



ADDIS ABABA UNIVERSITY
COLLEGE OF BUSINESS AND ECONOMICS
SCHOOL OF COMMERCE

**“THE IMPACT OF RESULT OF DELAY ON PROJECT
PERFORMANCE: THE CASE OF ETHIO TELECOM OFFICE
BUILDING CONSTRUCTION.”**

By Betelhem Tolla

ID: GSR/6890/14

**A Thesis submitted to Addis Ababa University, School of Commerce in partial
fulfillment of the requirements of the degree of Master of Arts in Project
Management (MAPM)**

Advisor: Fisseha Afework (A/Professor)

June 2023

Addis Ababa, Ethiopia



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Declaration

I, the undersigned Betelhem Tolla, do here by declare that this thesis entitles “The effect of delay of construction building on project performance: In the case of Ethio telecom office building.” is my original work and that it has not been submitted partially; or in full, by any other person for an award of degree of masters in any other university/institution and all the sources used to support this particular study have been appropriately acknowledged.

Researcher’s Name

Signature

Date

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Certificate

This is to verify that the project work conducted by BetelhemTolla, entitled" The effect of delay of construction on project performance: In the case of Ethio telecom office building construction " submitted in partial fulfillment of the requirements for the degree of master of Arts in project Management fulfills with the procedures of the university and encounters the recognized standards from the originality and quality perspectives.

Advisor Name

Signature

Date

Acknowledgment

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Abstract

Based on previous researches there is effect occurring due to delay of projects. The current study designed to check the effect of delay of building construction in project performance of Ethio telecom office building. The research designed to check the effect of delay on project performance. To achieve the study objective, Descriptive and inferential design were used along with quantitative approach was used and qualitative analysis was implements from the response of interview. The quantitative data was analyzed by using suitable methods of descriptive, correlation and regression analysis using SPSS version 27 tool. A five-point Likert scale survey questionnaire was distributed to 40 employee which include 28 engineer,5 contractor and 7 consultant, Census inquiry was used to since the population was small. The major findings of the study revealed that from the effect of delays which are dispute, total abundance and litigation all have negative effect on the project performance of the project. To be more successful in projects, the study recommends that the organization must focus onto overcome the all the factors provide.

Key words: *Project Performance, Dispute ,Total Abundance, Litigation*

CHAPTER ONE

1. INTRODUCTION

The main focus of the study is to assess the result effect of building construction delay in case of Ethio telecom office building. Moreover, the study shows the relationship of project performance and effect of delay. In this section of the study: background of the study, background of the company, statement of the problem, objectives of the study, research questions, significance of the study, limitation of the study, scopes of the study are presented in a way that they are clear and easily comprehensible.

1.1. Background of the Study

Project performance is defined as the overall measurement of whether a project meet objective and requirement of scope, cost and schedule. The success of a construction project can be measured using project performance. In construction the project performance refers to quality of a construction site's operation as well as the site's overall success (Salminen, 2005). One of the way a project performance observed is a construction projects.

Construction can be point out as an activity physical creation of infrastructure, superstructure and related facilities. It therefore comprises of total civil engineering works and all type of building projects including housing as well as maintenance and repair of existing structures. (Wells, 1984).

The construction industry is which a various resources are transformed built the physical; and social infrastructure necessary for socio economic development (MUDC ,2012). The role of construction industries is very crucial. In the present time the industry is an important sector of any national economy as the capital investment of any country to the larger extent is relay on the efficiency of sector. (Paul maker, Mohmmmed Yimam 2021)

However, the construction plays a great role in the economic development of a country the current practices in the construction industry face a lot of problem and frequent projects are not completed on schedule with in the agreed budget, expected quality level and according to the specification. Several factors contributing to these phenomena like shortage of fund, high cost

of construction, scarcity of construction materials, lack of knowledge in construction techniques and construction delay. (Adem Hussien ,2018)

A delay in construction has been defined as the occurrence of milestones or key dates in projects have been abandoned or omitted with the date of completion is put at jeopardy (Van et al., 2015). It may also be prompt by an increment in both overheads and labor costs for the contractor following which all parties involved in a construction project disagree and the project suffers (Egwim et al., 2021). The main causes of project delays are caused by scope of the project, planning gaps, unavailability of risk management system, unavailability of resources, inaccurate project estimates and task assessment; and delay in drawing and approving project designs (Baker ,2015). Delay will give a negative impact limiting its quality, cost, scope and time which is in the performance of the overall project.

Kumar (2016), project delays result in an infrastructure gap in areas such as roads, water, bridges, electricity, hospitals, and sanitation. In the view of Wu et al. (2018), project delay has effect for abandoning the projects entirely especially when exceeding project time and cost over. Mohammed (2015) revealed that project abandonment is where contractor is not be able to perform the contract due to the contractor's inability to start the project within a reasonable amount of time. Time out that occur when a contractor is unable to perform the contract planned projects within the time frame is also one of the effects of projects delay (Jaber, 2015). The other effects of construction delay are cost overrun in (Kumar,2016). In the view of Bakr (2015), cost overrun refers to the overtime cost incurred whenever there is construction delay. Litigation was the other construction delay consequences. To avoid the negative impact of construction delay there is the need to manage construction delays (Wu et al., 2018). Project delay have a direct impact on the project performance which is often conceptualized as a few quantitative and disjointed parameters, like the classical time, cost and quality triangle.

Globally, one in four projects (22.7%) is delivered more than 250 days late, while more than in one in ten (13.4) are delayed by at least a year (Andy Brown,2022). Long Island Rail Rode was one of the infrastructures built in New York. The acquisition cost was estimated approximately 6.34\$ billion and deadline for execution ended in 2013. Due to the delay the operating cost increase to 11\$ billion it was launched 2022.

Ethio telecom has wide structure it contains four main civil work department. The major responsibility of the civil work department is to manage and control the overall construction project that Ethio Telecom construct. This construction projects are major infrastructure

facilities that helps Ethio Telecom to deliver its products and services to customers. The delay of the construction causes effect in the performance of the company. This study will clarify the effect of delay of building construction in the performance of project at Ethio telecom.

1.2. Background of the company

Ethio telecom is the oldest public telecommunication operator in Africa. It is a company serving as the major internet and telephone service provider. Ethio telecom is owned by the Ethiopian government and maintains an ownership on the overall telecommunication service in Ethiopia. It is well known that Ethio Telecom is the only and the first telecom service provider in Ethiopia. As it was introduced in Ethiopia around 1894 (Bogale, 2005). Though recently the sector is applying privatization and other companies are on the way to join the sector. The services provided by Ethio Telecom include fixed line telephone, mobile telephone, internet and multimedia services. Ethio telecom provide different internet services including dial up, leased line and shared DSL to government organizations, private and commercial companies.

1.3. Statement of the problem

The regional office found in Dessie, Adama and Jimma are some of the projects at Ethio Telecom, the Adama regional office was recently terminated due to poor project progress that caused delay of the project causing high financial problem specially for the client (Ethio Telecom)

Studies show that only 7.73 % of the Adama regional office show a progress within 3 years (2018-2021) of construction. Additionally, the Jimma site show a schedule delay only 44.6% of progress up to date with in 2 years, the contract has reached its execution in April 2021. More over the Dessie building show a delay progress of 31.68% with the two year of construction. (Betelhem Kassahun, 2021)

The delay of the projects is affecting the company finance and it is delaying the service provision of the company. Due to the delay, the client (Ethio Telecom) is facing different problems. Since, the building are important for the service provision of the company the delay decrease the quality of service provide by the company. Currently, the employees are working on rental of buildings with high cost and as a result of the delay of the construction the company

have to invest additional budget for the office rent. The other effect is as the extend time increase the time value money, the cost of construction materials, machineries and labor increases a cost overrun of the project and decrease the overall performance of the project.

Many researches have conducted on the effect of delay on project performance worldwide, while in Ethiopia few researchers studied on the case of delay. According (Geberehiwot and Luo 2017) had studied on the Analysis of Delay impact on construction projects based on the investigation cost overrun, termination of contract, arbitration and litigation Additionally,(Dusso and Wodaje 2020) had studied the cause and effect of delay of building construction Ethiopia, Southern Nation Nationalities of people region in Gurage Zone based on the result top 5 effect of delay were identified which includes increase in financial cost of project, (budget over run), time over run of the project ,poor quality of completed project ,abandonment of building projects and wastage and underutilization of human resource and materials .

The above researchers distribute questionnaire for the client, contractor and consultant. The response was analyzed by using degree of severity, frequency of occurrence and RII (relative important index) in both cases. This study clarifies and clearly pointed out the effect of construction delay specifically on project performance using both qualitative and quantitative (regression analysis).

1.4. Research Questions

The researcher devise and conducts the study so as to answer the following fundamental research questions. These are:

1. What is the current project performance of Ethio telecom in case of office building construction at Ethio telecom?
2. How does dispute and litigation affect project performance?
3. How does total abandonment affect project performance?

1.5. Objective of the study

1.5.1. General Objective of the study

The general objective of the project is to assess the impact of result of building construction delay in project performance in the case of Ethio Telecom office building construction.

1.5.2. Specific Objectives of the study

- To assess the current project performance of office building at Ethio telecom.
- To assess the effect of litigation and dispute on project performance.
- To assess the effect of total abandonment on project performance.

1.6. Significance of the Study

Construction industry makes a particular contribution to the development of a country especially for developing country. Indeed, in developing countries construction is linked to both economic and social sector. One of the leading companies offering government is Ethio telecom. Ethio telecom built different infrastructure that can support the quality provision of service.

The study assesses the effect of delay of construction in project performance the value is used as a guide line to certain parties involved. Additionally, it will prevent delays and help in carrying out the work with in time, budget and schedule. More of this the research helps the company focuses and strategize on this effect to prevent the delay, reduce dispute caused by poor design progress history. The research also be used as a reference for further study.

1.7. Scope of the Study

The idea of delay in construction is a very wide concepts which cannot be limited only to big projects but beyond it. The research was limited to the building construction carried out at Ethio telecom in which contractors, consultants. It includes identifying the effect of delay in project performance of schedule, cost and quality. There are over 50 projects which are constructed in the past 5 years but the research will focus the 3-year projects in three sites which are regional office since they are the largest of all and also constructed with high budget.

1.8. Limitation of the Study

The construction projects have a wide scope in this, the research were limited to building construction projects that are held at Ethio Telecom. While working on the study there are some challenging factors which are:

- The staffs were so busy enough so couldn't be able to fill the questioner on time even though all of the respondent fill the survey some of the respondents were filling it carelessly respondent which was a serious issue while collecting the survey.
- It was very hard to find the contractors due to the projects are terminated and there were engaged in other projects.
- It was very time taking to collect responses from contractors and consultants.

1.9. Organization of the Study

This research paper consists of five chapters. The first chapter contains an introduction of the study which consists of background of the study, organizational back ground, statement of the problem, research questions, objective of the study, significance of the study, scope and limitation of the study and organization of the paper. The second chapter deals with a review of literature from different sources which presents theories and discussions related to what construction delay is, what causes project delay and its effects. The third chapter contains methodologies applied in order to achieve the research objective. It shows the source of data, research design, research technique, sample size distribution and method of analysis. The fourth chapter presents data analysis and interpretation that are obtained from questionnaire. The fifth chapter was dedicated to the conclusions, and recommendations.

1.10. Definition of Terms

Project: -it is an activity or a temporary or enterprise with beginning and an end for the creation of unique product or service (PMBOK).

Construction project: -designate to a building, renovating, modernization or other intervention in the building asset (Designing Buildings, 2022).

Project delay: -this is unplanned and unexpected project postponement due to events that impeded the continuation of project.

Project performance: - performance refers to the functional quality of a construction site's as well as the site's overall success (Rodolfo, 2018).

Contract: -a voluntary agreement between two or more parties that is enforceable by the law.

Project abandonment: -can be defined as stopping a running project attributed to many difficulties and limitation or problems encountered during the phase of the project cycle. (Alusegun, 2011).

Litigation: -is a court case that occurs amongst project stakeholders or participants in an attempt to settle an existing dispute (Eipstein, 2006).

Dispute: - is a disagreement that arise between parties.

CHAPTER TWO

2. LITERATURE REVIEW

This section covers review of literature from different scholars and authors that have been reviewed in the study area of effect of delay on project performance, type of delay and type of construction projects. It deals with conceptual, theoretical and empirical finding of diverse academic's theories. Several secondary sources including published books, journal and relevant websites were conducted. In this regard, an effort was made to include as much relevant material as possible by reviewing the documents that were already available and focusing on the achievement of the research goal.

2.1. Theoretical Review

2.1.1. Construction Project

Building construction is the process of assembling materials to form a building moreover, general contractor assumes overall responsibility for construction of a building (Merit on building design and construction, 2000). This Construction industry are an industry, which contains planning of project work. Scheduling of project duration, organizing, evaluating, executing project progress and observing of all project works. The construction project is universally approved as successful when it finished on time, within budget, according to specifications and to stakeholder's satisfaction. Delay increases work sliding and late finishing of the project, disagreement of client and contractors.

This Construction industry are an industry, which contains planning of project work. Scheduling of project duration, organizing, evaluating, executing project progress and observing of all project works. It is universally approved as successful when it finished on time, within budget, according to specifications and to stakeholder's satisfaction. Delay increases work sliding and late finishing of the project, disagreement of client and contractors. This may cause disturbance of project progress and loss of services, also increases time linked costs, and finally, it may cause termination of construction project work and its contract.

2.1.2. Types of construction projects

The major types of Construction facilities may be classified into four major categories. (Scott Wolfe J ,2013)

I. Residential Housing Construction

Residential housing construction includes single-family houses, multi-family dwellings, and high-rise apartments. Necessary contractual agreement and design are done by the replacement of owners and taking charge of the sponsors and arranging the final of the completed structure.

II. Institutional and Commercial Building Construction

Institutional and commercial building construction includes variety of project types and sizes, which includes schools, universities, medical clinics, hospitals, recreational facilities and sports stadiums, retail chain stores and large shopping centers.

III. Specialized Industrial Construction

They are very large scale projects with very unique technologies such as nuclear power plants, oil refineries and steel mills.

IV. Infrastructure and Heavy Construction

This type of construction includes projects such as highways, mass transit systems, tunnels, bridges, pipelines, drainage systems and sewage treatment plants. Nearly all projects are publicly owned with is financed either by bond or taxes.

There are many infrastructure works being done at Ethio telecom which are controlled by the civil work department which includes maintenance, infrastructure and site works. From all the constructions the construction of regional offices, head offices, warehouse construction, generator house and shops are the common ones. from the above listed the regional office take the upper part since the project are large and long contract.

2.1.3. Construction delay

Construction delay is the length of time that extends the project duration and cause disruption on the delivery of projects goal and objectives. Delay is a period of late time of project that identified in a contract agreement or greater than the date that contractor and client decided upon submission of a project. It is a project time lag over its planned schedule and is well thought-out as common difficulties in the construction industry (Desalegn DisasaDaba, 2018). Moreover, it is unplanned and unexpected postponed of a project because of some event or occurrence that hinders the project's commencement or continuation.

According to. (Ir. Hj. Redzuan Ab. Rahman, 2018) Construction delay is considered as one of the most major problems in the construction industry and it often affects project success in terms of the project performance such as time, cost and quality. The influence of delay is mainly related to consultants, contractor and owner on project performance. Effect of delays are costly to all parties concerned and very often it will result in disagreement, cost overrun, arbitration, litigation, total abandonment, and project infeasibility. Construction is a risky industry with uncertainties due to various external and internal factors that influence the construction process.

Delayed projects have led to infrastructure gap in areas such as roads, water, bridges, electricity, hospitals, and sanitation (Kumar ,2016). project delay has effect on total project abandonment The project abandonment is where contractor will not be able to perform the contract due to the contractor's inability to start the project within a reasonable amount of time. (Wu et al ,2018)

2.1.4. Causes of delays in construction project

There are different causes of delay in a project the following are some of the most common factors causing delays in the construction industry. delays can happen for various reasons such bad air condition or weather, unforeseen actions, conflict between construction parties, labor and equipment problems. There are also some other reasons listed below, but causes like weather and unforeseen conditions that are beyond control.

1. Securing Finance

Accurate estimating ensures there is always enough money for materials, wages, and more. Using proper estimation makes the process somewhat guaranteed. Moreover, once estimates are complete, contractors need an easy way to get the project in their construction management

platform and get to work.

2. Construction Drawings

No building projects may begin without authorized drawings from licensed professionals. Projects may be delayed by incomplete drawings.

3. Permits

Some projects like as those involving require zoning, soil erosion, water, sewer, etc demand several approvals. Every permission needs its own application, which can take days or weeks to complete.

4. Public Utilities

Majority of commercial project need moving utilities or utilizing existing ones. In order to prevent delays later, we must speak with public utility providers.

5. Design Changes

The project owner may change the layout when the construction begins. This can delay projects as professional help is needed to update the drawings and get them approved again.

6. Site Conditions

Different site condition can impede project progress. The soils state can be impacted by the weather, which might delay building. If it's hot and muggy, cold and snowy or both we should reevaluate the project schedule and apply safety procedure. Providing a work team with waterproof equipment for increased production when bad weather strikes.

7. Material Supply

Delivery of material and equipment can take several weeks, depending on the project. To avoid delays, it is better to plan for extra time.

8. Lack of Effective Communication

Whether it's communication from an owner, client, in the field or at the office, everyone should

be apprised as new updates like change orders or redesigns, or data like job progress or job costs become available.

9. Weather Conditions

Nature and weather can interfere in construction. Contractors don't have control over rain, storms, hurricane, and earthquakes.

10. Environmental Aspects

For most of the projects, you will need to conduct a Baseline Environmental Analysis (BEA) and consult state authorities.

11. Subcontractor Schedules and Compliance

Effectively managing subcontractors, their timelines and schedules, compliance documentation, collaboration with other contractors and more is vital to a project's success.

2.1.5. Type of delays

There are many classifications of delay which have been written by several authors but they have a linkage one to another. According to (Ahoirya and Aniba, 2011) they have classified delays in to the following parts.

1) Excusable Delays

Excusable Delays are delays that are unforeseeable and beyond the control of the contractor. It is a delay that is due to an unforeseeable event beyond the contractors or the subcontractor's control.

Normally, based on common general provisions in public agency specifications, delay resulting from the following events would be considered excusable:

- General labor strikes.
- Fires.

- Floods.
- Acts of God.
- Owner- directed changes.
- Differing site conditions or concealed conditions.
- Usually severe weathers.
- Intervention by outside agencies.

Decision concerning delays must be made within the context of the specific contract. the contract should clearly define the factors that are considered valid delays to the project that justify time extensions to the contract completion date, for example some contracts may not allow for any time extension caused by weather conditions, regardless of how unusual, unexpected, or severe. In the construction world, excusable delays consist of any delays that are unforeseeable, and fall beyond the contractor's control. A few examples of excusable delays can range anywhere from

severe weather, design changes requested by the owner, or labor union strikes. On the other hand, if a delay is found to be non-excusable, it is something that was foreseeable and within the control of the contractor. Inexcusable delays can be anything that the contractor could have prevented, such as a lack of proper equipment, a lack of needed materials, or failing to schedule workers properly.

2) Non-Excusable Delays

Are delays that are foreseeable or within the contractor's control. Obviously, the distinction between these two is significant in that it determines which party is liable for the delay. Similarly, it also dictates whether or not a contractor would be entitled to a time extension and possibly if the contractor would be entitled to compensation for that time extension.

Non-excusable delays are a result of a delay that was within control of the Owner/Contractor. The Owner/Contractor is fully responsible for the activity delays. Examples of non-excusable delays

include:

1. Delayed mobilization
2. Delayed submission of submittals

3. Overall late performance and execution
4. Late performance of subcontractors
5. Late performance by suppliers
6. Faulty workmanship by the contractor or subcontractor

Non-excusable delays can be either compensable or non-compensable or can result in an extension of time.

3) Non-Compensable

Delay normally encompasses such things as strikes, unusually severe weather, acts of God, fires, floods, etc. There is a general lack of understanding concerning the Non – Compensable Delay for weather. It should be noted that a Non – Compensable Delay is for unusually severe weather. That is weather which is not anticipated at that time of year in that part of the country. It does not mean that any time there is inclement weather or weather that may prevent the contractor from working that the contractor is entitled to a time extension. The contractor is only entitled to a time extension when the weather is unusually severe. The determination of what constitutes unusually severe weather is based upon a review of the historical weather data for that area.

4) Compensable Delays

When it comes to compensable delays, in most cases they will be defined in the contract. Compensable delays are typically known as “No damages for delay” clauses, and with this the contractor has the ability to be compensated for a particular delay cost, depending on the circumstances. A compensable delay is one where there’s going to be some compensation involved for the delay to the project. That means that the owner or contractor is liable for an extension of time or cost

2.1.6. Effect of delay

There is different effect of delay which are stated by different authors. According to (Mahamid2017), on the impact of construction delays in the industry of construction include: total abandonment; Time overrun; Cost overrun; and Litigation, Project abandonment is where the contractor stops the project. It occurs when the contractor does not start within a reasonable amount of time. Causes of abandoned construction projects are categorized into five. They include namely government policies, public delivery system, economic conditions, mismanagement and financial problems. According to Oyegoke et al. (2017), projects with poor costing are more likely to be abandoned. Time overrun is an effect of construction delay the factors contributing to time overrun also include contract mismanagement, site situation and inadequate planning. Cost overrun refers to increase in project cost (Mpofu et al., 2017). Reworking contributes to cost overrun. Construction mistake can be corrected by incurring more cost.

Moreover, there are different effects which are stated by (Mohd Danish,2019), according to the author he has listed 8 effect of delay which are: -

1. Time overrun
2. The contractor's profit has been greatly reduced due to cost overruns.
3. Non-productivity losses of the owners due to long-term stay during the construction phase.
4. Do not trust the contractor, damaging the reputation of the company.
5. Do not trust the owner to delay the payment that led to the contractor's cash flow.
6. Project participants are in dispute, arbitration or litigation.
7. Exit the project.
8. It is difficult to improve the market value of the contractor's business

According to Agarwal, Vaishant Gupta, Mukesh Pandey (2012) they define the consequences of delay are different for different project participants which also depends on the type of project. The general consequences are cost overrun; time overrun etc. For the owner/client delay is the loss of money, loss of time, loss of other facilities etc. For the contractor, delay

means the loss of wealth for more expenditure on equipment's, other materials and for hiring the skilled labor.

Surveys conducted by (Holt and Harris ,1997) studied influencing factors on 31 high-rise projects in Indonesia and found out that cost overruns occur more frequently and are more severe problem than time overruns. They pointed out that the major factors influencing cost overrun are material cost increase due to inflation, inaccurate material estimation and degree of complexity.

A study conducted on Nigerian construction and effect of delay on project performance. The research revealed six effect of delays which include time and cost overrun, dispute, arbitration, litigation and total abundance. Another study in Pakistan revealed that the clash, claims, total abundance and slowing down the growth of the construction (Samarah ,2016).

2.1.6.1. Time over run

When the Completion date specified in the contract, or beyond the date that parties agree upon for the delivery of the project” (Larsen et al., 2015). Time overrun is a most common incident which occurs nearly in all the projects related to the construction industry, it happens when the work of contract does not complete in its prescribed time.

The factors that led to the time over are listed by (Mohammed etal ,2017)

- Inflexibility of consultants
- Absence of consultants at site
- Change orders during construction by the owner
- Financial problems (delayed Payments, financial difficulties, and economic problems).
- Market inflation in the country

2.1.6.2. Dispute

Dispute is a one of the effects in construction projects. It is arisen among the project parties during the construction project. The project engineer as a mediator party has to solve any dispute early during construction otherwise the project completion will be late.

There are many factors which lead to dispute to occur according to

- Inadequate experience
- Argument between parties
- Lack of proper administration of contract
- The owner's interference

2.1.6.3. Total Abandonment

Total abandonment is one of the effects that delay in construction project (Aibinu and Jagboro, 2002). It can affect the construction process either temporarily or permanently. Total abandonment means the whole project stops immediately because the client or the contractor is facing financial difficulties (clients' bankruptcy, poor marketing and sales strategies). Inadequate risk procedures and control measures implemented, Lack of project planning, especially risk management, Lack of management support and Lack of customer support are some of the factors which lade to total abandonment of projects.

2.1.6.4. Litigation

One of the effects of construction delay is Litigation. In the view of Ruqaishi and Bashir (2015), when the arbitration does not work, the court system administers justice. According to Owolabi and Olusanya (2014), consultants and contractors are responsible for litigation has the lawful right to impose the results of litigation on the parties.

If anyone of the stakeholders is not satisfied, then he will be forced to file a suit against others. The overall effect is that it will further delay the project more and increase the cost including the cost of hiring an Attorney. (Mohamed Ahmed ,2017)

2.1.7. Relationship between delay and project performance

In previous time project performance defined as project that meets its scope under the defined budget schedule and quality but the project success goes beyond meeting only the schedule and budget but also delivering the benefits and meeting expectation of beneficiaries, stockholders, donors or funding agencies.

The success of a construction project may be measured using project performance. In a construction project, performance refers to the quality of a construction site's operation as well as the site's overall success (Salminen, 2005). Performance is measured in several ways as time, cost, quality, client satisfaction, productivity and safety. Delays due to material shortages; lack of resources; lack of project leadership skills; escalation of material costs; lack of highly experienced and qualified staff and poor quality of available equipment and raw materials are the most significant variables impacting project performance (Enhassi, 2009).

There was three aspect of project performance which was started by Atkinson called “The iron triangle” (Atkinson ,2015) these aspects of project are cost performance, schedule performance, quality performance, four indicators were also stated through a review of (Ahmed & Anantatmula 2017).

Project performance can be evaluated by using performance indicator such as cost, quality client satisfaction and business satisfaction (Alqahtani,2015). Different researcher conducted a framework to measure project success. Shenhar etal (2001) suggest that the project performance should be assessed according to the objectives classified as long term and short-term objective.

There are many factors which lead to the decline performance of a project the factors include unclear objective, in sufficient project schedule, design changing, inadequate control, in effective communication and unclear role of the stake holder (Alqahtani. etal,2105). According, to Stare (2011) he classified the above reason in to three main aspects which are organizational culture, project management culture and project manager. In the study of Heckman (2015) he emphasis that the capacity of the company changes positive associated with project performance. The study also added that the company project performance can be achieved through insuring consistent quality enhancements, cost optimization, safety enhancement and timely delivered.

2.1.8. Method in minimizing construction project delay

Many researchers have recommended the method of minimizing delay in construction would require strong management teams, through investigating of site conditions together with the design of groundwork and foundation. (Chan & Kumarasamy ,1997). Additionally, the have

revealed that developing communication system linkage of all project team was the significant way to mitigate the matter.

According to Aibin & Jaboro (2002) conducted on the effect of delay project delivery they have identified two methods in which delay can be minimized these were acceleration of site activities and contingency allowance. Odeh & Battaineh, (2002) recommended factors that are used to improve delay situation in Jordan which are enforcing liquidated damage clauses, offering incentives for early completion, developing human resources through proper training, adapting new approach to contract award procedure.

Based on several study of project performance factors and minimizing delay in construction project a total of twenty-three methods have been identified in order to minimize construction delay.

Table 2-1: Method to minimize project delay

Methods
1. Utilization of the latest construction technology
2. Frequent site meeting with all functional parties
3. Not awarding contract based on the lowest bid
4. Increase of productivity by working overtime, shift
5. Offer incentive for early project completion
6. Ask for extension of time
7. Execute delayed activities by subcontractor
8. Promote team working among project participants
9. Developing human resource management (training, day courses)
10. Timely decision making by all functional group.
11. Proper project planning and scheduling
12. Developing appropriate communication system linkage to all function group
13. Early in obtaining permit and approval from relevant authority
14. Through project feasibility study and site investigation
15. Accurate initial project cost
16. Hire experience personnel for project implantation
17. Build a systematic project control and monitoring mechanism
18. Absence of bureaucracy
19. Proper emphasis on past experience of project parties
20. Accurate initial time estimation

2.2. Empirical review

A construction project is generally considered successful if it is completed on time, in line with specification and stakeholder. Nonetheless, most of the projects did not complete as the expected rather they finished ahead of schedule or behind schedule as a result of the uncertainty of events and their uniqueness

Construction projects had 70% of time overruns and 76% of contractors and 56% of consultants have indicated that they have been facing average time overrun of 10 to 30% compared to original duration with in an additional cost of 50% cost. 50% of the construction projects in United Arab Emirates are delayed. Accordingly, delays are one of most frequent issues and they have a wide range of detrimental effects on project and the parties involved.

In Ethio Telecom construction projects the company is the client for the projects the company has its own departments to check up from the starting of a project to the end. The authority of the civil work department is to be in charge of the overall control construction project that Ethio Telecom constructs. The project helps the company to deliver its product and service in sufficient way.

A study conducted on Nigerian construction and effect of delay on project performance. The research revealed six effect of delays which include time and cost overrun, dispute, arbitration, litigation and total abandonment. According, to (Kotangora, 1993) report the project abandonment and uncompleted project in Nigeria were about 4000 with an estimated value of 300billion Naira. Moreover, (Yap, 2013), there were about 54 abandoned housing projects in the country with an estimated value of 7.5billion Nigerian Naira. Cost overrun and time overrun (elongation of project duration) were the two most frequent effects of delay in the Nigerian construction industry (A.A. Aibinu, 2002). Delay had significant effects on actual project duration.

In research which was conducted in Saudi Arabia which include 23 contractors ,19 consultant and 15 owners it was conclude that 70% of the projects experience a delay. Over 73 causes of delay were identified and grouped in section. The factors related to labor, contractor project and owner were the highest ranking (Saudi A. Assaf A., 2006). In another research conducted fifteen effects were identified and deterioration of the company, bankruptcy, stress of contractor, total abatement and acceleration of losses were the top 5 effect of construction delay in Saudi Arabia (Jawad A. Alsulima,2019)

According to Fashian. etal, (2020) indicate major effect of construction project delay in Somaliland construction industry. The primary goal of the study was to fill the significant knowledge gap by exploring the effect of delay on the construction industry. On his study ,5 effect of delay was relieved time overrun, cost overrun, dispute, complete abandonment and legal action or law suit were identified.

2.3. Conceptual framework

The study focus on construction delay that has an effect on the performance of a project both directly and indirectly. The study presents a conceptual framework that explore the relationship between project performance and delays. More specifically, the conceptual framework of the study looks relationship between the research variables.

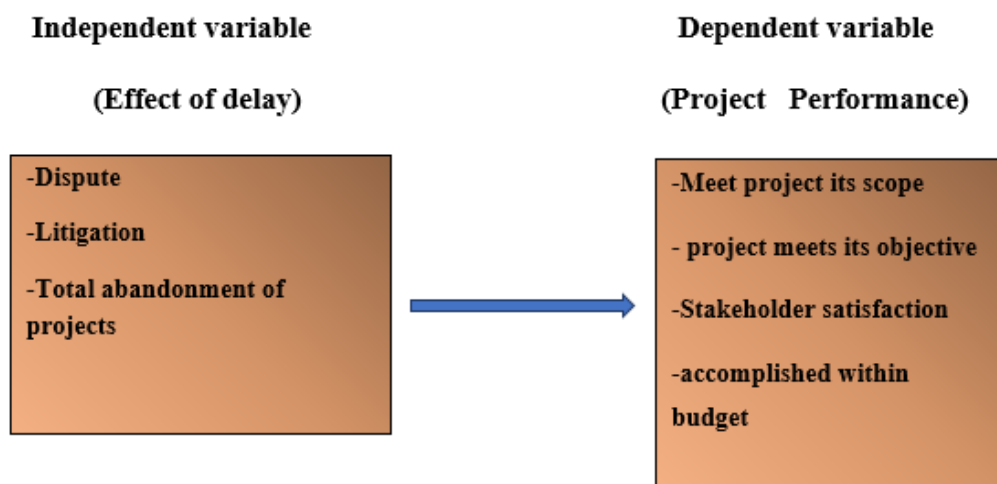


Figure 2-1: conceptual frame work Source; self-develop from literature

CHAPTER THREE

3. RESEARCH METHODOLOGY

This chapter discuss data processing presentation and interpretation of the general information provided by the respondent, including a demographic analysis. This research paper is structured using the Likert scale to collect data through questions, and it's also addressing the research topic with each question being addressed through an analysis of the data collected and presented in tables. The study assessed the relationship between construction project delays and their impact on project out comes. Utilizing mean, standard deviation, correlation, regression and percentage the findings were obtained and examined.

3.1. Research Design, and Research Approach

3.1.1. Research Design

Research design is an ideal framework for conducting a study by considering the linkage between research question and the implementation or execution of the research. (Ornstein 2013). This research used descriptive and inferential statics design since the study focus on the relationship between the effect of delay construction and the performance of a project. For the quantitative response of descriptive statistics concerned the effect of delay of construction frequency, measures of and central tendency were used and tables were used to summarize the responses. Inferential analysis such as correlation and regression analysis will be used to assess the relationship between each independent variable with the dependent variable and the aggregate effect, using SPSS (Statistical Package for Social Science) version 26.

3.1.2. Research Approach/ Method

In consideration of the nature of the research question, qualitative and quantitative research method is selected for this study as the research questions relates to the personal attitude, opinion and view and to assess the current performance of the company. The qualitative and quantitative approach were used to answer the first research question. Quantitative research approach was used to answer the second and the third research question

3.2. Data collection Techniques- Research instrument

The research instrument used for the study were mixed including questioner and interview. Questionaries were distributed for the administrative who are apart from the construction and who are related to the construction like consultant and contractors and an interview was conducted to the department head to assess the current project performance of the company.

3.3. Population and Sampling producer

3.3.1. Population

The target population for this research is considered from the three parties from Ethio Telecom Civil Works department which includes client (Ethio telecom), contractors and consultants. The samples that are considered from the population are individual representatives that are professionals involving in the building construction project in the near past year and are still working on ET building projects. The list of contractors and consultants currently involved in buildings construction projects were obtained from Ethio Telecom Civil Works department (ETCWD).

3.3.2. Sampling technique

The sampling technique for this study was a census study in which every unit, everyone or everything, in a population is considered. According to (Kothari 2004) Census is a complete enumeration of all items in the population in which, all items are covered, no element of chance is left and highest accuracy is obtained. Using Census was very appropriate for the study because there were small number of employees participated in the study.

3.3.3. Sample size

The sample used in the research was a censuses study since the population is less, I used all of the population that have a linkage with the study. Total numbers of 40 respondent were participated in the censuses in which it comprises a total number of 7 consultants that worked at Ethio telecom and 5 contractors working at the company. In the case of the engineer questioner was distributed to 28 questionnaires form the civil department of the company. Additionally,

for the qualitative part of the study I make an interview for one person which have a direct relationship with the construction at Ethio telecom.

3.4. Types and Sources of data

3.4.1. Primary data source

The researcher used primary data collection. A primary data source is an original data source, that is in which the data are collected firsthand by the researcher for a specific research purpose or project. The primary data was obtained through the survey method which was through questionnaire distribution with five-point Likert Scale Questionnaires. Questionnaires were developed and distribute to employees to gather information in order to assess effect of delay of construction on the performance of project.

The questionnaires were comprised of three parts. Part one was prepared just to gather information about the respondents such as, gender, education and experience. part two of the questionnaires, respondents were asked the degree of their agreement and disagreement on the questions related to dependent variable which is performance a building project. For a number indicating 1, 2, 3, 4 and 5 were assigned and measured as Strongly Disagree, Disagree, neutral, agree and strongly agree respectively. In part two of the questionnaires, respondent was asked that how frequently the effect of delay which are dispute, total abundance and litigation has been occur. For each question there were question provide and a number indicating 1,2,3,4 and 5 were assigned.

3.4.2. Secondary data source

The secondary data was derived from the review of literature and additionally through interview. The secondary data type includes different literatures and previous studies done related to delay of construction projects. Additionally, referring books, journal, newspaper, website, office recorded data and related documents were used. On the other hand, an interview was held with the department head to have a clear image on delay and to assess the current project performance situation at the company.

3.5. Data Analysis and presentation Methods

The data, after collection, must be processed and analyzed in order to get findings. Depending upon the nature of the problem the study used quantitative analysis. For the quantitative (numerical) response was used like percentage, frequency, measures of and central tendency were used and tables were used to summarize the responses.

Inferential analysis such as correlation and regression analysis were used to assess the relationship between each independent variable with the dependent variable and the aggregate effect, using SPSS (Statistical Package for Social Science) version 27. Correlation analysis was to conducted relationship between the performance of building projects and delay. The study adopts Pearson's coefficient of correlation. The bivariate analysis Pearson's coefficient of correlation, abbreviated as r , is a measure of the degree of association between two variables. Essentially, a Pearson product-moment correlation attempts to draw a line of best fit through the data of two variables, and the Pearson correlation coefficient was used to investigate the relationship between variables. The Pearson correlation coefficient, r , indicates how far away all of these data points are from this line of best fit (how well the data points fit this new model/line of best fit). The Pearson correlation coefficient, r , can be anything between +1 and -1. A value of 0 implies that the two variables have no relationship (B.Burns & R.Burns, 2008). Regression analysis was made to determine by what extent delay affect the project performance.

3.5.1. Data editing and coding

The collected data from the employee was edited to check lack of deviation, integrity and missing of data. Coding was used to allocate numbers to each answer and data from the questionnaire was transfer to SPSS version 27 and all measurement were coded with numbers.

3.6. Validity and Reliability

3.6.1. Validity

Validity defined as the extent to which data collection method or methods accurately measure what they were intended to measure (Sounders et. al., 2003). It concerned whether the with whether the findings are really about what they appear to be about. The researcher used

different source of data form literature, questionnaire, observation and document review to triangulate the data.

3.6.2. Reliability

Reliability is the absence of random error, which enables consecutive researchers to reschedule the same finding if they use the same procedures. A five-scale system (Likert scale) questionnaire was used. When compared to a two-scale system, this scale has a better level of dependability (Hayes, 1992). The researcher used SPSS (Statistical Package for the Social Sciences) to conduct a Cronbach's alpha reliability test to ensure the questionnaire's dependability for each independent variable according to Zikmund et. (2010) he has scaled the coefficient of alpha as between 0.8 and 0.9 to have excellent reliability, between 0.7 and 0.8 have good reliability, between 0.6 and 0.7 fair reliability and less than 0.6 poor reliability.

Table 3-1: Cronbach's alpha value

Variables	Cronbach's alpha	Number of Items	Strength
Dispute	0.84	3	Excellent
Litigation	0.7	4	Good
Total Abundance	0.72	4	Good
Project performance	0.85	4	Excellent

Source; Survey Results and Own Computation, 2023

Based on the table above the reliability of each variable have been tasted based on the result dispute and cost overrun have an alpha value of 0.804 and 0.806. Additionally, litigation have alpha value of 0,75 further, more arbitration and project performance have alpha value of 0.71 and 0.8. From the result we can see that most of the variables have excellent reliability so we can conclude that research instrument is reliable.

3.7. Ethical Consideration

During the research, upholding high ethical standards is still vital and significant, privacy and secrecy must always be upheld earn the participates trust. Participants personal information was kept a secret. An overview of the surveys goal is included in the survey questionnaire that participants receive. In order to maintain anonymity, respondents were not allowed to disclose their identities in the questionnaire. Additionally, the respondent is given enough time by the researcher and an email survey was issued to respondent outside of Addis. The essential and maximum level of care was used to prevent plagiarism.

CHAPTER FOUR

4. RESULTS AND DISCUSSION

This chapter covers data analysis, presentation and interpretation of the general information of the respondents which includes the study of the respondents' demographics. This research paper is organized based on Likert scale technique of gathering information through questionnaire and it also tackles the research questions where each of the questions is answered by the analysis of the obtained data and presented through tables. The correlation between the delay of building project, and its effect on project performance was evaluated by the research. The findings were obtained and analyzed using, mean, standard deviation, correlation, regression and percentages.

4.1. The demographic characteristics of respondents

This section summarizes the first part of the questionnaire which consist the demographic characteristics of the respondents (gender, age, educational level, project they are in, role they are working and total work experience in project). The main purpose of the demographic analysis in this research is to describe the respondent of each characteristic in terms of personal and professions so that the analysis could be more meaningful for readers.

Table 4-1: Demographic data of respondent

Variable	Categories	Frequency	Percentage
Gender	Male	30	75
	Female	10	25
	Total	40	100
Age	25-35	31	75.5
	35-45	9	22.5
	Total	40	100
Level of Education	Degree	35	87.5
	masters	5	12.5
	Total	40	100

Role	Contractor	7	17.5
	Consultant	5	12.2
	Engineer	28	68.3
	Total	40	100
Work Experience	Less than 5	17	42.5
	5-10	23	57.5
	Total	40	100

Source; Survey Results and Own Computation,2023

The study had considered sex as one of the demographic representations to have equal representation of the respondent. Based on the table provided greater number of the respondent are male which are 30 (75 %) and female contribution is 10 (25). This representation is not satisfactory additionally, almost all the contractor and consultant are male so based on the data represented we can conclude that sex is not well represented.

The study considers age as other demographic factors the age is classified as 25 -35 ,35-45 ,45-55 and above 55. The age range was taken in the bench mark that considering the age that can be participant in the construction sector. From the table above 75.5% (31) are as age of 25-35 years, and 35-45 are 9 (22.5%) years. From the result we can conclude that most of the respondent are ranging from 25-35 followed by the age of 35-45. Furthermore, there is no respondent for age of 45-55 and above 55.

The other demographic factor that was considered in the study is education level. Degree, Masters and others were provided as a choice for the respondent. The education level help to determine how much the respondent are engage in the construction project and to measure the knowledge level of the respondent. According, to the table 4.2.3.1 there were 35 respondents (87.5%) with a bachelor's degree, and 5 respondents (12.5%) with a master's degree. This leads us to the conclusion that the majority of respondents held bachelor's degrees, followed by masters. There is no other academic background. We can conclude most of the respondent have an understanding of the construction sector.

Role was one of the other demographic characteristics of the respondent. The respondent was requested to answer the role in which they take place. As shown in table above, concerning the role that the respondent take place was 68.3% % were engineers where as 17.5% and 12 2 %

are consultant and contractor respectively. As per the result we can conclude that most of the respondent are engineer followed by the consultant. The respondent was asked to indicate their experience at the company.

Total work experience in project work of respondents 17(42.5) had 1-5 years of experience, at the company and 23 (57.5%) had an experience of 5-10 years. From the respondent some of the engineers have a work experience of less than 5 years, additionally most of the respondent on contractor and consultant have experience of 5-10 years.

4.2. Descriptive Analysis of effect of delay

Every variable of the dependent and independent variables had been examined. Each variable was analyzed by computing the mean and standard deviation value of the respondent. According to (Hair et al,2007) he has stated that the standard deviation shows how dispersed the data relation to the mean. If the standard deviation is low, it shows that the data are close to the mean of the distribution and a high standard deviation indicated that the data are more spread out and don't fall close to the mean. For the study the mean statistical values of the items were based on the 5-point Likert scale which are if the mean score is below 2.5 it implies that the respondents disagree with the statement, if the mean score is equal to 2.5 it indicates that the respondents prefer to stay Neutral, and finally if the mean score is above 2.5 it implies that the respondents agree with the statement.

Dispute, total abundance and litigation were the independent variables which implies the effect of delay and the dependent variable was the project performance of the company. The mean value of each results analyzed as well as their respective variables were analyzed independently.

4.2.1. Dispute

Considering the influence of delay on project performance the respondent was requested to rate various aspects of dispute on their company.

Table 4-2: Descriptive statistics of Dispute

Variables	Mean	Std. Deviation
There are Argument between project parties	3.08	1.439
The contract of the project in the company has not been properly administered	2.75	1.276
The project parties do not have a common understanding on the contract	2.95	1.358

Source Survey Results and Own Computation, 2023

According to the respondent all the mean values of the respondent are above 2.5. The existence of argument between project parties and lack of common understanding of the contract with a mean value of 2.95 plus lack of proper administration the contract of the project in the company has a mean value of 2.75 which is also greater than 2.5. With this regard, the respondents have agreed with all the variable which are there have been argument between parties, lack of common understanding of the contract and lack of administration of the project.

4.2.2. Total Abundance

The third independent variable is total abundance there were 4 factors which include if there was a lack of planning at the beginning of the project, lack of implementation of risk procedures and control measures, lack of management support and Lack of resource and project planning which led to the total abundance of the project. The respondent was required to rate the factors based on the existence in the company.

Table 4-3: Descriptive statistics of Dispute

Items	Mean	Standard deviation
There was a lack of planning in the beginning of the project	2.9	1.27
Risk procedures and control measures were not implemented	3.10	1.17

There was lack of management support	3.2	1.247
Lack of resource planning	3.33	1.05
Over all mean= 3.12		

Source Survey Results and Own Computation, 2023

According to the result three of the result are rated above 2.5 which were lack of planning in the beginning of the project, lack of implantation of risk procedure and controlled measure and lack of management support having mean value of 2.9,3.1,3.2 respectively so the respondent have shown agreement with these three variables. Additionally, lack of resource planning shows a mean of 3.33 which implies that the respondent also agrees with the variable.

4.2.3. Litigation

Litigation is one of the third factor. Which contains four variables which include existence of legal action process taking place in the company, dispute at the company which led to the court, a loss of communication between parties and injuries of the employee that led to lawsuit.

Table 4-4: Descriptive statistics of Litigation

Items	Mean	Standard deviation
There was legal action process taking place in the company	3.1	1.33
There was a dispute which led to the court	3.2	1.11
There was a loss of communication between parties	3.03	1.33
There were injuries of the employee that led to lawsuit	2.8	1.3
Over all mean= 3.03		

Source Survey Results and Own Computation, 2023

Based on the table summarize respondents show a level of agreement on most of the variables. The respondent were asked if there was legal action process taking place in the company with the respondent show agreement with a mean of 3.1 and standard deviation of 1.33 .Secondly ,the respondent rated the existence of dispute which lead to the court having a mean of 3.2 and standard deviation 1.11 .Additionally, respondent were asked if there was a loss of communication between parties the respondent response with the mean of 3.03 and standard

deviation 1.33. Furthermore, they were requested to rate if there were injuries of the employee that led to lawsuit the respondent show a mean 2.8 and standard deviation of 1.33. The result show that all the variable fall above 2.5 which implies that they agree in each variable.

4.3. The extent of project performance

Project performance is the dependent variable. According to the literature provided the performance of a project are measure in which a project meets its objective, project meets its stakeholder satisfaction, project accomplished in budget and project accomplished in its scope. This variable was used to measures the performance of project in the company.

Table 4-5: Descriptive statistics of Project Performance

Items	Mean	Standard deviation
Extent in which project meets its objective.	3.42	1.17
Extent in which project meets its stakeholder satisfaction.	3.17	1.33
Extent in which project can be accomplished in budget.	3.18	1.23
Extent in which project accomplished its scope	3.33	1.16
Over all mean= 3.27		

Source Survey Results and Own Computation, 2023

Based on the response all the variables have a mean of above 2.5. Project meets stakeholder satisfaction rate a mean of 3.42 and standard deviation of 1.17 respectively, project meet its objective have a mean and standard deviation of 3.42 and 1.33 respectively which is above 2.5. Additionally, the accomplishment of project according to the budget was rated as 3.18 and standard deviations of 1.23. Moreover, accomplishment of project under its scope was rated with a mean of 3.3 and standard deviation of 1.16. The result show that all of the variable had shown an agreement in all the variables. The respondent also rated there performance regardless of the project accomplished with in budget by showing an agreement with a mean value of 3.18 which is above 2.5. From the result we can conclude that the performance of the company is good.

4.4. The relationship between effect of delay and Performance building projects

Based on B.Burns&R.Burns (2008) the bivariate analysis of association between variables which is “r” measure the degree of association between the two variables .The Pearson product moment to measure the strength of linear association between two variables. Additionally, the Pearson coefficient used to investigate how far are the data points from line of best fit. The Pearson coefficient can be anything between + 1 and -1 a negative coefficient shows that there is an inverse relationship between the variables where as positive value of coefficient show that there is direct relationship between the variable a value of 0 shows that there is no any relationship between the two variables.

Additionally, the magnitude of the coefficient tells us the correlation relationship between variable. The analysis was conducted using level 2 tailed significant. The P value from the analysis shows the level of significant for $P < 0.01$ have more significant and greater than 0.01 have low level of significant. Based on the above assumption the independent variable (effect of delay) which include Dispute, total abundance and litigation and the dependent variable (project performance) relationship was analyzed.

Table 4-6: Result of Pearson’s coefficient of correlation

	Project performance	Dispute	Total Abundance	Litigation
Project performance	1			
Dispute	-.554**	1		
Total Abundance	-.552**	.465**	1	
Litigation	-.351*	.538**	.513**	1
**. Correlation is significant at the 0.01 level (2-tailed).				
*. Correlation is significant at the 0.05 level (2-tailed).				

From the coloration analysis we have found that all of the variables show negative relationship. Dispute have a correlation coefficient of -0.554 and a p value <0.01. Additionally, total abundance correlates with project performance negatively with a Pearson coefficient of -0.552 and p value of < 0.01 while litigation show a negative correlation value with a value of -0.351 and p value of 0.26 which is > 0.01.

4.5. Regression Analysis

Regression analysis is one of the statistical methods that shows the relationship between two or more variables, the method tests the relationship between dependent and independent variables. Linearity, Multicollinearity, Normality, and auto correlation assumption were tasted.

4.5.1. Linearity

The first assumption taken was the linearity assumption to check the dependent variable project performance and the independent variable which are dispute, cost overrun, total abundance and litigation. In the assumption the variables should be linear.

From the coloration analysis we have found that all of the variables show negative relationship. Dispute have a correlation coefficient of -0.554 and a p value <0.01. Additionally, total abundance correlates with project performance negatively with a Pearson coefficient of -0.552 and p value of < 0.01 while litigation show a negative correlation value with a value of -0.351 and p value of 0.26 which is < 0.05.

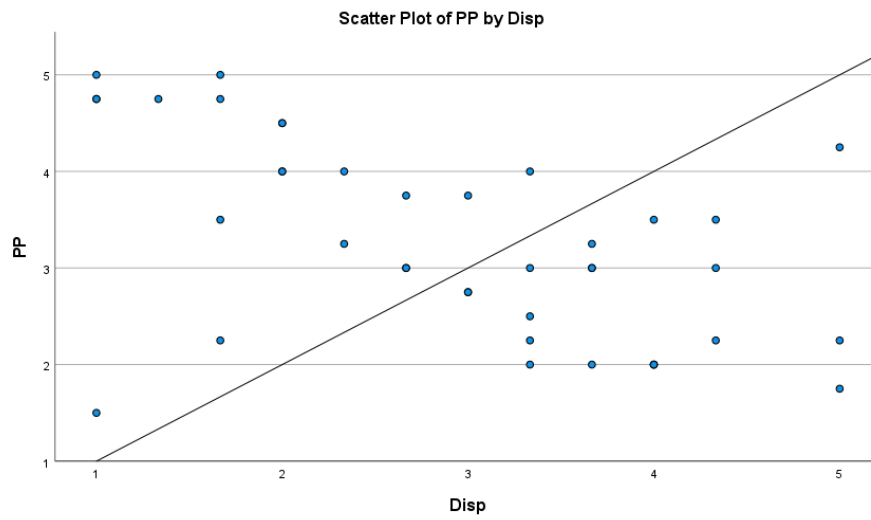


Figure 4-1: linearity between dispute and project performance

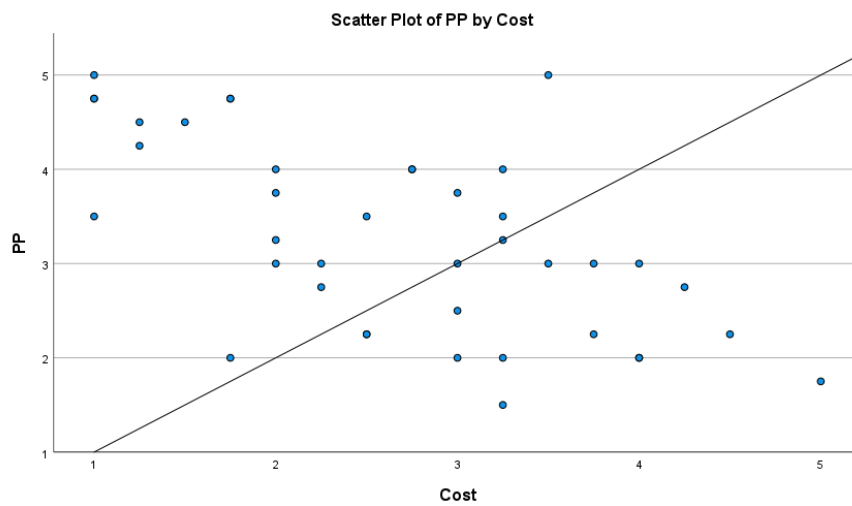


Figure 4-2: linearity between cost overrun and project performance

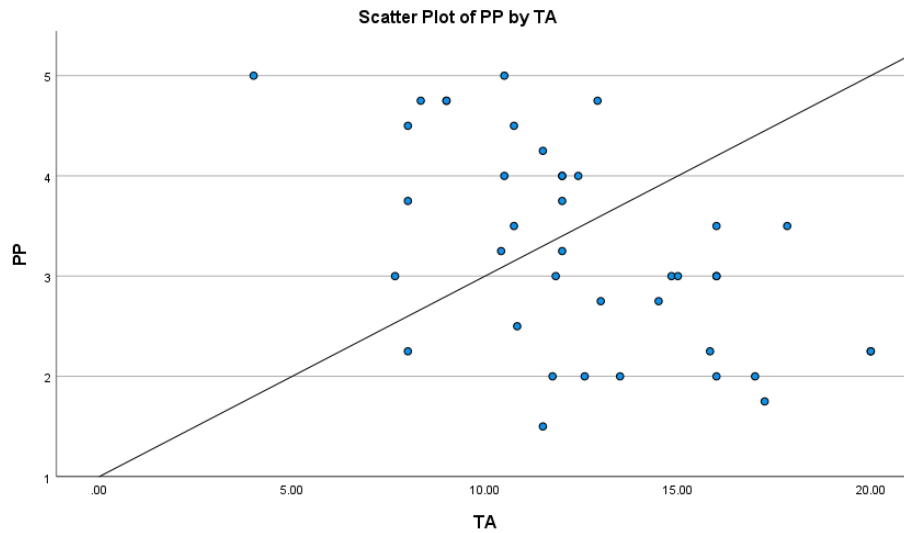


Figure 4-3: linearity between total abundance and project performance

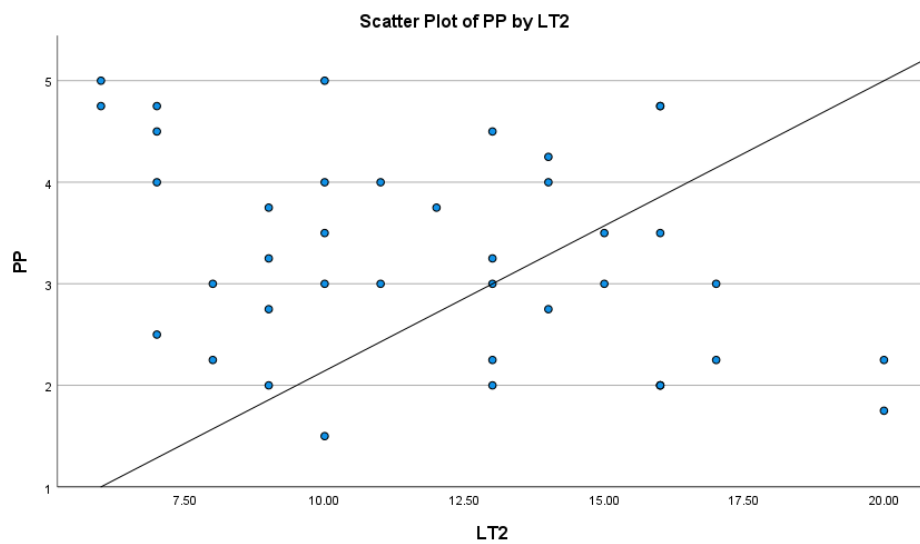


Figure 4-4: linearity between litigation and project performance

Source Survey Results and Own Comptuition, 2023

4.5.2. Test for Normality of Residuals

Test for normality is one of the assumptions of linear regression. Percentile plot or P plot are used in this study. The assumption of residuals is examined in this study using a Percentile plot,

or PP plot. The P-P plot dots are closer to the 45-degree diagonal line which implies normality of residual holds.

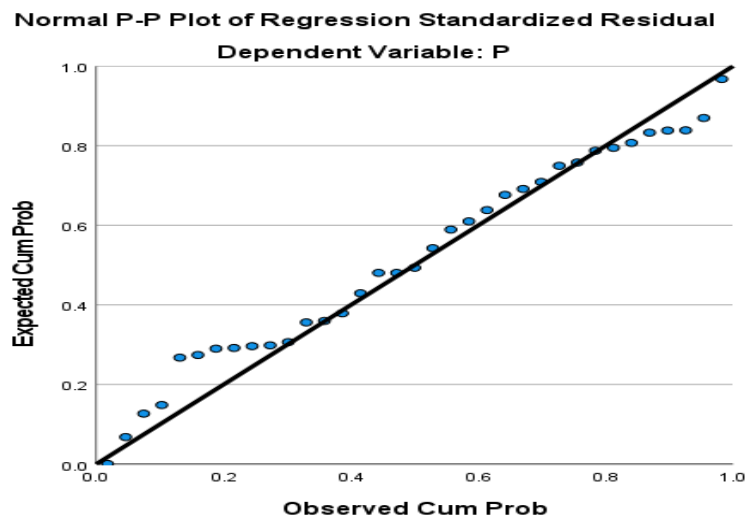


Figure 4-5: Result of normality test

Source Survey Results and Own Computation, 2023

4.5.3. Multi-Collinearity

The collinearity shows the correlation between predictor variables. The level of significance is reduced when there are multiple collinearities. The significance levels of the best coefficients are reduced when there is a lot of multi-collinearity. In this study, the variance inflation factor (VIF) was used to assess the degree of multicollinearity among variables. According to Firtiz and Morris (,2012) a VIF score below 10 and tolerance score above 0.2 which show a multi collinearity.

Table 4-7: Multicollinearity Test

Model	Collinearity Statistics	
	Tolerance	VIF
Dispute	0.66	1.51
Total Abundance	0.68	1.45
Litigation	0.62	1.60
Dependent variable: Project Performance		

Source Survey Results and Own Computation, 2023

From the above table we can see that all the VIF of beta coefficients was less than ten showing that multi collinearity was not a significant concern in this investigation additionally the result convince that all the tolerance is above 0.2.

4.5.4. Testing autocorrelation

In this investigation whether or not the residual from an ordinary least square regression were linearly autocorrelated was determined using the Durbin Watson test statics. If the Durbin Watson test result is between 1.5 and 2.5, it means that there is no autocorrelation in the residuals.

Table 4-8: Result of autocorrelation

<i>Model</i>	<i>R</i>	<i>R Square</i>	<i>Adjusted R square</i>	<i>Std. Error of the Estimate</i>	<i>Durbin-Watson</i>
<i>1</i>	.649 ^a	.421	.372	.810	1.9
<i>a. Predictors; dispute, litigation, total abundance</i>					
<i>b. Dependent variable; project performance</i>					

Source Survey Results and Own Computation, 2023

From the analysis the Durbin -Watson value is 1.9 which is between 1.5 and 2.5 that implies that the residuals were not auto-correlated in this study.

4.6. Effect of delay on project performance

Multiple regression was conducted to determine the effect of delay on project performance. It implies also how the independent variables predict the dependent variables.

Table 4-9: Effect of dispute, total abundance and litigation on project performance

Model Summary									
Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Change Statistics				
					R Square Change	F Change	df1	df2	Sig. F Change
1	.649 ^a	.421	.372	.810	.421	8.714	3	36	.000

a. Predictors: (Constant), Dispute, cost overrun, total abundance and litigation

Source Survey Results and Own Computation, 2023

As stated previously all the assumption which are normality, linearity, multicollinearity and auto correlation don't show any violation. Based on the regression analysis table 4.7.1 we can see that the R square value show 0.42(42%) which implies that dispute, litigation, and total abundance explain the total variation of Project performance while the remain 58% explained by using another model. The analysis also shows R=0.64 which implies a good relationship with variables. This suggests the model is a relatively good predictor of the outcome.

Table 4-10: Effect of dispute, cost overrun, total abundance and litigation on project performance

ANOVA						
	Model	Sum of Squares	df	Mean Square	F	Sig.
1	Regression	17.133	4	5.711	8.714	.000 ^b
	Residual	23.592	36	.655		
	Total	40.725	39			

a. Dependent Variable: Project performance

b. Predictors: (Constant), Litigation, Total Abundance, Dispute

Source Survey Results and Own Computation, 2023

Analysis of variance (ANOVA) is a framework that forms abasis for tests of significant and provide knowledge about the levels of variability within a regression model. (Rahul Pathak ,2020). It helps to predict a continuous outcome on the basis of one or more categorical

predictor variables. As shown in table 4.10 the analysis suggest that dispute, total abundance and litigation clarify variation in construction project performance. Plus, dispute. total abundance and litigation significantly predict the performance of projects.

Table 4-11: Regression analysis summary

		Coefficients			T	Sig.
Model		Unstandardized Coefficients		Standardized Coefficients		
		B	Std. Error	Beta		
1	(Constant)	5.523	.521		10.6	.000
	Dispute	-.351	.135	-.406	-2.60	.011
	Total abundance	-.116	.044	-.401	-2.61	.011
	Litigation	-.019	.043	.072	.451	.655
a. Dependent Variable: PP						

Source Survey Results and Own Computation, 2023

The above table shows that dispute at the company, total abundance and litigation has a negative effect on project performance with coefficient of ($\beta=-0.351$), ($\beta=-0.116$), and ($\beta=-0.19$) respectively.

The coefficient of dispute shows a beta value of ($\beta= -0.351$), which display that a unit increase in dispute process will lead to a 35.1% unit decrease in construction project performance. The t-statistic for dispute show ($t=-2.606$) shows statistically negative significant influence on project performance with p value= $0.011 < 0.01$

The coefficient of total abundance shows a beta value of ($\beta= -0.116$), which display that a unit increase in total abundance process will lead to a unit decrease of 11.6% in construction project performance. The t-statistic for dispute show ($t=-2.61$) which implies also a statistically negative significant influence on project performance with p value= $0.011 < 0.01$

Lastly, the coefficient of litigation 0.043 shows a beta value of ($\beta= 0.043$), which display that a unit increase in litigation process will lead to a unit increase of 4.3% in construction project performance. The t-statistic for dispute show ($t=0.451$) which implies also a statistically positive in significant influence on project performance with p value of $0.655 > 0.01$

From the regression, a statistical model was produced to foresee variable based on our predictor variable. This model takes the form of a statistical equation were: -

$$Y = 5.523 - 0.351 * X_1 - 0.116 * X_2 + 0.019 * X_3$$

Where: Y: is project performance,

X_1 : Delay

X_2 : Total abundance

X_3 : Litigation

4.7. Qualitative approach of the research

Many of the project at Ethio telecom office building are terminated especially the Dessie site, Jimma site and Adama site of the office construction. According to the response made by the head department of the civil work and the data obtained by the department Dessie regional office project was 3B+G+Mez. +5 office building which is being constructed for the region employees as a head office. The site covers 5925.17-meter square area and a total of 474,324,125.17birr of contract price including VAT. The project includes structural, architectural, sanitary, electrical installation, mechanical works, site work and guard house work. The contract was signed on June 29,2018 and completion time was on August 5, 2020 and due to time extension claim by the contractor reasoning that the shoring work has taken longer time; with 463 days of justification the completion date was extended to November 11, 2021. Within those years the project progress to date was only 32.86% and the planned to date progress was 86.25% this shows the progress of the project was behind the planned schedule and currently the project is terminated which show a delay of 3 years. The respondent suggest for the cause was due to the current situation of the country. Moreover, the respondent suggest that the project lack a key personnel and participant on the construction project which make the performance of the project low.

The second office building was the Adama regional office the contract was signed on October 2018 the area covered 3288 meter square which include structural, architectural ,sanitary ,electrical installation .According to the contract the completion date was on September 2021 even if there were a justification for 5 month on the contract within in two years the project only shows that the project work progress 7.73% the planned scheduled must meet 40% of

project it shows that the project delayed 32.27% from the schedule .since the progress is very low the contract was terminated.

The last construction site is Jimma regional office building .the site covers 2B+G+8 Office Building with area of 2339.59 meter square and contract amount of 247,947,372.79 with VAT. The starting date of the project was started on November 2018 according to the contract the completion dated was on April 2021. There was claim of contractor so there was a justification of 100 days and the completion date was extended to July 2021. Currently the project is terminated since we can see that the project has delayed 3 years from the starting point of the project

CHAPTER FIVE

5. CONCLUSION, AND RECOMMENDATION

This chapter presents the conclusion of the study and findings which are presented in the data analysis and presentation. This chapter includes recommendation and suggestion for further study.

5.1. Summary of Major Findings

In this part major finding of the study effect of construction delay on project performance will be summarized.

According to the respondent all the mean values of the respondent are above 2.5 which implies that they agree on the existence of dispute, total abundance and litigation in the company and the result show that there is an inverse relationship with the variable which are disputes and total abundance and a positive relation with litigation. Based on the finding on dispute factors that respondent mostly agree was the existence of dispute between project parties with the mean of 3.08. Moreover, dispute has a relationship between project performance with $r=-0.554$ and $p<0.01$.

Additionally, total abundance shows a negative relationship as the other factors. From the factor provided the respondent mostly agree on the lack of resource and project planning at the company with a mean value of 3.33. Furthermore, the variable has a good relationship having $r=0.552$ and significant p value of <0.01 .

Lastly litigation also shows a negative relationship with project performance's respondent rated from the factors that lead to litigation with a mean of 3.2 which is there was a dispute which led to a court. Additionally, the variable has a good relationship with project performance with $r=-0.374$ but it shows little in significance with $p=0.017$.

Regarding the total abundance and litigation, the total abundance has 4 factors which the respondent has mean value above 2.5 for all the factors and less than 0.9 which implies that it is low to happen. For effect of litigation on the company have rarely occurrence of the factors

According to the data gathered from the respondent, the mean value under this area indicates that the performance of building projects was good. According to the respondent they agree on

the extent in which they meet its objective, project meets its stakeholder satisfaction, Extent in which project accomplished within budget and accomplished with in scope which implies that there is a good performance of projects.

From the qualitative analysis the three-office building of Ethio Telecom are terminated. The respondent list many factors for this which include the current situation of the country, contractors' fault and the loss of key personnel on the site.

5.2. Conclusion of the Study

Delay is considered as one of the most major problems in the construction industry and it often affects project success in terms of the project performance such as time, cost and quality. Therefore, caring of this research is predominant.

To determine the objective of the research a theoretical literature view had been conducted. The review spotlight on effect of delay and project performance additionally, it includes type of delay and construction delay. Correlation analysis was conducted to show the relationship between delay and performance. The project performance is represented with 4 variables which includes stakeholder satisfaction, project accomplishment with in scope, project accomplishment with in the objective and budget. Likewise, the effect of delay includes three constraints which are dispute, total abundance and litigation.

The study mark out crucial pointes. The leading objective of the research desire to answer the current project performance at Ethio telecom even though from the questioner the respondent justifies their performance is good, the qualitative analysis show that their performance is very low since all the current office buildings are terminated.

Secondly, the project aims to show how dispute and litigation has an effect on project performance. From the result we can conclude that their litigation and dispute at the company and the variables affect the project performance negatively. Additionally, dispute affect significantly the project performance at the company while litigation have an insignificant effect.

Lastly, the research examine how total abundance can hinder the project performance. From the result we can conclude that total abundance affect project performance negatively and have

a significant effect on the project performance more over the three regional office building are currently terminated which strength there is a total abundance of projects at the company.

From the above we can conclude dispute, total abundance and litigation show major effect of delay and hinder the performance of the project. Following this other effect of delay should be examined at the company in the future.

5.3. Recommendations of the Study

As a result of these study findings, the researcher put forward the following recommendation.

- Ethio telecom should have a planning producer and control measure at the beginning of the project and have strategies to overcome the lack of resource and project planning.
- The government should develop better policies in order to decrease the effect of frequent material price escalation and money inflation that greatly affect projects.
- The contract documents, specifications and designs should be free from vague terms, errors and oversight of statements. The company should give a common understating on the contract and they should procure qualified staffs and train their staffs for a better performance. Moreover, the company should also give on time response for revised schedules of the contractors and response for testes and inspections giving trainings on how to administer the project properly without dispute

5.4. Recommendation for Future Research

Future researches should be done to develop guidelines, methods and strategies in order to minimize the effect of delay of building construction projects on different parties at Ethio Telecom and also nationwide and more effect of delay should be examined.

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ANNEX I

Questionnaire

Dear respondents,

The objective of this questionnaire is to assess effect of delay at Ethio Telecom building projects on organizational performance.

This questionnaire is prepared for data collection of a research on effect of delay at Ethio Telecom building projects on organizational performance.

Part one: personal question

1.1 Gender:

1. Male ----- 2. Female -----

1.2 Age (years):

1. 25 – 35 ----- 2. Between 35 – 45 ----- 3. Between 45 – 55 ----- 4. above 55 -----

1.3. Academic background

1. Degree ----- 2. Masters and above ----- 3. Other -----

--

1.4. Work experience in the construction sector

1. Less than 5 years ----- 3. Between 10 and 15 years -----

2. Between 5 and 10 years ----- 4. Greater than 15 years -----

Part two: Company back ground information

2.1. The section you are working for Q5

1.Civil works design ----- 3. civil works contract management & payment ----

2, Civil works operation ----- 4. civil works new build land and building management

2.2. Working experience of the organization in the construction sector Q6

1.Less than 5 years ----- 3. Between 10 and 15 years -----

2. Between 5 and 10 years ----- 4. Greater than 15 years -----

Part two: Project performance indicator on construction projects

2.1 How would you rate the organization performance on the following areas please make a tick

1.strongly disagree 2. disagree 3. neutral 4. agree 5. strongly agree

	1	2	3	4	5
Project delivered meeting its objective.					
Project delivered within budget.					
Project delivered meeting its stakeholder satisfaction.					
Project delivered with in scope.					

Part Three: - Effects of delay on building construction

4.1 How do you rate factors that cause a dispute which is one of the effects of delay? please make a tick.

A. Dispute

N0		1	2	3	4	5
1.	There are Argument between project parties					
2	The contract of the project in the company has been properly administered.					
3	The project parties have a common understanding on the contract					

C. Total Abondance

4.3 How do you rate factors that cause a cost overrun which is one of the effects of delay?
please make a tick

		1	2	3	4	5
1	There was a lack of planning in the beginning of the project					
2	Risk procedures and control measures were implemented					
3	There was management support					
4	Lack of resource and project planning					

D. Litigation

4.4 How do you rate factors that cause a cost overrun which is one of the effects of delay?
please make a tick

		1	2	3	4	5
1	There was legal action process taking place in the company					
2	There was a dispute which led to the court					
3	Where there a loss of communication between parties					
4	There were injuries of the employee that led to lawsuit.					

ANNEX II

INTERVIEW QUESTIONS FOR DEPARTMENT HEAD

1. Is there any project that is constructed and shows a delay?
2. What due to thick is the cause for the delay of the project at your company if there is any?
3. How many offices buildings are there in progress and what is their current status?
4. Where there any measurement taken to decrease this effect?