



**ADDIS ABABA UNIVERSITY**

***School of commerce Graduate program***

***Department of project management***

***Assessment of the causes of delays and their impacts on construction projects: The case of Federal Housing corporation construction of mixed use Apartment Building Project, Somali tera site***

**By**

**Hanan Ahmed**

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**ADDIS ABABA, ETHIOPIA**

**Assessment of the causes of delays and their impacts  
on construction projects: The case of Federal Housing  
corporation construction of mixed use Apartment  
Building Project, Somali tera site**

**By**

**Hanan Ahmed**

**A research project submitted to School of Commerce of Addis  
Ababa University in partial fulfillment of the requirements for the  
award of Master of Art in Project Management**

**ADVISOR**

**BANTIE WOEKIE (Ph.D.)**

**JUNE 2023**

**ADDIS ABABA, ETHIOPIA**

## Declaration

I, Hanan Ahmed, declare that this research project entitled: " Assessment of the causes of delays and their impacts on construction projects: The case of Federal Housing corporation construction of mixed use Apartment Building Project, Somali tera site" is my own original work under the supervision of Bantie Workie (Ph.D.). This study hasn't been offered to any institution for a similar degree award and won't be presented to any other university for a degree award of any kind.

Hanan Ahmed

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## **STATEMENT OF CERTIFICATION**

This is to certify that Hanan Ahmed has carried out this project work on the topic entitled “Assessment of the causes of delays and their impacts on construction projects: The case of Federal Housing corporation construction of mixed use Apartment Building Project at Somali tera site”. This work is eligible for submission as partial fulfillment for the requirements of the award of Master of Arts in project management.

**Advisor:** Bantie Workie (Ph.D.)

**Signature:** \_\_\_\_\_

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

# **ADDIS ABABA UNIVERSITY**

## **School of Commerce**

### **APPROVAL SHEET**

Assessment of the causes of delays and their impacts on construction projects: The case of Federal Housing corporation construction of mixed use Apartment Building Project, Somali tera site by Hanan Ahmed.

**Advisor Name**

**Signature**

**Date**

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**Internal examiner Name**

**Signature**

**Date**

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**External examiner Name**

**Signature**

**Date**

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I want to express my gratitude to Allah, the Almighty, for making this possible. I consider myself fortunate to have him directing and guarding me as I go forward towards any goal.

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## ABSTRACT

*The significance of this project was to assess the major causes of construction project delays and their impacts at Federal Housing Corporation mixed use apartment building project at Somali tera site. The research aim is to identify delay causing factors related to the three main stakeholders and their consequences. Qualitative research approach was undertaken. Both exploratory and descriptive research types were applied to this study, because this research will try to answer why the delay occurred and it contributes to a greater understanding of the causes and effects of delay in the project. Data was collected through semi structured interview and document review. The data was analyzed using thematic approach and coding method by following the steps described by (Braun & Clarke, 2006). Using these steps the following four themes were developed: Almost all projects experience delay, there are many factors that causes delay, the project was impacted by the delay and the contractor requested for delay claim. The findings revealed that there are many causes of delays related to the three stakeholders of construction project namely owner, contractor and consultant. Every one of them has their share. This finding also revealed that inflation, shortage of material in the market, late approval of documents from client and consultant side, mistake in design document, poor planning of the contractor and weather condition are the main cause of delay on Federal Housing Corporation mixed use apartment building project. Delays have been proven to have two main effects: time and cost overrun. But there were also disputes, litigation and total abandonment of the project for seven months as the effects of the delay. Based on the findings the following recommendation was given by the researcher, it is important to conduct thorough research and analysis to identify potential internal and external factors that may impact the project timeline and budget. By doing so, appropriate contingency plans can be put in place to mitigate any negative effects on the project.*

*Key words: construction, contractor, consultant, client, delay, impact, stakeholders*

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## CHAPTER ONE

### 1. INTRODUCTION

This chapter's aim is to lay the groundwork for further investigation about the causes of delay and its impact on the Federal Housing Corporation mixed use apartment building project. This chapter includes introduction part, background of the study, problem statement, research Questions, and objectives, importance of the study, scope, and limitations, and finally, conceptual definition of terminology which specifies key terminology and concepts in the Study.

#### 1.1 Background of study

A project is a group of tasks and activities with a specific goal that must be completed within a set of standards, with deadlines, a budget, and the use of both human and non-human resources (i.e., cash and equipment), with a multifunctional nature (PMI, 2013). In order to complete these project tasks and reach to the project's requirements, project management is used, which entails the use of knowledge, skills, tools, and procedures (kerzner, 2009). A few of the significant projects (programs) in the construction industry include physical infrastructures like buildings, road construction projects, bridges, water supply and sewage construction etc. (Jakele, 2004).

Building infrastructure, superstructures, and related facilities physically is known as construction. The sector of the economy that plans, designs, builds, operates, maintains, and repairs built facilities is referred to as construction, according to the phrase's general definition (Ahmed et al., 2013).

Construction projects are time-constrained. Each project has a predetermined timeline with a distinct beginning and end. In order to maintain these preset aspects (issues), which are already scheduled in terms of cost, time, and quality, excellent management is required. (Ibrahim, 1996)

According to Trauner et al. (2009), Events happen later than expected, jobs take longer to finish than planned, or nothing gets done because of construction delays. Construction delays are defined as lengthy construction durations that exceed what was first predicted. It has been established that these delays could pose a risk to the project.

Construction projects have a propensity to have delays, which could result in losses for all parties involved. These include loss increased costs for the client or owner. (Ahmed et al., 2013)

Every construction project has delays, yet the degree to which these delays are severe varies widely from project to project. It is essential to pinpoint the real reasons of delays in order to reduce and prevent them in any building project. While some tasks are just a few days behind schedule, others are more than a year behind (semera et al., 2006). Both internal and external causes may contribute to delays in construction projects. The four firms participating in the project are to blame for the delays, which include internal causes. Among these parties are the owner, designers, contractors, and consultants. Outside variables like the government, material suppliers, or the weather are to blame for further delays that are not the result of these four parties. . (Abdella, M. and Hussien, T., 2002)

Two factors are most frequently the root of legitimate delay claims. The first occurs when a contractor for the employer is late with his task, delaying the arrival of a subsequent contractor. The second is a change in design, which, even if it is made before work on the modified component of the project begins, nonetheless causes problems and delays for the contractor's work. (semera et al., 2006)

## **1.2 Problem statement**

Over the years, Ethiopia's building construction industry has had a serious problem with project delays. In an effort to promote economic development, the government invests a significant amount of money in the construction of buildings. The majority of government funds are designated for the construction of airports, hospitals, schools, railroads, and other public facilities. In addition to slowing down the nation's economic expansion, these projects' delays will result in higher government spending. This will result from both a change in contractors and the purchase of materials at a greater cost. Resources that could have been employed for other reasons will be wasted as a result.

Due to the problem of delays, businesses frequently incur significant financial losses, which can lead to insolvency. Additionally, the failure or delay of previous projects usually results in contractors losing their contracts. Most frequently, they are required to split the cost of a delay

even though it was not necessarily their fault. Delays have also caused several disagreements among parties involved in the construction business. (Ahmed et al., 2013)

The physical, social, and economic surroundings, as well as intrinsic characteristics of technology and its management, as well as other elements, all play a role in why building projects are delayed. In a study on construction projects, the primary reasons for completion delays of significant construction projects across different nations were found to be contract administration, finances, design deviation, and technology. (Abdelrasak, 2008)

Therefore, delay is common in Ethiopia; the aim of this research is to assess delay causing factors for the construction of mixed use Apartment Building project which is being undertaking for Federal Housing Corporation at Somali Tera site in Addis Ababa. The contract of this project is signed on January 2021, the completion time for the building according to the contract was two years and according to the contract 100% of the work must be done but the project is behind the schedule due to different reasons. The project needs additional two years to complete the project. This extension of time was granted for the contractor after long arbitration process with the client and consultant. The research focuses on the cause of the delay in detail and its impact on the entire project.

### **1.3 Research Questions**

This research particularly looks into the Cause of delays on the project and their impact on the project by asking questions listed below:

1. What are major causes of delay in Federal Housing corporation construction of mixed use Apartment Building project, Somali tera site?
2. What is the impact of delay on the FHC construction of mixed use Apartment Building project, Somali tera site?

## **1.4 Research objectives**

### **1.4.1 General Objective**

The general objective of this study is to assess the cause of delays and their impacts on construction projects in the case of Federal Housing corporation construction of mixed use Apartment Building project at Somali tera site.

### **1.4.2 Specific Objective**

The specific objectives include:

- To assess the major causes of project delay at FHC construction of mixed use Apartment Building project, Somali tera site
- To investigate the impact of delay at FHC construction of mixed use Apartment Building project

## **1.5 Significance of the Study**

Finding primary causes of building project inefficiency will be made easier with the aid of a study on project delays. Once the main factors that cause project delays have been identified, the project stakeholders will shorten project delays by concentrating their efforts and allocating resources to remove the relevant limiting issues.

This study offers a deeper knowledge of the reasons for delays, particularly for the major project stakeholders: contractors, clients, and consultants, based on information acquired from the interview and literature analysis. These results may motivate the key informants of the project to focus on any unforeseen delays that may have occurred in ongoing or upcoming projects. This study also assesses how delays affect the project and provides a conclusion and recommendations.

## **1.6 Scope of the study**

This study particularly aims at assessing the cause of delays and their impact on construction project the case of FHC mixed use apartment building at Somali tera site. Furthermore, the study

focused on only the specified project with data gathered through interviews and document review. The respondents for this research involve key informants that are the representative of the main parties involved in this project.

## 1.7 Limitation of the study

Making the assertion that a study is faultless is reckless. The study procedure could be negatively impacted by researcher communication bias; hence efforts should be taken to prevent it.(Cronin, 2014)

- The small number of interviews that were done for this study was viewed as a disadvantage. In parallel, the most important employees were questioned.
- The results of this study have the potential to be biased because qualitative data research is inherently subjective.
- The study's findings will not be applicable for all projects of the companies; it is restricted on one of their project among many projects.

## 1.8 Terms (definition of terms)

**Project:** Any activity carried out either individually or collectively with the intention of achieving a certain objective is referred to as a project. Moreover, research and design can be included.

**Impact:** is a marked effect or influence on something.

**Consultant:** A consultant is a specialist engaged to offer advice in order to complete a construction project successfully and on schedule.

**Contractor:** a company (or occasionally a person) that the client hires to complete the work necessary to complete a project is known as a contractor.

**Client:** A Client is anyone who has construction work carried out for them.

## 1.9 Organization of the Study

This study will contain five chapters. The first chapter will be the Introduction section, the second one will be review of literature, the third will be Research methodology, the fourth will be results and discussion and lastly the fifth one will be conclusion and recommendation

The first chapter includes an introduction section that includes information about the study's background, problem statement, research questions, and objectives. It also discusses the study's significance and its scope of limitations, and it concludes with a conceptual definition of terms section that defines key terms and concepts in the study.

A conceptual and empirical literature review that defines construction project delays, their primary causes, and their effects on the whole project as well as the construction firms themselves is included in the second chapter.

The research approach used is covered in the third chapter. The technique of data collecting, the data source, and the research approach methodology will be covered in the third chapter.

Chapter four presents findings and discussion about results of the collected data.

Finally, chapter five presents summary of findings, conclusion and recommendations.

## **CHAPTER TWO**

### **2 Review of Literature**

#### **2.1 Introduction**

The aim of this chapter is to gain an understanding of the existing research related to the cause of delays and its impact on construction project. Additionally, relevant research from Ethiopia and other developing nations will be examined, as well as their experiences with associated construction delay factors. The theoretical framework is also accompanied by an empirical review.

#### **2.2 Theoretical reviews**

##### **2.2.1 Definition of delay**

According to Macmillan dictionary delay is a situation in which something happens later or more slowly than you expected.

In the context of construction contracts, the word "delay" refers to the fact that the work is not progressing as quickly as anticipated and, more specifically, that as a result, completion may not be finished by the completion date specified in the contract conditions. (Chapel et al, 205)

Because there is frequently a construction loan involved, which includes interest, administrative workers allocated to the project, whose expenses are time-dependent, and ongoing inflation in pay and material prices, delays in building projects can be expensive. (Simple English Wikipedia, the free encyclopedia)

Delay is the length of time that elapses past either the deadline for project delivery that the parties have agreed upon or the completion date stipulated in the contract. Ramya and Divya (2015)

The term "delay" in the context of construction refers to an incident that takes place after the date that the parties agreed upon for the conclusion of a project or later than what was anticipated, planned, or mentioned in a contract (Pickavance, 2005).

## 2.2.2 Types of delay

Understanding the various forms of delays is essential before studying construction delays. In accordance with how they function contractually, Ahmed and Salman (2010), (Keane et al, 2008) and (Dinakar, 2014) categorize delays into the following four major categories.

### **a. Non-excusable delays**

Non-excusable delays result from the contractor's job on the construction project, such as when they don't provide adequate supplies to complete their task. These delays might result from poor project management and scheduling, poor site management, poor site monitoring, poor construction methods, equipment malfunctions, and unreliable suppliers or subcontractors. As a result, the contractor is required to keep working and cannot file a lawsuit for delay damages or request a time extension until the task is complete.

### **b. Excusable non-compensable delays**

When a delay is caused by unforeseen circumstances, circumstances outside the contractor's reasonable control, and circumstances unrelated to the contractor's fault or negligence, it may be considered "excusable". As a result, neither party is responsible for violating the terms of the agreement, nor they have agreed to split the risk and responsibility for any excused events. The cost of the delay will not be repaid to the contractor, but he will be given more time to complete his job and will not be liable to any liquidated damages as required by the contract during the delay.(Research and technology coordination committee(FHWA), 1998).

### **c. Excusable compensable delays**

These are the kinds of delays that warrant a time extension as well as financial compensation. There are various ways that compensable delays can occur in addition to those that follow contract revisions. These compensable delays include any suspensions or interruptions of the work that are caused by the owner's actions or as a result of the owner's violation of an agreement-related obligation. If the delay is compensable, the contractor is also entitled to an extension of time and a compensation for any cost increases caused by the delay. The cost or time required to execute any element of the work can change as a result of changes to the task,

either directly or indirectly. A fair adjustment must be made in such cases, and the contract will be adjusted to reflect this.

#### **d. Concurrent delays**

It is said to as concurrent when both the owner and the contractor are at blame for the delay. In principle, neither the contractor nor the owner may be held responsible for the delay (or asked to accelerate or be liable for liquidated damages).

Time is sometimes extended as a result of concurrent delays that entail two or more excused delays. Additional time may be granted or the delay may be shared between the client and the contractor when excusable delays with compensation and non-excusable delays occur simultaneously. Concurrent delays can be divided into three categories:

- The contractor can only ask for a deadline extension if both valid and valid delays occur at the same time.
- If excusable with compensation and excusable without compensation delays occur at the same time, the contractor has the right to request a time extension but not delay damages.
- If there are concurrently two excused delays with compensation, the contractor may request additional time and compensation for delay damages.

### **2.2.3 Causes of construction projects delay**

Delays in construction projects can be caused by a variety of circumstances. These range from those brought on by the physical, social, and economic environments to those originating from the technology and its administration. According to Ahmed and Salman (2010), there are two reasons why building projects are delayed: internal and external factors. The owner, contractors, and consultants are three stakeholders involved in the project who are among the internal reasons of delays. Other delays that are not the result of these three parties are brought on by external causes like the government, the suppliers of the materials, and the weather.

## **A. Internal causes**

One of the internal causes for the delay is the involvement of three parties in the project. They include the owner, the contractors, and the consultants. These parties are in responsibility of the delay that causes the project to take longer than expected.

### **a) Delays caused by the Contractor**

Contractor's contractual tasks is to finish the job by the time stated in the contract terms; however, if the contractor fails to do so due to his own fault, he will be responsible for paying the owner liquidated damage. (Trench W. , 1995)

The contractor's default, according to KK Chitkar (1998), was caused by improper project management during execution. Projects include a number of interconnected components, including: Resources, technology as well as the every individual working on the project, which work together to meet the project's goals. A poor method of handling each of these stakeholders could cause the project to be delayed.

1. Planning failure (failure to maintain a realistic and up-to-date work plan and schedule): This is caused by the creation of unworkable plans, issues with the determining of critical items during planning, a lack of knowledge of working procedures, inability to make quick decisions, and a lack of knowledge of the proper planning tools and techniques. (Asfaw , 2005)
2. Organizational failure: wrong organizational structure results in employee conflicts, increased management meddling, and insufficient transfer of responsibility at various levels (KK Chitkar, 1998).
3. Lack of resources: This is a result of inexperienced professionals, a lack of a skilled project manager (the contract administrator), and a failure to gather and deploy resources on time. (Jakele, 2004)
4. A lack of coordination: This failure occurs as a result of a lack of cooperation among staff members, a variety of communication gaps at different levels, and a lack of daily decisions to close procedural gaps (Gillian B. and Paul B., 1993).
5. A shortage of trained engineers: The failure to record labor productivity rate, the inability to visualize discrete works, and a lack of understanding about construction methods are the causes of this (Asfaw , 2005).

6. Failure to maintain cash flow: Since the self-financing date of the majority of projects is close to the end of the contract period, they frequently experience cash flow problems during construction, which can cause the work to lag behind the contract completion date. As a result, the project manager needs to predict cash flow in order to get short-term financing from other financial instruments. (Asfaw , 2005).
7. Insufficient technical expertise of the contractor's technical personnel
8. Materials lack on the job site
9. Construction errors
10. Poor labor skills and experience
11. Labor shortage
12. Low labor productivity
13. Financial issues
14. Inability to coordinate with others
15. Schedule difficulties with subcontractors during project execution
16. Absence of site contractor employees
17. Poor site management and
18. delays in site mobilization (Abdella, M. and Hussien, T., 2002)

**b) Consultant's responsibility**

According to (Edward R Fisk, 2000), the following are the main reasons for delays that are brought on by the consultant side.

- lack of site supervisors
- inadequate experience of the consultant
- delay in accepting significant changes to the scope of work
- errors and contradictions in design and drawing documents
- Lab test approvals that are delayed
- Design modifications
- late payment approvals
- inadequate document briefing (such as a specification or bill of quantities)
- work postponement

### **c) Owner's responsibility**

In a number of methods, the customer postpones finishing the project. The following are the key ones, according to a report released by the UK's building industry organization. (The construction industry council of UK, 1994):

- Stiff budgets
- Change orders by the owner during construction: replacement and addition of new work to the project and change in specifications
- Financial problems: delayed payments, financial difficulties, and economic problems
- A slow decision-making process
- Poor communication and coordination is all factors that can affect the construction site.

### **B. External causes**

Delay causing factors that link to outside factors include (Alghbari et al., 2007):

- Delay in receiving permissions from the municipality: Obtaining a building permit and an occupancy permit are labor-intensive processes involving numerous parties. Generally speaking, this causes unneeded frustration, unforeseen delays, and greater costs. Due to the complexity of the norms and regulations and the lack of manpower needed to streamline the permit processes, they are burdensome and time-consuming.
- There aren't enough materials or tools available for purchase;
- Unfavorable weather and site factors (such as the terrain and ground cover).
- Unfavorable economic conditions (exchange rates, inflation, etc.)
- delays in transportation,
- Changes in rules and regulations outside work resulting from government
- Delays in the provision of utility services (such as water and electricity) are just a few examples.

**Table 2-1 Summary of causes of delay on construction project**

Factors			
1. Material-related	1. Late Material Delivery and Unreliable Supplier	2. Labor-related	1. Slow Labor Mobilization
	2. Construction Materials shortage		2. Lack of Skilled Workers
	3. Materials for construction are of poor quality.		3. less Productivity of Labor
	4. Poor Procurement of Material		4. labor supply
	5. imported building supplies		5. Disengagement
3. Financial-related		4. Equipment-related	
	1. Improper money allocation		1. There is not enough equipment
	2. Excess Interest Rate		2. Regular Equipment Failure
	3. The Contractor's Financial Issues		3. Equipment Parts Shortages
	4. The Client's Financial Issues		4. Inadequate Equipment
	5. Client's unreasonable demands		5. Equipment mobilization takes time
	6. Delayed Payment to Supplier/Subcontractor		6. Poor Modern Technology
	7. Difficulties Making Monthly Payments		
5. Contractor-related		6. Client-related	
	1. Insufficiency in Contractor Experience		1. Slow client decision-making
	2. Improper Construction Techniques		2. Client inexperience with construction
	3. Improper Time Calculation		3. Change Orders

	4. Inaccurate Cost projection		4. Client's Interference
	5. Ineffective site management and supervision		5. Inability of Client Representative
	6. Poor project scheduling and planning		6. ineffective Communication
	7. A Project Team with Poor Skills		7. Ineffective Project Feasibility Study
	8. outdated technology		
7. Consultant-related		8. External Environment	
	1. lack of experience from the Consultant side		1. Unforeseen ground Condition
	2. mistaken Design & drawings		2. Unexpected Geological Condition
	3. Inadequate Project Management Assistance		3. Inflation/Prices Fluctuation
	4. Slow Response and Poor Inspection		4. Slow Site Clearance
	5. Incomplete Drawing/Details Design		5. Problem with Neighbors
	6. Inaccurate Site Investigation		6. Bad weather Condition
			7. Conflict

Source: (Dinakar, 2014)

#### 2.2.4 Consequences of delay on construction projects

Time extensions and liquidated damages are the two main categories of delay damages. The owner will demand liquidated damages if the job is completed late, and the contractor will want a time extension, more money, or both. The extension is often granted to the contractor to avoid liquidated penalties for a late completion (kerzner, 2009). Time extension and liquidated damage, the two main consequences of delays in building construction projects, are explored in this study.

### **A. Extension of time**

Construction contracts often provide for an extension of the work period when a delay happens that is not solely the contractor's fault. This is known as Extension of Time (EOT).

Time extension mechanisms serve purposes beyond those of the contractor alone. The contractor would only be required to finish the work in a "reasonable" amount of time rather than by the completion date in the absence of such a mechanism and in the event of a delay that was not the contractor's fault, and the client would lose any claim for liquidated damages.

When it is fairly apparent that a delay exists or is likely to exist that might warrant an extension of time, the contractor should give written notice to the contract administrator of the relevant occurrence that has caused the delay. If the contract administrator accepts responsibility for the delay and determines that a pertinent event was to blame, they may extend the deadline and adjust the completion date.

#### **What types of delays might allow an extension of time?**

Relevant occurrences that can justify a time extension include:

- Modifications requested by the client through the contract administrator.
- Extremely unfavorable weather.
- Civil unrest or war.
- Failure to give information by the owner or their consultants.
- An appointed subcontractor's delay.
- Work done by statutory undertakers.
- A delay in turning over the site to the contractor.
- Major force (such as a natural disaster or an epidemic).
- Losses caused by a specific hazard, such a flood.
- Delays in the client's provision of goods or supplies.
- Modifications to the law's requirements.
- Difficulties in obtaining permission despite the contractors' best efforts to prevent delay
- Even in cases where they are not at fault, the contractor must minimize the delay and any ensuing loss. (James P. and Groton, 1997)

## **B. Liquidated Damage for Delay**

In many projects where time is of the essence during construction, the owner and the contractor stipulate in the contract terms that if the contractor does not finish the project by the specified date, it will be held financially liable to the owner for a predetermined amount for each additional day that it takes the contractor to complete the work. Actual losses experienced are determined to be the pre-agreed sum. Liquidate damage is the name given to this evaluation. (Edward R Fisk, 2000).

Similar to that, it may depend on how much money the client will from get from that particular project. The basic rule is that a liquidated damages clause will be upheld if the amount it provides is a reasonable assessment, at the time the contract was signed. The actual losses to the owner may incur if the project is not completed by the deadline. It is understood that an exact estimate of the owner's delay harm is unattainable. If the owner doesn't make a reasonable effort to calculate its actual delay losses, the condition can be interpreted as an unenforceable fine or an attempt to discourage timely contractor performance. (Edward R Fisk, 2000).

### **2.2.5 Impacts of Delay on construction projects**

Different studies investigated how delays in construction affected the completion of projects in the construction sector. The following six consequences of delay were noted:

- time overrun
- cost overrun
- dispute
- arbitration
- total abandonment and
- Litigation.

The performance of the contractor is negatively impacted by delays, which further increase the impacts of construction. Due to issues like contract disputes, poor productivity, and increased construction prices, project delays may not serve the stated purposes of the construction project. A thorough analysis of the literature revealed the following six key consequences of delays in building projects:

### **1. Time Overrun**

Projects that take longer than expected to finish due to variables linked to clients, consultants, contractors, and other parties are said to have had time overrun. Time overrun is frequently causes of cost overrun, disagreements, and outright project termination. In Murali (2007) and Yau (2007) claimed that client- and contractor-related elements, including insufficient contractor expertise and owner involvement, had an influence on time overrun.

### **2. Cost Overrun**

This refers to the project's overall cost exceeds the planned budget during building and finishing stages. It can also be referred to as budget overrun, cost increase, or cost escalation. The difference between the project's actual cost and its initial planned cost may also be used to describe it. (Frank and Adwoa, 2007)

(Wiguna, I P A and Scott, S , 2005) The most important causes of cost overruns were shown to be high inflation, rising material costs, client design changes, flawed designs, adverse weather conditions, late payments on contracts, and poor construction performance.

### **3. Disputes**

Based on Murali S. and Yau W. ( 2007) mentioned that conflicts between parties may result from a variety of factors, including poor communication between parties, issues with neighbors, unforeseen site conditions, delays in payment for completed work, improper construction methods, delays brought on by subcontractors, and discrepancies in contract documents. In addition, arbitration or legal action may be necessary if the disagreements cannot be resolved peacefully or quickly.

### **4. Arbitration**

In accordance with Murali S. and Yau W. (2007), disputes that may arise due to delays brought on by client- and contractor-related factors, such as order changes, errors or discrepancies in contract documents, and a lack of communication between parties, will be resolved through arbitration. In these situations, it is necessary to have a capable third party who can resolve the problems amicably or quickly without going to court.

## 5. Litigation

According to (Murali S. and Yau W., 2007), when delays are brought on by client-related, contract-related, labor-related, externally related, and contract relationship-related factors like late payment for completed work, issues with site conditions, and a shortage of labor, disputes that must be resolved through litigation eventually arise. Litigation is the final resort for the parties engaged in building projects to resolve disagreements.

## 6. Total Abandonment

Project abandonment is the total stoppage of the project which may be temporary or in poorer condition for an extended period of time. It is the most serious negative impact of building project delays. The primary reasons relating to clients, consultants, contractors, and external factors may result in project abandonment, which can create delays in building projects. (Aibinu and Jagboro, 2002)

### 2.2.6 Minimization of construction project delay

Projects finishing on time or ahead of schedule are the stuff of construction managers' dreams. They're not always that fortunate, though. The numerous stakeholders involved in a construction project or external factors like the weather might cause delays. There are ways to become ready, though. To remain ahead of the curve, project managers can be proactive and employ risk management techniques. (Build, 2022)

- 1. Accurate Estimations:** Beginning with the budget, loss from building delays can be minimized. Construction managers must produce budgets with extreme precision to avoid delay in the project.
- 2. Streamlining Approvals:** The approval procedure could also cause a delay. Construction crews can be prepared to start a project but have to wait several days for approval. The procedure can be made more effective with a highly structured workflow that includes notifications.
- 3. Fast-Track Construction:** It's not necessary for the construction process to start and end on the job site. Some areas of the structure may have construction begin before the design phase is complete. Project managers may find this fast-track building technique useful for reducing losses from delays.

4. **Effective Communication:** It is difficult for project managers to stress the importance of effective communication from start to finish. Throughout the process, all stakeholders must communicate with one another; this is one of the best methods to prevent unwarranted delays in a project.
5. **Bracing for Weather:** Construction managers have some degree of influence over variables like estimates and approvals. Supervisors cannot, however, control factors like the weather. A project may come to a total halt due to weather conditions like rain or snow. To prevent too many problems with delays due to weather, project managers should make the timetable flexible.
6. **Manage resources more effectively:** Having the right materials on hand at the right a time is essential for productivity at the job site.
7. **Review designs thoroughly:** A project's design fault might not become apparent until the implementation stage. The project timeline may be significantly impacted by resolving these problems. This is where it becomes essential to study drawings and double-check specs before a project begins.
8. **Clarify project scope:** Making a clear understanding of the project scope to the client before your crew starts working, even though many of these adjustments are beyond your control. If adjustments are required, be sure that reasonable deadlines are set.

### 2.3 Empirical review

To determine the reason behind building project delays, several research have been conducted. (S. Al-Hejji & S. Assaf, 2006) to ascertain the reasons for delays and their significance in the eyes of each project participant (owner, consultant, and contractor), a time performance assessment of several construction projects was conducted in Saudi Arabia. During their investigation, they discovered 73 reasons of delay. All sides agreed that "change orders" were the common reasons of delays.

In their study of the factors that contribute to construction delays in residential projects in Jordan, Sweis et al. (207) came to the conclusion that the contractor's financial challenges and the owner's excessive demand for change orders are the main culprits.

( Chan, D. and Kumaraswamy, M., 2008) a survey was carried out to ascertain and assess the relative relevance of the significant variables generating delays in Hong Kong building projects. They evaluated and prioritized the primary causes of delays and divided them into two categories: the kind of project and the parties involved in the local construction sector (i.e., clients, consultants, or contractors). The findings showed that there were five main reasons for delays: poor site management and supervision, unexpected ground conditions, slow decision-making involving the entire project team, and client-initiated modification of work.

In a related study conducted in Egypt in (2008) by Abdelrasak, it was discovered that failure to use professional construction/contractual management services and delays in payments from the owner and financing provided by the contractor during construction are the main causes of delays.

Owolabi J. (2014) investigated the causes and effects of delays on the timeliness of project building in Nigeria. They found that there are fourteen (15) reasons why construction projects are delayed, including a lack of funding to complete the project, changes to the drawings, poor communication between the parties, a lack of adequate information from consultants, sluggish decision-making, contractor insolvency, variations, project management issues, errors made during the construction stage, bad weather condition, fluctuations in the cost of building materials, and an overall organizational structure that is not appropriate.

## **2.4 Experiences of delay in Ethiopian construction projects**

At both the national and international levels, there are numerous examples of delays. For instance, schedule and cost overrun issues have plagued the majority of Ethiopian building projects, raising serious concerns (Becker and Behailu, 2006) . The main problem in construction management, especially in Ethiopia, is time and cost overruns in construction project.

Getachew (2009) indicated that poor subsurface investigation and inaccuracies in quantity calculation were the primary reasons of time and expense overruns in federal road projects in Ethiopia. Additionally bad pavement research and interpretation, insufficient/inaccurate topographic survey data, a lack of design details, the absence of work detail, a change in alignment, a bad specification, and a delay in putting the concept into practice are all to blame.

According to Ethiopian Road Authority (2005), design consultants lack their own quality assurance system and instead choose to imitate or accept preexisting methodologies rather than attempting to adapt them to local requirements. They occasionally lack the necessary expertise regarding the kinds of services that ERA requires and don't take responsibility for the work they do. In addition, the majority of consultants are inexperienced and eager to accept contracts at a relatively cheap bid price, which results in the production of subpar work. The analysis also showed that the ERA's Terms of Reference were not specific and unambiguous. These issues show that there are design hazards that must be taken care of.

## **3 CHAPTER THREE: RESEARCH METHODOLOGY**

### **3.1 Introduction**

The aim of this chapter is to discuss about the decisions that the researcher must make in order to carry out the research project, this chapter deals with the research methodology implemented in this project. It includes the research design, research approach, types and sources of data, method of data collection and methods of analyzing the data that will enable to identify the causes and its impact on Federal Housing Corporation construction of mixed use Apartment Building project Somali tera site.

### **3.2 Research Approach**

A study's overall approach is determined by a set of guidelines and tactics known as research approach. Research approaches come in three varieties: mixed, qualitative, and quantitative. Studies that rely on quantitative inquiry seldom attempt to quantify their conclusions through statistical summaries or analysis. In qualitative research, descriptions are typically used rather than numerical data since it is interpretative in nature. Quantitative research is the methodical, empirical investigation of characteristics, occurrences, and relationships in the quantitative domain. The purpose of quantitative research is to develop and apply mathematical theories, models, and hypotheses pertaining to natural phenomena. (Dakito, 2021)

This study employed a qualitative research strategy to better suit the collecting of the necessary data from the sample and facilitates the analysis. Specifically case study, planned interview and document review, qualitative research was used to learn what stakeholders thought about the variables that contributed to the Federal Housing Corporation's mixed use apartment construction project at the Somali Tera site and how they affected the project.

### **3.3 Research Design**

A framework for data gathering and analysis is provided by a study design. Exploratory and descriptive are research designs which mostly used for qualitative research approach. Explanatory research looks at the causes of events using the little knowledge that is currently

accessible. It can help you better comprehend a certain topic, determine how or why a particular phenomenon is occurring, and make future forecasts. When applied descriptively, descriptive research design is a type of research design that aims to systematically gather data to characterize a phenomenon, situation, or population. Instead of concentrating on the why, it specifically helps in addressing the what, when, where, and how difficulties relating to the study topic.

Both exploratory and descriptive research types were applied to this study. Because this research will try to answer why the delay occurred and it contributes to a greater understanding of the causes and effects of delay in FHC building project.

### **3.4 Data Type and Data Source**

There are two types of data: primary and secondary. The term "primary data" refers to material developed by the researcher themselves, such as surveys, interviews, and experiments designed particularly to identify and solve the present study topic. The information is then obtained from a variety of data files. Major government agencies, healthcare institutions, etc. create a lot of data as part of organizational record keeping, which is utilized to get secondary data. (Benedictaine university library, 2023)

In this research study, primary and secondary data are both utilized. The representatives from the three key stakeholders (client, consultant, and contractor) were conducted for the formal structured interviews that used to gather the primary data, with the goal of determining the reason for and effects of the delay on the FHC construction of the mixed-use apartment project. Reviewing the company's documents which gives crucial information about the timetable of the main tasks and deliverables are used to gather secondary data.

### **3.5 Target Population**

The population list from which the samples were taken is known as the sampling frame. The focus population consisted of the main stakeholder's of the Federal Housing Corporation mixed used apartment building construction project. The contractor of this project is a china company called china communications construction company (CCCC) group co. ltd, the consultant company is Acute Engineering plc. and the client is Federal Housing Corporation, the

representatives of these companies will be interviewed in detail to obtain the required information.

Non-probability sampling, sometimes referred to as convenience sampling, was chosen as the sampling technique because it asks everyone who meets the requirements to participate and is a simpler and more affordable procedure than random sample. The researcher has freedom in choosing individual participants who meet the qualifying standards.

### **3.6 Methods of data collection**

Information gathered during an investigation or study is referred to as data. Data are collected using a variety of tools, including case study, observation, structured interview questions, and document review. Interviews, document review and observation were utilized as data collection methods to acquire qualitative data. This was done in order to compile enough relevant data to address the study's research objectives.

In this study, structured interview was used as one of several strategies for gathering qualitative data. This was done in order to gather sufficient pertinent data to address the study's research goals. In this situation the organized, targeted, objective questions are presented through the structured interview protocols. Additionally, the questions were thoughtfully prepared, arranged, and structured in accordance with the objective of the study. This method encouraged the participants to provide honest responses to the questions. The three primary stakeholders are all represented by the interviewees who were all actively participating in the project in order for tasks and activities to be completed on schedule.

### **3.7 Method of data Analysis**

Analyzing qualitative data can be done in a variety of ways. The data analysis methods used in this study include coding and theme analysis. Reading over a collection of data and looking for patterns in their meaning to identify themes is a method for thematic analysis of qualitative data. A critical component of making meaning of the data is the researcher's own experience, which is an active reflective process.

Thematic analysis is frequently used in qualitative research. It emphasizes the need of identifying, interpreting, and comprehending qualitative data patterns. This analysis allows you to view qualitative data in a certain way. It is frequently used to refer to a grouping of texts, as a transcript of an interview or a collection of articles. The researcher carefully reviews the data to seek for recurrent themes, ideas, or expressions. (Surendran, 2023)

Coding is one of the finest techniques to condense the enormous quantity of information obtained. Coding qualitative data requires classifying and identifying qualities and patterns in the acquired data. Because it enables you to develop ideas based on relevant study results, coding is essential in this data analysis. Once you've given your data codes, you may build on the patterns to gain a better knowledge of the data and form more informed decisions. (Surendran, 2023)

Braun and Clarke (2006) outline the following steps of the theme analysis as being applied in the current study:

- 1. Data familiarization:** Transcribing the data, reviewing it several times, and making notes about your initial thoughts are all part of this process
- 2. Generating initial code:** gathering information that is relevant to each code, and methodically coding key data elements throughout the whole data collection. Features were coded as a single word or phrase that corresponded to a certain notion during translation and transcription.
- 3. Searching for themes across the data:** putting together all data relevant to each prospective subject and classifying codes into potential themes. The data were examined and reread several times during this cycle in order to lower the number of codes and arrange them into recognizable themes.
- 4. Reviewing themes:** identifying whether the subjects connect to the coded extracts at the first level and the entire data set at the second level will help you create a thematic map of the analysis. The whole interview data set was reviewed once more to confirm the codes.
- 5. Producing the report:** The final analysis is selecting illustrative, interesting extract samples, analyzing the selected extracts in detail, connecting the findings to their search query and the surrounding literature, and generating a formal report on the analysis.

### 3.8 Ethical consideration

(Saunders M., Lewis P., and Thornhill A., 2009) state that ethical research is concerned with how we develop and define our research topic, organize our study and obtain consent, collect data, process and store it, analyses it, and communicate our research findings in a moral and responsible manner. Ethics exists to prevent harm and to guarantee that study participants are not exposed to any danger or risk as a result of faulty privacy protection techniques.

As a result, the Federal Housing Corporation mixed-use apartment project stockholders gave the researcher permission to use all the information required for this investigation. They were made aware of the study and agreed to participate in the interview. Every participant's responses are kept private and are according to interview protocol. The documentation review also done for the permitted document keeping their confidentiality.

## CHAPTER FOUR

### 4 DATA PRESENTATION, ANALYSIS AND DISCUSSION

#### 4.1 Introduction

This chapter's aim is to present the findings and outcomes of the interview and observation. Then discussion has been done by analyzing and interpreting the information gathered, which met the research goal.

The objective of this study was to assess the causes of delays and their impact on the construction project in the case of FHC mixed use apartment building project. Face to face Semi structured interview was conducted. Then the collected data is transcribed and processed in order to develop themes relevant to the study's objectives.

#### 4.2 Description of the research participants

To get the information needed, seven respondents were interviewed. The interviewees are key informants which represent main stakeholders. Participants are selected based on their level of engagement in the project.

The participants interviewed were:

- Site supervisor who is representative of the client side (Interviewee A)
- Site supervisor representing the consultant company (Interviewee B)
- project team leader from the contractor side ( Interviewee C1)
- Site manager from the contractor side (Interviewee C2)
- General Forman from the contract side ( Interviewee C3)
- Office Engineer from the contractor company ( Interviewee C4)
- Reinforcement production manager from the subcontractor side ( Interviewee D)

The several phases of the thematic analysis that are mentioned on the third chapter of this research are used in this chapter; the steps of the analysis were described by Braun and Clarke (2006).

The first step is familiarization of the data by transcribing and reviewing it several times. Then code will be generated from important data aspects across the full data. The next step will be grouping codes into potential themes. The analysis will be thematically mapped out by establishing if the subjects correspond to the coded extracts at the first level, and a report will be generated as a result.

### 4.3 Data presentation and Analysis

The interview was conducted with key informants at various positions. Majority of the participants were contractors, which have been good exposure to discuss about their performance. The contractors are the one who change the designed building in to reality, which make them more involved in the project construction.

Question's that are more related to the research question got more attention. Hence ideas that were frequently mentioned by different responders have been more emphasized. The analysis started with grouping related questions, and it will now focus on the four key questions that were posed to all project participants. Comparing the various points of view is made easier by grouping comparable questions.

➤ The following codes are generated from the transcribed data of the interview:

1. Delay
2. Cause factor
3. Major contributor
4. Impact on the project

#### 4.3.1 Construction project delay

This was questions raised for key informants "*From your experience how many projects are completed on time? Is there a delay on this particular project?*"

All interviewees mentioned that there is a delay on this project. According to the original schedule on the contract the project should be finished by January 2023. But the percentage of the project that has been finished so far is only 18%. From the newly revised schedule the project will require around two years from now onward in order to be completed.

Every construction project experiences delays. It is essential to determine the root causes of any construction project's delays in order to reduce and prevent them. Some projects are over a year behind schedule and others are behind by just a few days (semra et al., 2006).

*"In my experience, almost all of the projects I worked on in this area were not finished on time. The schedule was affected by a many factors. ."[Interviewee A]*

*"I have worked with local and international construction companies (Chinese) in all cases the projects were not completed on time. Even if Chinese companies took the necessary precaution and prevention mechanisms it is impossible to eliminate delay."[Interviewee C2]*

Majority of the respondents agreed that there is no project without delay. From their experience different factors impacted the project schedule and they were unable to complete the project within the contract time. But two of the respondents disagree this.

*"Of course many projects may have delay, but I can give you an example of projects that completed before the schedule. I was engaged on Meskel square underground parking lot project; the estimated completion time was three years but the project was completed within one year."[Interviewee D]*

The planning stage of the project is very crucial. Even if we plan the project effectively and work efficiently there may be external factors that cause delays. In addition other stakeholders may be responsible for the delay.

*"In our case we thought that our plan was good since we did not expect the inflation will have this level of impact on the project. But that lead to total stoppage of the project for few months."[Interviewee C2]*

From the data obtained during analysis of the first question the following theme was emerged:

**THEME 1:** Almost all projects experience delay but the severity differs from project to project.

### 4.3.2 Causes of delays on FHC mixed use apartment building project

This was the question raised for key informants "*What are the factors that cause delay on this project?*"

Delays in construction projects can be caused by a variety of circumstances. These range from those brought on by the physical, social, and economic environments to those originating from the technology and its administration.

Generally there are two causes of project delay, internal and external. The three main stakeholders are categorized under the internal cause of delay, while inflation, weather, material shortage and legal procedures are among external factors.

#### a) Contractor related delays

The Contractor is the one who plays a crucial part in transforming the blueprint into a finished project. The contractor is responsible for managing numerous resources to ensure the success of the project as part of this process.

*"The cause for the delay is planning failure of the contractor. They didn't consider the harsh weather that affects the project during rainy season. Because of this the schedules were messed up for two summer seasons. External factor (inflation, material shortage) also should be taken into account during planning phase because these factors are the main cause of delays in our project." [Interviewee B]*

It is important to conduct thorough research and analysis to identify potential external factors that may impact the project timeline and budget. By doing so, appropriate contingency plans can be put in place to mitigate any negative effects on the project.

*"I think planning failure and late delivery of construction material are the causes of the delay. Our company did not prepare construction materials (concrete and reinforcements) on site. The supplier for the mixed concrete is another company, and mostly those companies did not provide materials on time in the right amount. Selecting*

*the right supplier company is the contractor's responsibility. Additionally, the reinforcement bar production is done on another site, which results in a delay. Because the right amount of the reinforcement may not be produced and some design change may occur at the project site." [Interviewee C2]*

*"Our employers are not satisfied with their payment and there was much case they brought to litigation process, I think this process have impact on our project. There was also conflict with the subcontractor company due to failure of execution of work within the schedule; as a result another subcontractor company took the contract". [Interviewee C1]*

*"Contractors offer lower prices for the contract rather than offering reasonable price. After the construction started, the contractor faced many challenges that impact their financial plan. This resulted in requesting for price adjustment which then resulted in refusing from the client side and negotiation between them took longer time than expected. [Interviewee A]*

While most of the participants agreed that the contractor company is one of the contributors for the delay, the other respondents did not accept that.

*"From my experience working with Chinese companies, they are strict on their schedule, and they can also work overtime in order to meet the schedule. However, they are unable to do so in this project due to late approval from the consultant and client as well as other external circumstances that delay the project. I think they cannot be held responsible for the delay because some external factors are uncontrollable. You can tell this by observing the site now. Within two weeks, we finished the first floor and we are about to start the second floor." [Interviewee C3&C4]*

However, it is important to note that despite the external factors, the project team should still strive to mitigate any delays and ensure efficient progress. Regular communication and contingency planning can help minimize the impact of unforeseen circumstances.

#### **b) Consultant related delay**

A consultant is a company that combines the expertise of a supervision engineer and a designer/architect. A person who plans and designs both buildings and the landscaping that goes

around them is known as an architect. A person who works on the architecture or other parts of the design or construction is known as an engineer. Construction consultants usually examine environmental concerns and possible risks in addition to providing general and technical support for the project. They also assist in the development and management of contracts between clients and contractors.

*"I guess the consultant company has lack of experience in consulting part. Additionally, late payment approval and design problem are also the main issue from the consultant."  
[Interviewee C1]*

*"Consultants are slow in decision making process and there is a design issue on the project. Revising documents like mistaken design and drawings take long time for consultants." [Interviewee C2 & C4]*

Taking longer time for document revision, cause delays in the project timeline. These issues could be addressed through design review protocols. Implementing more efficient payment approval processes is necessary to eliminate the delay. Hence the contractor finance depends on the client's payment.

*"Insufficient site investigation, lack of identifying the source of delays on each task, identifying the responsible party for the delay and taking the corrective action can be raised as major issue from the consultant company". [Interviewee A]*

*"A concrete strength (quality) test and other laboratory tests are conducted by the consultant after each task. However, it takes some time for the experts to approve the test results. Due to the delay of the result we proceed to the next activities without the approval, which lead to disputes." [Interviewee C3]*

These disputes can cause project delays and additional costs. To avoid these issues, it is important to establish clear communication and expectations with the consultant regarding the timing of test results and approvals.

*"My task in this project is to produce reinforcement bars according to the design. However, the design change, wrong estimation, and lack of clarity made it difficult to*

*provide the necessary bars on the site. This also causes waste of materials."*[Interviewee D]

*"To address these issues, I have been communicating regularly with the design team and project manager to ensure that any changes or updates are promptly communicated to me. Additionally, I have implemented a more thorough estimation process and have been double-checking all specifications to minimize errors and reduce waste. I guess this is additional work, which reduce the quantity of the actual output."*[Interviewee D]

Changes are frequently made in building projects and can happen at any point in the process. The majority of changes, if not adequately managed through a formalized change management process, will have a significant impact. Since design changes interfere with work sequence, it negatively influences productivity.

Lack of communication is a challenge in the construction industry. Inaccurate, inadequate, unclear, and delayed reporting can all result in problems that delay projects and increase costs, both on the construction site and in the office.

### **c) Client related delay**

With assistance from other significant stakeholders like the principal designer and principal contractor, the client is ultimately responsible for successfully managing the construction project. The client has a big influence on the project's success because they started it and paid for the work to be done.

Clients are also responsible for the project delay. Almost all respondents mentioned that the client late decision making process and late payment are major delay factors.

*"Delay to deliver the site due to some government regulation and permit process. Slowness in approval for payment and contract price adjustment request can be mentioned as the cause of delay related to client".* [Interviewee C1]

*"Client habit of late decision making process, late approval of necessary documents and rigid budget resulted in time overrun".* [Interviewee B&C2]

*"We have to postpone or slow down the construction activities until we obtain funds from the client, which is one of the causes of the delay. Some project completion issues are brought on by the contractor's poor cash flow while they wait for the client's payment. Because of the contractor's poor cash flow, we are unable to pay our suppliers and subcontractors until we receive payment from the client. [Interviewee C4]*

*"Flexibility is necessary in construction industry, since there are many uncontrollable factors that affect the project. Willingness to communicate is a good thing because many problems can be solved by discussion." [Interviewee C4]*

As the project's owner, the client has high expectations, and making wise decisions is one factor in ensuring the project's success. Making wise decisions will result in advantageous outcomes and lower expenses for stakeholders. As a result, making decisions can occasionally become time-consuming in order to get the opinions or solid arguments of other team members on various issues.

#### **d) External delay factors**

The term "external factors of delay" refers to a newly created category of delays that includes any delays that are unavoidable and outside the contractor's control.

*"Inflation, shortage of construction material on the market, unfavorable weather condition and unavailability of utility service on the construction site highly impacted the project schedule." [Interviewee B, C1 & C4]*

*"Inflation highly impacted our project. After we finished the reinforcement bars which were on the store. There was nothing left to do, so we stopped our work for five months or more." [Interviewee D]*

From analysis of the above response one can conclude that, the delay caused by inflation led to further complications as it result to revise the contracts with suppliers and contractors. This ultimately resulted in a significant increase in project costs and a longer completion time than originally anticipated.

*"Delay in obtaining permits from local authority took longer time than expected and some legal document preparations took time." [Interviewee A]*

When analyzing the second question, the project's success depends on considering the potential effects of project decisions on each stakeholder throughout the project's life cycle. Therefore, it is crucial to have a formal process to identify, manage, and comprehend how the potential project stakeholders may be impacted by project decisions; respond to such decisions; interact with one another and the project manager.

From the data obtained during analysis of the second question the following theme was emerged:

**THEME 2:** There are many factors that causes delay and all stakeholders are responsible.

#### **4.3.3 Impact of delay on FHC mixed use apartment building project**

This was question raised for key informants *"What are the impacts of delay on your project?"*

Project is highly impacted by delays. Delays have different effects on various stakeholders. Losses in resources like time, money, and capacity are the most common effects. Any delay for the owner results in financial loss and facility unavailability. For the contractor, a delay results in financial losses for additional equipment and material purchases, labor hire costs, and lost time (Haseeb and Dyian, 2011)

*"The project contract agreement is signed in January 2021 G.C. According to the contract, 2023 is the time for the completion of the project but the project is not completed and is behind the schedule and I think it will take additional two years to be completed." [Interviewee C2]*

*"The project's substructure is finished, and the first floor's superstructure is nearly finished. But when we compare the total work done with the actual contract, only 18% of the task is completed. We approved for the extension of time and contractors are performing with the revised schedule." [Interviewee A]*

The problem of time overruns will cause the project's planned completion date to be further exceeded. It's likely to upset the firm owner or the clients. On rare occasions, the contractor

might not get the job if he is thought to be unqualified. Both the client and the contractor could face financial losses as a result of the project's delay.

*"The original contract amount of the project was 2.24 Billion. Due to inflation and the contract amount was revised and 70% of the amount was added." [Interviewee B]*

The price adjustment process took longer time from the client side. But the contract cost was revised in order to continue the project. The price variation was 1.568 billion birr which makes the total revised contract amount 3.808 Billion Birr.

*"The project was stopped for almost eight months due to inflation and shortage of construction material, this factor highly impacted our task". [Interviewee C3, C4 & D]*

Almost all respondent mentioned that there was a total stoppage of the project due to material shortage on the market and inflation.

Another impact of delay respondents mentioned was disputes among the parties. Delay caused by the subcontractor and discrepancies in contract documents will give rise to disputes between the various parties. In addition, arbitration or legal action may be necessary if the disagreements cannot be resolved peacefully or quickly.

*"There was a dispute between the contractor and the client due to cost overrun and time overrun." [Interviewee C4]*

From the data obtained during analysis of the third question the following theme was emerged:

THEME 3: The project was impacted by the delay and the schedule was adjusted again.

#### **4.3.4 Delay related claims on FHC mixed use apartment project**

This was questioned raised for key informants *"Is there any claims related to the delay on the project?"*

A construction delay claim is a formal request for compensation that is made by a contractor to a project owner. When a contractor feels they have suffered damages as a result of some factors.

The claim could be a request for additional payment, an extension of time, or both from one contracting party (contractor) to another party.

According to the respondents there was a claim related to the delay, Extension of time and price adjustment request are the major one.

*"The contractor company requested for extension of time and price adjustment request." [Interviewee A]*

*"We formally requested for an additional time period that can make up for the delay. Although the process took long period of time, we were granted for additional working period. Because the major causes for the delay were unpredicted external factor. "[Interviewee C4]*

*"There was extension of time clauses in the contract, the contractors were granted additional one and a half year extension according to the contract." [Interviewee B]*

From the above response, the following analysis is done. There were clauses in the contract that permit extension of time, the contractor company granted extension according to the contract.

*"Since cost inflation highly affected our activity, we requested for payment adjustment." [Interviewee C2]*

From the data obtained during analysis of the fourth question the following theme was emerged:

THEME 4: The contractor requested for delay claims and granted according to the contract.

#### **4.4 Discussion**

The analysis of the data was made by dividing the interview questions in to four main groups. The main questions raised to the key informants were, from your experience how many projects are completed on time? Is there a delay on this particular project? , what are the causes of the project's delays? , what is the impact of delay on your project? And has the project's delay given rise to any claims?

The answer for the first question shows that delay is international phenomenon and it can happen in most of the projects. Semera et.al (2006) said that every construction project experiences delays. It is essential to determine the root causes of any construction project's delays in order to reduce and prevent them.

Likewise, the findings revealed that there are different causes for delay in the project. All stake holders who participate on the project are responsible for the time overrun. Internal causes of delays are related to the client, consultant and contractor. Respondents mentioned that late payment, rigid budget, slowness in decision making processes and late approval of necessary documents are delay factors related to the client. Odeh & Battaineh (2002) said that client-related factors include the following: delays in supplying and transferring the site to the contractor, a delay in the owner's organization resolving contractor claims, suspension of work by the owner, a delay in the client's organization issuing modification orders, and a delayed decision-making process.

The lack of a consultant's site staff (managerial and supervisory ), due to the absence of expertise of the consultant's site staff, the monitoring of decision-making being delayed, slowness with which orders are given as well as the absence or incorrectness of design details are causes of delay related to the consultant (Al-Najjar, 2008). Furthermore, the findings of this research emphasized, mistake in design documents and late approval of necessary documents as the major consultant related causes.

Contractors are the one who change the design in to reality, which makes them more involved on the project. However there are delay causes that are related to the contractor. The following explanations were provided by Ahmed et al. (2003) and (Alghbari et al., 2007) for potential delays in construction projects relating to contractors. These problems include inadequate labor qualifications and experience, a labor shortage, poor labor quality, financial problems, interpersonal communication problems, and a lack of subcontractor expertise. They also include equipment supply delays at the work location, poor site management, a lack of tools and equipment, and a lack of staff from the contractor. From the data analysis inadequate planning, financial problem, disputes with employers and wrong selection of suppliers are the major delay causing factor related the contractor in FHC project.

External delay factors are inevitable that are not under the contractor's control. The project schedule was influenced by external factors like inflation, a lack of construction supplies, unfavorable bad weather, and the lack of utility supply. Due to this, the project's expenses significantly increased and it took longer than expected to complete.

Construction project delays will definitely increase both the project's overall and individual expenses. This is due to the market's fluctuating prices for materials. As a result, when a delay happens, the budgeted amount for materials can increase. Exchange rates will also have an impact on the cost of labor and the costs of materials acquired from other nations. The FHC project is highly impacted by the delay, which result in time overrun and cost overrun. According to Peter et al. (1997), time overruns are defined as the lengthening of time past the estimated completion dates provided to the contractors. Delays are defined as events that have an impact on a project's progress and cause project activities to be delayed.

The analysis shows that the project faced financial challenges due to inflation, and the interviewee believed that a payment adjustment was necessary to compensate for these challenges. The contract also had provisions for payment adjustments in such situations. As a result the contractor company was granted addition of time and payment adjustment according to the contract.

## **CHAPTER FIVE**

### **5 SUMMARY OF FINDINGS, CONCLUSION AND RECOMMENDATION**

#### **5.1 Introduction**

Data collected from interview and document review were analyzed in chapter four. This chapter provides a summary of the data analysis's findings and then draws conclusions and offers recommendations based on these findings.

#### **5.2 Summary of findings**

The main aim of this study was to identify the causes of delay and its impact on construction of mixed use apartment building for FHC at Somali tera site. Thematic analysis has been used to analyze and interpret the responses provided by the respondents' interviews. The study provides the following findings in regard to the data presentation and analysis: almost all projects experience delay but the severity of the delay differs from project to project, there are numerous reasons that contribute to delays, and every project stakeholder is responsible for the delay that occurs in the project and the project was impacted by the delay and the schedule was adjusted again.

It's clear that almost all construction projects deal with delay. In order to minimize their impacts it's necessary to identify its causes and the responsible parties for the delay. Effective planning and communication with other stakeholders can decrease the impact of the delay on the project.

The second theme showed that, there are many factors that cause the delay. Factors related to contractor are planning failure, payment problem and wrong selection of material supplier and subcontractor. The supplier company didn't bring the requested material on site when needed which affect the working schedule of the project. In addition there was dispute with the subcontractors because they couldn't perform their work according to the plan, which lead to termination of their contract. Factors related to the consultant are mistaken design, late approval of document, lack of effective site supervision and lack of experience in this industry. Client

related factors are slowness in decision making process, late approval of documents and rigid budget which didn't consider external factors which are uncontrollable. External factors that cause the delay are weather condition, inflation, shortage of material, government regulations giving permit and unavailability of utilities. The results also showed that all the parties involved are to blame for the delay.

The third theme covered the effects of delays on projects. The two major effects of delay have been identified as schedule and cost overruns. The total contract amount was increased by 70% and there was two years extension time for the project. But dispute, litigation and total abandonment of the project for seven months are the impact of the delay encountered in the project.

Finally the fourth theme discussed about claims that are related to the delay. There was a clause in the contract document that permits addition of time in the case of uncontrollable delays. The contractor received a one and half year extension of time with a fair adjustment to the actual contracting price.

### **5.3 Conclusion**

A delay is one of the biggest issues that could occur during a construction project, and the extent of the delay varies from project to project. While several projects are nearly a year behind schedule, others have been delayed for a few days. In order to mitigate and prevent delays in all construction projects, it is crucial to identify the real causes.

The following conclusions were drawn based on the responses obtained from the interview and document review:

- a. The FHC mixed use apartment building project is facing potential delays due to the following causes.
  - The three project stakeholders, the client, contractor, and consultant, are directly responsible for the delay and all have a role in causing the project delay.
  - Delay in approving and revising documents such as mistakes in design, drawings, test and inspections are the major delay causes related to the consultant company.

In addition late payment approval and lack of experience in this building industry causes for delay from the consultant side.

- Planning failure was the issue related to the contractor, poor financing practice and mistake made during choosing a material supplier also contributed to the delay.
  - Slowness in process of decision making and lack of flexibility is the main problem encountered in this project from the client side.
  - Rigid budget from the client was the main cause of the delay on the project even there was a total abandonment of the project because the client and the consultant rejected the request for price adjustment.
  - The researcher concluded from the findings that inflation and material shortages on the market were the major causes of delay for this project.
  - In all construction projects, weather conditions during rainy seasons become the main source of delay because the project experienced a partial and sometimes a complete stoppage and disruption of activity.
  - Unavailability of utility services (electric, water, telecommunication etc.), government regulations before giving the permit for construction are external causes for delay in the FHC project.
- b. Cost and schedule overruns were identified as the two major effects caused by delay but there are also disputes, litigation and complete termination of the project for seven months as the impact of the delay encountered in the project.

## 5.4 Recommendations

The specific objectives of this research were:

- To assess the major causes of delay at FHC construction of mixed use Apartment Building project, Somali tera site
- To identify the most frequent cause of delay at FHC construction of mixed use Apartment Building project, Somali tera site
- To investigate the impact of delay at FHC construction of mixed use Apartment Building project

According to the analysis of the interview, each party was responsible for the project's delay, including the client, the contractors, and the consultants. The following recommendations were provided to the main stakeholders in this specific project and other key informants based on the project's findings.

- The client must assign a "Risk Manager" who is involved in both the pre-construction and construction phase of the project and has a reasonable level of programming expertise. As part of the pre-construction work, s/he will coordinate with the other consultants to identify crucial design and procurement strategies that will influence the project's development.
- Implementing more efficient payment approval processes is necessary to eliminate the delay. Hence the contractor finance depends on the client's payment.
- Consultant must conduct appropriate research and allocate enough time for document design and drawing. Conducting design evaluations with a highly skilled and knowledgeable team of experts is necessary in order to avoid delay.
- Construction material knowledge is advocated for contractors, so they have to make prior delivery agreements and keeping the minimum level of safety stock at the site. Other strategies for addressing delay risks include using various sources of supply and identifying long lead construction items early in the planning process.
- Consultants should respond quickly to contractors' requests and approve materials and shop drawings.
- Contractors are required to create practical plans by recognizing the important factors during planning, comprehending operating procedures, making prompt decisions, and utilizing the right planning techniques and tools.
- To handle and minimize any delays that may arise during building activities, contractors should establish a solid project management system, managed by professionals who can mobilize and who understand the important processes.
- Every attempt must be made to retain the same labor gang throughout project duration.

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## APPENDIX

### KEY INFORMAT INTERVIEW GUIDE

#### ***Assessment of the cause of delays and their impacts on construction projects in the case of: Federal Housing corporation construction of mixed use Apartment Building Project, Somali tera site***

This interview is administered for the partial fulfillment of the requirements for the award of Master of Art in Project Management at school of commerce Addis Ababa University.

### **Composition of the interview**

This interview consist four sections:

**Section A:** Company, respondent and project profile and project description

**Section B:** Questions about factors that contribute to causes of delays and effects of delay

### **Objective of the Study:**

The objectives of the study are as follows

- To assess the major causes of delay at FHC construction of mixed use Apartment Building project, Somali tera site
- To identify the most frequent cause of delay at FHC construction of mixed use Apartment Building project, Somali tera site
- To investigate the impact of delay at FHC construction of mixed use Apartment Building project

### **NOTE:**

The findings of the study will be used for academic purposes only and Your answer is going to be treated confidentially.

Student Name: Hanan Ahmed

Advisor: Dr. Bantie W.

**Thank you for your corporation**

## SECTION A

### COMPANY, RESPONDENT and PROJECT PROFILE

#### Company Profile

1. State the name of the organization.

Name: [optional]

.....

Address:

.....

.....

.....

2. What is the type of the organization or company you are currently working at?

Client

Contractor

Consultant

Others, please specify .....

4. State the number of years of experience the organization / company have in Construction industry.

0 – 5 years

5 – 10 years

10 – 15 years

15 – 20 years

More than 20 years

5. in how many construction projects did the company participated to date?

0 – 5

5 – 10

10 – 15

15 – 20

More than 20 years

6. How many projects does the company currently have?

0 – 5

5 – 10

10 – 15

15 – 20

More than 20 years

**Respondent Profile**

1. Name .....

2. State your position in the project

.....

3. State the number of years of experience you have in the construction industry.

.....

4. State the number of construction projects you have been involved.

.....

5. From your experience how many of the projects are completed on time?

.....



## **Section B**

### **Questions about factors that contribute to causes of delays and their impact on the project**

1. Is there a delay on FHC mixed use apartment project?
2. What are the factors that cause delay on this project?
3. Did the delay affect the sequences of activities that must be completed on schedule for the entire project to be completed?
4. Who is the major contributor for the delay?
5. What did you do when the project is delayed?
6. What is the impact of delay on your project?
7. After the delay analysis on the updated schedule nearest to the delay event, do you then revise the remaining work to have a revised schedule or simply continue on the newly impacted schedule?
8. Is there a contract clause that permits or prohibits compensation for that type of delay?
9. Is there any claim related to the delay on the project? How did it solved?