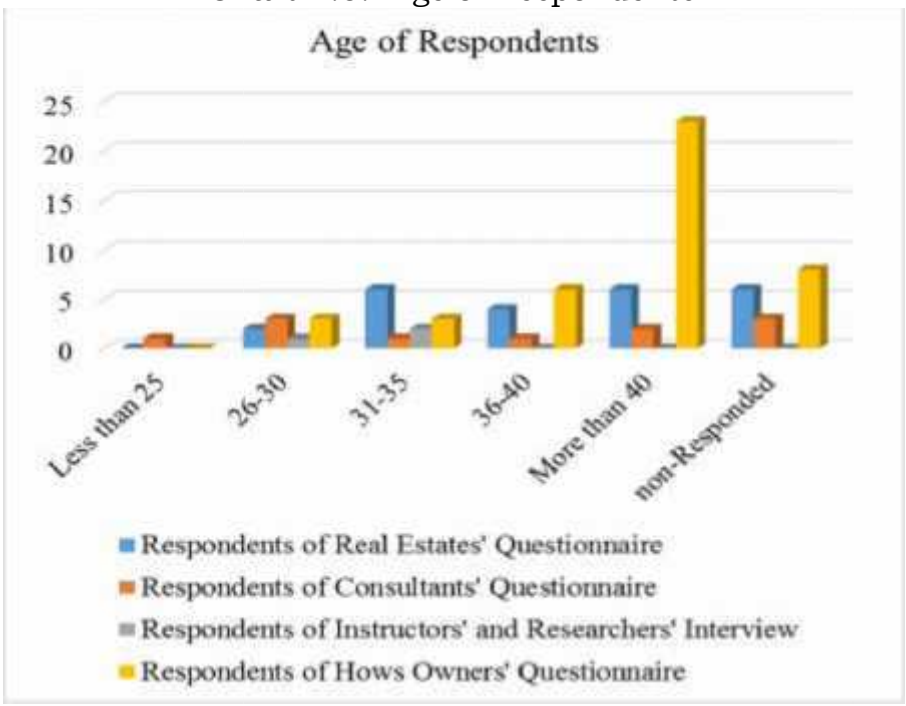
Chart-4.4: Experience (in year) of Respondents




( Source: Own Survey )

Chart-4.4 given above shows experiences of respondents in years. Except few respondents, most of them are well experienced in their fields. As it is mentioned in the above most of the respondents are engaged in construction field. These two things together insures that refined data is collected for the study.

Chart-4.5: Age of Respondents




(Source: Own Survey)

Chart-4.5 shown above indicates age of respondents. The chart is asymmetrical to the right side. This indicated that majority of the respondents have more age than the average age of the total respondents. Accordingly, it is expected that the data gathered from the questionnaires is filled carefully without the anchorage of being youngster behavior such as reluctant and impatience.

## 4.4 The Practice of Project Management in Ethiopian Real Estate Industry

So far, return/response rate of data collection tools, reliability and validity, and profile of respondents were discussed. In this section of the data presentation and analysis chapter, the practice of project management is assessed. Both quantitative and qualitative methods of analysis are used. Below are sub sections of the analysis of practice of project management in Ethiopian Real Estate Industry.

### 4.4.1. Project Management Practices in Terms of Project Management Knowledge Areas

As it is discussed in the literature review, project management knowledge areas are wings of project management in which they all include the project management process groups starting from Project initiation up to project closing. In this section of the analysis, the practice of project management of Ethiopian Real Estate Industry is assessed from the view point of project management knowledge areas. The following table-4.2 shows average results of each project management knowledge area out of five and in percent, and standard deviations. First, questions in Real Estate companies' questionnaires are categorized in to the different project management knowledge areas. Then average representative values are calculated for each project management knowledge areas in each questionnaire. Finally, average and standard deviation for the project management knowledge areas are calculated by combining the values of all of the Real Estate companies' questionnaires.

Table-4.2: Project Management Knowledge Areas in Ethiopian Real Estate Industry

| Responses from Real Estate Companies | | | |
|---|---|---|---|
| **Project Management Knowledge Area** | **Average Result out of Five** | **Average Result in Percent, %** | **Standard Deviation, SD** |
| Project Integration Management | 4.1786 | 83.572 | 0.34224 |
| Project Scope Management | 4.1875 | 83.75 | 0.26609 |

| | | | |
|---|---|---|---|
| Project Time Management | 3.9821 | 79.642 | 0.3354 |
| Project Cost Management | 3.8438 | 76.876 | 0.4397 |
| Project Quality Management | 3.9167 | 78.334 | 0.80006 |
| Project Human Resource Management | 3.9792 | 79.584 | 0.38247 |
| Project Communication Management | 3.8056 | 76.112 | 0.62875 |
| Project Risk Management | 3.7861 | 75.722 | 0.45777 |
| Project Procurement Management | 4.1215 | 82.43 | 0.49146 |
| Project Stakeholder Management | 3.9063 | 78.126 | 0.78648 |
| Project Safety Management | 3.8889 | 77.778 | 0.57874 |
| Project Environmental Management | 3.8056 | 76.112 | 0.56395 |
| Project Financial Management | 4.1389 | 82.778 | 0.58908 |
| Project Claim Management | 4.1458 | 82.916 | 0.49955 |
| Sum | 55.6866 | 1,113.912 | 7.16174 |
| Overall Project Management | 3.97776 | 79.5652 | 0.47704 |

( Source: Own Survey )

'To perform assessment on the practice of project management against the average practice of project management knowledge areas, the following are the computations of the average results that are used as a references to distinguish industry practice in terms of project management:

- Average practice of project management knowledge areas out of five is 55.6866 / 14 = 3.9776
- Average practice of project management knowledge areas in terms of Percent is 1 ,113.912 / 14 = 79.565 %

- Average Standard Deviation project management knowledge areas is: 7.16174 / 14 = 0.511553
- Average Standard Deviation of Project management knowledge areas in terms of percent = (0.511553 / 5) *100 % = 10.231 %

**Project Integration Management**

As shown in table-4.2 above, according to respondents from Real Estate companies, there is an average of 4.1786 rate out of 5 for the practice of project integration management in Ethiopian Real Estate industry. This rating value indicates there is an average of 83.572 % performance of project integration management in the industry. It is beyond the average practice (79.565 %) of project management knowledge areas. Accordingly, this project management knowledge practice is practiced well. It is also shown in the table that there is a 0.34224 standard deviation of the rating on project integration management by respondents, which leads to a 6.8448 % standard deviation in terms of percent rating. As it is computed above, the average standard deviation of Project management knowledge areas in terms of percent is 10.231 %, which means the respondents indicated that there is less deviation of project integration management practice from the average project management knowledge areas practice. As a result, it can be concluded that there is a convergent (more similar) practice of project integration management across Ethiopian Real Estate industry.

**Project Scope Management**

From table-4.2, according to respondents from Real Estate companies, there is an average of 4.1875 rate out of 5 for the practice of project scope management in Ethiopian Real Estate industry. This rating value indicates there is an average of 83.75 % performance of project scope management in the industry. It is beyond the average practice (79.565 %) of project management knowledge areas. Accordingly, this project management knowledge practice is practiced well. It is also shown in the table that there is a 0.26609 standard deviation of the rating on project scope management by respondents, which leads to a 5.3218 % standard deviation of knowledge areas in terms of percent rating. As it is computed above, the average standard deviation of project management knowledge areas in terms of percent is 10.231 %, which means the respondents indicated that there is less deviation of project scope management practice from the average project management knowledge areas practice. This indicates, there is a convergent ( more similar) practice of project scope management across Ethiopian Real Estate industry.

**Project Time Management**

In table-4.2 above, according to respondents from Real Estate companies, there is an average of 3.9821 rate out of 5 for the practice of project time management in Ethiopian Real Estate industry. This rating value indicates there is an average of 79.642 % performance of project time management in the industry. It is more or less equals to the average practice (79.565 %) of project management knowledge areas. Accordingly, this project management knowledge practice is moderately practiced. It is also shown in the table that there is a 0.3354 standard deviation of the rating on project time management by respondents, which leads to a 6.708 % standard deviation in terms of percent rating. As it is computed above, the average standard deviation of knowledge areas in terms of percent is 10.231 %, which means the respondents indicated that there is less deviation of project time management practice from the average project management knowledge areas practice. As a result, there is a convergent (more similar) practice of project time management across Ethiopian Real Estate industry.

**Project Cost Management**

As it seen in table-4.2 above, according to respondents from Real Estate companies, there is an average of 3.8438 rate out of 5 for the practice of project cost management in Ethiopian Real Estate industry. This rating value indicates there is an average of 76.876 % performance of project cost management in the industry. It is less than the average practice (79.565 %) of project management knowledge areas. Accordingly, this project management knowledge practice is poorly practiced. It is also shown in the table that there is a 0.4397 standard deviation of the rating on project cost management by respondents, which leads to an 8.794 % standard deviation in terms of percent rating. As it is computed above, the average standard deviation of project management knowledge areas in terms of percent is 10.231 %, which means the respondents indicated that there is less deviation of project cost management practice from the average project management knowledge areas practice. This indicates, there is a convergent (more similar) practice of project cost management across Ethiopian Real Estate industry.

**Project Quality Management**

From table-4.2 above, according to respondents from Real Estate companies, there is an average of 3.9167 rate out of 5 for the practice of project quality management in Ethiopian Real Estate industry. This rating value indicates there is an average of 78.334 % performance of project quality management in the industry. It is less than the average practice (79.565 %) project management. Accordingly, this project management knowledge practice is poorly practiced. But, as compared to the project cost management, project quality management is closer to the average industry project management

practice. It is also shown in the table that there is a 0.80006 standard deviation of the rating on project quality management by respondents, which leads to a 16.0012 % standard deviation in terms of percent rating. As it is computed above, the average standard deviation in terms of percent is 10.231 %, which means the respondents indicated that there is more deviation of project quality management practice than from the average project management practice. As a result, it is possible to conclude that there is a divergent (dispersed practice by Real Estate companies) practice of project quality management across Ethiopian Real Estate industry.

**Project Human Resource Management**

Using table-4.2, according to respondents from Real Estate companies, there is an average of 3.9792 rate out of 5 for the practice of project human resource management in Ethiopian Real Estate industry. This rating value indicates there is an average of 79.584 % performance of project human resource management in the industry. It is more or less equals to the average practice (79.565 %) project management. Accordingly, this project management knowledge practice is moderately practiced. It is also shown in the table that there is a 0.38247 standard deviation of the rating on project human resource management by respondents, which leads to a 7.6494 % standard deviation in terms of percent rating. As it is computed above, the average standard deviation in terms of percent is 10.231 %, which means the respondents indicated that there is less deviation of project human resource management practice from the average project management practice. This infers that there is a convergent (more similar) practice of project human resource management across Ethiopian Real Estate industry. Beside to this, 45 % of respondent consultants indicated that there is traditional way of human resource management in Ethiopian Real Estate Projects starting from non-fitful human resource managers.

**Project Communication Management**

As shown in table-4.2 above, according to respondents from Real Estate companies, there is an average of 3.8056 rate out of 5 for the practice of project communication management inEthiopian Real Estate industry. This rating value indicates there is an average of 76.112 % performance of project communication management in the industry. It is less than the average practice (79.565 %) project management. Accordingly, this project management knowledge practice is poorly practiced. It is also shown in the table that there is a 0.62875 standard deviation of the rating on project communication management by respondents, which leads to a 12.575 % standard deviation in terms of percent rating. As it is computed above, the average standard deviation in terms of percent is 10.231 %, which means the respondents indicated that there is more deviation of project communication management practice than from the average project management practice. This means, there

is a divergent (dispersed practice by Real Estate companies) practice of project communication management across Ethiopian Real Estateindustry.

**Project Risk Management**

As shown in table-4.2 above, according to respondents from Real Estate companies, there is an average of 3.7861 rate out of 5 for the practice of project risk management in Ethiopian Real Estate industry. This rating value indicates there is an average of 75.722 % performance of project risk management in the industry. It is less than the average practice (79.565 %) project management. Accordingly, this project management knowledge practice is poorly practiced. It is also shown in the table that there is a 0.45777 standard deviation of the rating on project risk management by respondents, which leads to a 9.1554 % standard deviation in terms of percent rating. As it is computed above, the average standard deviation in terms of percent is 10.231 %, which means the respondents indicated that there is less but closer deviation of project risk management practice from the average project management practice. This concludes that there is a moderately convergent (similar) practice of project risk management across Ethiopian Real Estate industry. From the viewpoint of 36% of respondent consultants, the Ethiopian Real Estate project risk management is not well developed and done in unprofessional way.

**Project Procurement Management**

As shown in table-4.2 above, according to respondents from Real Estate companies, there is an average of 4.1215 rate out of 5 for the practice of project procurement management in Ethiopian Real Estate industry. This rating value indicates there is an average of 82.43 % performance of project procurement management in the industry. It is beyond the average practice (79.565 %) project management. Accordingly, this project management knowledge practice is practiced well.

As a result, the procurement management problems such as poor tender documentation and poor evaluation of tender found in Bayelsa, which is studied by Ogege (2011) stated in the empirical review, doesn't work in Ethiopian Real Estate projects. It is also shown in the table that there is a0.49146standard deviation of the rating on project procurement management by respondents, which leads to a 9.8292 % standard deviation in terms of percent rating. As it is computed above, the average standard deviation in terms of percent is 10.231 %, which means the respondents indicated that there is less but closer deviation of project procurement management practice from the average project management practice. This leads to the conclusion that there is a moderately convergent (similar) practice of project procurement management across Ethiopian Real Estate industry. In addition to the view of the Real Estate companies on project procurement management that exist in

their projects, 81.81% of respondent consultants replied that, the procurement management of Ethiopian projects is traditional, open to corruption and performed without clear policies.

**Project Stakeholder Management**

As shown in table-4.2 above, according to respondents from Real Estate companies, there is an average of 3.9063 rate out of 5 for the practice of project stakeholder management in Ethiopian Real Estate industry. This rating value indicates there is an average of 78.126 % performance of project stakeholder management in the industry. It is less than the average practice (79.565 %) project management. Accordingly, this project management knowledge practice is poorly practiced. It is also shown in the table that there is a 0.78648 standard deviation of the rating on project stakeholder management by respondents, which leads to a 15.7296 % standard deviation in terms of percent rating. As it is computed above, the average standard deviation in terms of percent is 10.231 %, which means the respondents indicated that there is more deviation of project stakeholder management practice than from the average project management practice. This indicates, there is a divergent (dispersed practice by Real Estate companies) practice of project stakeholder management across Ethiopian Real Estate industry.

**Project Safety Management**

As shown in table-4.2 above, according to respondents from Real Estate companies, there is an average of 3.8889 rate out of 5 for the practice of project safety management in Ethiopian Real Estate industry. This rating value indicates there is an average of 77.778 % performance of project safety management in the industry. It is less than the average practice (79.565 %) project management. Accordingly, this project management knowledge practice is poorly practiced. It is also shown in the table that there is a 0.57874 standard deviation of the rating on project safety management by respondents, which leads to an 11.5748 % standard deviation in terms of percent rating. As it is computed above, the average standard deviation in terms of percent is 10.231 %, which means the respondents indicated that there is more deviation of project safety management practice than from the average project management practice. This concludes that there is a divergent (dispersed practice by Real Estate companies) practice of project safety management across Ethiopian Real Estate industry. Nine of the respondent consultants said that there is no well-developed project safety management in Ethiopian Real Estate industry and two of them replied that there are only few after-damage first-aid tools that are used by some Real Estate companies.

**Project Environmental Management**

As shown in table-4.2 above, according to respondents from Real Estate companies, there is an average of 3.8056 rate out of 5 for the practice of project environmental management in Ethiopian Real Estate industry. This rating value indicates there is an average of 76.112 % performance of project environmental management in the industry. It is less than the average practice (79.565 %) project management. Accordingly, this project management knowledge practice is poorly practiced. It is also shown in the table that there is a 0.56395 standard deviation of the rating on project environmental management by respondents, which leads to an 11.279 % standard deviation in terms of percent rating. As it is computed above, the average standard deviation in terms of percent is 10.231 %, which means the respondents indicated that there is more deviation of project environmental management practice than from the average project management practice. This indicates, there is a divergent (dispersed practice by Real Estate companies) practice of project environmental management across Ethiopian Real Estate industry. In addition to this, 36.36 % of respondent consultants stated that there is only acceptable environmental damage yet, but they also forwarded suggestion to consider environmental management practices in order to avoid the negative impact of Real Estate projects in the long run.

**Project Financial Management**

As shown in table-4.2 above, according to respondents from Real Estate companies, there is an average of 4.1389 rate out of 5 for the practice of project financial management in Ethiopian Real Estate industry. This rating value indicates there is an average of 82.778 % performance of project financial management in the industry. It is above the average practice (79.565 %) project management. Accordingly, this project management knowledge practice is practiced well. It is also shown in the table that there is a 0.58908 standard deviation of the rating on project financial management by respondents, which leads to an 11.7816 % standard deviation in terms of percent rating. As it is computed above, the average standard deviation in terms of percent is 10.231 %, which means the respondents indicated that there is more deviation of project financial management practice than from the average project management practice. This leads to the conclusion that there is a divergent (dispersed practice by Real Estate companies) practice of project financial management across Ethiopian Real Estate industry.

**Project Claim Management**

As shown in table-4.2 above, according to respondents from Real Estate companies, there is an average of 4.1458 rate out of 5 for the practice of project claim management in Ethiopian Real Estate industry. This rating value indicates there is an average of 82.916 % performance of project claim

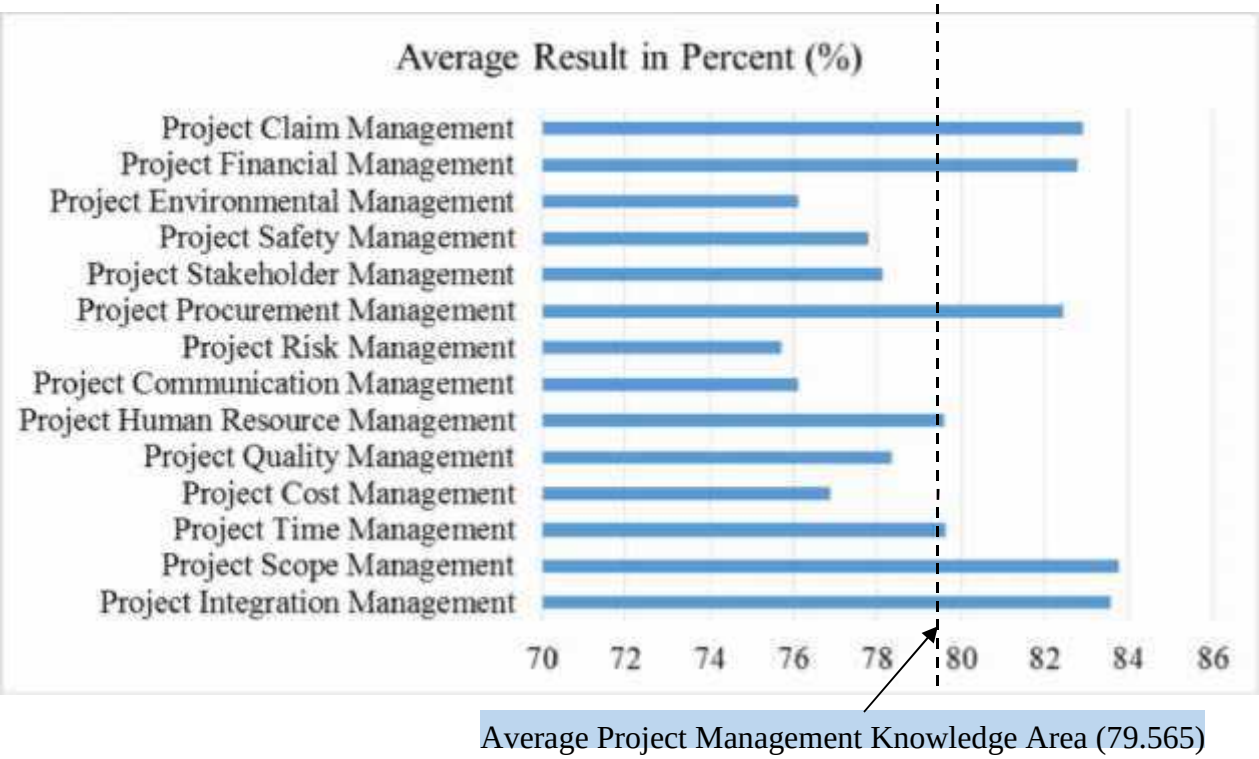
management in the industry. It is beyond the average practice (79.565 %) project management. Accordingly, this project management knowledge practice is practiced well. It is also shown in the table that there is a 0.49955 standard deviation of the rating on project claim management by respondents, which leads to a 9.991 % standard deviation in terms of percent rating. As it is computed above, the average standard deviation in terms of percent is 10.231 %, which means the respondents indicated that there is less but closer deviation of project claim management practice from the average project management practice. This indicates, there is a moderately convergent (similar) practice of project claim management across Ethiopian Real Estate industry.

**Overall Project Management Practice**

Using the average results of the practices of each project management knowledge areas, there is an average of 4.2467 rate out of 5 for the practice of the overall project management in Ethiopian Real Estate industry. This rating value indicates there is an average of 84.934 % performance of project claim management in the industry. It is also shown in the table that there is a 0.47704 standard deviation of the rating on project claim management by respondents, which leads to a9.5408 % standard deviation in terms of percent rating.

Chart-4.6 available below summarizes the average rate in percent of each knowledge management against the average practice of project management knowledge areas as a reference. It is shown that project integration management, project scope management, project financial management, and project claim management are far more practice than the average project management knowledge area practice. Project time management and project human resource management are practice more or less equals with the average. On the average project risk management, project environmental management, project communication management, project cost management, project safety management, project stakeholder management and project quality management are practiced below average and are listed from the very worst to the least worst in this statement.

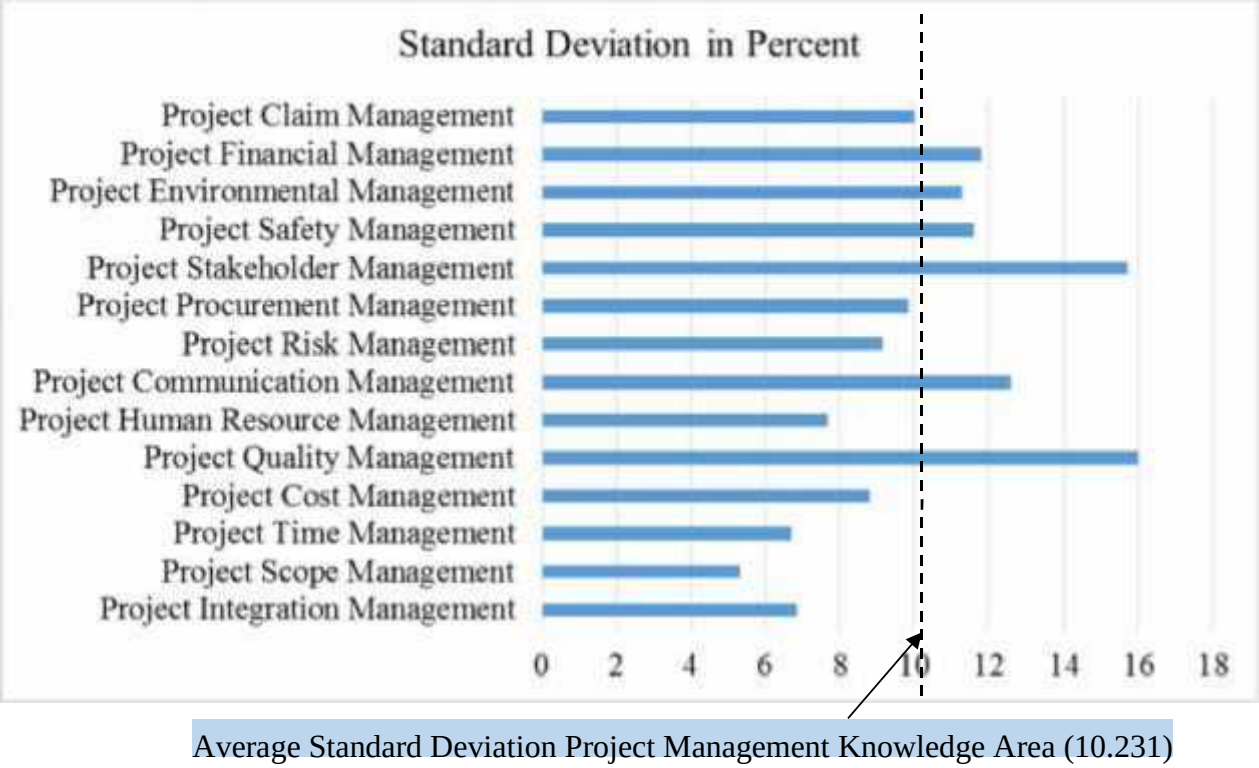
Chart 4.6: Summary of Average Practce of Project Management Knowledge Areas' Practices in Ethiopian Real Estate Industry




(Source: Own Survey)

The above chart alone cannot describe the practice of each project management knowledge areas in Ethiopian Real Estate industry since there may be fluctuation of practice in particular Real Estate companies. Accordingly, it is important to study the variation in the practices. One of the tool to analyze the variation of the practices is standard deviation. It is also discussed in the above analyses together with mean of each of practices. The following chart shows summary of the standard deviations of each project management knowledge area together with the average standard deviation.

Chart-4.7: Summary of Average Standard Deviation of Project Management Knowledge Areas' Practices in Ethiopian Real Estate Industry




(Source: Own Survey)

As it is seen in chart-4.7, there is a high practice variation in project quality management, project stakeholder management, project communication management, project financial management, project safety management, and project environmental management. They are listed from the very worst to the least worst. The rest project management knowledge areas are practices uniformly across the Real Estate Industry.

### 4.4.2. Project Management Practice in Terms of Knowledge Management Process Groups

From the literature review, it can be seen that project management can be analyzed either from the view point of knowledge areas or from the view point of process groups. The project management knowledge areas are categories under the overall project management practice whereas project management process groups are stages where a project passes throughout its life time. The project management practice of Ethiopian Real Estate industry is assessed above in terms of the project management knowledge areas. In this the section below, the project management practice of Ethiopian Real Estate industry is

assessed in terms of the project management process groups. Table-4.3 shows average results of each project management process groups out of five and in percent, and standard deviations. First, questions in Real Estate companies' questionnaires are categorized in to the different project management process groups.

Then average representative values are calculated for each project management process groups in each questionnaire. Finally, average and standard deviation for the project management process groups are calculated by combining the values of all of the Real Estate companies' questionnaires.

Table-4.3: Project Management Process Groups in Ethiopian Real Estate Industry

| Responses from Real Estate Companies | | | |
|---|---|---|---|
| **Project Management Process Groups** | **Average Result out of Five** | **Average Result in Percent, %** | **Standard Deviation, SD** |
| Project Initiation Process | 4.4861 | 89.722 | 0.51056 |
| Project Planning Process | 3.9760 | 79.52 | 0.36830 |
| Project Executing Process | 4.0125 | 80.25 | 1.03559 |
| Project Monitoring and Controlling Process | 4.3171 | 86.342 | 0.96488 |
| Project Closing Process | 3.7750 | 75.5 | 0.58477 |
| Overall Project Management | 4.2467 | 84.934 | 0.47704 |
| Sum | 20.5667 | 411.334 | 3.464 |

( Source: Own Survey )

To perform assessment on the practice of project management against the average practice of project management process groups, the following are the computations of the average results that are used as references to compare industry practice in terms of project management:

- Average practice of project management knowledge areas out of five is 20.5667 / 5 = 4.11334

- Average practice of project management knowledge areas in terms of Percent is 411.334 / 5 = 82.2668 %
- Average Standard Deviation project management knowledge areas is: 3.4641 / 5 = 0.69282
- Average Standard Deviation of Project management knowledge areas in terms of percent
  = (0.69282/ 5) *100 % = 13.8564 %

**Project Initiation**

As shown in table-4.3 above, according to respondents from Real Estate companies, there is an average of 4.4861 rate out of 5 for the practice of project initiation Process groups in Ethiopian Real Estate industry. This rating value indicates there is an average of 89.722 % performance of project initiation Process groups in the industry. It is beyond the average practice (82.2668 %) project management. Accordingly, this project management process group is practiced well. It is also shown in the table that there is a 0.51056 standard deviation of the rating on project initiation Process groups by respondents, which leads to a 10.2112 % standard deviation in terms of percent rating. As it is computed above, the average standard deviation in terms of percent is 13.8564 %, which means the respondents indicated that there is less deviation of project initiation process group practice from the average project management process groups practice. This concludes that there is a convergent (more similar) practice of project initiation process group across Ethiopian Real Estate industry.

**Project Planning**

Form table-4.3 above, according to respondents from Real Estate companies, there is an average of 3.9760 rate out of 5 for the practice of project planning Process groups in Ethiopian Real Estate industry. This rating value indicates there is an average of 79.52 % performance of project planning Process groups in the industry. It is less than the average practice (82.2668 %) project management. Accordingly, this project management process group practice is poorly practiced. It is also shown in the table that there is a 0.36830 standard deviation of the rating on project planning Process groups by respondents, which leads to a 7.366 % standard deviation in terms of percent rating. As it is computed above, the average standard deviation in terms of percent is 13.8564 %, which means the respondents indicated that there is less deviation of project planning process group practice from the average project management process groups practice. This indicates, there is a convergent (more similar) practice of project planning process group across Ethiopian Real Estate industry.

**Project Execution**

Using table-4.3 above, according to respondents from Real Estate companies, there is an average of 4.0125 rate out of 5 for the practice of project execution Process groups in Ethiopian Real Estate industry. This rating value indicates there is an average of 80.25 % performance of project execution Process groups in the industry. It is less than the average practice (82.2668 %) project management. Accordingly, this project management process group practice is poorly practiced. It is also shown in the table that there is a 1.03559 standard deviation of the rating on project execution Process groups by respondents, which leads to a 20.7118 % standard deviation in terms of percent rating. As it is computed above, the average standard deviation in terms of percent is 13.8564 %, which means the respondents indicated that there is more deviation of project execution process group practice from the average project management process groups practice. This infers that there is a divergent (dispersed practice by Real Estate companies) practice of project execution process group across Ethiopian Real Estate industry.

**Project Monitoring and Controlling**

As shown in table-4.3 above, according to respondents from Real Estate companies, there is an average of 4.3171 rate out of 5 for the practice of project monitoring and controlling Process groups in Ethiopian Real Estate industry. This rating value indicates there is an average of 86.342 % performance of project monitoring and controlling Process groups in the industry. It is more than the average practice (82.2668 %) project management. Accordingly, this project management process group practice is practiced well. It is also shown in the table that there is a 0.96488 standard deviation of the rating on project monitoring and controlling Process groups by respondents, which leads to a 19.2976 % standard deviation in terms of percent rating. As it is computed above, the average standard deviation in terms of percent is 13.8564 %, which means the respondents indicated that there is more deviation of project monitoring and controlling process group practice from the average project management process groups practice. This leads to the conclusion that there is a divergent (dispersed practice by Real Estate companies) practice of project execution process group across Ethiopian Real Estate industry.

**Project Closing**

As shown in table-4.3 above, according to respondents from Real Estate companies, there is an average of 4.2467 rate out of 5 for the practice of project closing Process groups in Ethiopian Real Estate industry. This rating value indicates there is an average of 84.934 % performance of project closing Process groups in the industry. It is beyond the average practice (82.2668 %) project management. Accordingly, this project management process group is

practiced well. It is also shown in the table that there is a 0.47704 standard deviation of the rating on project closing Process groups by respondents, which leads to a 9.5408 % standard deviation in terms of percent rating. As it is computed above, the average standard deviation in terms of percent is 13.8564 %, which means the respondents indicated that there is less deviation of project closing process group practice from the average project management process groups practice. This infers that there is a moderately convergent (more similar) practice of project closing process group across Ethiopian Real Estate industry.

Using the average results of the practices of each project management process groups, there is an average of 4.2467 rate out of 5 for the practice of the overall project management in Ethiopian Real Estate industry. This rating value indicates there is an average of 84.934 % performance of project process management in the industry. It is also shown in the table that there is a 0.47704 standard deviation of the rating on project process management by respondents, which leads to a9.5408 % standard deviation in terms of percent rating.

### 4.5. Relationship between Project Management Practices and Project Success in Ethiopian Real Estate Industry

In this part of the analysis, the relationship between project management and project success is assessed. The purpose is to measure the contribution of different wings of project management (both project management knowledge areas, and project management process groups) to the success of Ethiopian Real Estate projects. In section 2.1.10 of the literature review part, it is discussed that "It should be understood that simply because a project is a success does not mean that the company as a whole is successful in its project management endeavors. Excellence in project management is defined as a continuous stream of successfully managed projects." As are sult, it is shown that project management practice is the one sustaining the continuous success of projects rather than indicating the practice of project management in terms of success. In other word, the parameters of project success are dependent on the independent variables of project management practice.

In this study, Pearson correlation coefficient is used to measure relationship. In addition Actual error level (P-value or sig-value) is used, by comparing with α-value, to show whether there is significant relationship or not. For this study, significance level (α-value) is considered as 0.05, which means, there is 5 % acceptance of error in the relationships to be assessed. Correlation coefficient (R-value) and P-value (Sig-value) are obtained from SPSS. According to Yalew (2014, P328), correlation values are interpreted as the following:

| Correlation Value | Meaning(Interpretation) |
|---|---|
| 0.00-0.09 | No or very weak relationship |
| 0.20-0.39 | Low (weak) relationship |
| 0.40-0.59 | Moderate Relationship |
| 0.60-0.79 | Strong Relationship |
| 0.80-1.00 | Very Strong Relationship |

In the analysis, the above way of interpretation of Yalew (2014) is chosen.

### 4.5.1. Project Success

As it is indicated above, the analysis under section 4.6 of the analysis is to determine the relationship between project management and project success. In this study, project success is examined using 15 questions in the questionnaires filled by Real Estate companies. The table-4.4 available below shows final mean and standard deviation in total project success. Accordingly, Real Estate companies believe that an average of 80.612% of success requirements of their projects is achieved. This figure ranges with a standard deviation of 9.6708%.

Table-4.4: Mean and Standard Deviation of Project Success based on Responses from Real Estate Companies

| Based on Responses from Real Estate Companies | | | |
|---|---|---|---|
| Mean (Average) | | Standard deviation | |
| 4.0306 | 80.612 | 0.48354 | 9.6708 |

( Source: Own Survey )

On the contrary of Real Estate companies' belief on success level of their projects, Real Estate house owners believe that only 67.55 % of requirements from successful projects are achieved by their house suppliers. In addition to this figure, the table-4.5 below also shows that this belief of Real Estate house owners varies with a high standard deviation level of 21.53%.

Table-4.5: Mean and Standard Deviation of Project Success based on Responses from Real Estate House Owners

| Based on Responses from Real Estate House Owners | | | |
|---|---|---|---|
| Mean (Average) | | Standard deviation | |
| 3.377622 | 67.55 | 1.076343 | 21.53 |

( Source: Own Survey )

From the two perspectives about current success level of Real Estate projects, it can be revealed that, the level of effort by Real Estate companies to satisfy their customers doesn't feet with customer expectations. In this study, Project success is viewed from the point of Real Estate companies.

### 4.5.2. Project Management Knowledge Areas and Project Success

In this section of the analysis, relationship between project management knowledge areas and success of Real Estate projects is assessed. It is used to evaluate the level of contribution of each project management knowledge area to the achievement of successful projects. Table-4.6 shows the R-values and α-values in the relationship between each of the project management knowledge areas and project success.

Table-4.6: Correlation between Project Successes with Each Project Management Knowledge Areas

| Correlations between Project Success with Each Project Management Knowledge Areas | | |
|---|---|---|
| Project Management Knowledge Areas | Pearson Correlation (R) | Sig (2-tailed) |
| Project Integration Management | 0.248 | 0.242 |
| Project Scope Management | -0.167 | 0.436 |
| Project Time Management | 0.652** | 0.001 |
| Project Cost Management | 0.241 | 0.257 |
| Project Quality Management | 0.656** | 0.000 |
| Project Human Resource Management | 0.634** | 0.001 |
| Project Communication Management | 0.370 | 0.075 |
| Project Risk Management | 0.692** | 0.000 |

| | | |
|---|---|---|
| Project Procurement Management | 0.504* | 0.012 |
| Project Stakeholder Management | 0.793** | 0.000 |
| Project Safety Management | 0.572** | 0.003 |
| Project Environmental Management | 0.115 | 0.593 |
| Project Financial Management | -0.117 | 0.585 |
| Project Claim Management | 0.908** | 0.000 |
| **. Correlation is significant at the 0.01 level (2-tailed).<br>*. Correlation is significant at the 0.05 level (2-tailed).<br>Listwise N=24 | | |

( Source: Own Survey )

**Project Integration Management and Project Success**

In the relationship between project integration management and success of Real Estate projects, P-value is 0.242. SPSS uses α-value of 0.05. Since P-value is more than the α-value, there is no significant relationship between project integration management and project success. The Pearson correlation coefficient (R-value) also indicates the same scenario in which it is positive 0.248 which is interpreted as low (weak) relationship between project integration management and project success. PMI (2013) stated that Project integration management includes providing the project manager with the authority to apply organizational resources to project activities. In addition to this, Abu Bakri, Abu Razak and Awang (2013) stated and reviewed in the empirical literature part of this study that 'authority of project manager' is one of the critical success factors in the practice of project management for sustaining housing development. Accordingly, the Ethiopian Real Estate projects lack this CSF due to the existence of project integration management and success of Real Estate projects.

**Project Scope Management and Project Success**

Project scope management has P-value of 0.436, which is more than α-value (0.05) in the relationship with success of Real Estate projects. Accordingly, there is no significant relationship among them. The R-value, negative 0.167, indicates that there is no or very weak relationship. In this case, even though the relationship is weak, the negative sign indicates to have remedial action in advance, before the relationship changes to strong inverse relationship.

**Project Time Management and Project Success**

There is P-value of 0.001 on the relationship between project time management and project success, which is less than α-value (0.05). It directs that there is significant relationship between project time management of the Real Estate Companies and success of Real Estate Projects. The level of their relationship is indicated by R-value which is 0.652 where it ranges between 0.60 and 0.79. It is interpreted as there is strong relationship between them. Since the sign of the Rvalue is positive, the relationship is direct. It means as the practice of project time management increases there is a high likelihood that project success will also increase.

**Project Cost Management and Project Success**

Project cost management and project success have sig-value of 0.257 in their relationship, which is more than α-value (0.05). So, they have no significant relationship. The R-value which is 0.241 also shows that there is weak relationship between them.

**Project Quality Management and Project Success**

There is P-value of 0.000 in the relationship between project quality management and project success. Since it is less than α-value (0.05), there is significant relationship between them. The Revalue is also 0.656 which is values between 0.60 and 0.79. It infers the existence of strong relationship. The sign of the correlation coefficient is positive in which the relationship is direct.

Accordingly, the relationship between project quality management and Real Estate project success is strong and direct in which whenever one increases the likelihood that the other will also increase is high.

**Project Human Resource Management and Project Success**

The P-value of the relationship between project human resource management and Real Estate project success is 0.001 that is less than α-value (0.05). It infers that there is significant relationship between them. Since R-value is 0.634 it implies the existence of strong relationship between project human resource management and project success. As the sign of R is positive, the relationship is direct. It generally means, when project human resource management performs well, the likelihood that project success appreciates is high.

**Project Communication Management and Project Success**

According to the above table-4.6, P-value between relationship of project communication management and project success is 0.075 which implies the existence of insignificant relationship since it is greater than α-value. Using the positive R-value which is 0.370, it can be inferred that there is weak relationship between project communication management of Ethiopian Real Estate Industry and project success.

**Project Risk Management and Project Success**

Project risk management and project success have P-value of 0.000 which is an indicator of significant relationship as it is less than α-value (0.05). The coefficient of correlation (R-value) is positive 0.692. Accordingly, there is strong direct relationship between project risk management and project success. As one increases, there is a high probability that the other also increases. As it is discussed by Abu Bakri, Abu Razak and Awang (2013) risk management is a critical success factor in the practice of project management for sustaining housing development. Since there is strong direct relationship between project risk management and Ethiopian Real Estate project success, the situation let the industry to satisfy maintaining the critical success factor.

**Project Procurement Management and Project Success**

Project procurement management and project success of Real Estate projects have P-value equals to 0.012 in their relationship which is less than α-value (0.05). It means, there is significance relationship between them. As R-value is positive and is equals to 0.504 that is between 0.40 and0.59, there is moderate direct relationship between the practice of project procurement management and project success in Ethiopian Real Estate Industry. In other word, as one of them increases there is some significant probability that the other also increases, vise verse.

**Project Stakeholder Management and Project Success**

P-value in the relationship between project stakeholder management and project success is 0.000 that is less than α-value (0.05) which leads to infer that there is significant relationship among them. The correlation coefficient is positive 0.793 which is more likely closer to 0.8. Accordingly, there is a very strong relationship between the practice of project stakeholder management in Ethiopian Real Estate industry and success of projects.

**Project Safety Management and Project Success**

Project safety management and project success have P-value of 0.003 in their relationship which is less than α-value. That is an indicator of the existence of significant relationship. The positive sign of the coefficient of correlation and its magnitude, 0.572 which exists between 0.40 and 0.59 indicates that there is

moderated direct relationship between project safety management practice in Ethiopian Real Estate industry and Real Estate Projects. It means, as one of them increases, there is considerable probability that the other will also increases.

**Project Environmental Management and Project Success**

Project environmental management has P-value of 0.593 in a relationship with success of Real Estate Projects which leads to interpret that there is no significant relationship between them since it is more than α-value (0.05). The R-value is 0.115 (between 0 and 0.19) and has positive sign. Accordingly, there is no or very weak relationship between current project environmental management practice in Ethiopian Real Estate Industry and success of Real Estate Projects. The change in one of them doesn't indicate the change in the other.

**Project Financial Management and Project Success**

Project financial management has P-value of 0.585 in a relationship with success of Real Estate projects which is more than α-value (0.05). Accordingly, there is no significant relationship between them. The Pearson correlation coefficient (R-value), which is -0.117 ( negative ) indicates, there is no or very weak relationship. The negative sign shows to have remedial action in advance before the relationship changes to strong inverse relationship.

**Project Claim Management and Project Success**

Project claim management and project success have P-value of 0.000 which is less than α-value(0.05). It indicates the existence of significant relationship between them. The coefficient of correlation is 0.908 which is valued between 0.80 and 1.00 and has positive sign. Accordingly, it is possible to infer that there is very strong direct relationship between project claim management and project success. It means, as the practice of project claim management increases, success of Real Estate projects will also increases.

### 4.5.3. Project Management Process Groups and Project Success

In this section of the analysis, relationship between project management process groups and success of Real Estate projects is assessed. It is used to evaluate the level of contribution of each project management process group to the achievement of successful projects. Table-4.7 shows the R-values and α-values in the relationship between each of the project management process groups and project success.

Table-4.7: Correlation between Project Successes with Each Project Management Process Group

| Correlations between Project Success with Each Project Management Process Groups | | |
|---|---|---|
| Project Management Process Groups | Pearson Correlation (R) | Sig (2-tailed) |
| Project Initiation Process Group | 0.231 | 0.278 |
| Project Planning Process Group | 0.743** | 0.000 |
| Project Executing Process Group | 0.641** | 0.001 |
| Project Monitoring and Controlling Process Group | 0.251 | 0.237 |
| Project Closing Process Group | 0.401 | 0.052 |
| **. Correlation is significant at the 0.01 level (2-tailed).<br>*. Correlation is significant at the 0.05 level (2-tailed).<br>List wise N=24 | | |

( Source: Own Survey )

**Project Initiation and Project Success**

There is no significant relationship between project initiation process groups and success of Real Estate projects. This is indicated by the P-value equal to 0.238 which is greater than α-value(0.05). It is also shown by the R-value which is equal to positive 0.231 that is between 0.20 and0.39 . It implies, there is weak relationship between project initiation process group and project success in Ethiopian Real Estate Industry.

**Project Planning and Project Success**

Project plan process group and project success have significant relationship since their P-value is0.000 which is less than the α-value (0.05). Their R-value is 0.743 which is valued in a range of0.60 and 0.79. This directs the existence of strong relationship between project plan process group and success of Real Estate projects. Since the sign is positive, the relationship is direct. It is interpreted as, when practices in project plan process group are doing well, it leads to with a high probability of having successful projects.

**Project Execution and Project Success**

Just like project plan process group, project execution management process group has also significant relationship with project success. It is due to the P-value of 0.001 that is less than α value (0.05). The correlation coefficient is positive 0.641 which is between 0.60 and 0.79. It indicates a strong positive relationship. Accordingly, it is to be concluded that, as practice of project execution process groups increases the probability that success of Real Estate projects to be achieved will also increases.

**Project Monitoring & Controlling and Project Success**

Project monitoring and controlling process group and project success have P-value is equal to 0.237 in their relationship. Since it is greater than α-value (0.05), it indicates insignificant relationship. The R-value is positive 0.251 which is valued between 0.20 and 0.39. It shows the relationship is weak.

**Project Closing and Project Success**

As project closing process group is practiced more and more in Real Estate projects, there will be moderate likelihood that a certain Real Estate project become successful. It is shown by their coefficient of correlation which is positive 0.401. Their relationship is insignificant but closer to be significant since the P-value is more than but closer to the α-value (0.05).

### 4.5.4. Overall Project Management Practice and Project Success

In the above two sub-sections the relationship of particular project management knowledge areas/ process groups are assessed with success of Real Estate projects. But, it is also important to evaluate the contribution of the integrated overall project management practice to success of Real Estate projects. Table-4.8 below shows the Pearson correlation coefficient and P-value that are available in the relationship between overall project management practice and success of Real Estate projects.

Table-4.8: Correlation between Project Successes with Overall Project Management Practice

| Overall Project Management and Project Success | Pearson Correlation (R) | Sig (2-tailed) |
|---|---|---|
| | 0.423* | 0.040 |
| *. Correlation is significant at the 0.05 level (2-tailed).<br>List wise N=24 | | |

( Source: Own Survey )

When the relationship is assessed between the project management practice as a whole in the Real Estate Industry and success of Real Estate projects, they have significant relationship. It is drawn from the result that P-value (0.04) is less than α-value (0.05). The relationship is also expressed in terms of Pearson correlation coefficient which is equals to positive 0.423. It indicates that there is moderate direct relationship between current practice of project management in Ethiopian Real Estate industry and success of Real Estate projects. While the overall project management practice increases, there is moderate probability that success of Real Estate projects will also increase.

## 4.6.Regression Analysis in the Relationships between Project Management Practice and Project Success

In section 4.6, relationship between project management practice and project success is assessed in different directions. Now, it is also important to get general formulas to predict about success of projects by analyzing project management practice in the Real Estate projects. As it is discussed in 2.1.10 of the theoretical literature review, project management is important for a continuous success of projects. Accordingly, this study uses 'project management practices in Real Estate industry' as independent variable and 'success of Real Estate projects' as dependent variable.

### 4.6.1. Project Management Knowledge areas and Project Success

One way of expressing success of Real Estate projects due to the contribution of project management is using the project management knowledge areas as independents variables of the resulting dependent variables; project success. As it is shown in the below table-4.9, R-value (Pearson's correlation coefficient) between the all project management knowledge area practiced together and success of Real Estate projects is 1.00, which means, there is a very strong and direct relationship between the practice of all project management knowledge areas as a whole and project success. The $R^2$ being 1.00 indicates that the dependent variable (success of Real Estate projects) can be 100% expressed in terms of the independent variables (project management knowledge areas).

Table-4.9: Model Summary of Regression Analysis between Project Successes and Project Management Knowledge Areas

| **Model Summary** | | | | |
|---|---|---|---|---|
| Model | R | R Square | Adjusted R Square | Std. Error of the Estimate |
| 1 | 1.000 | 1.000 | 1.000 | .00000 |

( Source: Own Survey )

Table-4.10: Coefficients of Regression Analysis between Project Successes and Project Management Knowledge Areas

| **Coefficients** | | |
|---|---|---|
| Model | Un standardized Coefficients | |
| | B | Std. Error |
| (Constant) | 5.225 | .000 |
| Project Scope Management | -.827 | .000 |
| Project Time Management | .119 | .000 |
| Project Cost Management | -.175 | .000 |
| Project Quality Management | .281 | .000 |
| Project Human Resource Management | -.695 | .000 |
| Project Communication Management | .124 | .000 |
| Project Risk Management | .006 | .000 |
| Project Procurement Management | -.387 | .000 |
| Project Safety Management | .297 | .000 |
| Project Environmental Management | .093 | .000 |
| Project Financial Management | -.028 | .000 |
| Project Claim Management | .925 | .000 |

Dependent Variable: Project Success of Real Estate Industry ( Source: Own Survey )

Using the simple regression result obtained from SPSS, the coefficients of the linear equation to express success of Real Estate Projects using the Project Management Knowledge areas are listed in the above table-4.10. Accordingly, the following is the general equation for the current industry situations:

***Success of Real Estate Projects*** **=** *5.225 – 0.827 ( Project scope management) + 0.119 (Project time management) 0.175 (Project cost management) + 0.281 (Project quality management) –0.695 (Project human resource management) + 0.124 (Project communication management) + 0.006 (Project risk management) – 0.387 ( Project procurement management) + 0.297 (Project safety management) + 0.093 (Project environmental management) – 0.028 (Project financial management) + 0.925 (Project claim management)*

From the above equations project integration management and project stakeholder management are excluded from being independent variable because of insignificant contribution to express project success. The equation is used whenever practice level of each project management knowledge areas is measured and based on this success level of Real Estate project is required to be computed.

Table-4.11: ANOVA table of the Regression Model between Project Management Knowledge Areas and Project Success

| ANOVA | | | | | |
|---|---|---|---|---|---|
| | Sum of Squares | Df | Mean Square | F | Sig. |
| Regression | 5.378 | 12 | .448 | .000 | .000 |
| Residual | .000 | 11 | .000 | | |
| Total | 5.378 | 23 | | | |

( Source: Own Survey )

From table-4.11, the significance value of the F-statistics is 0. In this study the α-value=0.05. Accordingly, the significant value is less than the α-value (0.05). It is interpreted as, the independent variables (i.e. Project management knowledge areas) do a good explaining the variation in the dependent variable (success of Real Estate Projects).

From the table-4.11 above, the regression sum of squares=5.378 is greater than the residual sum of squares=0. It indicates that the regression model which provides the above equation accounts most of variation in the dependent variable (success of Real Estate Projects) which leads the equation more explaining formula.

### 4.6.2. Project Management Process Groups and Project Success

Beside to using project management knowledge area, another way of expressing success of Real Estate projects due to the contribution of project management is using the project management process groups as independents variables of the resulting dependent variables; project success. As it is shown in the below table-4.12, R-value (Pearson's correlation coefficient) between the all project management process groups practiced together and success of Real Estate projects is 0.882 . This means, there is a very strong and direct relationship between the practice of all project management process groups as a whole and project success. The $R^2$ being 0.778 indicates that the dependent variable (success of Real Estate projects) can be 77.8% expressed in terms of the independent variables (project management process groups).

Table-4.12: Model Summary of Regression Analysis between Project Successes and Project Management Process Groups

| **Model summery** | | | |
|---|---|---|---|
| R | R Square | Adjusted R Square | Std. Error of the Estimate |
| 0.882 | 0.778 | 0.717 | .25732 |

( Source: Own Survey )

Table-4.13: Coefficients of Regression Analysis between Project Successes and Project

( Source: Own Survey )

Using the simple regression result obtained from SPSS, the coefficients of the linear equation to express success of Real Estate Projects using the Project Management process groups are listed in the above table-4.13. Accordingly, the following is the general equation for the current industry situations:
***Success of Real Estate Projects*** **=** *0.565 – 0.460 (Project Initiation process group) + 1.364 (Project planning process groups) 0.117 (Project execution process groups) – 0.079 (Project monitoring and controlling process groups) – 0.005 (Project closing process groups)*

The equation is used whenever practice level of each project management process groups is measured and based on this success level of Real Estate project is required to be computed.

Table-4.14: ANOVA table of the Regression Model between Project Management Process Groups and Project Success

| **ANOVA** | | | | | |
|---|---|---|---|---|---|
| Model | Sum of Squares | Df | Mean Square | F | Sig. |
| Regression | 4.186 | 5 | .837 | 12.643 | .000 |
| Residual | 1.192 | 18 | .066 | | |
| Total | 5.378 | 23 | | | |

(Source: Own Survey)

Form table-4.14, the significance value of the F-statistics is 0. In this study the α-value=0.05. Accordingly, the significant value is less than the α-value (0.05). It is interpreted as; the independent variables (i.e. Project management

knowledge areas) do a good explaining the variation in the dependent variable (success of Real Estate Projects).
From the table-4.14, the regression sum of squares=4.186 is greater than the residual sum of squares=1.192. It indicates that the regression model which provides the above equation accounts most of variation in the dependent variable (success of Real Estate Projects) which leads the equation more explaining formula.

## 4.7 Problems Related with Project Management in Ethiopian Real Estate Industry

Nine consultants out of the eleven and all three interviewee instructors stated that Ethiopian Real Estate Industry is surrounded by plenty of problems. In addition to this, few respondents from these nine respondents revealed that the Real Estate industry is growing. Among the problems that exist in Real Estate industry, poor practice of project management is the major. This idea is also supported by seven of the consultant questionnaire respondents even though some other two disagree on this. The two consultants argue that high priority is given for the application of project management in Real Estate Industry. For specific project management area, the following table-4.15 shows the responses from Real Estate house owners that 20.93% agree on the existence of scope related problems, 60.67% agree on the existence of delay problems, 20.93% agree on the existence of price related problems, and 86.04% agree on the existence of quality related problems.

Table-4.15: Response of Real Estate House Owners on the Existence of Specific Project Management Problems

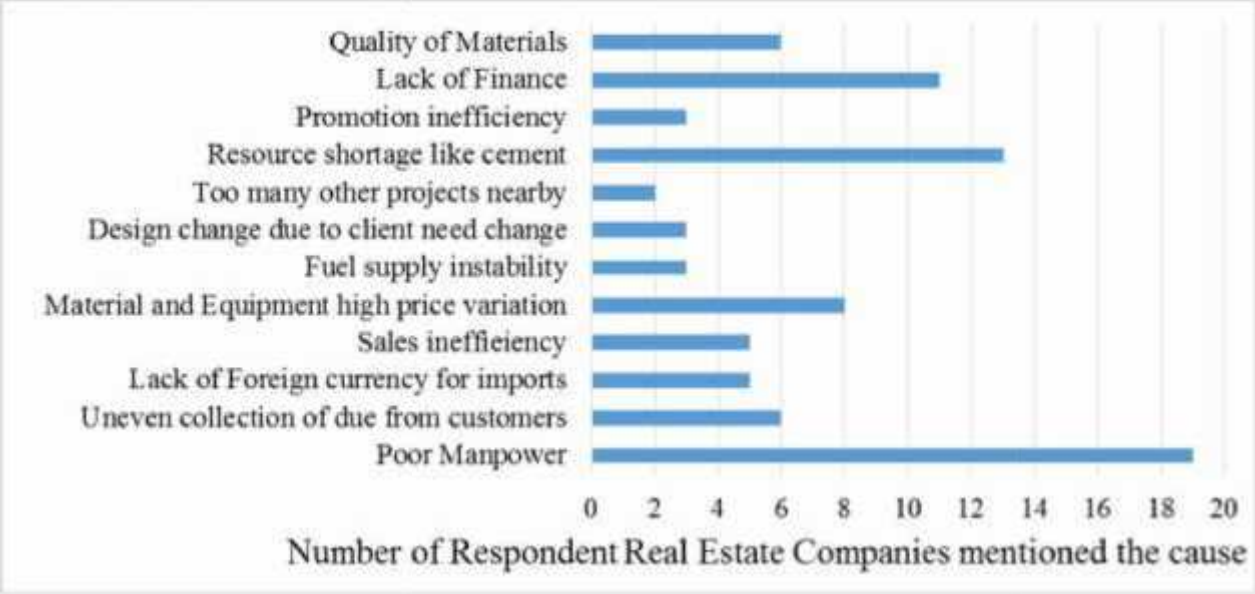
| Answer | Scope Problem | | Delay Problem | | Price Problem | | Quality Problem | |
|---|---|---|---|---|---|---|---|---|
| | No. | % | No. | % | No. | % | No. | % |
| Yes | 9 | 20.93 | 26 | 60.47 | 9 | 20.93 | 37 | 86.04 |
| No | 31 | 72.09 | 13 | 30.23 | 27 | 62.79 | 3 | 6.98 |
| Not-responded | 3 | 6.98 | 4 | 9.3 | 7 | 16.28 | 3 | 6.98 |

( Source: Own Survey )

In addition to this, most of Real Estate Company respondents also replied that there are different problems in Real Estate Projects related with Project Management. Chart-4.8 shows the major problems mentioned by them.It is clearly seen from chart that, existence of poor manpower is the most

dominating problem causes in Ethiopian Real Estate industry which is faced by 19 out of twenty Respondent Real Estate companies. Resource shortage, lack of finance, price variation of materials and equipment, poor quality of materials, and uneven collection of due from customers are also the major causes of project related problems.

Chart-4.8: Major Problems in Real Estate Industry that are related with Project Management




( Source: Own Survey )

### 4.7.1. Problems Related with Time

One of the frequently observed problem in projects is delay. Similar to other project areas, Real Estate projects also face this problem. Based on the chart-4.9 available below 67 % of Real Estate Company questionnaire respondents have experienced delay problem in their projects. Almost all consultant companies which filled questionnaire for this study and all the three interviewee instructors also agree on the existence of delay problems.

Chart-4.9: Response from Real Estate Companies on the Existence of Delay Problem in theirProjects


( Source: Own Survey )

Among the many causes of delay problems, material and equipment price variation, resource shortage, and unavailability of skilled manpower are the most frequently replied causes stated by Respondent Real Estate companies. Lack of foreign currency and uneven collection of due from customers are also delay causes replied by significant number of respondents.

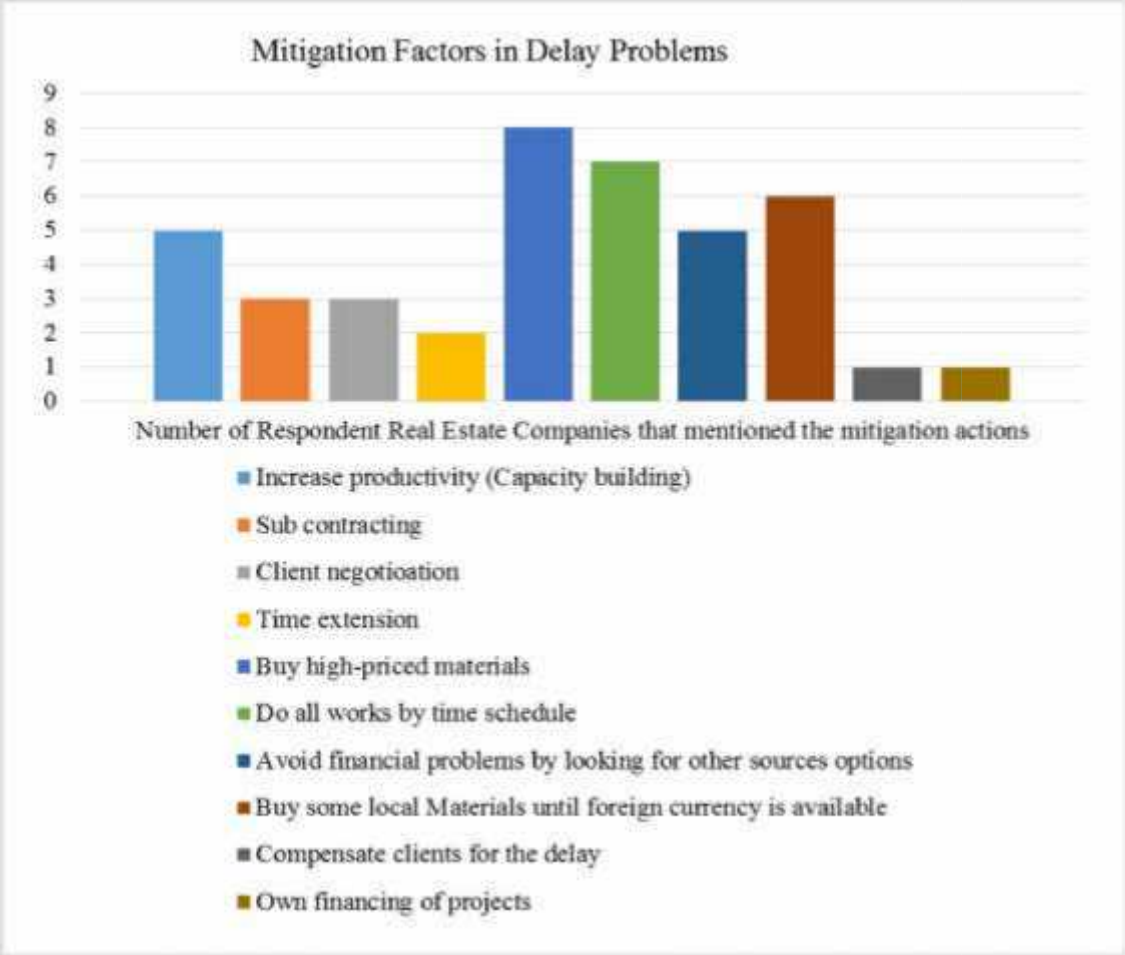
Chart-4.10: Major Causes of Delay Problems in Real Estate Projects


( Source: Own Survey )

Those Real Estate companies facing delay problems made different remedial actions in order to overcome it. The remedial actions may vary based on specific causes of delay. As it is indicated in the chart below, most of respondent Real Estate companies (8respondents) try to solve the problem by buying high-priced materials. This indicate that they are highly aware of the most dominating cause of delay problem, 'material and equipment price variation', which is mentioned in the above chart. The second mostly used mitigation factor is 'do all works by schedule'.

Nicholas and Steyn (2008: P176) Stated that scheduling the work elements is the most important step in planning because it becomes the basis for allocating resources, executing work, tracking project performance, and finishing on time. Accordingly, Real Estate companies that strictly follow scheduling would overcome delay problem. For those delay problems related with shortage of foreign currency, 6 respondents stated that they buy some local materials until they get foreign currency. This may solve the problem but on the contrary may result cost escalation since converting the procurement process (even temporarily) from bulk purchase (whole-sale market) to few quantity purchase (retail market) will bring higher cumulated price on a materials. The causes for delay stated in the chart, except the design change due to clients' need, don't align with the delay causes in Brunei Darussalam case which is mentioned in the empirical review studied by Salleh (2009). Accordingly, there are differences on the causes of delay between Ethiopian Real Estate projects and Brunei Darussalam building construction projects. The causes for delay of Ethiopian Real Estate projects also doesn't match with the causes of delay in Ghana stated by Venter (2005) which is stated in the empirical review. In the Ghana projects ineffective use of project management tools, lack of an appropriate risk management function, lack of adequate and effective methods of control, and untimely communication of pertinent information are the major causes of delay.

Chart-4.11: Major Mitigation Factors Used By Real Estate Companies to Solve Project Delay Problems




( Source: Own Survey )

Avoiding financial problems by looking for other source options and capacity buildings are significantly used by Real Estate companies to solve delay problems. There are also other remedial actions taken such as sub-contracting, client negotiation, time extension and compensating clients for the delay, and own financing of projects. Choosing best remedial action by itself requires further deep investigation.

### 4.7.2. Problems Related with Cost

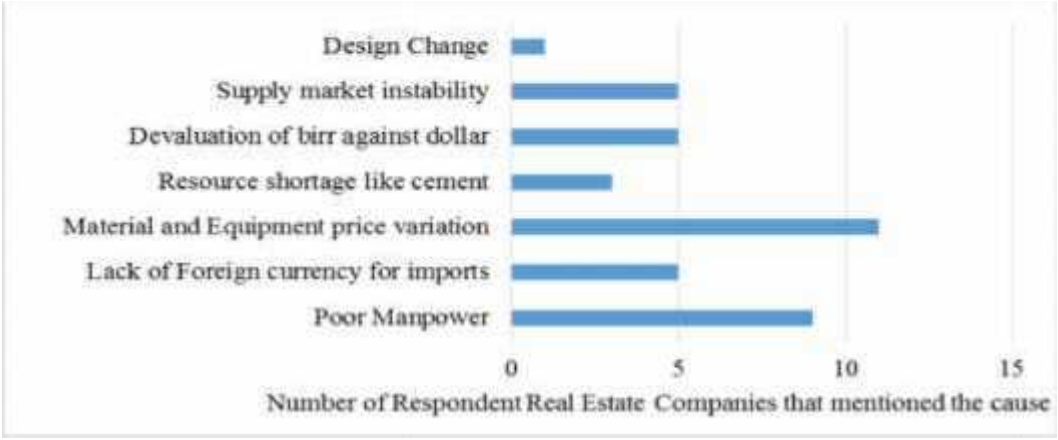
Besides to the delay problem, cost escalation is also the major problem available in Ethiopian Real Estate Industry. 79% of respondent Real Estate companies also experienced this cost escalation problem. Similar to the dominating cause of delay problem, material and equipment price variation highly aggravate the existence of cost escalation as 11 respondent Real Estate company respondents have indicated. Supply market instability is stated by 5 respondents as cause of cost escalation which is also related with the price

variation materials. For the stability of supply market which results price variation, one of the factors is devaluation of birr against dollar as stated by 5 respondents. 5 respondents also stated that in order to overcome the instable market caused price variation problem by importing materials from abroad by themselves. But they encountered scarce of foreign currency. Existence of poor construction manpower is also the second most dominating cause as it is stated by 9 respondents. Resource shortage and design change are stated by few respondents as causes of cost escalation of Real Estate projects.

Chart-4.12: Response from Real Estate Companies on the Existence of Cost Escalation in their Projects


( Source: Own Survey )

Chart-4.13: Major Causes of Cost Escalation Problems in Real Estate Projects




( Source: Own Survey )

As it is stated by 5 respondents, they delay projects until price of materials reduce to solve cost escalation problem caused by material and equipment price variation. Some Real Estate companies also accept the cost escalation and share the escalated amount with clients by negotiation in order to avoid delay problem. As it is mentioned above some Real Estate companies import items, such as finishing materials to have competitive advantage in terms of getting cheaper martials from the main sources; manufacturers. Some Real

Estate companies buy materials in bulk in order to reduce price appreciation burden at other time. Employing skilled manpower with reasonable wage, redesigning, and capacity building are some other remedial actions undertaken by few respondent Real Estate companies.

Chart-4.14: Major Mitigation Factors Used By Real Estate Companies to Solve Project Cost Escalation Problems


( Source: Own Survey )

### 4.7.3. Problems Related with Quality

Quality is the ability of output of a project for its intended purpose. Like the cost and time, quality also encountered with problems in Ethiopian Real Estate projects. Agreeing to this, 46% of Respondent Real Estate companies indicated that they had faced quality problems while they were running their projects.

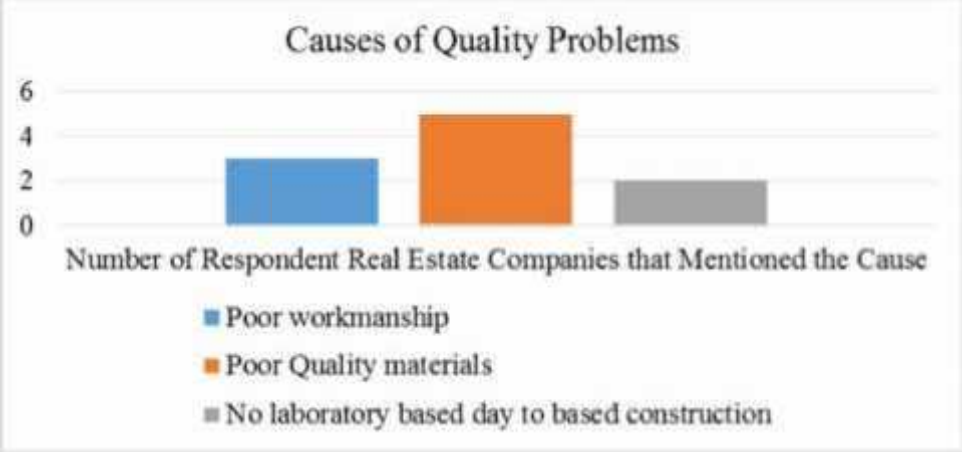
Chart-4.15: Response from Real Estate Companies on the Existence of Quality Problem in theirProjects


( Source: Own Survey )

There are different causes for quality related problems. Three causes are stated by respondent Real Estate companies. The dominating cause based on 5

responses is existence of poor quality materials in the market. Poor workmanship and non-laboratory based construction works are the other causes in the Real Estate projects.

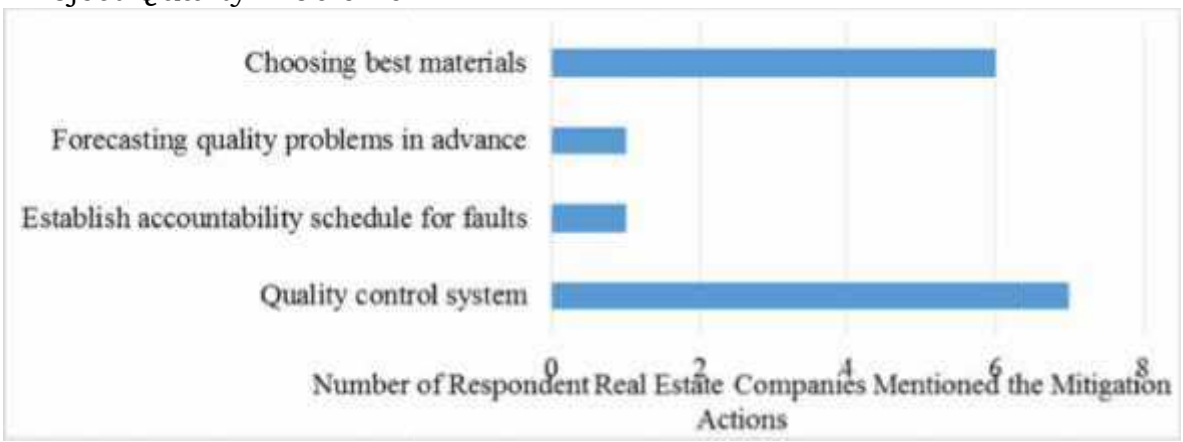
Chart-4.16: Major Causes of Quality Related Problems in Real Estate Projects




( Source: Own Survey )

To eliminate quality related problems, significant number (seven) of respondent Real Estate companies have quality control system. Careful selection of quality construction materials are also the other mitigation factor used by companies. Only few companies forecast, quality problems in advance and establish accountability schedule for defaults

Chart-4.17: Major Mitigation Factors Used By Real Estate Companies to Solve Project Quality Problems




( Source: Own Survey )

## 4.8. Summary

After data were gathered from the different data sources, they are organized and presented in tabular, chart and statement forms. Then, analysis were made to check the practice of project management in Ethiopian Real Estate

industry, the contribution of project management to project success, and also to identify the major causes of delay, cost escalation and poor quality in Ethiopia Real Estate industry.

# CHAPTER FIVE
# FINDINGS, CONCLUSIONS, AND RECOMMENNDATIONS

## 5.1. Introduction

This chapter is the final part of the study. First, important findings are summarized from the previous chapter. Then, based on the summary of findings conclusions are inferred. Finally, recommendations are provided at company level, at industry level, at national level, and for further study.

## 5.2. Summary of Findings

In the above data presentation and analysis chapter, project management of Ethiopian Real Estate industry is assessed in terms of project management knowledge areas, project management process groups, relationship between project management practice and project success, and major problems faced. Based on the analysis, major findings are obtained in the study and listed as follow:

- Project integration management, project scope management, project time management, project HR management, project procurement management, and project claim management are practiced above average practice of

project management knowledge areas with lower standard deviation than the average.

- Project cost management and project risk management are practiced below average practice of project management knowledge areas with lower standard deviation than the average.
- Project financial management is practiced above average practice of project management knowledge areas with higher standard deviation than the average.
- Project quality management, project communication management, project stakeholder management, project safety management, and project environmental management are practiced below average practice of project management knowledge areas with higher standard deviation than the average.
- Project initiation process groups and project closing process group are practiced above average practice of project management process groups with lower standard deviation than the average.
- Project planning process group is below average practice of project management process groups with lower standard deviation than the average.
- Project monitoring and controlling process group is practiced above average practice of project management process groups with higher standard deviation than the average.
- Project execution process group below average practice of project management process groups with higher standard deviation than the average.
- 45 % of respondent consultants indicated that there is traditional way of human resource management in Ethiopian Real Estate Projects starting from non-fitful human resource managers.
- From the viewpoint of 36% of respondent consultants, the Ethiopian Real Estate project risk management is not well developed and done in unprofessional way.
- 81.81% of respondent consultants replied that, the procurement management of Ethiopian projects is traditional, open to corruption and performed without clear policies.
- Nine of the respondent consultants said that there is no well-developed project management safety management in Ethiopian Real Estate industry and two of them replied that there are only few after-damage first-aid tools that are used by some Real Estate companies.
- 36.36 % of respondent consultants stated that there is no significant environmental damage yet, but they also forwarded suggestion to consider environmental management practices in order to avoid the negative impact of Real Estate projects in the long run.
- Project procurement management, project safety management, project time management, project quality management, project human resource management, project risk management, project stakeholders management, and project claim management have significant relationship with success of

Ethiopian Real Estate Projects. Among these Project management knowledge areas, Project procurement management and project safety management have moderate relationship with success of Ethiopian Real Estate Projects.

- Project time management, project quality management, project human resource management, and project risk management have strong relationship with success of Ethiopian Real Estate Projects.
- Project scope management, project environmental management, project financial management, project integration management, project cost management, and project communication management have no significant relationship with success of Ethiopian Real Estate Projects. Among these project management knowledge areas, project integration management, project cost management, and project communication management have weak relationship with success of Ethiopian Real Estate Projects. On the other hand project scope management, project environmental management, and project financial management have no or very weak relationship with success of Ethiopian Real Estate Projects. In addition to this, Project scope management and project financial management have inverse relationship with success of Ethiopian Real Estate Projects.
- PMI (2013) stated that Project integration management includes providing the project manager with the authority to apply organizational resources to project activities. In addition to this, Abu Bakri, Abu Razak and Awang(2013) stated and reviewed in the empirical literature part of this study that 'authority of project manager' is one of the critical success factors in the practice of project management for sustaining housing development. Accordingly, the Ethiopian Real Estate projects lack this CSF due to the existence of project integration management and success of Real Estate projects.
- As it is discussed by Abu Bakri, Abu Razak and Awang (2013) risk management is a critical success factor in the practice of project management for sustaining housing development.
  Since there is strong direct relationship between project risk management and Ethiopian Real Estate project success, the situation let the industry to satisfy maintaining the critical success factor.
- Project initiation process group and project monitoring and controlling process group have no significant relationship with success of Ethiopian Real Estate Projects where they have weak relationship.
  Project planning process group, project execution process group, and project closing process group have significant relationship with success of Ethiopian Real Estate Projects. Among these process groups, project closing process group has moderate relationship whereas the other two have strong relationship with success of Ethiopian Real Estate Projects.
- The following equation is the general equation to determine success of Real Estate projects in terms of project management knowledge areas for the current industry situations:

***Success of Real Estate Projects*** *= 5.225 – 0.827 ( Project scope management ) + 0.119 ( Project time management) 0.175 (Project cost management) + 0.281 (Project quality management) – 0.695 (Project human resource management) + 0.124 (Project communication management) + 0.006 (Project risk management) – 0.387 ( Project procurement management) + 0.297 (Project safety management) + 0.093 ( Project environmental management) – 0.028 ( Project financial management) + 0.925 (Project claim management)*

- The following equation is the general equation to determine success of Real Estate projects in terms of project management process groups for the current industry situations:

  ***Success of Real Estate Projects*** *= 0.565 – 0.460 (Project Initiation process group) +*
  *1.364 (Project planning process groups) 0.117 (Project execution process groups) – 0.079 (Project monitoring and controlling process groups) – 0.005 (Project closing process groups)*

- Existence of poor manpower is the most dominating problem causes in Ethiopian Real Estate industry which is faced by 19 out of twenty Respondent Real Estate companies. Resource shortage, lack of finance, price variation of materials and equipment, poor quality of materials, and uneven collection of due from customers are also the major causes of project related problems.
- 67 % of Real Estate Company questionnaire respondents are experienced delay problem in their projects. All most all consultant companies which fill questionnaire for this study and all the three interviewee instructors also agree on the existence of delay problems.
- Among the many causes of delay problems, material and equipment price variation, resource shortage, and existence of manpower are the most frequently replied causes stated by Respondent Real Estate companies. Lack of foreign currency and uneven collection of due from customers are also delay causes replied by significant number of respondents.
- Most of respondent Real Estate companies (8respondents) try to solve delay problem by buying high-priced materials. The second mostly used mitigation factor is 'do all works by schedule'. Nicholas and Steyn (2008: P176) Stated that scheduling the work elements is the most important step in planning because it becomes the basis for allocating resources, executing work, tracking project performance, and finishing on time. Accordingly, Real Estate companies that strictly follow scheduling would overcome delay problem. For those delay problems related with shortage of foreign currency, 6 respondents stated that they buy some local materials until they get foreign currency.
- Avoiding financial problems by looking other source options and capacity buildings are significantly used by Real Estate companies to solve delay

problems. There are also other remedial actions taken such as sub-contracting, client negotiation, time extension and compensating clients for the delay, and own financing of projects. Choosing best remedial action by itself requires further deep investigation.

- 79% of respondent Real Estate companies also experienced this cost escalation problem. Similar to the dominating cause of delay problem, material and equipment price variation highly aggravate the existence of cost escalation as 11 respondent Real Estate company respondents said. Supply market instability is stated by 5 respondents as cause of cost escalation which is also related with the price variation materials. For the stability of supply market which results price variation, one of the factor is devaluation of birr against dollar as stated by 5 respondents. 5 respondents also stated that in order to overcome the instable market caused price variation problem by importing materials from abroad by themselves. But they encountered scarce foreign currency. Existence of poor construction manpower is also the second most dominating cause as it is stated by 9 respondents. Resource shortage and design change are stated by few respondents as causes of cost escalation of Real Estate projects.
- As it is stated by 5 respondents, they delay projects until price of materials reduce to solve cost escalation problem caused by material and equipment price variation. Some Real Estate companies also accept the cost escalation and share the escalated amount with clients by negotiation in order to avoid delay problem. As it is mentioned above some Real Estate companies import items, such as finishing materials to have competitive advantage in terms of getting cheaper materials from the main sources; manufacturers. Some Real Estate companies buy materials in bulk in order to reduce price appreciation burden at other time. Employing skilled manpower with reasonable wage, redesigning, and capacity building are some other remedial actions done by few respondent Real Estate companies.
- 46% of Respondent Real Estate companies indicated that they faced quality problems while they were running their projects.
- Three causes of quality problems are stated by respondent Real Estate companies. The dominating cause based on 5 responses is existence of poor quality materials in the market. Poor workmanship and non-laboratory based construction works are the other causes in the Real Estate projects.
- To eliminate quality related problems, significant number (seven) of respondent Real Estate companies have quality control system. Careful selection of quality construction materials are also the other mitigation factor used by companies. Only few companies forecast, quality problems in advance and establish accountability schedule for defaults.

## 5.3. Conclusions of the Study

In the above section of summary, major findings are listed. Based on the findings, conclusions are inferred by the study. In this section, the driven conclusions are discussed below.

This study includes the assessment of project management practice in Ethiopian Real Estate Industry as well as the contribution of the project management practice to success of Real Estate projects. It doesn't takes in to account in depth study of project performance of Real Estate projects due to the reason that it requires detail evaluation of each project documents and day to day activities which is difficult to assess with in short period of research. Information from Real Estate house owners is collected not to conduct in depth customer satisfaction survey. Rather, it is for the purpose of cross-checking responses of Real Estate companies in addition to the use of consultants' and instructors' responses as a cross check.

**Project Management Practice in terms of the Project Management Knowledge Areas:** The practice of the ten general and four additional construction extension project management knowledge areas are assessed in this study. Accordingly:

- Project integration management, project scope management, project time management, project HR management, project procurement management, and project claim management are practiced well consistently (convergent/similarly) across the Real Estate industry projects.
- Project cost management and project risk management are poorly practiced consistently (convergent/similarly) across the Real Estate industry projects. Project financial management is practiced well but divergently, which means there are different Real Estate companies whose practice of project financial management may deviate from the expected level obtained from the analysis.
- Project quality management, project communication management, project stakeholder management, project safety management, and project environmental management are poorly practiced in Ethiopian Real Estate Industry projects. Since they have high standard deviation (divergent practice), poor practice of Project quality management, project communication management, project stakeholder management, project safety management, and project environmental management may not be seen in some Real Estate companies.
- But the practice of human resource management, project risk management, project procurement management, safety, project environmental management is negatively criticized by significant construction consultants.

**Project Management Practice in terms of the Project Management Process Groups:** The practice of project management in Real Estate industry is also assessed in terms of the five project management processed groups. According to this:

- Project initiation process groups and project closing process group are practiced well consistently (convergent/similarly) across the Real Estate

industry projects. Project planning process group is poorly practiced consistently (convergent/similarly) across the Real Estate industry projects.

- Project monitoring and controlling process group is practiced well but divergently which means there are different Real Estate companies whose practice of monitoring and controlling process group may deviate from the expected level obtained from the analysis.
- Project execution process group poorly practiced in Ethiopian Real Estate Industry projects. Since it has high standard deviation (divergent practice), poor practice of Project execution process group may not be seen in some Real Estate companies.

**Contribution of Project Management Knowledge Areas to Project Success:**

The following are the conclusions related with Contribution of Project Management Knowledge Areas to Project Success:

- Project procurement management, project safety management, project time management, project quality management, project human resource management, project risk management, project stakeholders management, and project claim management have significant contribution to the success of Ethiopian Real Estate Projects. Among these project management knowledge areas, Project procurement management and project safety management have moderate contribution to success of Ethiopian Real Estate Projects. Project time management, project quality management, project human resource management, and project risk management have very high contribution to success of Ethiopian Real Estate Projects.
- Project scope management, project environmental management, project financial management, project integration management, project cost management, and project communication management have no significant contribution to success of Ethiopian Real Estate Projects. Among these project management knowledge areas, project integration management, project cost management, and project communication management have weak contribution to success of Ethiopian Real Estate Projects. On the other hand project scope management, project environmental management, and project financial management have no or very low contribution to success of Ethiopian Real Estate Projects. In addition to this, Project scope management and project financial management have inverse relationship with success of Ethiopian Real Estate Projects.

**Contribution of Project Management Process Groups to Project Success:**

The following are the conclusions related with Contribution of Project Management Knowledge Areas to Project Success:

- Project initiation process group and project monitoring and controlling process group have no significant contribution to success of Ethiopian Real Estate Projects where they have low contribution.
- Project planning process group, project execution process group, and project closing process group have significant contribution to success of Ethiopian Real Estate Projects. Among these process groups, project closing process group has moderate contribution whereas the other two have high contribution with success of Ethiopian Real Estate Projects.

**Equations to determine success of Real Estate projects in terms of project management Practices:**

Following to the level of contribution of each knowledge area, the following equation is the general equation to determine success of Real Estate projects in terms of project management knowledge areas for the current industry situations:

***Success of Real Estate Projects*** **=** *5.225 – 0.827 (Project scope management) + 0.119 (Project time management) 0.175 (Project cost management) + 0.281 (Project quality management) – 0.695 (Project human resource management) + 0.124 (Project communication management) + 0.006 (Project risk management) – 0.387 (Project procurement management) + 0.297 (Project safety management) + 0.093 (Project environmental management) – 0.028 (Project financial management) + 0.925 (Project claim management)*

From the above equations project integration management and project stakeholder management are excluded from being independent variable because of insignificant contribution to express project success. The equation is used whenever practice level of each project management knowledge areas is measured and based on this success level of Real Estate project is required to be computed.

Following to the level of contribution of each process groups, the following equation is the general equation to determine success of Real Estate projects in terms of project management process groups for the current industry situations:

***Success of Real Estate Projects*** **=** *0.565 – 0.460 ( Project Initiation process group ) + 1.364*
*(Project planning process groups) 0.117 (Project execution process groups) – 0.079 (Project monitoring and controlling process groups) – 0.005 (Project closing process groups)*

The equation is used whenever practice level of each project management process groups is measured and based on this success level of Real Estate project is required to be computed.

**Major Causes of Delay, Cost Escalation, and Poor Quality:**

Based on the findings from the analysis, the following is concluded on major causes of delay, cost escalation, and poor quality:

- Among the many causes of delay problems, material and equipment price variation, resource shortage, and existence of manpower are the most frequently occurred. Lack of foreign currency and uneven collection of dues from customers are also sometimes result delay of projects. Buying high-priced materials not to stop projects due to material price escalation and doing all works by schedule are the most frequently used mitigation factors to solve delay problems. For those delay problems related with shortage of foreign currency, buying some local materials until getting foreign currency is the common solution available in Ethiopian Real Estate industry.
- Similar to the dominating cause of delay problem, material and equipment price variation highly results the existence of cost escalation. Supply market instability is the aggravating factor the price variation materials. The other aggravating factor for supply market instability is devaluation of birr against dollar. To overcome the instable market caused price variation problem, some Real Estate companies import items such as finishing materials from abroad by themselves to have competitive advantage in terms of getting cheaper martials from the main sources; manufacturers.. But they encountered scarce foreign currency. Existence of poor construction manpower is also the second most dominating cause of cost escalation. Some Real Estate companies delay projects until price of materials reduce to solve cost escalation problem caused by material and equipment price variation. Some Real Estate companies also accept the cost escalation and share the escalated amount with clients by negotiation in order to avoid delay problem. Some Real Estate companies buy materials in bulk in order to reduce price appreciation burden at other time.
- Three major causes of quality problems are available in Ethiopian Real Estate Industry. The dominating cause is existence of poor quality materials in the market. Poor workmanship and non-laboratory based construction works are the other causes in the Real Estate projects. To eliminate quality related problems, some Real Estate companies install quality control system. Careful selection of quality construction materials are also the other mitigation factor used by companies.

## 5.4. Recommendations of the Study

Based on the study and mainly from the conclusion there are different recommendations to be suggested. These recommendations are classified in to four as recommendation for: further investigation, Real Estate companies, Real

Estate Industry, and National level. The Following are the Recommendations in each category.

### a. Company Level (For Real Estate Companies)

1. Real Estate companies should maintain their project integration management, project scope management; project time management, project HR management, project procurement management, and project claim management practices since they are strong in applying these knowledge areas. On the other hand, Real Estate companies should improve their Project cost management and project risk management. Since practice level of the other project management knowledge areas are obtained with high degree of inconsistency across the Real Estate industry, individual firms should internally assess their practice on these knowledge areas. These knowledge areas are project financial management, project quality management, project communication management, project stakeholder management, project safety management, and project environmental management
2. Real Estate companies should maintain their initiation process groups and project closing process group practices since they are strong in terms of running these process groups. And, Real Estate companies should improve their Project planning process group practice as they are weak in terms of running this process group. Since practice level of the other project management process groups such as project execution process group and project monitoring and controlling process group are obtained with high degree of inconsistency across the Real Estate industry, individual firms should internally assess their practice on these process groups.
3. Since project time management, project quality management, project human resource management, and project risk management have very high contribution to success of Real Estate projects, companies can have the chance to enhance success of their projects by monitoring the existing performance on these knowledge areas. They can also slowly improve success of their projects by monitoring their project procurement management and project safety management practices. But they should change strategies related to project scope management, project environmental management, project financial management, project integration management, project cost management, and project communication management in order to let these knowledge areas have strong relationship with project success so that their contribution will be significant. Specially, care should be taken by the Real Estate companies on their current project scope management and project financial management practices since they have inverse relationship with project success.
4. Since project planning process group and project execution process group have high contribution to success of Real Estate projects, companies can have the chance to enhance success of their projects by monitoring the existing performance on these process groups. They can also slowly improve

success of their projects by monitoring their project closing process group practices. But they should change strategies related to Project initiation process group and project monitoring and controlling process group in order to let these knowledge areas have strong relationship with project success so that their contribution will be significant.

5. Companies should take causes of delay problems such as material and equipment price variation, resource shortage, existence of manpower are the most frequently occurred, Lack of foreign currency, and uneven collection of dues from customers in to account while they plan and make decisions related with on time delivery of projects. Similarly, Real Estate companies should consider causes of cost escalation such as supply market instability, devaluation of birr against dollar, and existence of poor construction manpower while they plan and make decisions related with cost structures. The three causes of quality problems such as existence of poor quality materials in the market, poor workmanship, and non-laboratory based construction works, should always be remembered in order to prevent quality related problems in advance.
6. Companies can use the equations for measuring success of projects, obtained by this study, in terms of either project management knowledge areas or project management process groups. But, the formula as a function of project management knowledge areas is more applicable since it can express project success 100%. But, these formula is are applicable only for short term decisions.
7. Real Estate companies should conduct continuous customer satisfaction survey to cope up with the new additional dimension of project success.
8. Real Estate companies should have Modern project management Information System. It enable them effectively (quick and on time) communicate between the headquarters and different project sites.

**b. Industry Level (For Ethiopian Real Estate Industry)**

- All Real Estate companies together should establish Real Estate Institute/Association in order to:

    - develop industry standards on project management practice;
    - share lesson learned and best practices in their Real Estate projects and project management practices; and
    - conduct continuous study/research to identify industry strengths and Weaknesses/gaps from the international project management standards.

**c. National Level**

- Research should be conducted at government level (i.e. ministry of industry, ministry of trade, ministry of urban, development, and housing

construction, and the new Ethiopian project management institute) on Project management practices and success of projects in other industries to:

- Set national project management standards, to let organizations and industries evaluate performance against these standards;
- Share lesson learned and best practices among different industries.

### d. For Further Study

1. Further study is recommended to have Project document based Research which enable to have more reliable and huge amount of data than collecting data through questionnaires and interview. In addition to this, it is possible to have wide range of study on project performance of Real Estate Projects.
2. It can be possible to have detail Study on the practice of single project management knowledge area. This would enable to assess the practice of a certain knowledge area by investigating on each requirements and activities involved in the knowledge area. The studies on single Project management knowledge areas can be:

    - At industry level, for those knowledge areas which are found in this study as practiced consistently across the Real Estate Industry (having low standard deviation). These Project management knowledge areas include project integration management, project scope management, project time management, project HR management, project procurement management, project claim management, project cost management and project risk management
    - At company level, for those knowledge areas which are found by this study as not consistently practiced (having high standard deviation). These Project management knowledge areas include project financial management, project quality management, project communication management, project stakeholder management, project safety management, and project environmental management.

3. In depth study on success of Real Estate Projects from different stakeholders' perspectives(customers, Real Estate companies, government, environmental protectors, sub-contractors, consultants, Real Estate Project Employees, etc.) is recommended.

## 5.5. Summary

In this chapter, the different findings that are drawn on project management practice, on the contribution of project management of delay, cost escalation

and poor quality are summarized at first. Then, based on the findings, conclusions are drawn to achieve the objectives of the study by answering the basic research questions. Finally, recommendation are given for Real Estate companies for improvement of project management practice; for Real Estate industry to establish Real Estate association; for government to set national project management standards; and for further study such as project document based study, in depth study on single project management knowledge area, etc.

## REFERENCES


- Abbey, J.L.S. (2005), "***The growth and corruption correlation: its impact on the achievement of middle income status***", report prepared by Centre for Policy Analysis in Collaboration with The World Bank Ghana Office, Ghana Anti Corruption Coalition, National Governance Pro gramme, Ghana Integrity Initiative, Accra.
- Azeem, V. A. (2009), ***Institutional and Individual CorruptionCauses and Ho w to deal with Corruption***. A Panel Discussion Organized by the Committee f or Joint Action (CJA), Accra.
- Abadir H. Yimam. (2011). ***Project Management Maturity in In the Construction Industry of Developing Countries: The Case of Ethiopian Contructors.*** Maryland:University of Maryland.
- AbuBakar, AbuHassan.,AmanAbdRazak., Shardy Abdullah., and AidahAwang. (2013). ***Project Management Success Factors for Sustainable Housing: A Framework.*** Pulau Pinang: UniversitiSains Malaysia.
- Bourne, Lynda. and Derek H.T. Walker. (2007). ***Project Relationship Management and the Stakeholder Circle.*** International Journal of Managing Projects in Business. 1 (1). p.125-130.
- Chandra, Prasanna. (1995). ***Projects: Planning, analysis, Selection, Implementation, and Review.*** 4th ed. New Delhi: Tata Mcgraw-Hill Publishing Company Limited.

- Cressey, D.R. (1971), Other People's Money: **A Study in the Social Psychology of Embezzlement**, Wadsworth Publishers, Belmont, CA.

-Donelly, Jack and Howard, E.R. (1987). **International Handbook on Human Rights.**

- Fasil, T. (2011). ***Building Construction: Lecture Note.*** Addis Ababa: Addis Ababa Institute of Technology.
- Heerkens, Gary R. (2002). ***Project Management.*** New York: Mcgraw-Hill Publishing Companies, Inc.
- Heldman, K., Baca, C.M. and Jansen, P.M. (2005). ***Project Management Professional Guide***. Deluxe Edition. Wiley Publication Inc.
- Jari, Atti J. and Pankaj P. Bhangale. (2013). ***To Study Critical Factor Necessary for a Successful Construction Project.*** International Journal of Innovative Technology andExploring Engineering (IJITEE). 2 (5).p.331-335
- Kelil, Ahmed. (2010). ***Employees' Perception towards Compensation and BenefitPolicy***: The Case of Some Selected Government Higher Education Institutions in Addis Ababa. Addis Ababa: Addis Ababa University.
- Kerzner, Harold. (2009). ***Project Management: A System Approach to Planning, Scheduling, and Controlling.***10th ed. New Jersey: John Wiley & Sons, Inc.
- Kutsch, Elmar. (2008). ***The Effect of Intervening Conditions on the Management of Project Risk.*** International Journal of Managing Projects in Business. 1 (4) p.602-610.

-Kloppenborg, T. and Opfer, W. A. (2000).**'Forty years of project**

**management research:**

- Lengwiler, Y. and Wolfstetter, E. (2006), "Corruption in procurement auctions", ***Governance and the Efficiency of Economic Systems, Discussio ns Paper*** No. 90, January, available at: www.sfbtr15.de/dipa/90.pdf (accessed May 2009).
- Larson, W. Larson. and Clifford F. Gray. (2011). ***Project Management: The Managerial Process.*** 5th ed. New York: The McGraw-Hill Companies, Inc.
- Lock, Dennis. (2001). ***The Essentials of Project Management.*** 2nd ed. Burlington: MPG Books Ltd.
- Mathis, Robert L. and John H. Jackson. (2006). ***Human Resource Management.*** 9th ed.
  Minneapolis: West Publishing Company.
- McNamara, Carter. (2002). ***Project Management.*** [Online]. Available from: http://www.mapnp.org/library/plan_dec/project/project.htm (1 of 4).[Accessed: February 14th 2015].
- Ministry of Works & Urban Development. (1995). ***Ethiopian Building Code Standard.*** Addis Ababa.
- Mensah,S., Aboagye, K., Addo, E. and Buatsi, S. (2003), "**Corporate governance and corruption In Ghana Empirical findings and policy implications",** paper presented at African Capital Markets Forum, Johannesb urg, 27-29 October.
- Ministry of Urban Development and Construction: Housing Development and Government Building Construction office (2012). ***Housing Development Strategies and Directives.*** Addis Ababa.
- Mo, Peng., Ryan J. and Jianzhong Lu. (2008). ***Addis Ababa Ring Road Project: A Case Study of a Chinease Construction Project in Ethiopia.*** Shanghai. [Online]. Available from: http://www.google.com/International_Conference_on_multinational_constructi on_project s/ Addis_Ababa_Ring_Road_Project.[Accessed: December 24th 2014].
- Modesto, S. Tichapondwa. and Stephen P. Tichapondwa. (2009). ***Successful Project Management: Insights from Distance Education Practices.*** [Online]. Available from: http://creativecommons.org/licenses/by-sa/3.0. [Accessed: January 1st 2015].
- Nasir, B. (2011). ***Contract,Specification and Quantity Survey: Lecture note.*** Addis Ababa: Addis Ababa Institute of Technology.
- Nicholas, John M. and Herman Steyn. (2008). ***Project Management for Business, Engineering, and Technology: Principles and Practices.*** 3rd ed. New York: Elsevier Inc.
- Nicholas, John M. and Herman Steyn. (2012). ***Project Management for Business, Engineering, and Technology: Principles and Practices.*** 4th ed. New York: Elsevier Inc.
- Nwachukwu, ChineduChidinma. & Fidelis I. Emoh. (2011) ***Building Construction Project Management success as a Critical Issue in Real Estate Development Investment.*** American Journal of Social and Management Sciences. 2 (1). P.56-75 - Ogege,
- Samson. (2011). ***Project Management in Bayelsa: Issues and Challenges.*** [Online]. ISSN-8308. 9 (1). p.148-152. Available from:

www.transcampus.org./journal,www.ajol.info/journals/jorind. [Accessed: 23th April 2015].
- Oschman, J.J., Ströh, E.C., & C.J. Auriacombe (2006). ***A conceptual analysis of total quality management (TQM).*** Johannesburg: Journal of Public Administration.
- Paramasivian C. & T. Subramanian. (2009). ***Financial Management.*** New Delhi: NewAge International (P) Ltd., Publishers.
- Pasian, L. Beverly. (2011). ***Project Management Maturity: A Critical Analysis of Existing and Emergent Contributing Factors.*** Sydney: Faculty of Design, Architecture, and Building; University of Technology.
- Project Management Institute. (2003). ***Construction Extension to: A Guide to the Project Management Body of Knowledge.*** Pennsylvania: Project Management Institute, Inc.
- Project Management Institute. (2013). ***A Guide To The Project Management Body of Knowledge.*** 5th ed. Pennsylvania: Project Management Institute, Inc.
- Pinto, J.K. (1996). Power and Politics in Project Management. Project Management Institute (PMI).
- Sacket, Wendy. and Christine L. Hainsworth-Straus. (1997). ***Real Estate: Money & Me.*** Florida: Rourke Publications, Inc.
- Salleh, Rohaniyati. (2009), ***Critical Success Factors of Project Management for Brunei Construction Projects: Improving Project Performance.*** Brunei.
- Saunders, Mark., Philip Lewis., Adrian Thornhill. (2009). ***Research methods for business students.*** 5th ed. London: Pearson Education Limited.
- Saylor.org. (2009). ***Project Management in a Complex World.*** [Online]. Available From: http://www.saylor.org/books. [Accessed: December 27th 2014].
- Venter, Fred. (2005). ***Project Management in Ghana: Expectations, Realities, and Barriers to Use.*** The Journal for Transdisciplinary Research in South Africa. 1 (1). p.7796.
- Wikipedia. (2015). ***Project.*** [Online]. Available from:en.m.wikipedia.org/wiki/project. [Accessed: February 3rd 2015].
- Westring, G. (1997), ***Public Procurement Reform***, an Audit Report Prepared fo r the World Bank, Advokatfirman Cederquist KB, Stockholm.
- Wilson, R.A. (2004), "***Employee dishonesty: national survey of risk manage rs on crime***", Journal of Economic Crime Management, Vol. 2 No. 1, pp. 1-25.
- Westport, CT: Greenwood Press. Gyimah-Boadi,E. (2002) "***Confronting corruption in Africa***", briefing paper:
- YalewEndawekeMulu. (2011). ***Basic Principles of Research Methodologies.*** 3rd ed. Addis Ababa: Negd Publishing Company.
- Yimam, Abadir H. (2011). ***Project Management Maturity in the Construction Industry of Developing countries (The Case of Ethiopian Contractors).*** Maryland: University of Maryland

# APPENDICES

**APPENDICES -1**

**ADDIS ABABA UNIVERSITY SCHOOL OF COMMERCE DEPARTEMENT OF BIAS**

**Questionnaire to be filled by Real Estate Companies**

This questionnaire is prepared for the fulfillment of conducting a thesis paper on 'The Practice of Project Management in Ethiopian Real Estate Industry and Its Impact on Project Success'. The information acquired through this questionnaire will be kept confidential and it is purely for

**APPENDICES -1**

academic purpose. There is no right or wrong answer here. Rather, your genuine, honest and timely response is vital for the accomplishment of this study. Therefore, you are kindly requested to give your response to each items/questions carefully. The researcher sincerely expresses his thanks in advance for devoting your time and energy to complete this questionnaire. Please note that you are not required to give your name in this questionnaire.

**Educational Background:** _____

**Educational Background Qualification:** Diploma ☐ Degree ☐ Masters ☐

**Job Title (Position):** _____

**Experience (in years):** _____

**Age:** _____

**i. Close Ended Questions**

**Instruction:** For the closed ended questions in table forms, please use the following keywords to answer. And put a tick mark (√) on the space provided.

SA= Strongly Agree
A= Agree
UD=Undecided
DA=Disagree
SDA=Strongly Disagree

**1. Project Initiation Phase**

| | **Questions** | SA | A | UD | DA | SDA |
|---|---|---|---|---|---|---|
| 1 | The company formally authorized the existence of a project using written document/charter | | | | | |
| 2 | There were written documents that provide the project manager with the authority to apply organizational resources to project activities. | | | | | |
| 3 | The company clearly identified all stakeholders and determined what kind o f relationship each stakeholders might have with company. | | | | | |

**2.Project Planning Phase**

| | Questions | SA | A | UD | DA | SDA |
|---|---|---|---|---|---|---|
| 1 | There was adequate and comprehensive project management plan | | | | | |
| 2 | The company had proper scope management plan | | | | | |
| 3 | The company determined, documented, and managed each stakeholders ' requirements to meet project objectives | | | | | |
| 4 | The company developed a detailed description about its real estate development as well as about the output of the project | | | | | |
| 5 | The company effectively subdivided project deliverables in to smaller components/activities for ease of management and outsourcing | | | | | |
| 6 | There are clear policies, procedures, and documentation for project schedule | | | | | |
| 7 | The company clearly identified and documented the specific actions to be performed in the real estate development | | | | | |
| 8 | The company clearly identified and documented relationships among the project activities | | | | | |
| 9 | The company effectively breakdown the cost and anticipated supply requirements for the project. | | | | | |
| 10 | The company effectively estimated time required for project activities. | | | | | |
| 11 | Effective project schedule models and tools were used for the project. There are clear policies, procedures, and documentation in the company for project cost management. | | | | | |
| 12 | The company developed an approximation of the monetary resources needed to complete project activities before the project began | | | | | |
| 13 | The company effectively aggregated the estimated costs of individual activities to establish cost baseline. | | | | | |
| 14 | There are clear quality requirements and standards in the company for real estate development | | | | | |
| 15 | There is clear job description and employee staffing management plan in the company and in its projects | | | | | |
| 16 | The company developed appropriate project communication approaches and plans to communicate with its stakeholders | | | | | |

| | | | | | | |
|---|---|---|---|---|---|---|
| 17 | Risk management activities for a project were clearly defined. | | | | | |
| 18 | The company determined which risks may affect the project and documented their characteristics | | | | | |
| 19 | Project risks were prioritized for further analysis to predict their probability of occurrence and impact | | | | | |
| 20 | The company numerically analyzed the effect of identified risks on overall project objectives | | | | | |
| 21 | The company developed options and actions to enhance opportunities and to reduce threats to project objectives | | | | | |
| 22 | Project procurement decisions of the company were documented and approaches were specified to identify potential sellers. | | | | | |
| 23 | There were appropriate management strategies to effectively engage stakeholders throughout the project life cycle | | | | | |
| 24 | The company developed the approach to manage the various hazards to satisfy inherent in the project | | | | | |
| 25 | The company assessed in detail the construction site environment and relevant environmental standards to the project | | | | | |
| 26 | Key financial issues to be addressed were identified and then project roles, responsibilities and relationships were determined. Claims by different stakeholders were identified in advance. | | | | | |
| 27 | The company properly qualified which claims by stakeholders should be held | | | | | |

**3. Project Execution Phase**

| | Questions | SA | A | UD | DA | SDA |
|---|---|---|---|---|---|---|
| 1 | The work defined in the project management plan and approved changes were led and performed properly | | | | | |
| 2 | There was continuous audit on quality requirements and results from quality control | | | | | |
| 3 | There was effective human resource planning and project tea m establishment | | | | | |
| 4 | The company improved competencies, team member interaction, and overall team environment to enhance project performance | | | | | |
| 5 | The company effectively tracked team member performance, provide d feedback, resolved issues, | | | | | |

| | | | | | | |
|---|---|---|---|---|---|---|
| | and managed related changes to optimize project performance | | | | | |
| 6 | The company has good project information system in accordance with the communications management plan. | | | | | |
| 7 | The company effectively obtained, selected, and awarded resource suppliers. | | | | | |
| 8 | The company communicated and worked with stakeholders to meet their needs/expectations throughout the project life cycle. | | | | | |
| 9 | The company regularly carried out safety measures | | | | | |

**4. Project Monitoring and Controlling Phase**

| | Questions | SA | A | UD | DA | SDA |
|---|---|---|---|---|---|---|
| 1 | Progress of the project was effectively and regularly tracked, reviewed, an d reported against the performance objectives defined in the project management plan. | | | | | |
| 2 | The company reviewed all change requests; approved managed relevant changes communicated their disposition | | | | | |
| 3 | The company formalized acceptance of the completed project outcomes. | | | | | |
| 4 | There was effective monitoring of status of the project, product scope and changes to the scope baseline | | | | | |
| 5 | The company properly monitored status of project activities to update project progress and manage changes to the schedule baseline to achieve the plan. | | | | | |
| 6 | The company monitored status of the project to update the project costs and managing changes to the cost baseline | | | | | |
| 7 | There was effective monitoring and recording o results of executing the quality activities. | | | | | |
| 8 | There was effective communication monitoring and control throughout the entire project life cycle to ensure the information needs of the project stakeholders are met. | | | | | |
| 9 | The company implemented and evaluated risk response plans an d continuously identified project risks | | | | | |

| | | | | | | |
|---|---|---|---|---|---|---|
| 10 | There was effective management of procurement relationships, contract performance, and related changes and corrections as appropriate | | | | | |
| 11 | There was effective monitoring of overall project stakeholder relationships and adjustment strategies and plans for engaging stakeholders. | | | | | |
| 12 | The company monitored specific project results to determine if they comply with relevant environmental standards and identified possible corrective actions | | | | | |
| 13 | There was effective monitoring of key influences of finance and corrective measures were taken if negative trends are recognized. The company has appropriate claim prevention mechanisms | | | | | |

**5. Project Closing Phase**

| | Questions | SA | A | UD | DA | SDA |
|---|---|---|---|---|---|---|
| 1 | The company properly finalized all activities across all Project activities t o formally complete the project or phases or the project. | | | | | |
| 2 | The company properly completed each project procurement | | | | | |
| 3 | Safety records were maintained and reported properly | | | | | |
| 4 | Financial information database was designed and maintained in the project to enable financial control to proceed in a smooth way.<br>The company has appropriate claim resolution mechanisms | | | | | |

**6. Project Success**

| | Questions | SA | A | UD | DA | SDA |
|---|---|---|---|---|---|---|
| 1 | The project ~~was~~ progressed within the allocated time period. | | | | | |
| 2 | The project was executed within the budgeted cost for each activates. The project was ran at the proper quality level set by the company and standards | | | | | |
| 3 | Houses and the villages are designed by considering clients' preference. | | | | | |
| 4 | The project ~~was~~ progressed with minimum or mutually agreed upon scope changes | | | | | |
| 5 | The project was implemented without disturbing the main work flow of the organization | | | | | |
| 6 | The project was implemented without changing | | | | | |

| | | | | | | |
|---|---|---|---|---|---|---|
| | the corporate culture | | | | | |
| 7 | The building structures are safe in terms of bearing all probable types of loads. | | | | | |
| 8 | The houses are built in which they advocate safety of users. | | | | | |
| 9 | The houses provide comfort to users which are against forces such as vibrations. | | | | | |
| 10 | | | | | | |
| 11 | The houses are free from occurrence of cracks. | | | | | |
| 12 | The house are free from significant deformation of structures. | | | | | |
| 13 | The village is clear to make visually appealing | | | | | |

**APPENDICES -1**

**ii. Open Ended Questions**

**Instruction:** For the open ended questions below, please fill your answers for each question in the blank space provided.

2.1. Estimated Duration of the project: _____

2.2. Actual Time Devoted on the project: _____

2.3. Initially estimated total project cost: _____

2.4. Actual Project Cost incurred: _____

2.5. How many projects have you accomplished? _____

2.6. How many houses does the company transferred to customers? _____

2.7. When did the company transferred the houses? _____

2.8. What were the problems you encountered during implementation of project(s)? Please State/list the problems as much as you can.

_____

_____

_____

_____

2.9. What were the mitigating factors used by the company to solve the problems you mentioned above?

_____

_____

_____

_____

_____

2.10. Did the project(s) face delay problems?

Yes ☐ No ☐

2.11. If yes, what were the causes for these delay problems? Please State/list causes of the problems as much as you can.

_____
_____
_____

2.12. What were the mitigation factors implemented by the company to solve the delay problems?

_____
_
_____
_
_____
_

2.13. Did the project(s) face cost escalation problems? Please State/list causes of the problems as much as you can.

Yes ☐ No ☐

2.14. If yes, what were the causes for these cost escalation problems?

_____
_____
_____
_____

2.15. What were the mitigation factors implemented by the company to solve the cost escalation problems?

_____
_____
____
_____
__

2.16. Did the project(s) face quality problems?

Yes ☐ No ☐

2.17. If yes, what was the causes for the quality problems? Please State/list causes of the problems as much as you can.

_____
_____
_____
_____

2.18. What were the mitigation factors implemented by the company to solve the problems?

_____
_
_____
_
_____
_

2.19. Forward any recommendation you would like to suggest in the execution of real estate projects?

Thanks You!

**APPENDICES -2**

***ADDIS ABABA UNIVERSITY SCHOOL OF COMMERCE DEPARTEMENT OF BIAS***

**Questionnaire to be filled by Consultants**

This questionnaire is prepared for the fulfillment of conducting a thesis paper on 'The Practice of Project Management in Ethiopian Real Estate Industry and Its Impact on Project Success'. The information acquired through this questionnaire will be kept confidential and it is purely for academic purpose. There is no right or wrong answer here. Rather, your genuine, honest and timely response is vital for the accomplishment of this study. Therefore, you are kindly requested to give your response to each items/questions carefully. The researcher sincerely expresses his thanks in advance for devoting your time and energy to complete this questionnaire. Please note that you are not required to give your name in this questionnaire.

**Educational Background:** _____

**Educational Qualification:** Diploma ☐ Degree ☐ Masters ☐

**Job Title (Position):** _____

**Experience (in years):** _____

**Age:** _____

**Instruction:** For the open ended questions below, please fill your answers for each question in the blank space provided.

1. How many real estate projects you consulted?

_____

2. How do you observe performance and success of Ethiopian real estate projects as a whole?

_____

_____

_____

_____

3. To what extent project management practice is applied in Ethiopian Real Estate industry?

_____

_____

_____

4. What are the different problems you observed in Ethiopian real estate projects? Please State/list the problems with their causes as much as you can.

_____

_____

_____

5. What are the reasons for existence of delay in Ethiopian real estate projects? Please State/list causes of the problems as much as you can.

6. What are the reasons for cost escalation in Ethiopian real estate projects? Please State/list causes of the problems as much as you can.

7. What are the reasons for quality variation in Ethiopian real estate projects? Please State/list causes of the problems as much as you can.

9. How do you observe the project human resource management in Ethiopian real estate industry?

10. How do you see the project procurement management in Ethiopian real estate industry?

11. How do you review the project risk management in Ethiopian real estate industry?

12. How do you judge the project safety management in Ethiopian real estate industry?

13. How do you see the project environmental management in Ethiopian real estate industry?

14. How do you observe the project claim management in Ethiopian real estate industry?

15. Please forward any additional comments (ideas) you have on the implementation of Project Management as well as on the Project Performance and success in Ethiopian Real Estate Industry.

Thank You!

**APPENDICES -3**

***ADDIS ABABA UNIVERSITY SCHOOL OF COMMERCE DEPARTEMENT OF BIAS***

**Questionnaire to be filled by real estate house owners**

This questionnaire is prepared for the fulfillment of conducting a thesis paper on 'The Practice of Project Management in Ethiopian Real Estate Industry and Its Impact on Project Success'. The information acquired through this questionnaire will be kept confidential and it is purely for academic purpose. There is no right or wrong answer here. Rather, your genuine, honest and timely response is vital for the accomplishment of this study. Therefore, you are kindly requested to give your response to each items/questions carefully. The researcher sincerely expresses his thanks in advance for devoting your time and energy to complete this questionnaire. Please note that you are not required to give your name in this questionnaire.

**Age:** _____

**Number of years you have been using the house:** _____

i. **Close Ended Questions**

**Instruction:** For the closed ended questions in table forms, please use the following keywords to answer. And put a tick mark (√) on the space provided.

SA= Strongly Agree
A= Agree
UD=Undecided
DA=Disagree
SDA=Strongly Disagree

ii. **Open Ended Questions**

| No. | Questions | SA | A | UD | DA | SDA |
|---|---|---|---|---|---|---|
| 1.1. | The house is completed within the allocated time period. | | | | | |
| 1.2. | The house is completed at the proper performance or specification level. | | | | | |
| 1.3. | The house is completed with mutually agreed scopes and changes. | | | | | |
| 1.4. | The structures are safe in terms of bearing all probable types of loads. | | | | | |
| 1.5. | The house is built in which it advocates safety of users. | | | | | |
| 1.6. | The house provides comfort to users which is against forces such as vibrations. | | | | | |
| 1.7. | The house has aesthetically good appearance. | | | | | |
| 1.8. | The house is free from occurrence of cracks. | | | | | |
| 1.9. | The house is free from significant deformation of structures. | | | | | |
| 1.10. | The village is clear to make visually appealing | | | | | |
| 1.11. | The village is decorated by attractive plants. | | | | | |

**Instruction:** For the open ended questions below, please fill your answers for each question in the blank space provided.

2.1. Beginning date of contract: _____

2.2. Promised date of Completion: _____

2.3. Actual date of completion: _____

2.4. Are you satisfied with the timing of delivery of your house from the real estate developer?

Yes ☐ No ☐

2.5. If you are not satisfied, to what extent the company delayed the delivery?

_____

_____

2.6. Are you satisfied with the price you are charged by the real estate developer?

Yes ☐ No ☐

2.7. If you are not satisfied, to what extent the price is expensive?

_____

_____

2.8. Are you satisfied with the quality of your house?

Yes ☐ No ☐

2.9. If you are not satisfied, what are the reasons that make you dissatisfied?

_____

_____

2.10. Did the real estate developer built the house as per the specifications included in the contract?

Yes ☐ No ☐

2.11. If not, what are the deviations between the contract specification and the actual performance?

_____

_____

_____

2.12. Please forward any additional comments (ideas) you have on the company that sold the house to you as well as about the house and its village constructed by the real estate developer.

_____

_____

_____

_____

_____

Thank You!

## APPENDICES -4

**በአዲስአበባዩኒቨርሲቲየንግድስራኮሌጅየቢዝነስ፣ኢንፎረሜሽንእናማህበራዊሳይንስዲፓርትመንትየፕሮጀክትማኔጅመንትየ2ተኛዲግሪፕሮግራም**

**በሪልእስቴትመኖሪያቤትባለቤቶችየሚሞላ**

ይህመጠይቅየተዘጋጀው"የፕሮጀክትአመራርትግበራበሪልእስቴትኢንዱስትሪእናትገበራውለፕሮጀክቶችስኬትየሚያበረክተውፋይዳ"በሚልርዕስበመሰራትላይላለጥናትግብአትየሚሆንመረጃለመሠብሠብነው::በዚህመጠይቅየሚሰበሰበውመረጃበሚስጥርየሚያዝእናለሶስተኛወገንተላልፎየሚሰጥአይደለም::በዚህመጠይቅውስጥየተሣሣተየሚባልመልስአይኖርም:::
ነገርግንከርስዎየሚጠበቀውግልፅ፣ሀቀኛእናወቅታዊየሆነንመልስነው::ስለዚህለተሠጡትጥያቄዎችጥንቃቄየተሞላበትመልስእንዲሰጡንበትህትናእንጠይቃለን::
ይህንንመጠይቅለመሙላትፍቃደኛሆነውጊዜዎትንናጉልበትዎትንበመሠዋትዎበቅድሚያየከበረምስጋናችንንእናቀርባለን::በዚህመጠይቅላይስምዎንመጥቀስእንደሌለብዎትበትህትናእናሳውቃለን::

**እድሜ**_____

**ቤቱንከተረከቡምንያህልጊዜሆነዎት**_____

**i. የምርጫጥያቄዎችመመሪያ:**

ከታችበሰንጠረዥመልክለተቀመጡትየምርጫጥያቄዎችየሚከተሉትንየቃላትመፍቻዎችበመጠቀምመልስይሆናልያሉትንአማራጭትይዩየጭረትምልክት( ) ያስፍሩ::

5= በጣምእስማማለሁ
4= እስማማለሁ
3= አልወሠንኩም
2= አልስማማም
1= በጣምአልስማማም

**ii. አጭርመልስየሚሹጥያቄዎች**

| ተ.ቁ. | ጥያቄዎች | 5 | 4 | 3 | 2 | 1 |
|---|---|---|---|---|---|---|
| 1.1. | ቤቱ በተቀመጠለት ጊዜ ነበር የተጠናቀቀው:: | | | | | |
| 1.2. | ቤቱ የተጠናቀቀው ውሉ ላይ በተስማሙት አይነትና የጥራት ደረጃ ነው:: | | | | | |
| 1.3. | ቤቱ የተጠናቀቀው ቅድሚያ ባዩት ዲዛይን እና እርስዎ ይቀየር ያሉት ነገር ካለ እርሱን ባካተተ መልኩ ነው:: | | | | | |
| 1.4. | ቤቱ መሸከም ያለበትን የተለያዩ አስፈላጊ ነገሮችን እንዲሸከም ተደርጎ የተሰራ ነው:: | | | | | |
| 1.5. | ቤቱ ሲገነባ የነዋሪዎችን ደህንነት ባገናዘበ መልኩ ነው:: | | | | | |
| 1.6. | ቤቱ በድምፅ እና በሌላ ነገሮች ከሚመጡ መንቀጥቀጥ እና ከመሠል ነገሮች በራቀ መልኩ ለነዋሪው ምቾት የሚሠጥ ነው:: | | | | | |
| 1.7. | የቤቱ ገጽታ ማራኪና አይታን የሚስብ ነው:: | | | | | |
| 1.8. | ቤቱ ከመሠንጠቅ የፀዱ ግድግዳዎችና ሌሎች አካላቶች ያሉት ነው:: | | | | | |
| 1.9. | ቤቱ የተጣመመ አካል የሌለበት እና ከዚህ አደጋም የፀዳ ነው:: | | | | | |
| 1.10. | አካባቢው ማራኪ ሆኖ የተዘጋጀ ነው:: | | | | | |
| 1.11. | የቤቱ አካባቢ በአትክልቶች የተዋበ ነው:: | | | | | |

**መመሪያ:** ከታችለተሠጡትጥያቄዎችለእያንዳንዱመልስበተሠጠውክፍትቦታላይይሙሉ::

2.1. ቤቱንየገዙበትቀን_____

2.2. ኮንትራቱላይቤቱይጠናቀቃልየተባሉበትቀን_____

2.3. ቤቱየተጠናቀቀበት/ የተረከቡበትቀን_____

2.4. ቤቱንበተረከቡበትየጊዜርዝመትላይቅሬታአለዎት? አዎአለኝ☐አይየለኝም☐

2.5. ቅሬታካለዎትከስርምክንያትዎትንበዝርዝርያስቀምጡ::

_____

_____

2.6. ለቤቱበከፊሉትዋጋላይቅሬታአለዎት?

አዎአለኝ ☐ አይየለኝም ☐

2.7. ቅሬታካለዎትምክንያትዎትንከስርይፃፉልን::

_____

_____

2.8. በቤቱጥራትላይቅሬታአለዎት?

አዎአለኝ ☐ አይየለኝም☐

2.9. ቅሬታካለዎትምክንያትዎትንከስርያስቀምጡ::

_____

_____

2.10. የሪልእስቴቱኩባንያቤቱንኮንትራቱላይበተቀመጠውመሠረትነውየገነባው?

አዎ☐አይደለም☐

2.11. መልስዎትአይደለምከሆነምንምንነገሮችንእንዳጎደለይፃፉልን::

_____

_____

2.12. ስለቤትዎናቤትዎንስለገነባውሪልእስቴትኩባንያተጨማሪሀሳብ፣አስተያየትእናቅሬታካለዎትከታቸባለውክፍትቦ ታላይየፃፉ፡፡

_____
_____
_____
_____
_____

ስለትብብርዎከልብእናመሰግናለን!!

**APPENDICES -5**

***ADDIS ABABA UNIVERSITY SCHOOL OF COMMERCE DEPARTEMENT OF BIAS***

**Interview Questions for Researchers & Instructors in Construction Field**

1. Tell me about your educational background, specialization, and experience?
2. How do you observe the practice of project management in Ethiopian real estate industry?
3. How do you express the performance and success of Ethiopian real estate projects in Ethiopia?
4. Do you think the practice of project management contribute to the effective and efficient performance and success of real estate projects?
5. What are the reasons for existence of delay in Ethiopian real estate projects?
6. What are the reasons for cost escalation in Ethiopian real estate projects?
7. What are the reasons for quality variation in Ethiopian real estate projects?
8. Tell me other problems that are available in Ethiopian real estate projects?
9. Please forward any additional comments (ideas) you have on the implementation of Project Management as well as on the Project Performance and success in Ethiopian Real Estate Industry.

Thank You!

Project Management Process Group and Knowledge Area Mapping ( PMI, 2013: P 61)

| Knowledge Areas | Project Management Process Groups | | | | |
|---|---|---|---|---|---|
| | Initiating Process Groups | Planning Process Groups | Executing Process Groups | Monitoring and Controlling Process Groups | Closing Process Groups |

| | | | | | |
|---|---|---|---|---|---|
| Project Integration Management | Develop Project Charter | Develop Project Management Plan | Direct and Manage Project Works | • Monitor and Control Project Work<br>• Perform Integrated Change Control | Close Project or Phase |
| Project Scope Management | | • Plan Scope Management<br>• Collect Requirements<br>• Define Scope<br>• Create WBS | | • Validate Scope<br>• Control Scope | |
| Project Time Management | | • Plan Schedule Management<br>• Define Activities<br>• Sequence Activities<br>• Estimate Activity Resources<br>Estimate Activity Durations<br>• Develop Schedule | | Control Schedule | |
| Project Cost Management | | • Plan Cost Management<br>• Estimate Costs<br>• Determine Budget | | Control Costs | |
| Project Quality Management | | Plan Quality Management | Perform Quality Assurance | Control Quality | |

| | | | | | |
|---|---|---|---|---|---|
| Project Human Resource Management | | Plan Human Resource Management | Acquire Project Team<br>Develop Project Team<br>Manage Project Team | | |
| Project Communication Management | | Plan Communications Management | Manage Communications | Control Communications | |
| Project Risk Management | | • Plan Risk Management<br>• Identify Risks Perform Qualitative Risk Analysis<br>• Perform Quantitative Risk Analysis<br>• Plan Risk Responses | | Control Risks | |
| Project Procurement Management | | Plan Procurement Management | Conduct Procurements | Control Procurements | Close Procurements |
| Project Stakeholder Management | Identify Stakeholders | Plan Stakeholder Management | Manage Stakeholder Engagement | Control Stakeholder Engagement | |

Mapping of Project Management Processes and Project Management Knowledge Areas for Construction Extension (PMI, 2003: P 16).

| Knowledge Areas | Project Management Process Groups | | | | |
|---|---|---|---|---|---|
| | Initiating Process Groups | Planning Process Groups | Executing Process Groups | Monitoring and Controlling Process Groups | Closing Process Groups |
| Project Integration Management | | Project Plan Development | Project Plan Execution | Integrated Change Control | |
| Project Scope Management | Initiation | • Scope Planning<br>• Scope Definition | | Scope Validation<br>Scope Change Control | |
| Project Time Management | | • Activity Definition<br>• Activity Sequencing<br>• Activity Duration Estimation<br>• Schedule Development | Activity Weights Definition | Schedule Control<br>Progress Curves Development<br>Progress Monitoring | |
| Project Cost Management | | • Resource Planning<br>• Cost Estimating<br>• Cost Budgeting | | Cost Control | |
| Project Quality Management | | Quality Planning | Quality Assurance | Quality Control | |
| Project Human Resource Management | | • Organizational Planning<br>• Staff Acquisition | Team Development | | Project Completion |

| | | | | | |
|---|---|---|---|---|---|
| Project Communication Management | | Communication Planning | Information Distribution | Performance Reporting | Administrative Closure |
| Project Risk Management | | • Risk Management Planning<br>• Risk Identification<br>Qualitative Risk Analysis<br>Risk Response Planning | | Risk Monitoring and Control | |
| Project Procurement Management | | • Procurement Planning<br>• Solicitation | • Solicitation Source Selection<br>• Contract Administration | | Contract Closeout |
| Project Safety Management | | Safety Planning | Safety Plan Execution | | Contract Closeout |
| Project Environmental Management | | Environmental Planning | Environmental Assurance | Environmental Control | Administration & Reporting |
| Project Financial Management | | Financial Planning | | Financial Control | Administration & Records |
| Project Claim Management | | Claim Identification<br>Claim Qualification | | Claim Prevention | Claim Resolution |