

**Addis Ababa University School of  
Commerce**

**Assessing the Monitoring and Controlling  
Practices for the success of Residential  
Real Estate Projects in Addis Ababa City**

***By: FITSUM EPHREM***

**Advisor: Worku Mekonen (PhD)**

**A Research Thesis Submitted to Addis Ababa University,  
School of Commerce as Partial Fulfillment of the  
Requirement for Degree of Master of Art in Project  
Management**

**June, 2023  
Addis Ababa, Ethiopia**

Addis Ababa University

School of Commerce

Project Management

**Assessing the Monitoring and Controlling  
Practices for the success of Residential Real  
Estate Projects in Addis Ababa City**

By: Fitsum Ephrem

*Approved by Board of Examiners:*

_____	_____	_____
Advisor	Signature	Date

_____	_____	_____
Examiner	Signature	Date

_____	_____	_____
Examiner	Signature	Date

## **Declaration**

I hereby declare that the project entitled “Assessing the Monitoring and Controlling Practices for the success of Residential Real Estate Projects in Addis Ababa City” is my original work and has not been presented in Addis Ababa University or another University, and that all sources of material used for the project have been duly acknowledged

Fitsum Ephrem (The Researcher)

## Statement of Certification

I certify that Fitsum Ephrem has carried out her research under my guidance on the topic of “Assessing the Monitoring and Controlling Practices for the success of Residential Real Estate Projects in Addis Ababa City”. This work is suitable for submission as a partial fulfillment requirement for the award of master’s degree in project management

Date: \_\_\_\_\_

**Advisor: Worku Mekonen (PhD)**  
**Associate Professor, School of Commerce**  
**Addis Ababa University**

## **Acknowledgments**

My deepest gratitude goes to God for making this happen for me, my long term goal which I could not accomplish without him. Second gratitude goes to my thesis advisor Dr. Worku, for his guidance and comments. And also, My respondents, I highly value your cooperation and time for this research to be fruitful

Eng. Dessalegn Kebede, Eng. Wubshet Bekele, Emenet Epherm and Ato Asfaw Hailu, without you, this journey would have been dark. All the support and encouragement I got from you is extraordinary. The Ethiopian Association of Civil Engineers is my motivation and wisdom bank. I look up to you ED.

Last but not least, My family and friends whom I always lean on when it gets tough, who had the laughs and tears with me, I can never repay you other than recognizing you here. Thank you millions!

# Table of Contents

<b>Abstract</b> .....	8
<b>Acronyms/Abbreviations</b> .....	9
List of Tables.....	10
List of Figures.....	11
<b>Chapter one: Introduction</b> .....	12
<b>1.1 Background of the study</b> .....	12
<b>1.2 Statement of the problem</b> .....	13
<b>1.3 Basic questions</b> .....	15
<b>1.4 Objective of the study</b> .....	15
<b>1.4.1 General Objective</b> .....	15
<b>1.4.2. Specific Objectives</b> .....	15
<b>1.5 Key term definitions</b> .....	16
<b>1.6 Significance of the study</b> .....	16
<b>1.7 Scope and Limitations of the study</b> .....	17
<b>1.8 Organization of the Study</b> .....	17
<b>Chapter two: Literature Review</b> .....	18
<b>2.1 Introduction</b> .....	18
<b>2.2 Theoretical literature review</b> .....	18
<b>2.2.1 Monitoring of projects</b> .....	18
<b>2.2.1.1 Gantt Chart</b> .....	19
<b>2.2.1.2 Earned value Analysis</b> .....	20
<b>2.2.1.3 The process of Monitoring</b> .....	22
<b>2.2.2 Controlling of Projects</b> .....	24
<b>2.2.2.1 Project Control Systems</b> .....	24
<b>2.2.3 Real Estate Development</b> .....	26
<b>2.2.3.1 The Real Estate Development Process</b> .....	27
<b>2.3. Empirical literature review</b> .....	28
<b>2.3.1. Residential Real estate projects in Ethiopia</b> .....	28
<b>Chapter Three: Research Methodology</b> .....	30
<b>3.1 Introduction</b> .....	30
<b>3.2 Research Approach</b> .....	30
<b>3.3 Research design</b> .....	31
<b>3.3 Sources of data and data collection Instrument</b> .....	31
<b>3.4 Population and Sampling Design</b> .....	32
<b>3.5 Data collection procedure</b> .....	33

<b>3.6 Reliability</b> .....	33
<b>3.7 Validity</b> .....	33
<b>3.8 Ethical Consideration</b> .....	33
<b>Chapter Four: Results and Discussion</b> .....	34
<b>4.1 Introduction</b> .....	34
<b>4.2 Planning to Monitoring and Controlling of RRE projects</b> .....	36
<b>4.3 Monitoring and its factors</b> .....	38
<b>4.4 Data collection for the monitoring and controlling of the project</b> .....	43
<b>Chapter Five: Summary, Conclusion and Recommendation</b> .....	50
<b>5.1 Summary</b> .....	50
<b>5.2 Conclusion</b> .....	50
<b>5.3 Recommendation</b> .....	52
<b>5.4 Suggestion for further studies</b> .....	54
<b>References</b> .....	55
<b>Appendix 1</b> .....	58
<b>Appendix 2</b> .....	61

## **Abstract**

*This abstract presents the findings from a survey conducted on residential real estate (RRE) project management practices. While most projects have monitoring and controlling mechanisms in place, the utilization of proven project management techniques, such as Earned Value Management, is limited among respondents.*

*The absence of Earned Value Analysis exposes developers to potential disadvantages, including cost overruns, delays, and other issues that can impact project success. However, the survey demonstrated a positive trend towards the adoption of digital construction monitoring methods among RRE projects*

*To remain competitive in the market, construction companies must keep abreast of digital technologies and incorporate them into their projects.. Effective data management, change management, and stakeholder engagement were identified as crucial factors contributing to successful RRE project completion.*

*The study also shed light on the challenges faced during the construction phase, including the need to order materials well in advance due to scarcity and foreign currency shortages. Additionally, low stakeholder engagement was identified as a hindrance to the planning of an effective monitoring and controlling system. Encouraging active involvement of stakeholders can lead to improved project performance and should be prioritized through enhanced communication channels.*

*Overall, the findings emphasize the significance of embracing digital technologies, implementing effective project management practices, and prioritizing stakeholder engagement to enhance the success of residential real estate projects in Addis Ababa City.*

**Key words: Planning, Monitoring, Controlling, Residential Real Estate, Project Management, Project success**

## **Acronyms/Abbreviations**

RE: Real Estate

RRE: Residential Real Estate

EVA: Earned Value Analysis

EV: Earned Value

PV: Present Value

AC: Actual Cost

BCWP: Budgeted Cost of Work Performed

BCWS: Budgeted Cost of Work Scheduled

ACWP: Actual Cost of Work Performed

ES: Early start

EF: Early Finish

LS: Late Start

LF: Late Finish

CPI: Cost performance Index

SPI: Schedule performance Index

## List of Tables

Table 1: Personal and Project Profile.....	35
Table 2: Planning to monitoring and controlling .....	37
Table 3: Monitoring and its Factors .....	40
Table 4: Frequency and Percentage of data collection and measurement .....	42
Table 5: Methods used to measure project cost and performance.....	43
Table 6: Methods used to measure project performance.....	43
Table 7: Monitoring tools used in the projects .....	44
Table 8: Data collection for the monitoring and controlling of the project.....	46
Table 9: Reporting, Reviewing and Using Performance Information for controlling.....	49

## List of Figures

Figure 1: Sample Gantt Chart.....	21
Figure 2: Earned Value Analysis.....	23
Figure 3: Overall Monitoring system.....	25
Figure 4: The Project control process.....	27

# **Chapter one: Introduction**

## **1.1 Background of the study**

Real estate development is a vibrant investment sector, with rapid changes occurring in construction, finance, marketing, and the regulatory environment. (Mike et.al, 2015). The residential, commercial as well as the mixed use real estates have common stands where the shareholders have common interests, that is, the project success to secure their benefits. What makes the residential one different among others is that it falls under the human basic need, i.e. shelter. From average to the high level of life standard, people look forward to establishing a secure and convenient living arrangement. Not only for themselves but also the next generation: to inherit it as it lasts for a longer time. Rent is an option when constructing one's own home due to financial and schedule restrictions.

Cambridge dictionary defines a real estate developer simply as a person whose job involves buying and selling buildings and land, and arranging for new buildings to be built. Nevertheless, it is more complex than that and it involves multiple disciplines to give it a complete meaning. Just like any other projects, real estate development projects should evolve and follow the advanced project management process. People who invest huge amounts of money to buy a home do not decide overnight to do so. Years and years of planning is mandatory to make sure that they can afford it. On a very recent expo held at Enter luxury Hotel Ethiopia organized by Ethio International Expo 2023, about 25,000 home buyers from all over the world showed interest to buy a house. On the other hand, developers should keep in mind that providing a quality product they have promised on time must be their priority to stay in the business and keep their reputation at the top.

Speaking of delivery, the end product needs to be delivered on time and should be up to the standard of the contract agreement. (Ruskin, A. M.,1985) in his

journal has explained the importance of an early monitoring as “if a mistake is not detected in a timely way, the remedial work required when it is actually spotted may use so much of the contingency allowance that the allowance remaining afterwards will be inadequate to accommodate following mistakes.

Real estate development is one the sectors in Ethiopia having the attention of many both local and international investors. According to the data from Ethiopian Investment commission up to 2023, among the registered five hundred ninety nine real estate developers, only one hundred eighty three of them are in the operational stage of their projects and have started producing goods. And also, few have managed to stand out from the crowd and are competing against each other. Meanwhile, there are also those who are new entrants to the industry thinking that it is feasible to pursue what many have already got their hands into.

In Addis Ababa city many residential real estate companies have emerged in the last few decades to give citizens an opportunity to own a house aside from making business out of it. However, it is a must to know where the sector stands in regards to standards and requirements to compare the current practices to what actually is mandatory in order to trace progress and come up with solutions for critical problems. Therefore, this paper will analyze the monitoring and controlling practices of residential real estate projects in Addis Ababa city that fall under a project life cycle.

## **1.2 Statement of the problem**

Real estate represents an increasingly significant global asset class and its distinctive characteristics must be understood by investors (MacGregor et al, 2016). As most confuse it with a solely construction project, it is a must to take note that the construction is one of the phases that constitutes the Real estate projects.

Though there are multiple publications on the stages of conceiving, designing, building, financing, and acquiring real estate, yet not much has been written on how to build high performing real estate organizations. (Frank

Apeseche, 2017). High performing organizations in general practice good project management.

However, the current situation in Ethiopia is very unstable and changes every day. Just like any other projects, residential real estate projects must be planned in detail to have a clear picture of what is going to be achieved. Monitoring the probability of unforeseen events occurring and controlling gives optimum solutions and prevents the project from falling apart all together.

Once again, (Eng. Desalegn, 2021) in his book mentioned how the practice of Real estate project management is carried out in a traditional way including poor monitoring and controlling practices.

Alemayehu Wondafrash, (2021) in his studies indicated that most real estate developers adjust their agreed sales price in average form 5%-20%. These kinds of unanticipated adjustments are caused by many reasons and should be reduced through constant follow up with certain control mechanisms.

Many more researches have brought forward associated challenges that may or not be spotted early with the proper monitoring and control practices before they encounter. (Milka Hagos,2016), in her studies have pinpointed out how Residential Real Estates are susceptible to missed milestone deadlines, construction price escalation and exchange rate fluctuation.

(Selam Yohannes,2016), outlined how Real estate developers also claimed that at present, it is not easy to obtain finance from private or state-owned financial institutions due to the government's main focus on controlling the fast growing inflation. With this struggle in front, after acquiring the necessary finance, real estate developers should know how their execution is coming according to the plan they made.

This study shall investigate the monitoring and controlling practices of Residential Real Estate companies in Addis Ababa that affect the success of the projects including the tools and techniques, analysis, software and technologies to trace the progress made every time.

### **1.3 Basic questions**

- What are standard Monitoring and Controlling tools and processes?
- How do Private RRE developers in Addis Ababa city apply Monitoring and Controlling Practices on their residential real estate projects?
- How do real estate developers control common changes in their residential real estate projects?

### **1.4 Objective of the study**

#### **1.4.1 General Objective**

The main objective of the study is to examine the monitoring and controlling of practices of the completed and ongoing Residential Real Estate projects in Addis Ababa city. The study was guided by the below specific objectives

#### **1.4.2. Specific Objectives**

- To evaluate monitoring and controlling practices including tools, techniques and technologies used among Residential Real Estate projects that have potentials for the contributions to success of the projects.
- Investigate the relationship between monitoring and controlling practices and quality of RRE projects.
- Examine the issues and challenges in modern Monitoring and controlling practices and recommend how to create a superior residential real estate developer.

## 1.5 Key term definitions

**Project:** Temporary endeavor undertaken to create a unique product, service, or result

**Project Management:** 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.

**Real Estate:** Private ownership of a limited parcel of land, which includes the right of the air above it and the ground below it, and buildings or structures attached to the ground

**Real Estate Developer:** Companies that are involved in the construction and selling houses.

**Development team:** A group of people who collaboratively develop a product

**Residential Real Estate:** Any property used for residential purpose such as, single-family homes, condos, cooperatives, duplexes, and multifamily residences with fewer than five individual units.

## 1.6 Significance of the study

The real estate industry is a vital sector that contributes significantly to the economic growth of any country. In recent years, the Ethiopian government has been actively encouraging foreign investments in the country's real estate market. Addis Ababa, being the capital of Ethiopia, has experienced significant growth in the real estate sector due to the increased demand for housing units. However, the success of real estate projects largely depends on

effective monitoring and controlling practices. This study aims to assess the monitoring and controlling practices of residential real estate projects in Addis Ababa city.

### **1.7 Scope and Limitations of the study**

This study only intends to assess the monitoring and controlling practices of carried out and still ongoing residential real estate projects in Addis Ababa city excluding the ones in the idea inception stage and future projects to be developed. This research does not include the commercial real estate projects to keep the intention of the study according to its objectives.

The study may only focus on a particular group of residential real estate projects or a limited number of projects, which could limit the generalizability of the findings. There may not be standardized monitoring and controlling practices across all residential real estate projects in Addis Ababa, which could make it difficult to compare and analyze data. In addition, time constraint may prevent the researcher from collecting comprehensive data or conducting extensive analysis.

### **1.8 Organization of the Study**

Chapter 1 of this research paper reviews the problem to be addressed and raises questions that are relevant to the study and objectives set to meet at the end of the research. In addition scope and limitation of the study are elaborated as well. Chapter 2 explores literature that are relevant researches and reports associated with the topic addressed in this study. Chapter 3 shows the methodology and procedures used for data collection and analysis. Chapter 4 illustrates the analysis of the data and discusses the results in a detailed manner. Finally, Chapter 5 discusses the implications of the results from the point of view of the research questions raised and the formulated hypothesis and ends with recommendations for further study.

## **Chapter two: Literature Review**

### **2.1 Introduction**

This part of the study will explore related theoretical and empirical topics that are relevant for the research. Books, journals, credible conference papers, and other useful resources will be used as benchmarks. International experiences associated with residential real estate projects, project monitoring and controlling concepts will be briefly discussed and be compared with the standards provided by the PMI

### **2.2 Theoretical literature review**

#### **2.2.1 Monitoring of projects**

Several academicians and experts define the term “Monitoring” from different angles. Even though there is a common ground for all, for different disciplines, the focus of the definitions changes. OECD, (2002) defines Monitoring as a continuing function that uses systematic collection of data on specified indicators to provide management and the main stakeholders of an ongoing project with indications of the extent of progress and achievement of objectives and progress in the use of allocated budget. On the other hand, according to (Mohanty, et.al, 2011), Monitoring is collecting information concerning the progress of the project.

Regardless of its size and type, any small or complex project shall be monitored according to the plan documents. One of a project manager’s/project management team’s task is following up the project they have undertaken from the start to provisional hand over and to final hand over to the client or product owner. Monitoring ensures progress payments match actual progress, minimizes the risk of unconventionality to specifications, and increases the probability that deviations which could be hidden by project end are brought to light ( Gumz, 2007)

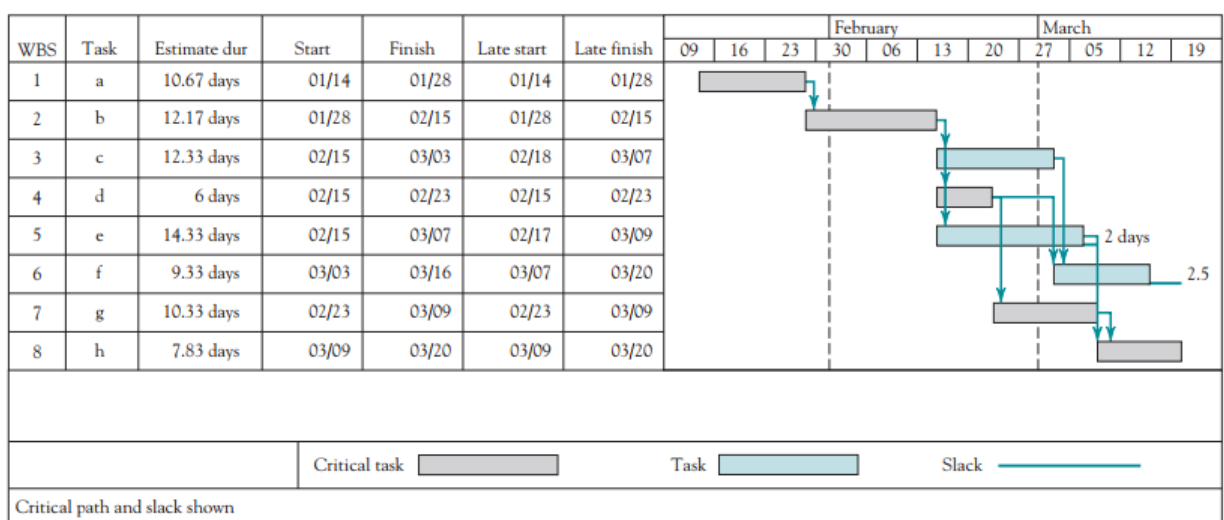
A baseline information is needed for monitoring of projects as benchmark and comparison to what is to be achieved. All projects need to establish some

type of a baseline against which their efforts may be monitored during the period of project performance (Fleming, et.al, 1995).

Gudda. (2011) classified levels of monitoring into implementation monitoring and results monitoring. Implementation monitoring is a means of tracking project strategies used to achieve a given outcome. These strategies include inputs, activities, and outputs in annual work plans.

### 2.2.1.1 Gantt Chart

Gantt chart is an alternate project scheduling and monitoring tool that provides the baseline and every time there is a change, the “tracking gantt chart is developed and updated to reflect the change. (Mohanty,et.al ,2011). Therefore, by default, we can say that Gantt charts can be used for monitoring the schedule of residential real estate projects. A typical gantt chart has two sections. i.e., the left and the right sections. The left one outlines a list of activities to be executed whereas, the right one has a timeline which schedules bars that visualize work. Even though, it can be constructed manually, recent software such as Microsoft project and Primavera produce a very clear Gantt chart that indicate, critical path, Slack, ES, LS, EF and LF



**Fig 1. Sample Gantt chart**

**ES** : the earliest time a task can be started

**EF**: The earliest a task can be finished

**LS**: the latest time a task can be started

**LF**: the latest time a task can be finished

**Critical task**: An activity that cannot be delayed at all in order for the project to be completed per the master schedule

**Slack**: Amount of time available a noncritical task can be delayed without pushing the master schedule

As a project manager or a project management team, attention shall be given that activities are executed per the given ES, EF, LS and LF. And also any tolerance shall fall under the slack time that gives room for contingency that the project is completed on time or early.

#### **2.2.1.2 Earned value Analysis**

Earned Value Management (EVM) is a powerful project management method that is implemented in engineering and construction projects. (Boydak, A., 2013.). As the name indicates, earned value describes the amount of work achieved in terms of schedule, budget and scope. It also forecasts the amount of work to be executed on time and in budget in order to meet the objectives of the project. Once again, (Boydak, A., 2013.), underlines the basic principles of Earned value analysis as performer of a scope recognized for the amount of work he/she completed. Earned value (EV) is considered as the amount of work completed on the same bases it was planned in quantifiable units such as cash, job hours, volume or others which it is compared against i.e., the planned value (PV). Budgeted cost of work performed (BCWP) is used as EV interchangeably and also, Budgeted cost of work scheduled (BCWS) is another

term for the planned value. EV can be calculated by multiplying the budgeted cost of the task by the percentage of completing the task and summing over all tasks for the project. Here, a problem may be encountered when trying to measure the exact amount of percentage of tasks completed as well as the percentage of the entire project completed. Consequently, one way of estimating the percentage of the work is by considering the task when initiated is 50% complete and the other 50% is completed when it is totally over. ( Samuel J Mantel., et.al.2011). Overall, EVA is measurement of work progress in terms of performance, budget and schedule.

Other associated values are variance and variance ratios of the previous values.

Cost Performance Index=  $EV/AC$

Schedule Performance Index=  $EV/PV$

Cost variance (CV) =  $EV-AC$

Schedule variance (SV) =  $EV-PV$

These values indicate the status of projects and are particularly helpful when comparing the performance of multiple projects. Ratios less than one show that project is either delay or cost overrun or both. And also, a negative variance shows similar stands.

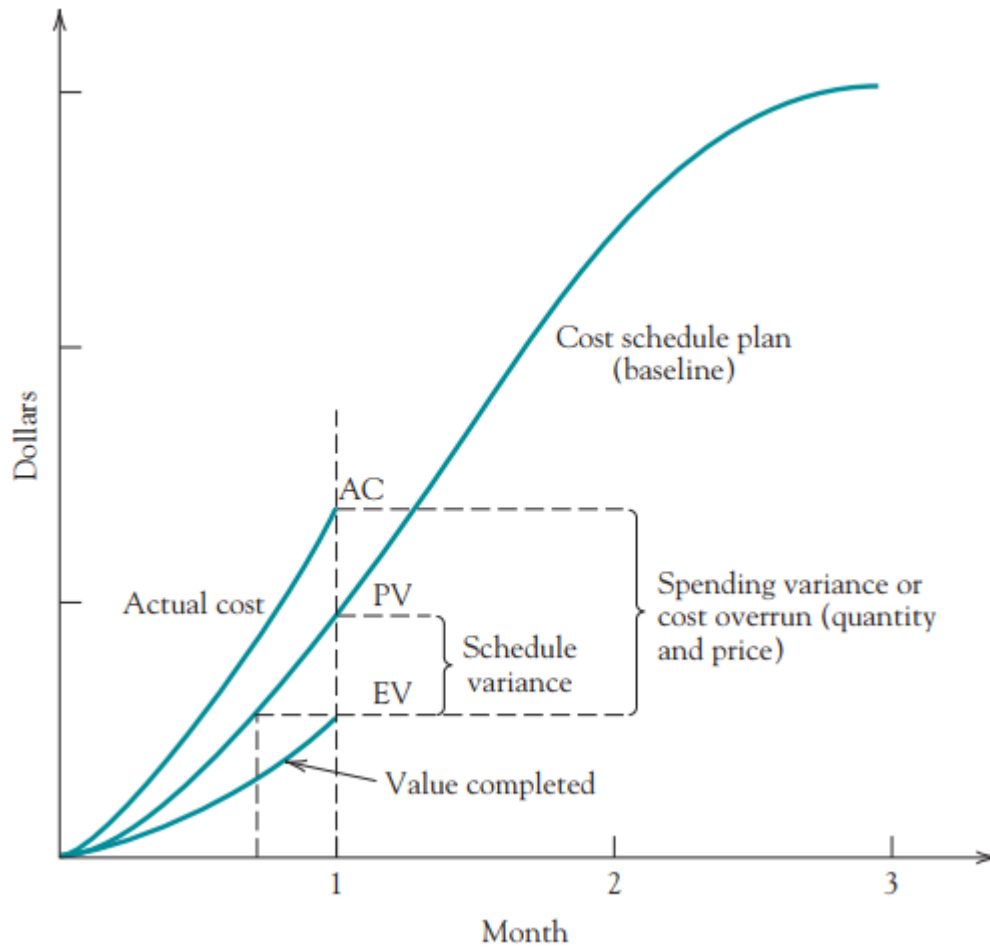


Fig. 2 Earned Value Analysis

### 2.2.1.3 The process of Monitoring

According to ((Mohanty et al., 2011), the key to setting up a monitoring system is to identify the special characteristics of scope, cost, and time that need to be controlled in order to achieve the project goals as stated in the project plan.

(Gumz, J. & Parth, F. R., 2007) in their paper have established a well-structured project monitoring system and are summarized as below.

- A) Conduct an Inventory:** Assess the organization's monitoring tools, techniques and policies. And if any system for monitoring is to be created, it is a must to know who will own and maintain them

In case of RRE development firms, in each project undertaken, evaluating the existing policies and guidelines related to monitoring and security within the company include data protection and privacy policies, access control policies, incident response protocols, and employee monitoring policies, if applicable.

- B) Agree on what to monitor:** Develop objectively verifiable indicators and standards to be used
- C) Gather baseline data:** This step is a means to measure progress towards results by using indicators, recording their descriptions and initial measurement.
- D) Build the monitoring system:** Assemble a library of templates and tools that can make the process efficient.
- E) Throughout the project , gather data on project and product deliverables :** Keep hands on the data gathered as they should be fresh and updated
- F) Analyze and report monitoring information:** Here, findings are reported to the designated personnel acceding to their frequencies. Reports should be brief rather than long-winded. They should also be conveyed in a format that is conducive to quick understanding.
- G) Verify Quality:** Assure that the information provided is useful, clear, timely, relevant and credible

In short, we can conclude, in short, the overall monitoring system as below

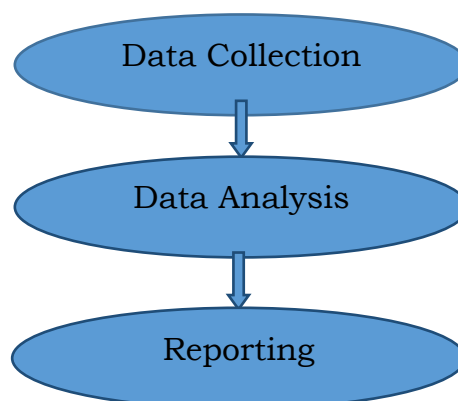


Fig. 3 Overall Monitoring system

## **2.2.2 Controlling of Projects**

Rambusch (2012) identifies two types of “controlling” concepts: concepts oriented towards the goal to attain results and concepts oriented towards the universal goals of the company.

Controlling belongs to the five life cycles of project processes. It involves using the data obtained through monitoring to bring actual performance into correspondence with the plan (Meredith and Mantel, 1989). In order to manage for overall project success, control must be exercised at the detailed work level for each aspect of project performance or there is no guarantee that the desired changes will result. Many articles have supported the criticality of control in the achievement of the project goals and objectives. A collaborative working relationship should be maintained between the project owner and the project manager. The project manager should possess the flexibility to deal with uncertainty, and the owner should take an interest in the project performance ( Rozenes, S. et.al. 2006).

### **2.2.2.1 Project Control Systems**

Project control systems include the directions of change in the preliminary planning variables compared with the actual performance. (Rozenes et.al, 2006). If a project is not progressing according to the master plan, appropriate corrective measurements shall be introduced to mitigate negative impact or a total failure. It is also the responsibility of the project manager and/or the projects team to take actions when executions deviate from plans. Decisions shall be made fast if the success of the project is at risk. If problems are detected from the data collected and analyzed in the monitoring stage, early control is a must to bring the project to life. Ever though there are multiple advantages of the project controlling system, two take the alpha position. ( Mantel et.al, 2011).

The stewardship of organizational assets can be categorized into physical assets, human assets and financial assets. Controlling physical assets such as inspecting, certifying inventory received from suppliers as well as properly storing them prior from usage save last minute panic in the project lifecycle.

Human asset stewardship involves, controlling and maintaining the growth and development of the project team. Financial control in the project on the other hand, focuses contingency of financial resources and regulation of resource use. Accounting tools such as current assets controls, project budgets, capital investment controls and audits are the ideals control tools for projects.

Earned Value Analysis which is based on cost information is also used in the controlling process. In the previous discussions it has been pinpointed that monitor in data collection and analysis is the input for controlling decisions. If the estimated time of project completion does not much with the total project schedule, project crashing shall be implemented by using additional resources after making the necessary evaluation analysis. ( Homer, J. L. ,2004) presented four specific project control systems.

Over all, the project control process is summarized as below

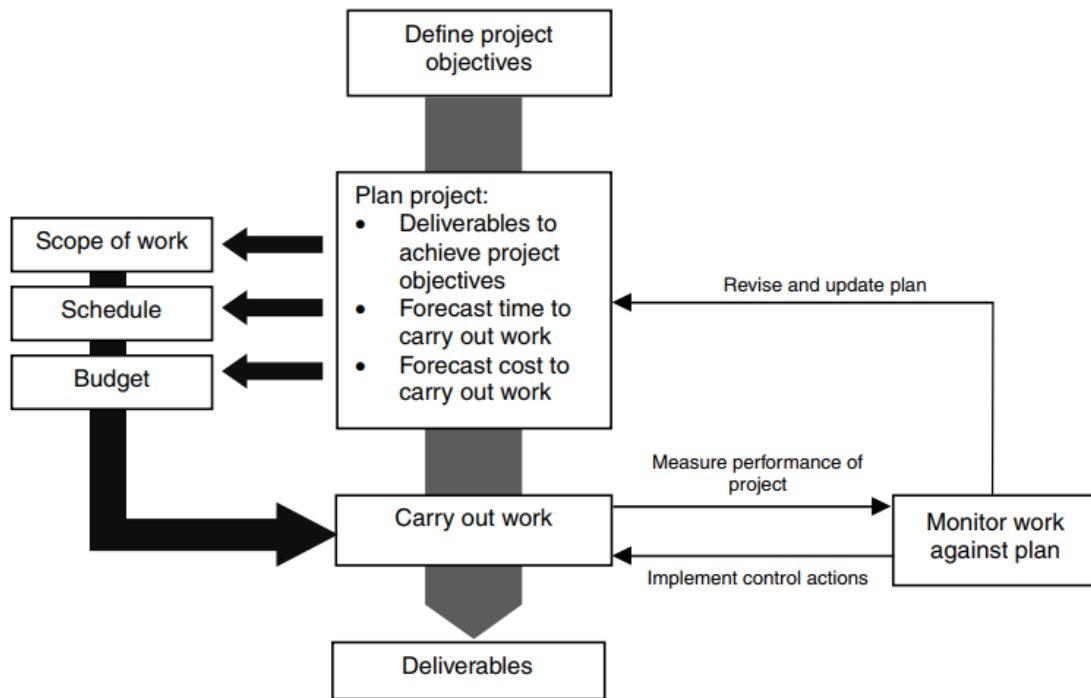


Fig. 4 The Project control process

### 2.2.3 Real Estate Development

According to ( Khedekar and Dhawale ,2015) Real estate is defined as land, the air it above and the ground below it and any buildings or structures attached to it. The term extends to reality or real property that is tangible and non-tangible. To transform an idea to reality, production factors i.e., land, labor and capital are coordinated by entrepreneurial management and redelivered by teams. (Mike E. et.al. 2015).

In the process of the development, a developer and an investor who finances the project and expect the return of their investment take part. A real estate developer is a person or a team who is involved in the development process and takes the risks and receives the rewards of the development. (F.Truneh, 2013)In this context, the developer may obtain the budget from financial institutions or the end user of the product. Investors often incur some risk in leasing and may make minor renovations, but developers usually engage in

both the development and the operating phase of the business (Brooks & Tsolacos, 2010)

Real Estate projects can be residential, commercial or mixed use. However, if more portion of the building is designated to one of the two, the entire building will be considered as one that dominates over the other. Real estate development is linked with specialization in the sense that a person develops land and property for sale or rent. ((F.Trunch, 2013)

### **2.2.3.1 The Real Estate Development Process**

What makes a Real Estate project from other construction projects, a Real Estate is a concept that goes all the way to the property's destiny and what happens to it once it's completed.

Architects, Engineers, Landscape architects, land planners, urban designers, building contractors, environmental consultants, soil and geotechnical consultants, lenders, joint venture partners, attorneys, accountants, leasing agents and sales brokers and property managers are some of key stakeholders in the Real Estate development process. According to (Mike Eet.al, 2015), Residential development encompasses a wide range of products from communities of single-family lots to multifamily apartments and condominiums. Apartment units are held by a single owner and rented to the end user, whereas condominium units are sold to an end user and the common property is owned and managed by a condominium association.

Once again, (Mike E., et.al, 2015), summarized the Real Estate Development process as following which is called the eight stage model of Real Estate development.

**Stage 1: Idea Inception-** Multiple ideas are gathered from current market data by seeing possibilities and feasibility studies are conducted

**Stage 2: Idea Refinement-** The idea incepted is further investigated and tentative designs are generated

**Stage 3: Feasibility:** Formal market study is carried out and legal, physical and financial feasibility for all participants are demonstrated

**Stage 4: Contract Negotiation-** Developer gets loan commitment in writing, decides on general contractor, determines general rent or sales requirements, and obtains permits from the local government.

**Stage 5: Formal Commitment:** Joint venture agreement, construction loan agreement and permanent loan commitment, purchase of insurance and pre lease agreements are signed

**Stage 6: Construction:** Operating staff is brought up, construction disputes are resolved and checks are signed

**Stage 7: Completion and formal opening:** Developer brings in full-time operating staff, increases advertising, utilities are connected and finally tenants move in. Construction loan is paid off.

**Stage 8: Property, asset and portfolio management:** Owner/or developer oversees property management including re-leasing, reconfiguring, remodeling and remarketing space as necessary

## **2.3. Empirical literature review**

### **2.3.1. Residential Real estate projects in Ethiopia**

Residential Real Estate projects aside from generating income for the developers, they are one way of acquiring a house for many who are willing to pay the prices all at once or in a mortgage. Residential development encompasses a wide range of products from communities of single-family lots to multifamily apartments and condominiums. Apartment units are held by a single owner and rented to the end user, whereas condominium units are sold

to an end user and the common property is owned and managed by a condominium association. (Mike E.et.al. 2015)

Real estate development as a business form commenced in Ethiopia in the mid-1990s (F.Truneh, 2013). Apparently, real estate development is directly linked to the state of the land tenure system and investment policies of a country. It is illegal to sell bare land as it belongs to the government and not to an individual. Therefore, people sell houses they have built the last couple of years and the developer gets to decide about what to do with the property. Either, a full demolishing work is done to the whole thing or major renovation takes over if it is in good or moderate condition. According to the data collected from the Ethiopian Investment commission, five hundred ninety nine real estate developers got their license in the sector in the last two decades. Most of these developers tend to get the Real Estate development license once their property is ready for sale or for lease instead of at the inception stage. ( Desalegn,2021). Addis Ababa City Construction Bureau requires for Real Estate projects to be insured just like any other construction projects. It also forces authorized building/ general contractors and consultants to take part in the process. By the competitive promotions made by different Real estate firms and sales agents, it can be concluded that most projects reside in the capital city.

## **Chapter Three: Research Methodology**

### **3.1 Introduction**

This chapter is a review of data collection and analysis method implemented in conducting this study. The type of research strategy used, the mode of data collection and the methodology used in conducting the research is briefly discussed. It includes the research approach, research design, source of data and collection method, sample size and sampling technique and data analysis.

### **3.2 Research Approach**

Before conducting the study, preliminary data collection has been carried out in order to find out the relevance of the study. That is, investigating the current practice of M&C of RRE projects including the availability of standards, usage of updated tools, technologies and techniques. The objectives of preliminary data analysis are to edit the data to prepare it for further analysis, describe the key features of the data, and summarize the results. ( M.R. Karim. et.al., 2011) A Real Estate management institute located around Wossen grocery is a pillar of the information gathered. An expert at the institution cooperated to have interview with the data collector that gave a green light to go ahead with further investigation (Appendix 1)

Further, multiple literature reviews have been conducted to grasp concepts related to the research and to show the gap between what ought to be done and what actually is the reality. In addition, conferences, expos and seminars with Real Estate and housing themes are big inputs to this scientific research. Both qualitative and quantitative approaches have been used to carry out the data analysis.

Overall, both qualitative and quantitative data collection methods have been used to carry out the research. Quantitative data is the type of data in a research, to be analyzed based on observable phenomena via statistical, mathematical, or computational techniques in numerical form such as

statistics, percentages, and more. (Anubha Walia, 2020). These data in this research are linked to these constituents but not limited to , the personnel involved in the RRE projects, progress tracking methods, technologies used and comparisons made among them.

Qualitative data collection was conducted through a well-structured both open and close ended questionnaire developed by the researcher (Appendix 2)

SPSS software has been used to analyze these data and interpret them accordingly. (Appendix 1). Preliminary interview has been conducted followed by the quantitative approach

### **3.3 Research design**

A descriptive research design is used in the study as it was intended to outline what kind of monitoring and controlling techniques are used by Real estate developers working on residential real estate projects according to (Kothari,2008), Descriptive research is defined as a research method that describes the characteristics of the population or phenomenon that is being studied.(Manjunatha.N,2019). This methodology focuses more on the “what” of the research subject rather than the “why” of the research subject.

However, this study falls under the hybrid design of descriptive and evaluative design of research as it attempts to assess the monitoring and controlling practices of RRE projects in Addis Ababa city which is compared to the standards provided by PMI.

### **3.3 Sources of data and data collection Instrument**

Primary data has been collected from front liners of the projects studied which are project managers’ project coordinators as well as owners of the firms chosen for the study. Secondary data was extracted from official websites of the companies and project profiles collected at conferences and expos attended by the data collector.

The questionnaire was grouped into five main categories. The first part is the personal and leading project information that helped to know the respondent behind the form and how it can affect the response they give. The second section targeted to assess the prerequisite monitoring and controlling practices that facilitate the actual M&C process. The third one emphasized the factors that may or not enable the respondents to make monitoring and controlling convenient and applicable for the RRE projects. The next one is regarding the tracing and controlling the project that evaluates the techniques they use to put track if things go out of hand. The fifth section of the questionnaire focuses on the bridge that connects the M&C process and the valid, reliable, , consistent, complete and relevant data input and respondents gather to precisely apply the PMI concepts regarding M&C process. The last two parts investigate the communication in the overall project to come up with a solution that is the main purpose of the controlling system. Finally, RRE project specific issues and problems that related to controlling negative changes were raised and brought up for discussion.

### **3.4 Population and Sampling Design**

Scope of this study restricts the Residential Real Estates developed and under development by private firms and located at Addis Ababa City. These firms comprise both single and multiple property development projects which have been chosen for the study. Twenty active and operating candidates were systematically chosen per the recommendations of the experts in the sector.

However, not all of them responded to the call out and some had to be discarded due to incomplete responses. Even though there are several stakeholders in the industry, project managers, coordinators and owners are the target respondents. About eighty four completed and forty nine ongoing projects that represent the monitoring and controlling practices of the firms were up for the study.

### **3.5 Data collection procedure**

Prior communication with the respondents was made regarding the guidelines to fill the questionnaire via google form and other details were completed through email address which saved much time both for the researcher and the respondents.

### **3.6 Reliability**

The reliability of the instrument was tested through Cronbach's Alpha 0.8. A reliability analysis was carried out consisting of 36 items. Cronbach's alpha showed that the questionnaire had an acceptable reliability,  $\alpha = 0.879$ . This shows that the measurement tool we are using is reliable and consistent.

### **3.7 Validity**

A discussion was held with experts to make sure the questionnaire measures what it was supposed to measure and was modified accordingly.

### **3.8 Ethical Consideration**

The motive of the study was briefly explained for the respondents both via phone call and email. They were also guaranteed that the data they share will be anonymous and will be solely used for academic purposes. Anything that was assumed to make the respondents uncomfortable was omitted from the very beginning.

## Chapter Four: Results and Discussion

### 4.1 Introduction

This chapter of the paper tries to present the quantitative data obtained through the questionnaire. IBM SPSS software was used to analyze the data collected and present the analysis. In the discussion that follows the tables, “strongly agree” and “agree” were added together to indicate how many of the participants agree with the statement on the questionnaire. The term neutral was introduced for those who do not have a stand on the matter. Whereas “do not agree” and “strongly do not agree” show that they oppose the idea and do not agree with the statements. Some of the closed questions were reinforcing data for the closed end questions.

**Table 1: Personal and Project Profile**

Variable		F	Percentage
Position in the project	Project manager	7	50%
	Resident Engineer	1	7.1%
	Others	6	42.9%
	Site Engineer	0	0%
	Total	14	100%
Expertise in RRE Project	1-5 years	3	21.4 %
	6-10 years	4	28.6%
	11-15 years	1	7.1%
	15+ years	6	42.9%
	Total	14	100%
	Master’s Degree	6	42.9%
	Bachelors	0	0%
	Project management Certificate	0	0%

Highest Training In PM	Short term training	8	53.3%
Monitor and controller of the project	Project Manager	11	78.6%
	Development team	1	7.1%
	External Consultant	2	14.3%
	Project management office	0	0
	Total	14	100%

**Source: SPSS analysis**

Based on the personal and project profile from the respondents 50% of the sample projects are managed by a project manager. 7.1% of projects are managed by resident engineers and the rest 42.9 are managed by the others including the general manager of the firm. Among these managers, about 21.4% have less than 5 years of experience relatively fresh to the sector. 28.6% have from 6-10 years of experience. On the other hand, 7.1% of them have moderately higher experience in RRE projects. The senior managers more than 15 years comprise about 42.9 %which leaves the projects in better hands. Among the respondents, 42.9 % have a masters degree in project management. Whereas, 57.1% have been trained on project management. None of them are internationally certified project managers.

When it comes to the project, 78.6% of them are monitored and controlled by project managers. 7.1% of the investigated projects, teams are formed to do

the M&C process. 14.3% are followed up by external consultants hired by the developer.

#### 4.2 Planning to Monitoring and Controlling of RRE projects

To effectively monitor and control any project, it is important to establish clear metrics and milestones to measure progress and identify potential issues early on.

**Table 2: Planning to monitoring and controlling**

Planning to Monitoring and Controlling	Strongly agree		Agree		Neutral		Do not agree		Strongly disagree	
	F	%	F	%	F	%	F	%	F	%
Acceptable data collection tools are selected before project implementation	3	21.4	5	35.7	4	28.6	2	14.3	0	0
Indicators to be measured are noted in the planning document and communicated with team and stakeholders	2	14.3	5	35.7	5	35.7	2	13.3	0	0
Acceptable levels of performance are identified so that is clearly understood when the project begins to get out of track		7.1	11	78.6	0	0	2	14.3	0	0

The roles and responsibilities of staff in monitoring are clearly defined and documented	2	14.3	9	64.3	2	14.3	1	7.1	0	0
Project is monitored as per the documented guideline for monitoring	2	14.3	9	64.3	2	14.3	1	7.1	0	0

**Source: SPSS analysis**

The results of the survey are not encouraging as they reveal that close to half of the respondents do not understand the importance of proper planning and monitoring in project implementation. The fact that only 57.1% of respondents have properly selected the data collection tool for monitoring before they start implementing on the projects they have completed and have at hand indicates a low level of awareness regarding the need for accurate data collection and analysis. And also, 78.6 of the participants in the survey have included the indicators for planning in their monitoring documents followed by communication with the team and stakeholders. This means that project managers are involving key stakeholders in the decision-making process, which can lead to increased buy-in and support for the project.

Another positive finding is that 85.7% of respondents agree that acceptable levels of performance are identified at the outset of the project. This is crucial, as it helps to ensure that the project stays on track and meets its objectives. It also allows for early identification of potential problems so that corrective action can be taken before they become serious.

In conclusion, the survey results are positive and suggest that organizations are paying attention to important aspects of project implementation such as proper planning, accurate data collection, stakeholder engagement, performance management and monitoring. These factors are critical to the success of any project, and it is encouraging to see that many organizations are taking them seriously.

### 4.3 Monitoring and its factors

Monitoring is an essential aspect of any project, and it involves keeping a close eye on various factors to ensure that the project progresses as planned. In the context of real estate projects, monitoring becomes even more critical due to the huge investments involved and the complexity of the tasks at hand. To effectively monitor a real estate project, a sufficient number of qualified staff should be assigned, including architects, engineers, marketing professionals, lawyers, bankers, and financiers. These individuals bring expertise in their respective fields and can help ensure that the project is progressing as expected and that risks are identified and mitigated.

In addition to having the right team in place, modern tools, systems, and applications are also necessary for proper residential real estate development project monitoring. These tools enable project managers to track progress, identify potential issues, and make informed decisions based on real-time data.

Another factor to consider when choosing monitoring tools and systems is user-friendliness. Complex systems can hinder the monitoring process and lead to errors or delays. Therefore, it's important to select tools and systems that are easy to use and can integrate with existing workflows seamlessly.

**Table 3: Monitoring and its Factors**

Statements	Strongly agree		Agree		Neutral		Do not agree		Strongly disagree	
	F	%	F	%	F	%	F	%	F	%
Sufficient number of qualified staffs are assigned for the project : Architects, Engineers, Marketing,	2	14.3	9	64.3	1	7.1	2	14.3	0	0

Lawyers, Bankers, Financiers										
The tools, systems, and applications required for proper project monitoring are sufficiently available	1	7.1	11	78.6	1	7.1	1	7.1	0	0
The monitoring tools and systems are user-friendly	1	7.1	8	57.1	4	28.6	1	6.7	0	0

**Source: SPSS analysis**

64.3% of respondents have assigned architects, engineers, marketing and lawyers as well as financiers for their RRE projects. This makes the integration management better as each has roles to play in the implementation stage of the projects. 78.6% of respondents claim that tools, systems and applications for project monitoring are sufficiently available. And also, 57.1% of the respondents claim these tools and systems are user friendly..

Data collection and measurement frequency refer to how often we collect data or measure a particular task from the implementation. The frequency of data collection is an important consideration because it affects the accuracy and reliability of our measurements. In RRE projects, the data we collect and measure include, construction progress data, budget data, timeline data, Quality control data: This includes data on the quality of construction work, such as inspections, testing, and certificates of occupancy, sales and marketing data. Feedback from contractors and subcontractors: include data

on the performance of contractors and subcontractors, including their devotion to schedules and budgets, quality of work, and communication with project managers.

These types of data can help project managers identify potential issues early on and make informed decisions to keep the project on track and within budget. By measuring these types of data, project stakeholders can ensure that the residential real estate project is completed successfully, on time, and within budget while meeting the needs of customers and adhering to regulatory requirements.

**Table 4: Frequency and Percentage of data collection and measurement**

Frequency of data collection and measurement	free	%
Daily	0	0
Weekly	7	50.0
Every other week	0	0
Monthly	4	28.6
Inconsistent	3	21.4

**Source: SPSS analysis**

The earned value analysis tool is commonly used to measure project performance against schedule and budget. When utilized correctly, this tool can provide valuable insights into the project's health and help identify areas where improvements can be made.

**Table 5: Methods used to measure project cost and schedule**

Methods used to measure project cost and performance	free	%
--	------	---

Activity based ratios between the earnings and expenditures of the project activities such as Efficiency =Actual Performance/Planned Performance	5	35.7
Earned Value Management	4	28.6
Leading parameter where one or more of the major types of work are picked as measures of the performance of the whole project	3	21.4
Other methods	2	14.3

The fact that only 28.6% of participants use Earned Value Management to measure cost and schedule performance, and 35.7% use Activity Based Ratio for residential real estate projects, is a cause for concern. It suggests that many in the industry are not taking a disciplined and comprehensive approach to managing project costs and schedules.

Without effective tools like Earned Value Management and Activity Based Ratio, it becomes difficult to accurately track project progress, identify potential delays or overspending, and make informed decisions about how best to allocate resources. This can lead to costly mistakes, missed deadlines, and ultimately, dissatisfied clients.

Furthermore, the lack of these proven project management techniques may indicate a larger problem within the industry - a resistance to change or a reluctance to invest in new technologies and approaches. This puts those who do use these tools at a competitive disadvantage, as they are able to better plan and execute their projects, while others struggle to keep up.

**Table 6: Methods used to measure project performance**

Monitoring techniques used in the RRE project	free	%
Digitalizing Construction Monitoring (DCM) Such as BIM	11	78.6

Hi-Resolution Automated Cameras	3	21.4
Drones	0	0

**Source: SPSS analysis**

It's interesting to see that nearly 80% of the respondents are utilizing digital construction monitoring methods, which indicates a significant shift towards technology in the construction industry. This trend is likely driven by the increased availability of digital tools and solutions that make it easier to monitor and manage residential real estate projects remotely.

Additionally, the fact that over 20% of respondents are using hi-resolution automated cameras for monitoring their real estate projects shows that there is a growing interest in using advanced technologies like computer vision and machine learning to improve construction monitoring. These types of cameras can capture detailed data and provide valuable insights into construction progress, making them an appealing choice for many in the industry.

**Table 7: Monitoring tools used in the project**

Monitoring tools	free	%
Primavera	0	0
Microsoft projects	10	71.4
Project.net	0	0
Excel Sheet	2	14.3
Others	2	14.3

It appears that a majority of the participants in the survey or study are using Microsoft Project management software, with only a small percentage using Excel sheets and none using Primavera software.

Microsoft Project is a popular and widely used project management software that offers a range of features for planning, scheduling, tracking, and managing projects. Its user-friendly interface and comprehensive tools make it a go-to choice for many organizations, especially those working on complex real estate projects with multiple stakeholders and deadlines.

On the other hand, while Excel sheets may be a familiar and simple tool for basic project management tasks, they lack the advanced features and functionality of dedicated project management software like Microsoft Project. Using Excel sheets for project management can often lead to errors, omissions, and delays, especially when dealing with large and complex projects.

It's also interesting to note that none of the respondents in the survey are using Primavera software, which is a recent and powerful project management tool. While it may not be as widely used as Microsoft Project, Primavera is known for its robust features and capabilities, particularly in industries such as engineering and construction.

Overall, based on these results, it seems that the majority of respondents in the study are relying on tried-and-true software solutions like Microsoft Project, while a smaller percentage are still using less efficient tools like Excel sheets. Additionally, the absence of respondents using Primavera software suggests that it may not yet have gained significant traction among this particular group of users.

#### **4.4 Data collection for the monitoring and controlling of the project**

There are many types of data that are important for residential real estate development projects including demographic data, information about the local population, such as income and household size can help developers understand the needs and preferences of potential buyers.

Other one is the information about the current state of the real estate market, including trends in supply and demand, pricing, and inventory levels can help developers make informed decisions about how the development should go.

Accurate financial projections and analysis are crucial for determining the feasibility and profitability of the project. This includes data on construction costs, financing options, and potential revenue streams.

Information about local infrastructure, including roads, public transportation, and utilities, can impact the accessibility and livability of a residential development projects

**Table 8: Data collection for the monitoring and controlling of the project**

Statements	Strongly agree		Agree		Neutral		Do not agree		Strongly disagree	
	F	%	F	%	F	%	F	%	F	%
The data is updated at regular, fixed (known) interval	3	21.4	7	50	2	14.3	2	14.3	0	0
Measurement of the indicators is conducted the same way every time (system stability and consistency)	2	14.3	8	57.1	2	14.3	2	14.3	0	
Indicators measure, as directly and neatly as possible, the actual and intended performance levels	1	7.1	11	78.6	2	14.3	0	0	0	0

As the data type is the same over time, comparisons among different time periods can be made easily	3	21.4	6	42.9	3	21.4	2	14.3	0	0
The data is verifiable and backed up by evidence	3	21.4	7	50.0	2	14.3	2	14.3	0	0
The data is sufficient (enough) for the information to be relevant and useful	2	14.3	9	64.3	2	14.3	1	7.1	0	0
The data serves the purpose it is gathered for and to control deviations that occur unintended	2	14.3	7	50.0	2	14.3	3	21.4	0	0

**Source: SPSS analysis**

Table 8 provides valuable insights into the data management practices of real estate projects. The fact that over 71.4% of the studied projects are backed up by regularly updated, sufficient, and useful data is a positive sign for the industry. Such data is crucial for reaching out to potential buyers, financiers, and other key stakeholders, and for controlling real estate projects effectively. It highlights the importance of effective data management in the modern real estate landscape, and serves as a reminder for project managers to prioritize data gathering, analysis, and utilization in their day-to-day operations. Ultimately, this can lead to better decision-making, more efficient processes, and improved outcomes for all parties involved in real estate projects

#### **4.5 Reporting, Reviewing and Using Performance Information for controlling**

Reporting, reviewing, and using performance information for controlling is a critical aspect of real estate project management. It involves monitoring project progress, analyzing data, identifying potential issues, and making informed decisions based on the available information.

Reviewing performance information involves analyzing the data collected from the project and identifying trends or patterns that may indicate potential issues. By identifying these issues early on, project managers can take corrective actions to address them before they become more significant problems.

There are several tools and techniques that can be used to collect and analyze performance information for controlling in real estate projects. These include software solutions, such as property management systems and accounting software, dashboards that provide real-time performance data, and interactive reports that allow project managers to drill down into specific aspects of the project's performance.

**Table 9: Reporting, Reviewing and Using Performance Information for controlling**

Statements	Strongly agree		Agree		Neutral		Do not agree		Strongly disagree	
	F	%	F	%	F	%	F	%	F	%
Unanticipated changes with the project and its context,	4	28.6	7	50.0	1	7.1	2	14.3	0	0

including any changes in schedule and budget are being attentive looked at										
There is a flexibility to report whenever change occurs instead of scheduled reports	2	14.3	9	64.3	1	7.1	2	14.3	0	0
Reports are tailored according to the management level or the audience they are being reviewed by	2	14.3	9	64.3	1	7.1	2	14.3	0	0
Key stakeholders such as Buyers, consultants, lawyers and others are involved in reviewing implementation and their feedback integrated in setting future performance targets	2	14.3	3	21.4	3	21.4	6	42.9	0	0
If the project is not progressing as planned, a timely corrective action is taken as per the findings of the monitoring	2	14.3	9	64.3	2	14.3	1	7.1	0	0

Table 9 shows that 64% of the respondents showed great attentiveness towards unanticipated changes that occurred during the project and its context. This includes any changes in schedule or budget that may arise unexpectedly. This statistic highlights the significant role that change management plays in successful residential real estate project completion.

The focus shown towards unanticipated changes by the majority of the survey respondents highlights the importance of flexible change management practices in residential real estate projects. By tailoring reports and embracing real-time updates, project managers can improve communication, make informed decisions, and ultimately increase the chances of successful residential real estate project completion.

However, only 21% of respondents agreed that key stakeholders such as buyers, consultants, lawyers, and others are involved in reviewing implementation and their feedback is integrated in setting future performance targets, and this implies that a significant portion of the sector may not be fully engaged in the process of setting performance targets and reviewing the implementation of those targets. This lack of engagement can result in a number of negative outcomes, including decreased buy-in for performance initiatives, missed opportunities for improvement, and potential conflicts between different stakeholders.

Once again, 64% of respondents in the survey agreed that taking timely corrective action is important if a construction project is not progressing as planned. However, there are challenges such as finance being a bottleneck and professional engineers without project management training managing the project.

One specific scenario mentioned is the delay in finishing concrete works of one floor by more than 5% due to untimely weather interference. In this case, a prompt schedule revision would be necessary to make up for lost time.

Finally, construction phase challenges the respondents mentioned which are related to planning and the monitoring and controlling mechanisms they have used are stated as the below.

- Materials that need longer time for supply such as materials that are imported from abroad are ordered ahead of time based on a studied lead time required for items to be imported.
- Scarce materials such as cement and finishing materials specifically electrical fixtures, Floor ceramics, bathroom equipment's etc... were planned ahead

Attempts were made to generate foreign currency and survive the shortage allocated from the government. Opening the LC ahead of time in a planned manner and engaging in export of agriculture products, mainly coffee are some of the mechanisms they used to cope up with the insufficient foreign currency in their RRE projects.

## **Chapter Five: Summary, Conclusion and Recommendation**

### **5.1 Summary**

The survey results reveal that 50% of sample projects are managed by project managers, and senior managers with more than 15 years of experience comprise 42.9%. A majority (78.6%) of the investigated projects are monitored and controlled by project managers. It is encouraging to see that organizations are taking important aspects of project implementation such as proper planning, accurate data collection, stakeholder engagement, performance management, and monitoring seriously.

However, 57.1% is quite a small proportion for properly selecting the data collection tool for monitoring before getting implemented considering the importance of it. This by default tells us the rest 42.8 do not have the trend of priorly assessing what kind of data collection tool for monitoring should be used. The respondents that formally assign architects, engineers, marketing teams and legal representatives constituted being only 64.3% looks concerning considering the complexity of the the RRE projects and overlapping responsibilities certain personnel get burdened.

In addition, only a small percentage of participants use tools like Earned Value Management which is considered vital input for monitoring of any project. The majority of participants are using Microsoft Project management software, while none are using Primavera software.

### **5.2 Conclusion**

The discussion covers the findings from a survey on residential real estate (RRE) project management. The survey indicates that 50% of RRE projects are managed by project managers, with 21.4% having less than five years of

experience and 42.9% having a master's degree in project management. Most projects are monitored and controlled by project managers, and acceptable performance levels are identified at the outset of the project. However, only a small percentage of respondents use proven project management techniques like Earned Value Management. Not using earned value analysis can put developers at a significant disadvantage, potentially leading to cost overruns, delays, and other issues that can impact project success. The digital revolution has had a significant impact on the industry, and more and more developers are utilizing digital construction monitoring methods to improve project performance and efficiency. The survey results indicate that a majority of respondents are already using digital controlling methods, with over 20% of them employing high-resolution automated cameras. This trend is expected to continue as more advanced technologies become available and the benefits of digital monitoring, such as real-time progress tracking, reduced costs, and improved communication, become increasingly apparent to the industry. As such, it is becoming increasingly important for construction companies to stay up to date with digital technologies and incorporate them into their projects to remain competitive in today's market.

Microsoft Project is the most commonly used project management software, while Excel sheets are less efficient. The study highlights the importance of effective data management, change management, and stakeholder engagement in successful RRE project completion. Finally, the challenges faced during the construction phase include ordering materials ahead of time and dealing with scarce materials and foreign currency shortages.

Finally, low engagement of stakeholders is spotted, which can hinder the planning of the overall monitoring and controlling system. Each partner can contribute a better way of performance and should be communicated accordingly.

### **5.3 Recommendation**

Based on the findings of this study the following recommendations are forwarded for operational and new entrant residential real estate developers to practice monitoring and controlling processes

Given that 21.4% of project managers have less than 5 years of experience in the sector, it is important to ensure that these individuals receive proper training and support to effectively manage projects. Additionally, senior managers with much experience should be given leadership roles to ensure that projects are in good hands.

The other thing is, for them to use proven project management techniques. While 78.6% of respondents claim that their projects are monitored according to documented guidelines for monitoring, only 28.6% are using Earned Value Management to measure cost and schedule performance, and 35.7% are using Activity Based Ratio for residential real estate projects. It is recommended to adopt these proven project management techniques to accurately track project progress, identify potential delays or overspending, and make informed decisions about how best to allocate resources.

The fact that nearly 80% of respondents are utilizing digital construction monitoring methods shows a significant shift towards technology in the residential real estate sector. Developers should capitalize on this trend by investing in digital tools and solutions that make it easier to monitor and manage residential real estate projects remotely.

Over 50% of studied projects are backed up by regularly updated, sufficient, and useful data, which shows a gap in the overall data utilization for the monitoring process in the industry. the rest of the RRE developers should take data collection and interpretation seriously in order to stay competitive in the industry. Project managers should prioritize data gathering, analysis, and utilization in their day-to-day operations to improve decision-making, processes, and outcomes for all parties involved in real estate projects.

Table 9 shows that 64% of respondents showed great attentiveness towards unanticipated changes that occurred during the project and its context. This highlights the importance of flexible change management practices in successful residential real estate project completion. Developers should focus on tailoring reports and embracing real-time updates to improve communication and make informed decisions in response to unexpected changes.

Earned value analysis should be introduced before any RRE projects are conceived and should be the first priority of the project management team and the general manager of the developing team. EVA not only shows the progress of the project but also the long run performance that determines the success of it.

The respondents mentioned several challenges related to planning and monitoring and controlling mechanisms during the construction phase, such as ordering materials ahead of time and generating foreign currency. Developers should engage in proactive planning and risk management to anticipate and address potential challenges during the construction phase. Forming an association that can be used as a shield for the unstable conditions of each developing firm such as inflation, shortage of foreign currency, construction materials and poor marketing strategy.

By upgrading from Microsoft project manager to primavera, project teams can unlock the features of detail monitoring and controlling planning, such as accurate EVA, precise working calendars, generate updated reports tailored for different parties, risk allocations and dedicated personnel for them. Most importantly, complex portfolios are better managed with the primavera software.

By implementing these recommendations, real estate developers can better monitor and control their projects, increase efficiency, and improve outcomes for all stakeholders involved in the project.

#### **5.4 Suggestion for further studies**

Investigate the role of technology in monitoring and controlling practices for residential real estate projects. Assess the current adoption of data analytics platforms, and remote monitoring technologies, and analyze their impact on project success.. Furthermore, contemporary issues regarding M&C can constitute the study to be carried out.

## References

Anubhaa M Walia & Manpreet Uppal (2020). Fundamentals of Research BOOK.

Boydak, A. (2013). Differences of earned value management practices in construction. Paper presented at PMI® Global Congress 2013—EMEA, Istanbul, Turkey. Newtown Square, PA: Project Management Institute.

Bris gone, A. & Bastian, C. (2012). Project planning, execution, monitoring, and control techniques on large complex programs. Paper presented at PMI® Global Congress 2012—North America, Vancouver, British Columbia, and Canada. Newtown Square, PA: Project Management Institute.

Dessalegn Kebede. (2021). Real Estate Development Management and Marketing.

Fleming, Q. W. & Koppelman, J. M. (1995). Monitoring performance against the baseline. *PM Network*, 9(9), 9–14.

F.Truneh,. (2013). Institutional Interfaces and Actors' Behavior in Transitional Real Estate Markets of Addis Ababa (Ethiopia). Erasmus University Rotterdam, Netherlands

Gumz, J. & Parth, F. R. (2007). Why use a hammer when you need a wrench: results-based monitoring and evaluation of projects. Paper presented at PMI® Global Congress 2007—EMEA, Budapest, Hungary. Newtown Square, PA: Project Management Institute.

Homer, J. L. (2004). The role of project control systems in facilitating and measuring project success. Paper presented at PMI® Global Congress 2004—North America, Anaheim, and CA. Newtown Square, PA: Project Management Institute.

James P. Lewis. (2005). Project Planning, Scheduling and Control: A Hands-On Guide to Bringing Projects In On Time and On Budget.

Khedekar, S., & Dhawale, A. (2015). Qualitative Risk Assessment and Mitigation Measures for Real Estate Projects in Maharashtra. *International Journal of Technical Research and Applications*.

Kelly, L. M., & Reid, C. (2020). Baselines and monitoring: More than a means to measure the end. *Evaluation Journal of Australasia*, 20(1), 3-15. <https://journals.sagepub.com/doi/10.1177/1035719X20977522>

Mantel Jr, S. J., Meredith, J. R., Shafer, S. M., & Sutton, M. M. (2011). *Project management in practice*. John Wiley & Sons.

Manjunatha.N (2019), Descriptive Research, JETIR June 2019, Volume 6, Issue 6

Mike E. Miles, Laurance M. Netherton, Adrennen Schmitz. (2015) . *Real Estate Development principles and process*, Urban Land Institute.

Mohanty, A., Satpathy, B., & Mishra, J. (2011). Structured approach to project execution, monitoring, and control at operational level. *Modern Scientific Education*, 6, 48-57.

M.R. Karim, Wallace R. Blischke, D. N. Prabhakar Murthy. (2011). *Warranty Data Collection and Analysis* (pp.159-189)

OECD. (n.d.). *Managing Aid: Monitoring and evaluation*. OECD iLibrary. [www.oecd.org/publishing/corrigenda](http://www.oecd.org/publishing/corrigenda). p-94

Omunga, L., & Gitau, R. (2019). Influence of monitoring and evaluation on performance of building construction projects in Nairobi City County, Kenya. *The Strategic Journal of Business & Change Management*, 6(4), 480–496.

Rozenes, S., Vitner, G., & Spraggett, S. (2006). Project control: literature review. *Project Management Journal*, 37(4), 5–14.

Samuel J Mantel., Jack R. Meredith, Scott M., Shafer. Margareth M. Sutton, (2011). *Project Management in practice*.

Selamawit Yohannes,( 2018) , HOUSING PROVISIONS AND AFFORDABILITY IN PRIVATE RESIDENTIAL REAL ESTATES IN ADDIS ABABA, *Zede Journal of Ethiopian Engineers and Architects*, Vol. 36, July, 2018

ULI-the Urban Land Institute. (2015). *Real Estate Development: Principles and Process*. John Wiley & Sons.

## **Appendix 1**

Preliminary Interview to assess the present situation of M&C practices of Residential Real Estate projects in Addis Ababa City conducted with Eng. Dessalegn Kebede, Founder of Abu-Kelemsis Real Estate Management Institute

- How long have you been in the RE development sector and what is your current position?
  - More than 15Years
  - Real Estate Development Consultant , CEO
- In your opinion, do most RRE projects have defined goals and objectives?
  - No, they don't have it all
- How distinct are the construction and the other aspects of the RE projects?
  - Real Estate Development Business is a multi-discipline business which involves Construction, Marketing, investment, finance, legal, technology, cultural and subcultural aspects.
  - Construction is the major part of development which real estate developers gives due attention. This is mainly due to serious follow-ups from government regulatory offices, financiers, buyers, shareholders
  - Marketing can be considered as the second aspect that is considered seriously as it is the source of funding and the measurement of success of the Real Estate Company.
  - Other aspects are considered in rare cases or when the need arises
- Assuming that monitoring involves evaluating the progress towards meeting the project's end goals and ensuring that no problems occur during the project's timeline and if any problems occur, controlling. i.e. Implementing corrective actions to minimize or eliminate delays in the

project's schedule how do you rate the monitoring and control practice of the sector in Addis Ababa City? And how Important is the overall M&C process?

- Monitoring of project performance through agreed working Scheduling is implemented in most of construction projects.
- The process is so important in evaluating and revising working schedule and it will create good understanding between the client and the contractor
- What methods do you use to track down the progress of RRE projects?
  - Project scheduling software is used to plan and track implementation process. Performance of the project is evaluated on daily, weekly and monthly basis.
  - Project schedule revision is done on monthly basis
- Who are the main shareholders of the RRE projects
  - The main stakeholders of RRE are:- Developers, financiers, government , buyers
- How do you rate the communication process among Team Members, Stakeholders and Clients in RRE projects?
  - Communication between stakeholders is not done in an effective and efficient way.
  - Most of communications are more of formal communications related to payment collection
- How dynamic do you think is the RE development environment in A.A city?
  - It is more of saving money from inflation than development for business. The current dynamics indicates that the cost is increasing on daily basis as most of developers propose contract agreements considering USD to Birr exchange rate as the form of payment for scheduled and progress payment
- Do you think that there are severe problems in the current RE projects? If there are, name some

- Inflation, shortage of foreign currency, unavailability of substitute products for imported construction materials, Delay, shortage of finance, shortage of trained and qualified skilled manpower
  
- Do you think early monitoring and control practices deduce/ mitigate these problems?  
Which elements do you think have higher impact on the success of the RE development project? (Scope, schedule, budget, quality ...)
  - Yes; I agreed early monitoring and control will reduce problems
  - Higher impact
    - Finance
    - Inflation
    - Skilled manpower
    - Shortage of Foreign currency

○

## Appendix 2

# Residential Real Estate (RRE) Questionnaire

These questions are generated to assess the monitoring and controlling practices of Residential Real Estate In Addis Ababa City which are 100% anonymously used and solely for academic purpose of Master's degree in Project Management

1. Email \*

---

### Personal and Project Profile

2. Your position at the RRE Project

*Mark only one oval.*

Project manager

Resident Engineer

Site Engineer

Other

3. Your level of education

*Mark only one oval.*

Degree

Masters

Doctorate

4. Your experience in RRE projects

*Mark only one oval.*

1-5 years

6-10 years

11-15 years

+15years

5. Have you been trained in project management

*Mark only one oval.*

Yes

No

6. What was the highest level of training you received on Project management?

*Mark only one oval.*

Masters

Bachelors

Project Management corticated

Short term training

7. Who monitors this Project

*Mark only one oval.*

A project manager

Development team

A project management office

External Consultant

## Planning to monitoring and controlling

This section of the questionnaire examines the project's monitoring plans

8. Has feasibility study has been conducted

*Mark only one oval.*

Yes No

9. If your answer is yes, how has it been conducted?

*Mark only one oval.*

In house professional

Out sourced for external legal firm

Informally conducted

10. Acceptable data collection tools are selected before project implementation starts :Primary and secondary data/

*Mark only one oval.*

Strongly agree

Agree

Neutral

Do not agree

Strongly disagree

11. Indicators to be measured are noted in the planning document and communicated with all team members and stakeholders

*Mark only one oval.*

Strongly agree

Agree

Neutral

Do not agree

Strongly disagree

12. Acceptable levels of performance are identified, so that it is clearly understood when the project begins to get out of track (Against the predefined baseline)

*Mark only one oval.*

Strongly agree

Agree

Neutral

Do not agree

Strongly disagree

13. The roles and responsibilities of staff in monitoring are clearly defined and documented

*Mark only one oval.*

Strongly agree

Agree

Neutral

Do not agree

Strongly disagree

14. Your project is being monitored as per the documented guideline for monitoring

*Mark only one oval.*

Strongly agree

Agree

Neutral

Do not agree

Strongly disagree

### Monitoring and its factors

These statements are meant to assess the factors that affect effective monitoring practices

15. Sufficient number of qualified staffs are assigned for the project :  
Architects, Engineers, Marketing, Lawyers, Bankers, Financiers

*Mark only one oval.*

Strongly agree

Agree

Neutral

Do not agree

Strongly disagree

16. The tools, systems, and applications required for proper project monitoring are sufficiently available *Mark only one oval.*

Strongly agree

Agree

Neutral

Do not agree

Strongly disagree

### Tracing and controlling project performance

This section is intended to find out how the project is traced and used to control the project for it to be successful

17. The monitoring tools and systems are user-friendly

*Mark only one oval.*

Strongly agree  
Agree  
Neutral  
Do not agree  
Strongly disagree

18. How often is measurement taken and data collected on the implementation indicators?

*Mark only one oval.*

Daily  
Weekly  
Every other week  
Monthly Inconsistent

19. Unanticipated changes with the project and its context, including any changes in schedule and budget are being attentively looked at

*Mark only one oval.*

Strongly agree  
Agree  
Neutral  
Do not agree  
Strongly disagree

20. Which of the following methods are used in this project to measure cost performance?

*Mark only one oval.*

Activity based ratios between the earnings and expenditures of the project activities such as  
o Efficiency = Actual Performance/Planned Performance

Leading parameter where one or more of the major types of work are picked as measures of the performance of the whole project  
Earned Value Management other methods none

21. Which of the following monitoring technologies are used in this project

*Mark only one oval.*

Digitalizing Construction Monitoring (DCM) Such as BIM

Hi-Resolution Automated Cameras

Drones

22. Which of the following tools are in use in your project

*Mark only one oval.*

Primavera

Microsoft projects

Project.net

Excel Sheet

Others Other:

---

Data collection for the monitoring and controlling of the project

In this section the data collected to monitor and control the project will be examined

Update frequency

23. The data is updated at regular, fixed (known) interval

*Mark only one oval.*

Strongly agree

Agree

Neutral

Do not agree

Strongly disagree

Reliability

24. Measurement of the indicators is conducted the same way every time (system stability and consistency)

*Mark only one oval.*

Strongly agree

Agree

Neutral

Do not agree

Strongly disagree

Validity

25. Indicators measure, as directly and neatly as possible, the actual and intended performance levels

*Mark only one oval.*

Strongly agree

Agree

Neutral

Do not agree

Strongly disagree

Consistency

26. As the data type is the same over time, comparisons among different time periods can be made easily

*Mark only one oval.*

Strongly agree

Agree

Neutral

Do not agree

Strongly disagree

Auditability

27. The data is verifiable and backed up by evidence

*Mark only one oval.*

Strongly agree

Agree

Neutral

Do not agree

Strongly disagree

Completeness

28. The data is sufficient (enough) for the information to be relevant and useful

*Mark only one oval.*

Strongly agree

Agree

Neutral

Do not agree

Strongly disagree

Relevance

29. The data serves the purpose it is gathered for and to control deviations that occur unintended

*Mark only one oval.*

Strongly agree

Agree

Neutral

Do not agree

Strongly disagree

## **Reporting, Reviewing and Using Performance Information for controlling**

This section determines how changes and deviations are controlled and used for the betterment of the Project

30. There is a flexibility to report whenever change occurs instead of scheduled reports

*Mark only one oval.*

Strongly agree

Agree

Neutral

Do not agree

Strongly disagree

31. Reports are tailored according to the management level or the audience they are being reviewed by *Mark only one oval.*

Strongly agree

Agree

Neutral

Do not agree

Strongly disagree

32. Key stakeholders such as Buyers, consultants, lawyers and others are involved in reviewing implementation and their feedback integrated in setting future performance targets

*Mark only one oval.*

Strongly agree

Agree

Neutral

Do not agree

Strongly disagree

33. If the project is not progressing as planned, a timely corrective action is taken as per the findings of the monitoring

*Mark only one oval.*

Strongly agree

Agree

Neutral

Do not agree

Strongly disagree

34. For the previous question, please give a scenario

---

---

---

---

---

#### Controlling of negative changes

These questions are specially generated to assess the Residential Real estate questions

35. Scarce materials are/were planned ahead of time

*Mark only one oval.*

Strongly agree

- Agree
- Neutral
- Do not agree
- Strongly disagree

36. For the previous question please some of the scarce materials

---

---

---

---

---

37. Attempt to generate foreign exchanges was made

*Mark only one oval.*

- Strongly agree
- Agree
- Neutral
- Do not agree
- Strongly disagree

38. For the previous question, please the attempt made

---

---

---

---

---

39. Good relationship is developed with financial institutions

*Mark only one oval.*

Strongly agree

Agree

Neutral

Do not agree

Strongly disagree

40. Buyers deposit their payments accordingly to finance the project

*Mark only one oval.*

Strongly agree

Agree

Neutral

Do not agree

Strongly disagree

---

