SCHOOL OF GRADUATE STUDIES

DEPARTMENT OF PROJECT MANAGEMENT

DETERMINANTS OF CONSTRUCTION PROJECTS DELAY: CASE OF (YEKA SUB CITY CONSTRUCTION OFFICE)

BY: TAMIRU KIFLE

AUGUST 2024

ADDIS ABABA, ETHIOPIA

DETERMINANTS OF CONSTRUCTION PROJECTS DELAY: CASE OF (YEKA SUB CITY CONSTRUCTION OFFICE)

BY: TAMIRU KIFLE

ADVISOR: ASHENAF HAILE (Dr.)

A THESIS SUBMITTED TO THE SCHOOL OF GRADUATE STUDIES OF ADDIS COLLEGE IN PARTIAL FULFILLMENT OF THE REQUIREMENT FOR THE DEGREE OF MASTER OF ARTS IN PROJECT MANAGEMENT

AUGUST 2024

ADDIS ABABA, ETHIOPIA

Statement of declaration

I, Tamiru Kifle, declare that this thesis entitled “determinants of construction projects delay: case of (Yeka sub city construction office)” is original work. I have carried out this study independently with the guidance and support of the research advisor, Ashenaf Haile (Dr.). The sources used have been properly acknowledged.

TAMIRU KIFLE: _____ _____

SIGNATURE DATE

Statement of certification

This is to certify that thesis entitled “determinants of construction projects delay: case of (Yeka sub city construction office)” for the partial fulfillment of Master of Arts in project management at Addis college department of project management has been carried out by Tamiru Kifle under my supervision. Therefore I recommend that the student has fulfilled the requirements and hence hereby can submit the thesis to the department.

CONFIRMED BY ADVISOR:

ASHENAF HAILE (DR.)	SIGNATURE	DATE

ADDIS COLLEGE

SCHOOL OF GRADUATE STUDIES

DEPARTMENT OF PROJECT MANAGEMENT

This is to certify that the thesis entitled “determinants of construction projects delay: case of (Yeka sub city construction office)” has been prepared by Tamiru Kifle.

Approved by Board of Examiners:

_____Signature_____ Date_____

Research Advisor

_____Signature_____ Date_____

External Examiner

_____Signature_____ Date_____

Internal Examiner

_____Signature_____ Date_____

Chair Person

_____Signature_____ Date_____

School Dean

Acknowledgments

I am grateful to the Almighty God for having enabled me to complete this work. This work has not been easy but with his guidance, it has been rendered possible. I would very much like to express my gratitude to my advisor ASHENAF HAILE (DR.) for his guidance, personal encouragement and continuous patience.

I would like to express my sincere appreciation to my lovely wife Menberework Byene her patience, guidance and encouragement help me succeed in producing this work.

I would also like to extend my special appreciation to all who have supported me throughout the entire process of the study by materials; and my colleagues, my friends especially those who encourage me, all the staffs and management of Yeka sub city construction office who assisted me in conducting my research either by providing me with all relevant information or by being part of the research as a respondent.

Lastly, with no regard to the order, I would like to thank, My Family, my close friends, and also my classmates who took part in this research paper one way or another. I would like to wish God blessed all these peoples.

Acronyms/Abbreviations

ARG	:	Average
Freq	:	Frequency
HR	:	Human resource
HRM	:	Human resource management
S/N	:	Serial Number / Questions number
SPSS	:	Statistical package for social science
Stdv	:	Standard deviation

Table of Contents

Lists of Table

List of figures

Abstract

In the construction sector the key concern is delay or time limitation to fully accomplish the work without any defect in the project. Generally, delay is a circumstance where work does not complete in an estimated period. Every kind and stage of a construction project has construction delays, which are a prevalent issue in Ethiopian construction projects. The purpose of this study was to analyze the determinants of construction projects delay. In this study both descriptive and explanatory/causal research design were adopted. The study were employed a quantitative and qualitative research approach. Both secondary and primary data source were used; the primary data collected from sampled the contractor and admin staffs using five point-Likert scale questionnaires. The populations of the study were contractor and admin staffs of Yeka sub city construction office. Census method for data collection than sampling technique was employed to draw the total of 130 respondents. Method of data analysis was descriptive with correlation and multiple regressions. Descriptive analysis incorporating the frequency, percentage, mean and standard deviation, while inferential statistics multiple linear regression. The multiple regressions result indicated that the four independent variables had positive relation and significant effect on construction projects delay. The multiple regression result showed that the independent variables used in the study explain 84.1% variability on construction projects delay. The study indicates that the top major causes of delay in construction are Cost of materials, Delay of payment by the client, Shortage of construction material, Improper planning and scheduling, Reworks, and Lack of modern technology. The study goes on to show that time overruns, cost overruns, poor quality, and compromised quality are the main consequences of delays. In order to avoid/minimize the construction project delay in the sub city, the study recommends the payments to be made on time by the client, The consultant should promptly evaluate and approve the design documents, and the contractor should choose reputable

subcontractors and collaborate with them to finish the project within the allotted price and timeline.

Keywords: construction, Delay, Projects, Contractors and supervision of work

CHAPTER ONE

1. Introduction

When the consultant, contractor, and client collectively or separately compensated for the project's failure to be completed within the prearranged, approved, or stipulated contract time, it constitutes a delay. One category of elements that contribute to construction project schedule delays was identified as contractor-related delay factors. Schedule delays are caused by contractor-related delay factors, according to several studies. Factors pertaining to contractors include poor project scheduling and planning, inexperience, frequent subcontractor changes, outdated technology, improper building techniques, and error-prone rework.

The first chapter of the entire study is this one. It offers some understanding of the conditions and presumptions under which the research is carried out. It includes background information, a problem statement, objectives, significance, and scope.

1.1 Background of the study

The construction industry is one among the most sectors that provide important ingredient for the event of an economy. However, many projects experience extensive delays, and thereby exceed initial time and price estimates (Tawana, 2015). In the construction industry, a delay can be characterized as time that exceeds the deadline specified in a contract or the date agreed upon by the parties for project delivery (Assaf, et al., 2006). A project's ability to successfully manage, schedule, and control its available resources and activities while maintaining the highest possible standards for time, cost, and utility is critical to its success. However, project schedule is regarded as the most crucial component of the development management life cycle and one of the main factors influencing project success, along with quality and cost (Durdyev, et al., 2017)..

Construction projects are always prone to problems especially during execution. One of these flaws is schedule delays, which lead to disagreements, time and expense overruns, and occasionally the termination of construction projects (Afshari, H., 2010). In their nature, delays occur due to one party that might or might not always impact the performance or delivery rate of another party. Several parties such as owner, contractors, subcontractors or other parties can be

responsible for delays. Hence, this kind of instance calls for the identification of responsible bodies among parties.

The duration of construction is frequently used as a benchmark to assess how well a road project performs and how well its organization is working. Constructing an accessible and efficient road for fulfilling the above mentioned economic and social requirements mostly struggles with accomplishment of different projects on time and with a specified cost. Time overrun is the most common phenomenon that occurs nearly in almost all the projects related to the road construction industry. It is considered to be one of the most repetitive problems that has an adverse effect on project success in terms of the triple constraints which are time, cost, and quality. Time delay is critical in developing countries where it mostly exceeds 100 % of its estimated time while constructing a project (Muhammad A.*et. al.,* 2017).

According to Rountos (2005), the management of construction projects requires the knowledge of the modern management as well as understanding of the design and the construction process. Construction projects are characterized by a certain set of goals and limitations, such as the necessary duration for completion. For many, they are also an expensive endeavor. Change from being Pound-foolish to Penny-wise in an attempt to cut costs. Construction job is inherently change-filled. Most initiatives fall short of their budget, schedule, and quality goals.

The development effort of Ethiopia includes public construction projects. It shares considerable amount of the country's scarce financial resources. When it comes to government development programs, Ethiopia's construction sector receives the largest share of government funding. Consequently, public construction projects consume an average annual rate of nearly 60% of the government's capital budget (MoWUD, 2006). Construction projects are typically deemed successful when they are finished on time, under budget, and to the greatest possible standard and in the safest manner, in accordance with the specifications and to stakeholders' satisfaction. Functionality, profitability to contractors, absence of claims and court proceeding and "fitness for purpose" for occupiers have also been used as measures of project success (Takim & Akintoye. 2002).

Werku (2016) conducted an empirical study titled "Investigating Causes of Construction Delay in Ethiopian Construction Industries," which only examined three perspectives: those linked to contractors, consultants, and clients. Furthermore, the analysis did not indicate the degree to which the casual elements contributed to the project's delay. The other perspectives, such as supervisory related, resource related and so forth were not touched well.

The aim of this study is to investigate the factors which were cause delays within the construction projects within the case for the Yeka sub city construction office. Also, the consequences of delays are evaluated in the study. For this purpose, a survey is going to be conducted with the clients, consultants and contractors operating in Addis Ababa at Yeka sub city construction office and recommend effective strategies to attenuate delays of building projects. This study aims to close this huge gap since previous research has indicated that delays in construction projects are frequently significantly decreased by efficient implementation of the project management concepts (Frame, 2002).

1.2 Statement of problem

The recent project environment is characterized by the higher complexity, uncertainty, and multiple stakeholders that are competing for the project goals and objectives. The project management practices are greatly influenced by the theoretical approaches and models developed by different academics, practitioners and professional institutions have been challenged. A great issue observed from project management in recent time shows that the nature of project has transformed due to an existence of the large scale, uncertainty, huge cost, and several stakeholders' involvement in project and increase interests in the project benefits (Fortune et al., 2011; Cicmil & Hodgson, 2006).

In Werku and Jha's (2016) investigation into the reasons behind construction delays in Ethiopian construction sectors, the following groups were ranked in order of significance: (1) variables connected to contractors, (2) material related factors, (3) labor related factors, (4) designers related factors, (5) consultants/supervisors related factors, (6) client related factors, and (7) external related factors. (Alade, et al., 2016) explained effects of delay as time overrun which refers to the late completion or late delivery, from the time specified or agreed by all parties in

the construction project and cost overrun which refers to increased costs of labor, working force, materials and equipment, etc. The term "dispute" refers to minor issues that arise between parties in a construction project; in these cases, the other effects of delay include litigation, arbitration, and abandonment.

According to the study conducted on Ethiopian construction industry by Werku (2016) shows that in Ethiopia only 8.25% projects have been completed by the original targeted completion date. According to this study, the remaining 91.75% delayed off from its contractual time. In regard to Addis Ababa Road construction, delay is becoming the major challenges that the authority and the residents are facing. Hence the impact of road construction project delay especially in Addis Ababa costs more the city and the country both economic and social aspect of the resident while It is quantified not only in terms of cost overrun but also in terms of lost revenue and deficiency of services. All stakeholders engaged in a project may become dissatisfied if more costs are incurred and project duration is extended due to failure to identify the delay and make the necessary corrective project management decision in a timely manner (Werku, 2016).

For instance, Bernard Ogweno, et al., (2016) identified that top management support and effective procurement process determine timely completion of construction projects. However, they did not consider other factors causing construction projects completed beyond schedule. Shabbab Al Hammadi and M. Sadique Nawab(2016) argued that the main delay factors that lead to Project time overruns are related to project owner's role, contractor related, financing related, materials related and design documents. But they did not try to explore how external factors affect timely completion of construction projects. Siraw (2014) studied the analysis of factors contributing to time overruns on road construction projects under Addis Ababa city Administration, but, in his study, he did not included other external factors like political factors, local community obstructions and frequent request for design change.

Delays and their resulting costs is probably the most fertile field in which complicated contractual disputes grow and proliferate under a building and construction contract. The events, which can cause a delay of some kind during the course of a project, are always many and various, and are often weird and wonderful. These events may be due to acts or omissions by the

contractor: acts or omissions by the owner or the owner's agents; or other events beyond the contractor's control (Goldfayl, 2004).

It is shown in many studies that construction times overrun have negative effects on the project owners, contractors, and consultants (Ghaffari, 2013; Marzouk and El-Rasas, 2014). If the source of the delay is not found and a timely corrective project management decision is not made, the project may end up costing more than expected and taking longer than expected to complete, which would frustrate everyone engaged in the building process. These days, delays are a key barrier to the development of developing nations like Ethiopia, and they can have a significant impact on the efficacy and efficiency of the project. By identifying the true reasons of these delays, it is feasible to minimize them. Therefore, in order to reduce and eliminate delays in any construction project, it is crucial to identify the true causes and effects of delays.

This research examined the factors that cause delays to building construction project and determine how critical delay causes are most influential in project performance. This would provide stakeholders responsibilities that results delay to the project performance with the foundation on which such strategies on how to avoid delays. As a result, the goal of this study is to minimize delays in the construction process and provide vital information to engineers and stakeholders about it a proper project management. In order to accomplish the research objectives, this has been accomplished by determining the primary reasons and offering solutions for the issues.

1.3 Objectives of the study

1.3.1 General Objectives of the study

The general aim of the study is to investigate the determinants of construction projects delay: case of (Yeka sub city construction office).

1.3.2 Specific objectives of the study

Specifically the study has addressed the following specific objectives:

1. To determine the influence of construction project financing have on the delay of Yeka sub city construction office in Addis Ababa

2. To investigate the influence of construction project planning on the delay of Yeka sub city construction office in Addis Ababa

3. To establish the influence of construction project material & equ't related on the delay of Yeka sub city construction office in Addis Ababa

4. To find out the influence of construction project external related causes on the delay of Yeka sub city construction office,

5. To establish the influence of construction project contractor related problems on the delay of Yeka sub city construction office in Addis Ababa

6. To find out the influence of construction project supervision of work on the delay of Yeka sub city construction office.

1.4 Research hypothesis

On this study the following alternative hypotheses have been developed to assess the determinants of construction projects delay variable.

H1: Construction project financing does significantly influence on the delay of Yeka sub city construction office in Addis Ababa at 5% of level of significance.

H1: Construction project planning does significantly influence on the delay of Yeka sub city construction office in Addis Ababa.

H1: Construction project material & equ't related does significantly influence on the delay of Yeka sub city construction office in Addis Ababa.

H1: Construction project an external related cause does significantly influence on the delay of Yeka sub city construction office in Addis Ababa.

H1: Construction project contractor related a problem does significantly influence on the delay of Yeka sub city construction office.

H1: Construction project supervision of work does significantly influence on the delay of Yeka sub city construction office.

1.5 Significance of the study

When compared to the unanswered issue of the delay of construction of Ethiopia, only limited number of studies was undertaken up to now in relation to determinants of the delay. The study is identified factors of delay in the Yeka sub city construction office. Thus, the subject matter of this research and the resulting lessons drawn from the analysis are likely to benefit different stakeholders of the Yeka sub city construction office. This study may be significant for its contribution to:

i. Knowledge

The study sheds light on the determinants of construction delay with respect to the Yeka sub city construction office in Addis Ababa and may improve an existing stock of knowledge.

ii. Managerial Decision Making

The study's conclusions and suggestions are crucial to the project's management because they help the stakeholders identify areas that require repair and provide them with the tools to implement such changes.

iii. Literature and Reference

The research could be used to establish a framework for subsequent studies that can work with data sets that are more comprehensive. Furthermore, it could stimulate further researches.

iv. Policy Framing

The study's conclusions and suggestions are significant to policymakers because they highlight certain issues that require their own remedial action.

1.6 Scope of the study

Geographically

The study was conducted at Yeka sub city construction office in Addis Ababa. Geographically, the study was also be limited to consultants, clients, contractors and subcontractors of the Yeka sub city construction office in Addis Ababa that are currently underway since 2020 and 2024, which are deemed to be delaying.

Methodologically

The study used descriptive and explanatory/causal research design via quantitative and qualitative research approached was employed. Both secondary and primary data source were used. The correlation and multiple linear regression analysis were employed.

Conceptually

The aim of this study was to assess the determinants of construction projects delay: case of (Yeka sub city construction office). To address this objective there are many different factors; such as construction project financing, construction project planning, material & equ't related, an external related cause, contractor related a problem, and supervision of work.

1.7Limitations of the study

The primary focus of this research is on the determinants of construction projects delay of the Yeka sub city construction office construction. In terms of unit of analysis, the scope of this research is limited to Project managers working in the company, Engineers, supervisors, managers, and all staff members found in the company. The major constraints faced by the researcher whilst conducting this study were lack of prior research studies on the topic and time constraints. The other limitation of the study is that the research relied merely on the opinions of the contractor. This is due to the non-availability of adequately published and documented data about determinants of construction projects delay by the organizations which would have been useful if found.

The study was limited by unavailability of documented information about building construction projects in Yeka sub city construction office since the available data was not well organized. Moreover, shortage of time and were other factors that constrained the researcher not to conduct the study as much expected within schedule.

1.8 Operational Definition of Terms

The definitions of terms given below are defined in the sense in which they are used in this paper.

Delay: It is an act event which extends required time to perform or complete works of the contract manifests itself as additional days of work (Assaf and Al-Hejji, 2006).

Project: any temporary endeavor with a definite beginning and end and depending on its complexity, it can be managed by a single person or hundreds Assaf & Al-Hejji (2006).

Construction Project: project which intended to undertake the construction of buildings, infrastructures, and special purpose facilities Enshassi et al (2009).

Consultants: The supervision operation is carried out by private architectural and engineering companies Ahmed et al. (2002).

Contractors: Firms that are hired by the government to undertake the construction works of the housing units Ahmed et al. (2002).

Client: A person or Organization who owns the project and has full authority to control the whole project (Saeed, 2012).

Stake holders: A person, group, organizations that have interest or concern in an organization include Client, Contractor and Consultant (Saeed, 2012).

1.9 Organization of the study

The study consists five chapters; Chapter one was the introduction part which Contains the back ground, the statement of problem, objectives of the study, hypothesis, significance of the study, scope of the study, limitation of the study and operational definitions. Chapter two was all about the review of related literature that includes the theoretical, empirical and conceptual framework. Chapter three was about the research methodology involving the research design, research approach, source of data and collection method, target population, sampling techniques and size, method data analysis, validity and reliability of the instrument and ethical consideration. The fourth chapter is also about the analysis and discussion of the results parts. The last chapter, chapter five, is also about the summary, conclusion and recommendation parts.

CHAPTER TWO

2. REVIEW OF RELATED LITERATURE

2.1. Introduction

This section summarizes the literature that is already in existence regarding the factors leading to delay in construction projects in the world and Ethiopia with specific emphasis on the construction projects. It gives a summary of earlier research on relevant subjects, which gives the background information needed for this study. It further organizes the work into various topics and sub-topics under theoretical review and empirical review that are strongly guided by the six objectives of the research.

2.2. Theoretical Review

2.2.1 Nature of Construction Projects Delay

Construction delay is the most frequent phenomenon in the construction industry. Assaf & Al-Hejji (2006) define a construction delay as the extension of a project's duration beyond a contractually stipulated completion date or beyond a project delivery date that the contractual parties agreed upon. Many construction projects worldwide face significant delay due to various reasons. According to Haseeb et al. (2011), around 80% construction projects in Pakistan faced delays. Assaf & Al-Hejji (2006) found that approximately 70% of the large construction projects in Saudi Arabia experienced time overruns. In Ethiopia, 94% of 52 surveyed public building projects constructed by local contractors in the years between 1995 and 2005 suffered delays (Abdo, 2006).

2.2.2 Classification of Delays

Prior to going into the categorization of delays according to compensability, source, and nature, it is important to comprehend the Ethiopian Civil Code's delay-related legal structure.

2.2.2.1. Legal Framework Regarding Construction Delays

The legal framework allocates obligations to parties of a contract to share risks associated with a project delay. When an event that causes delay happens, it is possible to identify the responsible stakeholder as per the contract provisions and the responsible party pays compensation in terms

of time or money to the non-responsible party. It also identifies certain conditions so called force majeure which may cause delays in completion of projects, but whose occurrence is beyond the control of the contractor and the client and hence the delay is neither caused by the contractor nor by the client.

2. 2.2.2 Delay related Articles in the Ethiopian Civil Code

The Ethiopian Civil Code (ECC) comprises six articles which address the nature, effect, and treatment of construction delays as discussed hereunder.

1. Article 1771: A contractual party is allowed to require enforcement of the contract or cancellation of the contract and damage caused to him by delay to be made excellent when the other person fails to fulfill his end of the bargain. However,

2. Article 1791: If the party fails to perform his obligations, his shall be liable to pay damages unless he can show that performance was prevented by force majeure

3. Article 1792: Force majeure results from an unforeseeable occurrence, which absolutely prevents the contractor from performing his obligations

4. Article 1793: Examples of force majeure include the unforeseeable act of a third party for whom the contractor is not liable; a governmental ban on carrying out the contract; a natural disaster such an earthquake, lightning strike, or flood; a foreign or civil war; or the contractor's unanticipated, serious illness or death.

5. Article 1794: Force majeure shall not exist in the following situations strike or lock-out taking place in the undertaking of a party or affecting the branch of business in which he carries out his activities; or an increase or reduction in the price of raw materials necessary for the performance of the contract; or the enactment of new legislation which makes the performance of the contract more onerous. Article 1794: When contractor delays the carrying out of his task, the client may fix him a reasonable time limit to begin the execution of the task. In case, the contractor, after this time limit, has not begun the task or has interrupted it in bad faith, the client may cancel the contract without waiting for the expiry of the period laid down for the completion of the task. Where appropriate, the client may also claim damages from the contractor

2.2.2.3 Types of Delays by Source

According to Alhaji and Danladi (2012), construction delays are typically brought on by either the contractual parties, such as the client, contractor, and consultant, or by uncontrollable circumstances or force majeure.

1. Client

Delays result from the client's actions motivated by need or from his inaction against contract requirements. Examples include late payment to the contractor, change order, differing site condition, interference, late decision making, etc. In this case, the contractor will be entitled to claim for time extension and financial compensation (Saeed, 2012).

2. Contractor

In addition to causing delays, non-performance by the contractor owing to personal issues or issues under his control can also lead to schedule and cost overruns. Examples include inadequate experience, poor site management, problems related to subcontractors and suppliers, shortage of material, labor and finance, improper project planning, mistakes during construction, etc. In this scenario, the contractor will have to pay the customer liquidated loss or actual harm instead of being entitled to a time extension and financial compensation (Saeed, 2012).

3. Consultant

In actuality, issues with consultants, such as poor project management, late approval of tests and drawings, and design flaws, can cause delays. Since the consultant is the client's agent and under its control, the contractor will be entitled to a time extension and/or financial compensation in this situation, while the customer will not be entitled to a claim for liquidated loss(Saeed, 2012).

4. Force Majeure

Delays are caused by force majeure, which are beyond the control and without the fault of the client or the contractor. Examples include an unexpected action by a third party for whom the contractor is not liable, a legal ban that hinders the contractor from carrying out the terms of the contract, or a natural disaster like an earthquake, lightning or flood, international or civil war and the death or a serious accident or unexpected serious illness of the contractor. In this case, the contractor shall not be entitled to financial compensation, but extension of time to complete the project. In addition, the contractor shall not pay liquidated damage to the client (ECC, 1960).

2.2.2.4 Types of Delays by Compensation

Construction delay is classified into two major types of delay by compensability such as non-excusable (contractor-caused) delay and excusable delay. The excusable delay is further classified into compensable (client-caused) delay and non-compensable (force majeure-caused) delay as discussed hereunder (Alhaji & Danladi, 2012).

1. Non- Excusable Delays

Non-excusable delay is any delay caused by the contractor, its sub-contractors, or suppliers only. The contractor is responsible for the delay and the owner is entitled to claim any delays to the project as per the contract. The contractor gets neither a time extension nor financial compensation rather the client is entitled to liquidated damages or actual damages provided there is no liquidated damages clause in the contract. These delays include, for example, late commencement of work, poor site management, shortage of material, low productivity of labor, equipment failure, problems with sub-contractor etc. Generally speaking, the contractor is not entitled to relief and is required to either reimburse the owner or accelerate the lost time. Acceleration is often carried by working overtime and on weekends by adding manpower or even by placing extra shifts and equipment(Alhaji & Danladi, 2012).

2. Excusable Compensable Delays

One of the parties the consultant or the client—is to blame for an acceptable compensable delay. The client is responsible for both the time and cost effect of the delay. Contactor gets both a time extension and financial compensation. Examples include failure to pay the contractor, the client's intervention with the work, change order, differing site condition, late decision making etc(Alhaji & Danladi, 2012).

3. Excusable Non-Compensable Delays

Force majeure or third party delays are acceptable reasons for non-compensable delays. A contractor often has the right to a time extension but not reimbursement for damages incurred due to delays. Examples include an official prohibition preventing the performance of the contract, a natural catastrophe such as an earthquake, lightning, or flood, international or civil war and the death or a serious accident or unexpected serious illness of the contractor(Alhaji & Danladi, 2012).

2.2.2.5 Types of Delays by Nature

Construction delays are classified into three categories such as independent delay, serial delay and concurrent delay based on their time of occurrence (Arditi & Robinson, 1995; Stumpf, 2000).

1. Independent delays

An independent delay is defined as a particular delay occurring solely and without concurrency with other delays (Arditi &Robinson, 1995). Analyzing this type of delay is simple and the effect can be identified easily by imposing the delay on the project schedule, but independent delay may cause serial delays. Example is when a contractor fails to supply material solely.

2. Serial delays

Serial delay is a series of sequential, non-overlapping delays that are linked together (Arditi &Robinson, 1995; Stumpf, 2000). It is caused by the action or inaction of one of the parties (Raid et al., 1991). Measuring the impact of serial delays is comparatively simple as none of the individual delays interferes with one another. Example is when client fails to pay the contractor and then the contractor fails to supply material sequentially (Arditi & Robinson, 1995).

3. Concurrent delays

Concurrent delay is defined as two or more delays that occur at the same time, either of which would cause project delay (Williamet al, 2011). Concurrent delays can be caused by a combination of delays as follows (Kraeim, 1987):

I. Excusable delay and non-excusable delay. Example is when severe weather occurs and contractor fails to supply material at the same time. In such a case, contractor should be entitled to time extension, but not financial compensation.

II. Excusable delay and compensable delay: Example is when severe weather occurs and client fails to pay the contractor at the same time. In such a case, contractor should be entitled to time extension, but not financial compensation.

III. Excusable delay, non-excusable delay, and compensable delay: Example is when severe weather occurs, contractor fails to supply material, and client fails to pay the contractor at the same time. In such a case, contractor should be entitled to time extension, but not financial compensation.

IV. Non excusable delay and compensable delay: Example is when contractor fails to supply material and client fails to pay the contractor at the same time. In such a case, contractor should be entitled to time extension, but not financial compensation.

2.2.2.6 Types of Delays by Responsibility

Ahmed et al. (2002) delay responsibilities are categorized in to client responsible, contractor responsible, neither party responsible, and both parties responsible so as to identify which party will be entitled for compensation as discussed hereunder,.

1. Client Responsible

Such delays occur when the client is responsible for the occurrence of delay, then Contractor will be granted time extension and financial compensation and client will not be entitled to claim for liquidated or actual damages. Examples include change order, failure to pay the contractor, differing site condition etc.

2. Contractor Responsible

Such delays occur when the contractor is responsible for the occurrence of delay; client will be entitled to claim for liquidated or actual damages. Contractor will not be granted time extension and financial compensation. Examples include failure to deliver material and equipment, low productivity of workers, failure of equipment etc.

3. Neither Party (e.g. force majeure) Responsible

Such delays occur when a delay occurs due to force majeure, neither parties are responsible. However, Contractor will get time extension to complete the project but nofinancial compensation and client will not be entitled to claim for liquidated or actual damages. Examples includes civil war, occurrence of a natural catastrophe such as earthquake, flood etc.

4. Both Parties Responsible

Such delays occur when a delay occurs due to both parties concurrently, Contractor will get time extension to complete the project, but no financial compensation and client will not be entitled to claim for liquidated or actual damages. Joseph (2004) showed that in building construction projects in Botswana public sector, contractors were responsible for 48% of the total delay experienced on their projects while the employer or the government was responsible for 31% of the delays. The rest of the delays were due to force majeure.

2.2.3 Identification of Delay Events

A delay event is any types of event which causes delay to completion (Alena et al, 2015). Identifying delay events is very important, but difficult and time taking to determine the responsible contracting party for a delay. Delay events are typically grouped into either of the Contractor's delay event or the Client's delay event. The contractor delay events include late commencement of work, late material delivery, equipment failure, low productivity of labor, etc. There are two primary approaches to identify delay events: effectbased approach and cause-based approach (Farrow, 2001). The effect-based approach: investigates the as-built schedule to identify the deviations from the as-planned schedule, which are the effects of delay events. This approach identifies the effects first and then investigates the causes of those effects.

The cause-based approach: lists out a set of delay events first and then measures the effects of those causes based on a baseline schedule. The cause-based approach requires a reliable as planned schedule as it must verify that identified delay events were not counted at the as planned status.

2.2.4 Determinants of Project Delay

Delay can be described as one of the most important issues of a project success. Despite its proven significance, it is common to see public sector construction projects failing to achieve its objectives within the specified time. To this effect, several past studies have identified typical determinants of delay in the public sector construction projects. However, the focus this study will be on such determinants, which are very common in various construction projects. These are construction material, project financing, Project planning, Contractors experience and supervision of work.

2.2.4.1 Project Planning

Planning must reflect the tactics selected to achieve the project's strategic objectives including the integration sequence of the various system entities. Projects failing to do this will suffer huge overruns and schedule delays (Forsberg, Mooz and Cotterman, 2005).

2.2.4.1.1 Plan the Work and Work the Plan

Forsberg, Mooz and Cotterman (2005) define planning as the process that determines beforehand the tasks necessary to complete the project. Moreover, planning continues and the plan evolves as the project progresses through the phases of the project cycle. Thus, a plan contains at least:

- What is to be done?, When it should be done? And Who is responsible for doing it?

2.2.4.2 Project Financing

Construction is a high-risk business with historically low profit margins. Control over costs, cash flow, and adequate project funding is critical to the success of any business endeavor, and construction is certainly no exception (Levy, 2007).

Financing is related to unreasonable constraints to the owner or funding shortage, methods of payment, delayed payment on contracts, monthly payments from agencies, cash problem during construction, etc (Rahman et al., 2013). According to Zagorsky (2007), financial difficulty is defined as getting into a situation where a respondent's credit is adversely impacted, such as not paying bills. Contractor's financial difficulties are defined as the contractor not having sufficient funds to carry out the construction works. This includes payment for the materials, laborer's salaries and equipment to be used for the construction work. Slow collection, low profit margins and insufficient capital or excessive debt are the 3 major causes of financial difficulties among contractors. Slow collections topped the list in the years 2005 and 2007, in which the contractor received late payment from the client. Delay in payment from the client would eventually cause financial difficulties to the contractor. Thus, most of the construction works cannot be carried out due to these financial difficulties. Insufficient profit is the second highest factor contributing to the financial difficulties of the contractor. Insufficient profit cannot be controlled because it is due to bad economic conditions. Insufficient capital is one of the major causes of financial difficulties among contractors. Poor financial control by the contractor can lead to insufficient capital (Liu, 2010). Hence, the contractor will have excessive debt which causes them to face financial difficulties as they cannot pay back the debt resulting into cost and time overruns of the project. Similarly, some contractors take up many projects at the same time thereby constraining their financial resources leading to some of the project being delayed.

2.2.4.3 Construction Material

Enshassi et al (2009) discovered in her study that top factors that influenced on delay and cost overruns included on increment in material prices due to continuous delay in construction fluctuation in cost of construction materials unsettlement of local currency in relation to dollar value, funds and associated auxiliaries not ready, lack of finance planning and monitoring during pre-test and post contract stages culminating into inaccurate construction project take-off. According to a study done by Kombo (2006) on delay an cost overruns in public sector construction projects in Kenya, it was found out that construction works in the public sector projects depends mainly on equipment, plants and materials whose unavailability may cause project delay and increase in cost overruns without effective and efficient procurement procedures.

2.2.4.4 Supervision of work

The competence of the project manager during project implementation will also affect the timely completion of a project. Positive attitude of project manager and project participants has emerged to be the most important success attribute for quality compliances at project sites (Kenig et al, 2012).

The authors additionally observed that some of the attributes that are with high importance are all related to the project manager. For example effective monitoring and feedback by the project manager, project managers technical capability, leadership quality of the project manager, effective monitoring and feedback by the project team members. Also looked at is the authority to take day to day decisions by the project managers' team at site. Furthermore, the success of project hinges on the efficacy of the project team in managing the process (Olatunji, 2010). This indicates adequate capacity of the project manager as well as the project team to ensure proper inspection and investigation of work done on site.

According to McMiniminee et al. (2010), a weak link in the process such as a lack of project management experience, could adversely affect timely execution/ timely completion of the projects. When there is no proper inspection/supervision, quality control is greatly compromised. Chism and Armstrong (2010) agree by stating that inspection and workmanship standards are quite important to achieve quality. Fapohunda and Stephenson, (2010) state that to achieve the

pre-determined project objectives, the construction site manager should have a significant influence over cost, time, scope and quality which make it paramount for the manager to have ability of exercising authoritative and absolute control.

2.2.4.5 Contractor Related Delay Factors

Another recent critical literature review on main factors of delay in Construction projects by Daba and Pitroda (2018) indicated that the contractor-related schedule delay factors are

"dishonesty/problems in funding by contractor, ineffective site supervision, ineffective scheduling, revise due to mistakes during work, sub-contractors work related delay, poor experience of the contractor, delay in site arrangement, delay in preparation of working drawing and sample of material, delay in payment of executed work for a contractor by the owner, slow decision-making, late approving design documents, variation by owner, delay in procurement of materials, mistakes in design documents, recurrent changing of subcontractors, poor methods of construction, unskilled project crew, poor technology, poor coordination and communication between them, ineffective contractor's policies, unskilled subcontractors, ineffective economic control on site, inadequate procurement of construction materials, improper equipment, frequent equipment breakdowns, shortage of equipment, subcontractor turn-over, lack of labour, slow mobilization of labour, ineffective equipment, slow equipment deliver, materials damage, conflict between labor and client".

A more recent study on cost overruns by Enshassi et al., (2010) on the topic "Significant Factors Causing Time and Cost Overruns in Construction Projects in the Gaza Strip" factors related to contractor-related Schedule delay are: financial problems; delay in delivery of materials to site; shortage of materials on site; construction mistakes and defective work; poor skills and experience of labour; low productivity of labour; coordination problems with others; lack of subcontractor's skills; lack of site contractor's staff; poor site management; shortage of site labour; and equipment and tool shortages on site. Aibinu and Odeyinka (2006) identified several factors as the main contributors to contractor-related factors for Schedule delay. These include planning and scheduling problems, financial shortage problems, equipment fault, shortage of equipment and materials, slow mobilization, equipment maintenance problems and a shortage of labors.

2.2.4.6 External Related Schedule Delay Factors

A study by Assaf and Al-Hejji (2006) on the topic "Causes of delay in large construction projects". Their findings indicated that the external/ others related delay factors as; unfavorable weather conditions, delay in obtaining permits from municipality; effects of subsurface conditions (e.g. soil, high water table, etc.), hot weather effect on construction activities, rain effect on construction activities, unavailability of utilities in site (such as, water, electricity, telephone, etc.), Social and cultural considerations, traffic management and restrictions on the work site, building accidents, varying site (ground) conditions, improvements in government regulations and laws, utility supply delays (such as water and electricity), and a third-party final review and registration are all things to consider.

Findings from a recent study done by Aziz (2013) of Egypt in his study also showed that the main and highest factor affecting delays in construction projects in Egypt is a financial problem (funding problem) and identified the top ten factors include different type of bribes, shortage of equipment Ineffective project planning and scheduling, poor site management and supervision, poor financial control on site, rework due to errors, selecting inappropriate contractors, sudden failures actions and inadequate planning.

Various researchers have identified others/external -related Schedule delay factors category as one of the groups of factors affecting schedule delays in construction project management.

These include price escalation, inclement weather, labour disputes and strikes, government regulations, slow permit by the government, civil disturbances and acts of God (Aibinu and Odeyinka, 2006). In a separate studies by several authors have concluded that poor procurement of material topped, shortage of materials in the market as a factor causing delay, poor quality of materials, escalation of material prices, and late delivery of materials, lack of equipment and tools on the market; adverse weather conditions; poor site conditions (location, ground, etc.); poor economic conditions (currency, inflation rate, etc.); changes in laws and regulations; equipment breakdowns, shortage of equipment; transportation delays; and external work due to public agencies (roads, utilities, and public services are external -related Schedule delay factors Assaf and Al-Hejji (2006); Alghbari, et al., (2007).

2.3 Empirical review

2.3.1 Determinants of Projects Delays

Delays happen in construction projects, but the magnitude of these delays varies from project to project. It is vital to identify the causes of delay in a bid to minimize or avoid delay in any construction project. A number of researches have been conducted on the causes of construction delay worldwide.

Alinaitwe, Apolot & Tindiwensi (2013) have made an investigation into the causes of delays and cost overruns in Uganda's Public Sector Construction Projects in the case of Civil Aviation Authority (CAA). It specifically aimed to identify the causes of delays and overruns and to rank them according to their frequency, severity and importance.

It computed and ranked frequency index, severity index and importance index values and all 20 factors. It was discovered that modifications to the scope of work, late payments, inadequate monitoring and control, excessive capital costs, and political unrest and instability were the five main reasons why building projects were delayed. Moreover, the relationship between the factors that cause delays and those that cause cost overruns was found to be moderate (Alinaitwe et al., 2013).

An empirical study on key determinants of construction delay was made with the purpose of identifying the important dimensions of construction delay. It used questionnaire with 40 factors causing delay method to collect data from respondents. Nine dimensions pertaining to design, equipment, personnel, experience, government, material, finance, and ownership were discovered by the study using exploratory factor analysis (Abinayasri, Anandakumar & Krishnamoorthy, 2017).

Seboru (2015) looked into what might be holding up Kenyan road construction projects. The findings reveals the overall top five causes of delay indentified by both consultants and contractors were: Payment by client; slow decision-making and bureaucracy in client organization; Claims; Inadequate planning / scheduling; and Rain. Likely, the top five causes of delay identified by consultants were: Payment by client; Slow decision-making and bureaucracy in client organization; Inadequate planning / scheduling; Different site conditions; and Proximity to borrow pit. Moreover, the top five causes of delay identified by contractors were: Slow

decision-making and bureaucracy in client organization; Payment by client; Engineer's certificates; Claims; and Rain.

Kusakc, Ayvaz, and Bejtagic (2017) studied an Analysis of Causes and Effects of Delays in Construction Projects in Libyan Oil Industry. A study was done among clients, consultants, and contractors involved in projects in Libya in order to determine the most important elements. The sampling procedures used were convenience and snowball sampling where the participants are identified through referral networks and professional relations. According to their research, the construction process, material scarcity, and security issue rank as the top three delay factors.

A study undertaken on Construction delay: a quantitative analysis investigated the causes of delays on 130 public projects in Jordan to aid construction managers in establishing adequate evaluation prior to the contract award using quantitative data. The study looked into a number of projects, including residential, commercial, and administrative structures, educational facilities, healthcare facilities, and communication hubs. The study identified the main causes of delay in construction of public projects to be related to designers, user changes, weather, site conditions, late deliveries, economic conditions and increase in quantity (Al-Momani, 2000).

Kariungi (2014) looked into the factors that influence projects in Kenya to be completed on time using the Kenya Power and Lighting Company as a case study. The factors were assessed from various project levels; ranging from formulation of project plans, execution, monitoring and evaluation, and closure. The study adopted descriptive and exploratory research designs while the target population was project engineers, supervisors and technical staff working in projects. Depending on their applicability, questionnaires, interviews, and observation checklists were utilized to gather information from a variety of respondents. SPSS was used to code and analyze the data that was gathered. In addition, measures of central tendency and correlation analysis were used to establish an interaction between the independent and dependent variables.

The findings were procurement delays, timely availability of funds and climatic factors.Construction projects located in the Gaza Strip, Palestine suffer from many problems and complex issues and consequently a study with an objective to identify the factors affecting the performance of local construction projects; and to elicit perceptions of their relative importance was undertaken. The study deployed a comprehensive literature review to generate a set of

factors believed to affect project performance and hence a total of 120 questionnaires were distributed to 3 key groups of project participants; namely owners, consultants and contractors. The results of the survey show that all three groups concur that the following are the most significant factors influencing project performance: lack of resources; low project leadership skills; escalation of material prices; lack of highly experienced and qualified personnel; and poor quality of available equipment and raw materials. Delays resulting from border closures or road closures leading to a shortage of materials. (Enshassi, Mohame and Bushaban, 2009).

One of the biggest issues facing Western Australia's building sector is delays. For people working in the construction sector, delays are a major issue because they can have a variety of detrimental consequences, including cost overruns. This study used a questionnaire survey and a review of the literature to determine the main reasons behind delays in the Western Australian construction sector. A total of 48 delay factors were obtained from literature review and were further categorized into eight major groups that contributed to the causes of delay.

The targeted respondents, who included clients, contractors, and consultants in Perth, Western Australia, were given the survey questionnaire. Thirty-two people took part in the survey. The top ten most significant causes were, based on the available, albeit sparse, data: (1) lack of skills; (2) financial difficulties; (3) lack of labor; (4) unrealistic project completion deadlines; (5) unforeseen ground conditions; (6) poor contractor or consultant organization; (7) poor communication; (8) underestimating the time of completion; (2009) slow decision-making speed; and 10) designer errors (Wong and Vimonsatit, 2012).

Sambasivan and Soon (2007) studied the causes and effects of delays in Malaysian construction industry and identified ten most important causes as: (1) contractor’s improper planning, (2) incorrect site management by the contractor; (3) insufficient experience of the contractor; (4) insufficient client financing and payments for finished work; (5) issues with subcontractors; (6) shortage of material; (7) labor supply; (8) equipment availability and failure; (2009) lack of communication between parties; and (10) errors during the construction stage. The study used a questionnaire survey to ask clients, consultants, and contractors about the reasons behind and consequences of delays. Approximately 150 people took part in the survey.

A survey conducted in Saudi Arabia to determine exact factors responsible for project delay was achieved by carrying a critical analysis of the literature and carrying out a questionnaires survey among engineers, consultants, and project managers working on building projects, and gathering their answers. The paper cited the main delay factors in the importance of Project owner's role, contractor related, Financing related, Materials related, Design documents have been cited as (Al Hammadi and Nawab, 2016).

2.4 Summary of Literature Review

The reviewed literature revealed various studies in different parts of the world that have largely made on the factors relating to construction projects delay. Investigation into the causes of delays and cost overruns in Uganda's Public Sector Construction Projects in the case of Civil Aviation Authority (CAA) -2013, an empirical study on key determinants of construction delay was made with the purpose of identifying the important dimensions of construction delay-2017, factors causing delays in road construction projects in Kenya-2015, analysis of Causes and Effects of Delays in Construction Projects in Libyan Oil Industry2017, Construction delay: a quantitative analysis investigated the causes of delays on 130 public projects in Jordan to aid construction-2000, determinants of Timely Completion of Projects in Kenya: A case of Kenya Power and Lighting Company, Thika-2014, Constructionprojects delay in the Gaza Strip, Palestine-2009, construction projects delays in the case of Western Australia's construction industry-2012, and causes and effects of delays in Malaysian construction industry-2007. These investigations have been completed and documented.

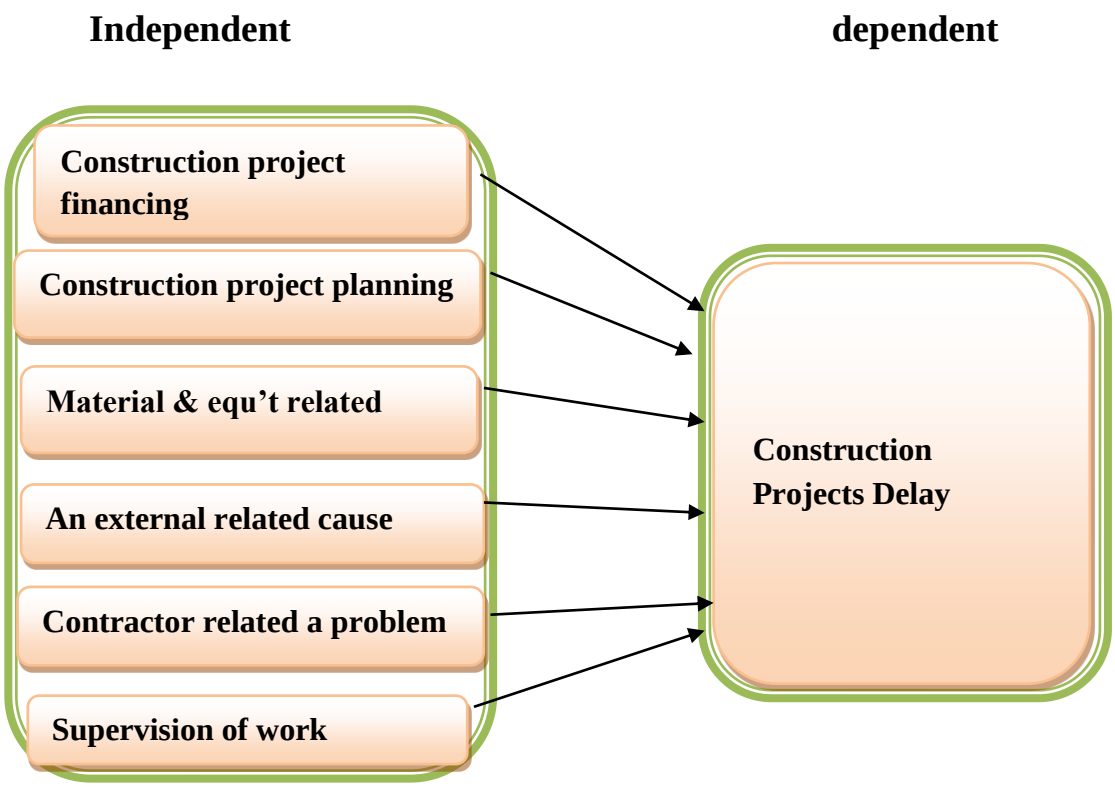
An empirical study on key determinants of construction delay was made with the purpose of identifying the important dimensions of construction delay. It used questionnaire with 40 factors causing delay method to collect data from respondents. Nine dimensions pertaining to design, equipment, personnel, experience, government, material, finance, and ownership were discovered by the study using exploratory factor analysis (Abinayasri, Anandakumar & Krishnamoorthy, 2017).

Therefore, in relation to the above, the chapter has highlighted the literature that is existing in relation to the delay of projects in the construction industry. The chapter has reviewed the literature in relation to the six objectives and the factors have been looked at from the global perspective down to the study scope area. Among the highlighted factors include: Projects

Funding (financing), Project Planning, Contractor's Experience, construction material and Supervision that are considered to be independent factors while delay in projects implementation in the construction industry is taken to be the dependent variable. The conceptual framework, the interaction between variables, and the research gaps are also highlighted in this chapter.

2.5 Conceptual Framework

A conceptual framework is a thorough conceptualization of ideas that provide guidance for a research project. It enables the interaction between dependent and independent variables to be portrayed (Kothari, 2004). In this study, the dependent variable will be delay of projects in construction industry while the independent variables are going to be those factors that are thought to influence the realization of the dependent variable.



Source: Developed by the researcher based on Literature review

Figures 2. 1:Conceptual framework and development

CHAPTER THREE

3. RESEARCH METHODOLOGY

3.1. Introduction

This chapter presents the methodology and research design that was adopted in conducting the research study and collecting the desired data and reaches a conclusion. The chapter defines the research design followed, target population of the study, the sampling size used, sampling procedure followed as well as the type of data collection instrument used. The data collection procedures and data analysis techniques used in analyzing the results of the study are also discussed. The detail about the methodology and methods of the study are discussed below.

3.2. Research Design

Research design is a decision regarding what, where, when, how much, by what means of concerning an inquiry or a research study constitute a research approach and the research design is the conceptual structure within which research is conducted; it constitutes the blueprint for the collection, measurement, and analysis of data (Kothari, 2004).

This study was descriptive and explanatory research designs, which are, intend to assess gap inquiry of contractors, consultants, and client's expectation and perception toward dimensions of determinants of construction projects delay. Descriptive research intends to existing facts concerning the nature and status of a situation, as it exists at the time of the study, and to describe present conditions, events, or systems based on the impressions or reactions of the respondents of the research (Creswell, 1994).

As descriptive research, this study was concerned with describing the existing nature and characteristics of respondents and variables by presenting a profile of the respondents through tables, frequency distributions, and percentages and identifying the mean and standard deviation of determinants of construction projects delay. These studies were an explanatory research design; it had an explanatory variable, which is a determinant of construction projects delay.

3.2.1 Research Approach

Concerning the research method consider to be very efficient in answering research questions by quantitative and qualitative approach. Quantitative research approach explains phenomena by collecting numerical data that are analyzed using mathematically based methods. Therefore, this implies quantitative research is essential for collecting numerical data to explain a particular phenomenon. Qualitative approach is concerned with subjective evaluation of opinions, behavior and attitudes. Qualitative methods are not good at giving direct answers, but are good at developing more questions, because of consistent use of "soft data" (Higgins, 2009). Therefore, in this research, quantitative approach is used.

3.3 Source of data

The necessary data for this study was collected from both primary and secondary sources. The primary data will gather through questionnaires. The researcher was used questionnaires to the sampled clients and consultants. The secondary data was collected from relevant organization reports, websites and published and unpublished books that are related to the study. These primary data would easily obtain through questionnaire. It is an effective mechanism for well-organized collection of certain kinds of information. Since the information collected through questionnaire is original, it is imperative to address the research problems. Using primary data in research helps to hold the necessary data that planned to conclude about the current understanding of the situations. The secondary data is used to select the appropriate sample size by using the Yeka sub city constriction office 2022/2023 human resource report. Secondary data sources are the best alternatives for the research that enables to get numeric data and other text documents which are essential to ascertain accuracy of the research being studied.

3.4 Data collection methods

The data collect through own survey data collection method by distribution the questionnaires as well as collecting the respondents respond. The procedures for collection of data for this study were basically questionnaires. The questionnaires adopted from different literature review. Similar type of questionnaire was given to both clients and consultants to answer. These questionnaires were made up of 42 questions of which all of the questions are close-ended and open-ended. The questionnaire was dividing into five sections: The first part was designed to

analyze demographic data, which was focused on collecting the respondent's personality characteristics. The second part looked at determinants of construction projects delay. And finally questionnaire looked at construction projects delay (dependent) at Yeka sub city constriction office. Accordingly, except demography part others are representing by five levels of preference; Strongly Disagree, Disagree, Neither agree nor disagree, Agree, and Strongly Agree.

3.5 Target population

The population of the study is the area from which the samples are select. From this, sample frame can be identified. As previously said, the goal of the research is to use every participant as a sample. This indicated survey study of samples is employ for the project. Those samples include the site experts and admin staffs locate in Yeka sub city constriction office. This comprises only the professional teams starting from the site engineers to higher-level project coordinators and or manager. All these combined are deemed to be study population. The whole totals of constriction projects in Yeka sub city constriction office comprises of 120 in number and are identified to be population size the study. Therefore, study employs those project teams to be population in the sample study. Since the target population is small in number, the data collection cost for these respondents is very low, and make more reliable on the data; and hence the researcher chosen the census method for data collection than sampling technique.

3.7 Method of data analysis

Method of data analysis was descriptive with correlation and multiple regression data analysis method use. The quantitative data was adopted so as to present the necessary data for this study in numerically. The data was analysis using Statistical Package for Social Sciences (SPSS) version-25.By applying these methods data was interpret through tables, frequency, percentage, and average mean score are employ to present analysis and discuss the result of the study. This allows the researcher to summarize, organize and present data in a meaningful way and bring clear meaning to the users. The correlation and regression analysis are also employ. Correlation analysis is use to quantify the degree to which variables are related and provides with a linear relationship between two variables. Regression analysis was a related technique to assess the relationship between dependent variable and independent variables. The multiple linear

Regression analysis was useful when have to identify the impact of a unit change in the more than one independent variable on the dependent variable (Creswell, 2014).

3.8 Validity of the instrument

Validity involves the degree to which the study measuring what it is supposed to measure. More simply, it focuses on the accuracy of the measurement (Nwannebulfe, *et al*., 2017 and Richard, *et al*., 2014). All measures going to be used to construct the instruments are expected to be acceptable in the study. Determinants of construction projects delay assessments measurement are adopted from various scholars on their study in the questionnaire were prepared using a five point-Likert scale except the demographic parts. Maximum effort would be exerted to create link between the items in the questionnaire and the objectives of the study. Thus, in order to ensure content validity of the items incorporated in the instrument highly experienced experts were examine and their comments were arranged in the instrument before it is distribute. Moreover, the instrument is given to the advisor and the colleagues to comment on it before distributing it. Finally made an adjustment of questionnaires depends on the pilot test time forwarded comments before distributed for full sample respondents'.

The Likert Scale has the benefit of being the most widely used survey gathering method, making it simple to understand. The answers can be readily measured and are based on a computation of some mathematical analysis. Respondents find it easier to answer questions when they are not forced to take a position on a subject since they are not required to give a clear-cut yes or no response. Instead, they are free to express their degree of agreement. Additionally, the responses given take into account participants' ambivalence or indecision. Since each participant's response is represented by a single number, these responses are very simple to code when data is gathered. Likert surveys are another quick, easy, and affordable way to collect data.

3.9 Reliability of the instrument

Measuring instrument is reliable if it provides consistent results. Cranach's alpha is a coefficient of reliability used as a measure of the consistency or reliability of a psychometric test score for samples. Eleven respondents were chosen for pilot testing to assess the study instrument questionnaires' reliability by gauging their comprehension and interpretation of the questions. This was done to make sure that such questions bear some meaning and the comments raised by

those respondents which used to modify the questionnaires. Cranach's alpha a coefficient of 0.75 or above is considered very good; between 0.6 and 0.75, it is considered good; and between 0.4 and 0.6, it is regarded as fair (Bryman, 2012).

Table 3. 1:Reliability Cronbach's alpha a coefficient value

VARIABLES	Cronbach's Alpha	No. of Items
construction project financing	0.895	7
construction project planning	0.812	6
material & equ't related	0.865	9
an external related cause	0.893	9
contractor related a problem	0.911	9
supervision of work	0.98	3
construction projects delay	0.897	8
Over all reliability value	**0.822**	**51**

Source: Own survey, 2024

Accordingly, the reliability test of the actual study shows that as it has very good quality with reliability measure of 0.822.

3.8. Statistical Methods of Data Analysis

3.8.1 Descriptive Statistics

After the need data gather through the stated data collection methods, the next step was to analyze and present these data. Descriptive Statistics are used to compare or describe data using tables and graphs and it was a collection, organization, summarization, and presentation of data in a meaningful form ways for this study Statistical Package for Social Science (SPSS) software version, 25 was implemented to analyze and present the data by using the statistical tools for this study. The statistical tools uses for this study were descriptive analysis. To present a profile of the respondents by frequency distributions and percentages and to identify the mean and standard deviation of determinants of construction projects delay a descriptive statistical analysis was implemented for this on study. To determine the relationships between determinants of construction projects delay this study use Pearson's correlation coefficient. And in addition to this, the study use simple linear regression, multiple regression analysis to determine the impact of independent variable on dependent variable.

3.8.2. Inferential Statistics

3.8.2.1 The Pearson Product Moment Correlation Coefficient

According to Phyllis and his associates (2007:18-55), inferences have very important in management research. This is so because conclusions are normally established based on results. Such generalizations are, therefore, be made for the population from the samples. They speculate that the Pearson Product comment correlation coefficient is a widely use statistical method for obtaining an index of the relationships between two variables when the relationships between the variables are linear and when the two variables' correlation is continuous. To ascertain whether a statistically significant relationship exists between lacks of information about the independent variable on dependent variable with the Yeka Sub city construction office. According to Duncan C. and Dennis H. (2004:38-41), the correlation coefficient can range from -1 to +1. The value of -1 represents a perfect negative correlation while a value of +1 represents a perfect positive correlation. A value of 0 correlations represents no relationship.

In this study Pearson's Product, Moment Correlation Coefficient will use to determine the relationships between independent variable on dependent variable.

The results of the correlation coefficient may be interpreted as follows.

Correlation Coefficient Interpretation

(-1.00 to -0.8) ……....strong	
(-0.8 to -0.6) …….substantial	Negative
(-0.6 to -0.4) …….medium	
(-0.4 to -0.2) …….low	
(-0.2 to 0.2) …….....very low	
(0.2 to o.4) ……...low	
(0.4 to 0.6) ……..…medium	Positive
(0.6 to 0.8) ……..…substantial	
(0.8 to 1.00) ……...strong	

The researcher has developed models on the one hand to see the effect of all considered four predictor variable and The Model of equations used to answer the research objectives was linear function, expressed as follows:

$Y_i = b_o + b_1X_1 + b_2X_2 + b_3X_3 + b_4X_4 + b_5X_5 + b_6X_6 + e$ …….. 1

Use to see the relationship between independent variable on dependent variable.

Where:

Yi = dependent variable (construction projects delay)

b_0: Constant ; b_1, b_2, b_3, b_4, b_5, b_6, b_7, = regression coefficient (Slope of line) of each variable, e = Error, , , an, , and

Xi = independent variables (X1= construction project financing, X2= construction project planning, X3= material & equ't related, X4= external related cause, X5= contractor related a problem and X6= supervision of work).

Assumption of Linear Regression model

- The relationship between the response and independent variables are linear.
- The error term appearing in the population regression function is homoscedasticity (constant variance).
- The successive (a pair of error terms) are uncorrelated.
- All explanatory variables are linearly independent.
- Determines how the response variable changes as a particular variables change.
- The independent variable and the error term are independent.

3.10 Ethical consideration

The researcher was give emphasis to the ethical issues in every aspect of this study that demands. When the questionnaires distribute to the respondents, respondents are informed and guaranteed that the information they provide ware confidential and used only for academic purpose. Moreover, a statement conforms to the prohibition of disclosing identity detail or personal reference in the questionnaire. This would be help to avoid any biased responses and to make participants feel safe in filling the questionnaire. Therefore, the collected data was keep and not used for any personal interest. Generally, the whole process of the study was conducted within the frame of acceptable ethics.

CHAPTER FOUR

4. ANALYSIS AND DISCUSSION OF RESULTS

In this chapter the collected data was presented, analyzed and interpreted; the analyzed and interpreted data was presented and discussed. The first part of the study presents the response rate of the distributed questioner and background of the respondent through frequency distribution and percentage. The second part presents descriptive statistical analysis of determinants of construction projects delay to know the level of performance, correlation analysis to show the relationship between the dependent variable and independent variable (construction projects delay as a dependent variable and determinants of construction projects delay as an independent variable) and multiple regression analysis to determine the determinants of construction projects delay by using SPSS statistic version 25.

4.1. Response Rate and demographic data of respondents

4.1 .1 Response Rate

This study is intended to assess the Determinants of construction projects delay: case of (yeka sub city constriction office). In Yeka sub city constriction office there are 120 consultants, clients, contractors and subcontractors of the Yeka sub city construction office where 120 sample respondents have been selected censes methods. From 120 distributed questionnaires, 109 has been filled and collected effectively. However, 6 questionnaires are incompletely filled, and 5 questionnaires have not been collected. As a result, the collection rate for the total questionnaires becomes 90.8%.

Table 4. 1:Response rate of questionnaires by respondents

Questionnaires	Frequency of the Respondents	Valid Percent
Collected and Used	109	90.8%
Uncollected	11	9.2%
Total Distributed	120	100%

Source: Own survey data, 2024

4.1.2 Background Information of the Respondent

To obtain the general profile information of the consultants, clients, contractors and subcontractors of the Yeka sub city construction office, the respondents were asked about their Sex, age, educational level and the Job position that they have been consultants, clients, contractors and subcontractors of the Yeka sub city construction office

Table 4. 2:Sex, Age, Educational level and the Job position of respondent.

Item		Frequency	Percent	Valid Percent
Sex	Male	83	76.1	76.1
	Female	26	23.9	23.9
	Total	109	100	100
Age	18-30	31	28.4	28.4
	31-40	46	42.2	42.2
	41-50	16	14.7	14.7
	51-60	12	11.0	11.0
	above 60	4	3.7	3.7
	Total	109	100.0	100.0
Educational Level	Diploma	10	9.2	9.2
	degree level	66	60.6	60.6
	post gradation level	30	27.5	27.5
	PHD	3	2.8	2.8
	Total	109	100.0	100.0
Profession	Project Manager	1	0.9	0.9
	Design team	12	11	11
	Project procurement team	9	8.3	8.3
	Project audit team	14	12.8	12.8
	Contractor	48	44	44
	Consultant	25	22.9	22.9
	Total	109		
A Project you are involved	Completed	65	59.6	59.6
	Currently under Construction	44	40.4	40.4
	Total	109	100	100
Time elapsed yet for on-going projects	<1 years	42	38.5	38.5
	2-3 years	57	52.3	52.3
	4-5 years	9	8.3	8.3
	>6 years	1	0.9	0.9
	Total	109	100	100

Source: output of SPSS from Own survey data, 2024

The result of gender of the respondent from the above table 4.2 shows that 76.1 % (83) of the respondents were male and 23.9% (26) of the respondents were female. It implies that the male employees are higher than female employee in number.

The above table illustrates that the age of the respondents. Table 4.2 result shows that 28.4% (31) of the respondents were found from 18 to 30 years old, whereas 42.2% (46), 14.7% (16) and 11% (12) of the respondents were found between 31-40, 41-50 years and from 51 up to 60 years old respectively. The remaining of 3.7% (4) respondents was found their age above 60 years old. So, majority of the employee of the organization were found their age 31 up to 40 years old. This implies that most of the staffs are under the age category which commonly identified as young. So that having a group of employees that belong to the most active and energetic age group might help the organization to give better service to community.

The above table shows that educational level of the respondent. The result of table 4.2 indicates that 60.6% (66) of the respondents were first degree, 27.5% (30) of the respondents were post-graduation and 9.2% (10) of the respondents were Diploma. Whereas 2.8 %(3) of the respondents were PHD. Hence, the result shows that as most of employees are degree holders. This clearly shows the participants in the industry have a good educational background for the requirement of the sector.

When we see area of profession of our respondents project manager constitute 0.9% (1), design team constitute 11% (12) , project procurement team constitute 8.3% (9), project audit team 12.8% (14), contractor44% (48) and lastly consultant have amounted 22.9% (25).which says contractor have larger number in simpler terms.

As shown in the table above 59.6% (65) and 40.4% (44) a project you are involved in the completed and currently under construction respectively. Hence, the result shows most of project are completed.

The years involved in construction is explained as <1 years 42(38.5%), 2-3 years 57(52.3%), 4-5 years 9(8.3%), and >6 years 1 (0.9%). this indicates that most of the construction firms who are participating on those project sites have relatively larger life span on time elapsed yet for on-going projects

4.2. Descriptive Statistical Analysis

4.2.1. Determinants of construction projects delay

In this section, the descriptive analyses performed based on the respondent's response about the behaviors of their construction projects delay and this is presented by using five point Likert scales. The mean and standard deviation to compare the results obtained from the SPSS are presented below. This determinant of construction projects delay contains 43 questions to describe the six determinants of construction projects delay namely construction project financing, construction project planning, material & equ't related, an external related cause, contractor related a problem, and supervision of work. In order to measure the determinants of construction projects delay provide by the Yeka sub city constriction office five point Likert scale was used with: 1= strongly disagree, 2= disagree, 3 = neutral, 4= agree and 5= strongly agree. But, while making interpretation of the results of mean and standard deviation the scales were reassigned as follows to make the interpretation easy and clear. 1-1.8= Strongly Disagree, 1.81–2.6 = Disagree, 2.61 – 3.4= Neutral, 3.41 –4.20= Agree and 4.21 –5 = Strongly Agree (Al-Yasaad et al. (2006)).In order to see the general perception of the respondents regarding the determinant of construction projects delay, the researcher has included the measures stated in the coming tables as follows by summarized analysis & interpretation supplemented by frequency tables and percentages. In order to simplify interpretation of the results, ratings of agree & strongly agree are grouped as agreement and ratings of disagree & strongly disagree are grouped as disagreement.

4.2.1.1. Construction project financing

Table 4. 3:Descriptive results of construction project financing

S/N	construction project financing	Strongly Disagree		Disagree		Neutral		Agree		Strongly Agree		Mean	Stdv
		Freq	%	Freq	%	Freq	%	Freq	%	Freq	%		
1	Limited Finances	10	9.2	15	13.8	4	3.7	66	60.6	14	12.8	3.54	1.15
2	Financial management	14	12.8	11	10.1	14	12.8	54	49.5	16	14.7	3.43	1.23
3	Project Finances Diversions	8	7.3	14	12.8	10	9.2	51	46.8	26	23.9	3.67	1.18
4	Serious budget deflect resulted from fluctuation and price escalation	9	8.3	10	9.2	14	12.8	52	47.7	24	22	3.66	1.16
5	Utilization of low price of civil work in estimation of the cost	9	8.3	15	13.8	10	9.2	50	45.9	25	22.9	3.61	1.21
6	Cost escalation on various items	3	2.8	20	18.3	17	15.6	52	47.7	17	15.6	3.55	1.05
7	Cash flow problems	6	5.5	18	16.5	16	14.7	47	43.1	22	20.2	3.56	1.15
ARG		8	7.74	15	13.5	13	11.14	53	48.76	21	18.9	3.57	1.16

Source: output of SPSS from Own survey data, 2024

The table above shows the frequency and percentage distribution of construction project financing factors entirely related to limited finances, financial management; project finances diversions, fluctuation and price escalation, estimation of the cost, cost escalation on various items and cash flow problems. This is explained by average frequency (percentile) 8(7.74%), 15(13.5%), 13(11.14%), 53(48.76%) and 21(18.9%) participants are strongly disagreed, disagreed, neither agreed nor disagreed, agreed and strongly agreed level of perceived respectively. This tells as most respondents (21.24%) are not satisfied to the current construction project financing help to contribute higher level of construction projects delay. From these responses we can conclude that employees are satisfied with their limited finances, financial management; project finances diversions, fluctuation and price escalation, estimation of the cost, cost escalation on various items and cash flow problems at Yeka sub city construction office.

Generally, the above table shows summary of the details for the issues related to construction project financing factors by involving the number of respondents, mean, and standard deviation, values in each category. The mean is the average value of participants' response. The standard deviation is the measure of dispersion from the mean. The overall mean of construction project

financing is 3.57. This result shows as most of the respondent employees are have higher the average level of preference for construction project financing factors by which the average is result approximates to ‘Agree by the provision of the of construction project financing. The provision of construction project financing factors for employee like, limited finances, financial management; project finances diversions, fluctuation and price escalation, estimation of the cost, cost escalation on various items and cash flow problems at Yeka sub city construction office are satisfactory.

4.2.1.2. Construction project planning

Table 4. 4:Descriptive results of construction project planning

S/N	construction project planning	Strongly Disagree		Disagree		Neutral		Agree		Strongly Agree		Mean	Stdv
		Freq	%	Freq	%	Freq	%	Freq	%	Freq	%		
1	The residential building projects' pre-planning is appalling.	12	11	30	27.5	22	20.2	34	31.2	11	10.1	3.02	1.2
2	Project Schedule planning has not been achieved due to poor coordination	15	13.8	25	22.9	18	16.5	39	35.8	12	11	3.07	1.26
3	Plans at the Yeka sub city construction office have been damaged by outside intervention.	4	3.7	13	11.9	15	13.8	53	48.6	24	22	3.73	1.05
4	Identify the resource allocated for the project	10	9.2	15	13.8	25	22.9	41	37.6	18	16.5	3.39	1.18
5	Set the specified date of project accomplishment	11	10.1	29	26.6	7	6.4	54	49.5	8	7.3	3.53	1.4
6	Identify what procedure should be done	4	3.7	13	11.9	15	13.8	53	48.6	24	22	3.73	1.05

Source: output of SPSS from Own survey data, 2024

The above table shows the frequency and percentage distribution of construction project planning factors responded by respondents explained by average frequency (percentile) most of them are disagreed by the provision of these construction project planning in Yeka sub city construction office. i.e. 9(8.58%), 21(19.1%), 17(15.6%), 46(41.88%) and 16(14.8%) participants are strongly disagreed, disagreed, neither agreed nor disagreed, agreed and strongly

agreed respectively. This tells as most respondents (28.1%) are not satisfied by the current construction project planning practice which helps to develop construction projects delay. From this response we can conclude that employees are not satisfied with their pre-planning, project schedule planning, external interferences, resource allocated, project accomplishment and procedure at Yeka sub city construction office.

Generally, the above table shows summary of the details for the issues related to construction project planning factor the number of respondents, mean and standard deviation values in each category. The mean is the average value of participants' response. The standard deviation is the measure of dispersion from the mean. The overall mean of construction project planning factor was 3.41. This result shows as most of the respondents have below the average level of construction project planning factors by which the average is result approximates to 'agree' level of satisfaction by the provision of construction project planning practices. The provision of construction project planning factors for employee like, pre-planning, project schedule planning, external interferences, resource allocated, project accomplishment and procedure at Yeka sub city construction office are moderate.

4.2.1.3. Material & equ't related

Table 4. 5:Descriptive results of material & equ't related

S/N	material & equ't related	Strongly Disagree		Disagree		Neutral		Agree		Strongly Agree		Mean	Stdv
		Freq	%	Freq	%	Freq	%	Freq	%	Freq	%		
1	The Projects in the site have been delayed due to low quality of materials	7	6.4	26	23.9	11	10.1	40	36.7	25	22.9	3.46	1.26
2	Shortage of construction material has led to delayed projects	8	7.3	17	15.6	10	9.2	48	44	26	23.9	3.61	1.21
3	Late delivery of construction material has led to delayed projects	10	9.2	14	12.8	11	10.1	53	48.6	21	19.3	3.56	1.2
4	Frequent equipment breakdowns	2	1.8	33	30.3	8	7.3	51	46.8	15	13.8	3.4	1.11
5	Low efficiency of equipment	4	3.7	24	22	21	19.3	51	46.8	9	8.3	3.34	1.02
6	Changes in material types and specifications during construction	8	7.3	17	15.6	6	5.5	69	63.3	9	8.3	3.5	1.08
7	Shortage of construction materials	8	7.3	15	13.8	10	9.2	50	45.9	26	23.9	3.65	1.19
8	Poor procurement strategies of construction material	10	9.2	13	11.9	11	10.1	53	48.6	22	20.2	3.59	1.2
9	Escalation of prices in material	3	2.8	20	18.3	18	16.5	56	51.4	12	11	3.5	1.01
ARG		7	6.11	20	18.24	12	10.81	52	48.01	18	16.84	3.51	1.14

Source: output of SPSS from Own survey data, 2024

The above table shows the frequency and percentage distribution of material & equ't related more of the respondents responded 70(64.85%) are agree by the level of material & equ't related, but only 27(24.35%) of the respondent disagreed and the remaining 12(10.81%) are neither agreed nor disagreed. This tells as most respondents are satisfied by the current material & equ't related which helps to develop construction projects delay. Hence, it indicates that there is moderate level of employee material & equ't related because of the construction projects delay practices is moderate.

Generally, the above table shows summary of the details for the issues related to material & equ't related by involving the number of respondents, mean and standard deviation values in each category. The mean is the average value of participants' response. The standard deviation is the measure of dispersion from the mean. The overall mean of material & equ't related is 3.51. This result shows as most of the respondent employees have above the average level of

preference for material & equ't related. However, the overall mean result approximates to 'agree' due to its average from the moderate level of satisfaction.

4.2.1.4. External related cause

Table 4. 6:Descriptive results of external related cause

S/N	external related cause	Strongly Disagree		Disagree		Neutral		Agree		Strongly Agree		Mean	Stdv
		Freq	%	Freq	%	Freq	%	Freq	%	Freq	%		
1	Delay in obtaining the required document from concerned government offices, municipality, regional environmental offices	5	4.6	10	9.2	14	12.8	55	50.5	25	22.9	3.78	1.04
2	Delay in land acquisition	9	8.3	8	7.3	28	25.7	48	44	16	14.7	3.5	1.04
3	Delay in providing services for utilities such as water, electricity, etc.	3	2.8	15	13.8	13	11.9	52	47.7	26	23.9	3.76	1.05
4	Delay in clearances form various regulatory agencies	6	5.5	13	11.9	13	11.9	58	53.2	19	17.4	3.65	1.07
5	Unforeseeable reasons such as adverse natural calamities, etc.	10	9.2	19	17.4	16	14.7	55	50.5	9	8.3	3.31	1.13
6	Delay in sub-contractors work , in adequate contractor's work	8	7.3	15	13.8	11	10.1	50	45.9	25	22.9	3.63	1.19
7	Seasonality of works to be performed	8	7.3	12	11	11	10.1	56	51.4	22	20.2	3.66	1.14
8	Political instability (eg. Security issues)	8	7.3	16	14.7	11	10.1	50	45.9	24	22	3.61	1.19
9	Price fluctuations (inflation/escalation)	5	4.6	11	10.1	26	23.9	47	43.1	20	18.3	3.61	1.04
ARG		7	6.32	13	12.1	16	14.57	52	48.02	21	18.95	3.61	1.09

Source: output of SPSS from Own survey data, 2024

The above table shows the frequency and percentage distribution of external related cause factors responded by respondents explained by average frequency (percentile) most of them are agreed by the provision of these external related cause in Yeka sub city construction office. i.e. 7(6.32%), 13(12.1%), 16(14.57%), 52(48.02%) and 21(18.95%) participants are strongly disagreed, disagreed, neither agreed nor disagreed, agreed and strongly agreed respectively. This tells as most respondents (66.97%) are satisfied by the current external related cause which helps to develop construction projects delay. From this response we can conclude that employees are satisfied with their required document, land acquisition, providing services for utilities, clearances, Unforeseeable, sub-contractors work, Seasonality, Political instability and Price fluctuations at Yeka sub city construction office.

Generally, the above table shows summary of the details for the issues related to external related

cause the number of respondents, mean and standard deviation values in each category. The mean is the average value of participants' response. The standard deviation is the measure of dispersion from the mean. The overall mean of external related cause was 3.61. This result shows as most of the respondents have the average level of external related cause by which the average is result approximates to 'agree' level of satisfaction by the provision of external related cause. The provision of external related cause for employee like, required document, land acquisition, providing services for utilities, clearances, Unforeseeable, sub-contractors work, Seasonality, Political instability and Price fluctuations at Yeka sub city construction office are good.

4.2.1.5. Contractor related a problem

Table 4. 7:Descriptive results of contractor related a problem

S/N	contractor related a problem	Strongly Disagree		Disagree		Neutral		Agree		Strongly Agree		Mean	Stdv
		Freq	%	Freq	%	Freq	%	Freq	%	Freq	%		
1	Poor communication and Coordination	0	0	15	13.8	17	15.6	48	44	29	26.6	3.83	0.97
2	Delay in sub - contractor work	4	3.7	13	11.9	15	13.8	53	48.6	24	22	3.73	1.05
3	Inadequate contractors experience.	5	4.6	15	13.8	6	5.5	70	64.2	13	11.9	3.65	1.01
4	Poor safety conditions on site	9	8.3	10	9.2	15	13.8	60	55	15	13.7	3.93	4.02
5	Rework due to errors during construction	8	7.3	10	9.2	12	11	53	48.6	26	23.9	3.72	1.14
6	Conflicts between contractor and other parties	6	5.5	14	12.8	11	10.1	55	50.5	23	21.1	4.05	4.01
7	Under estimation of cost of the project by contractor	7	6.4	13	11.9	21	19.3	50	45.9	18	16.5	3.54	1.1
8	Poor qualification of contractor's technical staff	2	1.8	19	17.4	17	15.6	54	49.5	17	15.6	3.6	1.01
9	Shortage in material/equipment/tool on site	4	3.7	16	14.7	15	13.8	52	47.7	22	20.2	3.66	1.07
ARG		5	4.58	14	12.74	14	13.16	55	50.44	21	19.05	3.74	1.71

Source: output of SPSS from Own survey data, 2024

The above table shows the frequency and percentage distribution of contractor related a problem more of the respondents responded 19(17.32%) are disagree by the level of contractor related a problem, but only 76(69.49%) of the respondent agreed and the remaining 14(13.16%) are neither agreed nor disagreed. This tells as most respondents are satisfied by the current contractor related a problem which helps to develop construction projects delay. Hence, it

indicates that there is high level of contractor related a problem satisfactions because of the contractor related a problem are good.

Generally, the above table shows summary of the details for the issues related to contractor related a problem by involving the number of respondents, mean and standard deviation values in each category. The mean is the average value of participants' response. The standard deviation is the measure of dispersion from the mean. The overall mean of contractor related a problem is 3.74. This result shows as most of the respondent employees have above the average level of preference for contractor related a problem. However, the overall mean result approximates to 'agree' due to its average from the high level of contractor related a problem.

4.2.1.6. Supervision of work

Table 4. 8:Descriptive results of supervision of work

S/N	supervision of work	Strongly Disagree		Disagree		Neutral		Agree		Strongly Agree		Mean	Stdv
		Freq	%	Freq	%	Freq	%	Freq	%	Freq	%		
1	Projects in the site have been delayed due to ineffective monitoring	13	11.9	31	28.4	22	20.2	33	30.3	10	9.2	2.96	1.2
2	Proper feedback is missing in supervisors leading to delays	14	12.8	25	22.9	19	17.4	39	35.8	12	11	3.09	1.24
3	Poor decisions making from the supervisors has led to delayed projects	9	8.3	16	14.7	10	9.2	49	45	25	22.9	3.6	1.22
ARG		12	11	24	22	17	15.6	40	37	16	14.37	3.21	1.22

Source: output of SPSS from Own survey data, 2024

The table above shows the frequency and percentage distribution of supervision of work entirely related to ineffective monitoring, proper feedback and poor decisions making. This is explained by average frequency (percentile) 12(11%), 24(22%), 17(15.6%), 40(37%) and 16(14.37%) participants are strongly disagreed, disagreed, neither agreed nor disagreed, agreed and strongly agreed level of perceived respectively. This tells as most respondents (33%) are not satisfied to the current supervision of work help to contribute higher level of supervision of work. From these responses we can conclude that are satisfied with their ineffective monitoring, proper

feedback and poor decisions making at Yeka sub city construction office.

Generally, the above table shows summary of the details for the issues related to supervision of work by involving the number of respondents, mean, and standard deviation, values in each category. The mean is the average value of participants' response. The standard deviation is the measure of dispersion from the mean. The overall mean of supervision of work is 3.21. This result shows as most of the respondent employees are have higher the average level of preference for supervision of work by which the average is result approximates to 'neutral by the provision of the supervision of work. The provision of supervision of work for employee like, ineffective monitoring, proper feedback and poor decisions making at Yeka sub city construction office are satisfactory.

4.3. Construction projects delay

Table 4. 9:Descriptive results of construction projects delay

S/N	construction projects delay	Strongly Disagree		Disagree		Neutral		Agree		Strongly Agree		Mean	Stdv
		Freq	%	Freq	%	Freq	%	Freq	%	Freq	%		
1	Poor quality output	5	4.6	10	9.2	14	12.8	55	50.5	25	22.9	3.78	1.04
2	Time overrun (repayment and rescheduling request)	9	8.3	8	7.3	28	25.7	48	44	16	14.7	3.5	1.09
3	Cost overrun (additional variation payment request)	0	0	15	13.8	17	15.6	48	44	29	26.6	3.83	0.97
4	Bad public relation	4	3.7	13	11.9	15	13.8	53	48.6	24	22	3.73	1.05
5	Disputes and claim	9	8.3	15	13.8	10	9.2	50	45.9	25	22.9	3.61	1.21
6	Total rejection/Abandonmen	10	9.2	13	11.9	11	10.1	55	50.5	20	18.3	3.57	1.18
7	Arbitration	2	1.8	29	26.6	8	7.3	55	50.5	15	13.8	3.48	1.08
8	Litigation	6	5.5	18	16.5	16	14.7	47	43.1	22	20.2	3.56	1.15
ARG		6	5.2	15	13.87	15	13.65	51	47.14	22	20.17	3.63	1.09

Source: output of SPSS from Own survey data, 2024

The above table shows the frequency and percentage distribution of participants to construction projects delay. the result shows 73(67.31%) of the respondent agree that have output, time overrun, cost overrun, public relation, disputes and claim, rejection/abandonment, arbitration and litigation but still respondents of 21(19.07%) disagreed while the remaining 15(13.65%) are neither agreed nor disagreed. therefore, we can conclude that employees' of yeka sub city

construction office have good level construction projects delay practices.

Generally, the above table shows summary of the details for the issues related to construction projects delay by involving the number of respondents, mean and standard deviation values in each category. The mean is the average value of participants' response. The standard deviation is the measure of dispersion from the mean. The overall mean of construction projects delay is 3. 63. This result shows as most of the respondent employees have above the average level of construction projects delay; by which the average result approximates to 'agreed' level construction projects delay. Hence, still there is good construction projects delay of employees in average even if they are sissified by the provision of construction projects delay. Therefore, more provision of Construction projects delay which help to employee can help employee more performing their Construction projects delay more than before.

4.4 Determinants of construction projects delay

Even though, all the variable including determinants of construction projects delay of construction project financing, construction project planning, material & equ't related, an external related cause, contractor related a problem, and supervision of work have been observed to be sever on determinants of construction projects, this does not necessarily mean that all have equal determinants of construction projects delay. The result of the mean value of determinants of construction projects delay in the following table clearly compares the difference of all the key barriers in relation to its severity.

Table 4. 10:Determinants of construction projects delay (in order of severity)

No	Predictor variables	Grand mean	Grand std. dev	Rank of severity	Agreed	Neutral	Disagreed
					%	%	%
1	Construction project financing	3.57	1.16	3	67.66	11.4	21.24
2	construction project planning	3.41	1.19	5	56.68	15.6	27.68
3	material & equ't	3.51	1.14	4	64.85	10.81	24.35
4	external related cause	3.61	1.09	2	66.97	14.57	18.42
5	contractor related a	3.74	1.71	1	69.49	13.16	17.32
6	supervision of work	3.21	1.22	6	51.37	15.6	33

Source: output of SPSS from Own survey data, 2024

From the above lists of main determinants of construction projects delay, the contractor related a problem with the mean value of 3.74 and standard deviation 1.71 depicts that it is dominant determinants than the others followed by involvement of external related cause, Construction project financing, material & equ't related, construction project planning and supervision of work that have a mean of 3.61, 3.57, 3.51, 3.41, & 3.21and a standard deviation of 1.09, 1.16, 1.14, 1.19, and 1.22respectively.

4.5 Correlation Analysis between Determinants of construction projects delay

Table 4. 11:Correlation Analysis

Correlations								
		construction projects delay	material & equ't related	supervision of work	construction project financing	external related cause	contractor related a problem	construction project planning
Pearson Correlation	construction projects delay	1.000	.830	.744	.788	.863	.620	.590
	material & equ't related	.830	1.000	.741	.774	.819	.506	.420
	supervision of work	.744	.741	1.000	.772	.728	.488	.553
	construction project financing	.788	.774	.772	1.000	.757	.613	.478
	external related cause	.863	.819	.728	.757	1.000	.535	.545
	contractor related a problem	.620	.506	.488	.613	.535	1.000	.321
	construction project	.590	.420	.553	.478	.545	.321	1.000
Sig. (1-tailed)	construction projects delay		.000	.000	.000	.000	.000	.000
	material & equ't related	.000		.000	.000	.000	.000	.000
	supervision of work	.000	.000		.000	.000	.000	.000
	construction project financing	.000	.000	.000		.000	.000	.000
	external related cause	.000	.000	.000	.000		.000	.000
	contractor related a problem	.000	.000	.000	.000	.000		.000
	construction project planning	.000	.000	.000	.000	.000	.000	
N	construction projects delay	109	109	109	109	109	109	109
	material & equ't related	109	109	109	109	109	109	109
	supervision of work	109	109	109	109	109	109	109
	construction project financing	109	109	109	109	109	109	109
	external related cause	109	109	109	109	109	109	109
	contractor related a problem	109	109	109	109	109	109	109
	construction project planning	109	109	109	109	109	109	109

Source: output of SPSS from Own survey data, 2024

Correlation analysis is measuring or indicating the leaner relationship and measure the strength of the association between two variables. The coefficient of correlation founds between -1 and 1. If the correlation coefficient of two variables is 1, these variables will have a positive relationship. And also the correlation coefficient approaches to positive one there is a strong relationship among the two variables. In another way, the correlation coefficient is -1 show that the two variables have a negative relationship. And the correlation coefficient approaches -1 there is a strong negative relationship among them. If there is no relationship between the two variables, the correlation coefficient will be equal to zero (0) (Berndt et. al. 2005).

The correlation coefficient lies between 0.1 and 0.29 the relationship between the two variables is weak or non-existent. When the relationship between two variables moderate, the correlation coefficient found between 0.3 and 0.49 and the correlation coefficient of the two variables is more than 0.5 there is a strong relationship among them. For this study, the Pearson correlation coefficient was used to study the relationship between namely external related cause, material & equ't related Construction project financing, supervision of work, contractor related a problem and construction project planning, and construction projects delay. The following table shows that the Pearson Correlation on the relationship between determinate construction projects delay.

Regarding the table in above, all of the determinate construction projects delay have a statistically or significant positive relationship at the p-value 0.000 which is less than the significant level of 0.05 (5%). Among them, external related cause has the strongest relationship with a correlation coefficient of 0.863 followed by material & equ't related with a coefficient of 0.830, followed by Construction project financing with a coefficient of 0.788, followed by supervision of work with a coefficient of 0.744, followed by contractor related a problem with a coefficient of 0.630, On the other hand, construction project planning 0.590. Construction project planning has the lowest relationship among determinate construction projects delay relative to the other five dimensions at the Pearson correlation coefficient of 0.590. If there is a positive relationship between two variables indicates; that one variable increases, the other variable will be increases. Therefore, based on the above discussion of the six determinate construction

projects delay have a strong positive correlation. So, these six determinate have strong correlation/ relationship with construction projects delay.

4.6. Regression Analysis

Regression analysis is a statistical measurement of the relationship between the two or more variables by showing the change of response variable (dependent variable) as a result of per unit change of the predictor (independent variable). In other words, the regression model is the process of estimating the value of the dependent variable while the independent variable changed by per unit (Sekaran and bougie, 2010).

In this study, regression analyses are used to see what the dependent variable (construction projects delay) will be as a result of change occur on the independent variable (determinate namely, external related cause, material & equ't related, Construction project financing, supervision of work, contractor related a problem and construction project planning).

4.6.1. Assumption of Regression Analysis

4.6.1.1. Multicollinearty Test

Table 4. 12:Multicollinearty Test

Model		Collinearity Statistics	
		Tolerance	VIF
1	material & equ't related	0.254	3.941
	supervision of work	0.314	3.185
	construction project financing,	0.264	3.783
	an external related cause	0.254	3.934
	contractor related a problem	0.612	1.634
	construction project planning	0.630	1.586
a. Dependent Variable: construction projects delay			

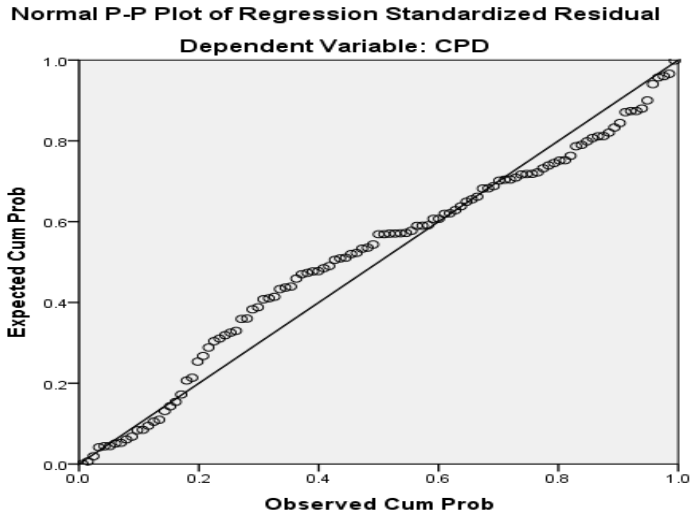
Source: output of SPSS from Own survey data, 2024

While computing a multiple regression, testing Multicollinearity between the independent variable is necessary. Multicollinearity test is to measure the close correlation of independent

variables to each other. Multicollinearity of the variables is tested by using the tolerance statistics and variance inflation factor (VIF). If the tolerance statistics are below 0.1(10%), there will be a multicollinearity problem. And also the value of VIF of variables is more than 10; there will be a multicollinearity problem, Gujarat and porter (2010).

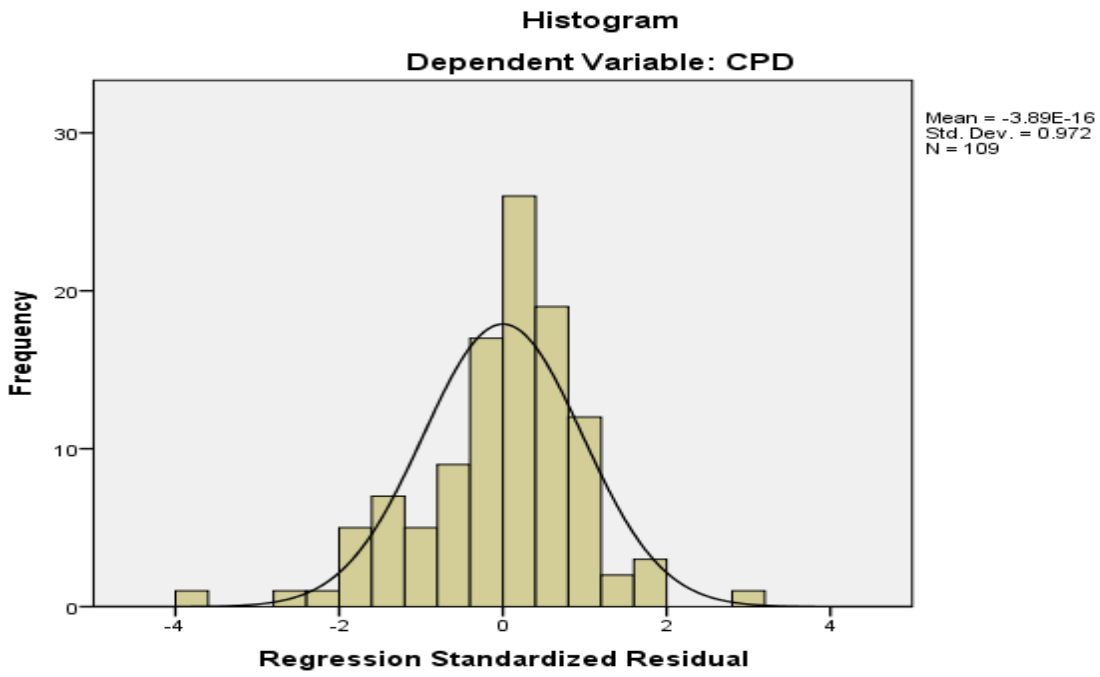
Regarding the table in above, all variables VIF was below 10 and the tolerance statistics were more than 0.1 (10%). So, there is no multicollinearity problem or there is no close correlation among the predictors.

4.6.1.2 Test of Normality



The probability Plot (P-P) graph shows the normal distribution of the population

Figures 4. 1:Conceptual framework and development



Figures 4. 2:histogram that shows the normal distribution of population

A normality test is used to determine whether the sample data drawn from the normally distributed population or not. Simply it shows the population distribution is normally distributed or not. The study used both methods of assessing normality. This can be checked by histogram and Normal Probability Plot (P-P) graph.

In the Normal Probability Plot, it will be hoped that points will lie in a reasonably straight diagonal line from bottom left to top right. This would suggest that there is normal population distribution. And also Histogram should be approximately normal or it must be bell-shaped distribution. The following figure 4.1 shows that the population distribution was normally distributed. Because all plotted points lie near the straight diagonal line from bottom left to top right. And also figure 4.2 shows similarly the distribution of the population was normal. Because the curve is a bell curve and the histogram shows that the population is normally distributed.

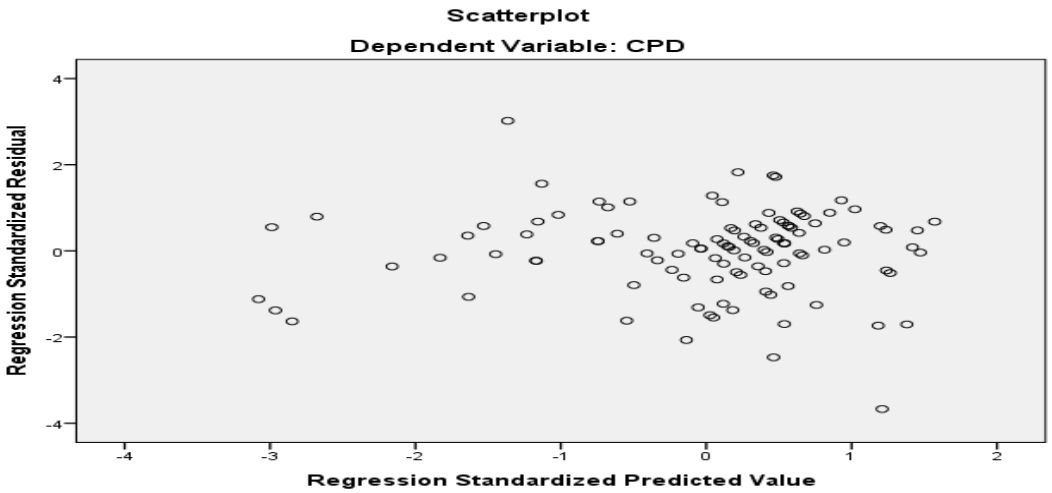
4.6.1.3. Linearity

Linearity is the relationship between the dependent and independent variable should be linear concerning their parameter, this can be checked by the scatter plot of the dependent variable versus standardizing predicted. In another word, Linearity means that the predictor variables in

the regression have a straight-line relationship with the outcome variable. If the remainder is normally distributed and homoscedastic, we will not have to worry about linearity.

4.6.1.4. Homoscedastic

Homoscedasticity is an assumption of regression analysis used to test whether remain is equally distributed, or whether they tend to bunch (merge) together at some values, and at other values, spread far apart. In the context of *t*-tests and ANOVAs, you may hear this same concept referred to as equality of variances or homogeneity of variances. Your data is homoscedastic if it looks somewhat like a shotgun blast of randomly distributed data. The opposite of homoscedasticity is heteroscedasticity, where you might find a cone or fan shape in your data. You check this assumption by plotting the predicted values and residuals on a scatterplot (Ibid).



Figures 4. 3:Homoscedasticity assumption checked by regression

4.6.2. Multiple Regression Analysis

Multiple regression analysis is a form of statistical analysis that seeks the equation representing the impact of two or more independent variables on a single dependent variable. Multiple regression analysis is a statistical model used to analyze or figure out the extent of the impact of two or more independent variables on a single dependent variable. More precisely, multiple regressions able to show how the value of the dependent variable changes as the value of two or more independent variables is changed (Babbie, 2013).

For this study, multiple regression analysis was used to determine the strength of the relationship between the overall determinant that is contracted on the conceptual framework and construction projects delay.

4.6.2.1. Multiple Regression Analysis of Overall determinant construction projects delay

Table 4. 13:Model summary of determinant construction projects delay

Model Summary[b]				
Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.917[a]	.841	.831	.26670
a. Predictors: (Constant), construction project financing, construction project planning, material & equ't related, an external related cause, contractor related a problem, and supervision of work				
b. Dependent Variable: construction projects delay				

Source: Regression output of SPSS from Own survey data, 2024

From the above table 4.16 the multiple regression analysis of the overall determinant (independent variables) and construction projects delay (dependent variable), the model summary revealed that 84.1% (R2 =0.841) of the variation of construction projects delay explained by the overall determinant. Therefore, determinants have a positive determinant on construction projects delay.

The following ANOVA table demonstrates that the good fitness of the model. More precisely, ANOVA table shows that the significance of the regression model. So, the following ANOVA table infers that the model is a significant or good fit at F (6,102) 89.780, p =0.000.

Table 4. 14:ANOVA of determinant construction projects delay

ANOVA[a]						
Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	38.316	6	6.386	89.780	.000[b]
	Residual	7.255	102	.071		
	Total	45.571	108			
a. Dependent Variable: construction projects delay						
b. Predictors: (Constant), construction project financing, construction project planning, material & equ't related, an external related cause, contractor related a problem, and supervision of work						

Source: Regression output of SPSS from Own survey data, 2024

Table 4. 15:Coefficients of determinant construction projects delay

Coefficients[a]						
Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	.613	.139		4.405	.000
	material & equ't related	.251	.066	.299	3.810	.000
	supervision of work	.017	.049	.025	.354	.724
	construction project financing	.064	.051	.096	1.251	.214
	external related cause	.311	.068	.356	4.547	.000
	contractor related a problem	.101	.033	.156	3.094	.003
	construction project planning	.103	.032	.160	3.209	.002
a. Dependent Variable: construction projects delay						

Source: Regression output of SPSS from Own survey data, 2024

The above multiple regression coefficients table pertained that the contribution of the determinate of four variable (independent variables) on the model. The predictor variables which have a higher beta coefficient with the lower p-value ($p<0.05$) have a significant contribution or effect on the dependent variable, and the predictor variables which have a smaller beta coefficient with a higher p-value ($p<0.05$) have insignificant contribution or effect on the dependent variable. Predictor variables that have a small beta coefficient and higher p-value have little or no effect on the model.

The above table 4.18, indicate that the four determinate (material & equ't related, external related cause, contractor related a problem, and construction project planning) has a positive and

significant effect or contribution on construction projects delay by 0.299, 0.356, 0.156and 0.160 beta value and at p=0.000, 0.000, 0.003 and 0.002 respectively. When we compare their level of effect, external related cause induces that largest contribution (35.6%) the second material & equ't related, (29.9%) the three construction project planning (16%) and contractor related a problem, (15.6%).

From the above table of multiple regression coefficients, the following regression equation was developing to predict the level of construction projects delay due to the listed predictor in this study.

$Y= \beta_0+\beta 1x_1+ \beta 2x_2+ \beta 3x_3 + \beta 4x_4$

$Y= 0.613+0.299x_1+ 0.356x_2+0.156x_3 +0.160x_4$

Y= dependent variable (construction projects delay).

a= constant, if all predictor variables are 0 (zero), the value of dependent variable equals to constant (=0.613).

β_1, β_2, $\beta_3$and β_4 = the beta coefficient of material & equ't related, external related cause, contractor related a problem and construction project planning respectively.

X1, x2, x3 and x4 = the predictors or independent variables (material & equ't related, external related cause, contractor related a problem and construction project planning).

Hypnosis test result is four variable (material & equ't related, external re lated cause, contractor related a problem and construction project planning). Accepted but the other two variable (supervision of work and construction project financing) is reject hypostasis.

Political instability (eg. Security issues) is ranked first. The main reason associated with this is that for the last two to four years the country political problems was not stable that affect free flow of people and material as needed. Many projects suffer time overrun. This result agrees with Cho Y. J., Lee J. W. (2012) as this factor affects strongly on project schedule & cost performance of projects. Shorter completion period given for the contract is ranked second with an average RII of 0.92. The main reason is that many construction projects done under emergency program have smaller time to complete to mate donors given time without considering the volume of work and local condition. This is a strong indication of the importance of proper estimation of project duration. One of the important obligations of owner is to

determine the duration of project according to the volume of activates and local condition. This result is in agreement with Odeh and Battaineh (1999) as this factor affects strongly on project schedule performance.

4.7 interview questions

- Successfully completion of construction projects on time requires clear information and understanding between different parties in the form of a contract agreement. Different types contract agreements and bidding procedure with inadequate definition may result disputes between different parties involved in construction project.
- Construction projects are mostly complex in the nature and have tight deadlines in terms of completion. Workforce availability, productivity and skills are some of the key requirement for on time completion of any project. Construction industry is highly populated by foreigner workers and constitutes 92% of the total workforce of construction in yeka sub city construction office.
- The availability of construction materials on time is the key to maintain a proper progress of the work. A speedy selection and approval of materials is requiring completing the procurement process on time.
- On time payment process and approval can help to continue the pace of work and maintain an effective progress. Most contractors argue that unnecessary delay in payment process result to a slow progress or suspension of work at project.
- Many researcher argues that a good coordination between projects parties i.e. owner, consultant and contractor is require for a smooth operation of different activities such as inspection, material approval, testing, and major changes in design or their approval.
- Factors such as hot weather and rain etc. are some of the external factors which are not in the control of the project team i.e. owner, consultant and contractors but possibly can delay the project.
- The causes of delay in construction may vary from project to project, but some of causes can be common even the project type ad nature may change.

CHAPTER FIVE

5. SUMMARY OF THE MAJOR FINDINGS, CONCLUSION, AND RECOMMENDATION

5.1. Summary of the Findings

This study was conducted on the determinants of construction projects delay: case of (yeka sub city construction office). The study committed to knowing the determinants (construction project financing, construction project planning, material & equ't related, an external related cause, contractor related a problem, and supervision of work) on construction projects delay. In order to achieve its objective, this study was used determinants of construction projects delay to measure and know the perception of consultants, clients, contractors and subcontractors about the construction projects delay: case of Yeka sub city construction office. This determinant of construction projects delay has six dimensions, and 36 items of questions were containing all six determinants of construction projects delay dimensions used to measure the perception of the consultants, clients, contractors and subcontractors.

For this study, 120 questionnaires were distributed and 109 questionnaires were properly filled and collected. The general profile of the respondents showed that 76.1% of the respondents are male whereas the remaining 23.9% are female. Regarding the age profile of the respondents pertain that 42.2 %(46) of the respondents' age were found between 31-40 years. The educational background of the respondents showed that 60.6 %(66) of the respondents were degree and above. Regarding the project you are involved 59.6 %(65) of the completed.

The result of the descriptive statistics of this study showed that contractor related a problem has the highest mean score of 3.74 followed by external related cause with a 3.61 mean score and Construction project financing with a 3.57 mean score. According to this study, this implies that main determinants of construction projects delay. others followed material & equ't related with a 3.51 mean score, construction project planning with a 3.41 mean score and supervision of work with a 3.21 mean score .

The finding from the correlation analysis indicates the four determinants have a positive and statistically significant relationship with of construction projects delay. Among them, external related cause has the strongest relationship with a correlation coefficient of 0.863 followed by

material & equ't related with a coefficient of 0.83. Contractor related a problem and construction project planning 0.620 and 0.590 have the moderate relationship with construction projects delay relative to the other two dimensions at the Pearson correlation coefficient.

Similarly, the multiple regression analysis results demonstrate that the overall determinants have an effect on construction projects delay. From this result, external related cause, and material & equ't related, have a positive relationship with construction projects delay and Contractor related a problem and construction project planning have a statistically significant effect on construction projects delay at a 95% level of confidence ($p<0.05$).

Generally, the two determinants (external related cause, and material & equ't related) has a positive and significant effect or contribution on construction projects delay by 0.356and 0.299 beta value and at p=0.000 and p=0.000 respectively. On the other hand, the determinants (Contractor related a problem and construction project planning) have a little positive effect and significant effect or less contribution on construction projects delay by 0.156 and 0.160, beta value and p-value 0.003 and 0.002 respectively.

From the model summary of multiple regressions, the value of R squared shows that 84.1% of the variation of construction projects delay explained by determinants the remaining 15.9% explained by other factors which are not included in this study.

5.2. Conclusion of the Study

This study investigated to point out the determinants of construction projects delay: case of (Yeka sub city construction office)

- ✓ The result of the study concludes that external related cause, material & equ't related, Contractor related a problem and construction project planning determinants were construction projects delay in the organization.

  As the study depicted, the dominantly determinants was external related cause followed by the material & equ't related.
- ✓ Two determinants (external related cause, and material & equ't related) have a strong positive and significant relationship with construction projects delay. Relatively a Contractor related a problem and construction project planning determinants has the

moderate correlation with construction projects delay with 0.620 and 0.590 correlation coefficients.

- ✓ The overall determinants can explain 84.1% of the variation of construction projects delay. And also the overall determinants (external related cause, material & equ't related, Contractor related a problem and construction project planning) have a positive relationship to construction projects delay and from these dimensions; all four determinants are statistically significant effects on construction projects delay.

5.3. Recommendation

Many empirical as well as theoretical reviews of research results has indicated that, the determinants of project delay are plenty and the assessment result on such factors have been given different conclusions based on the research environment and capacity of the project undertakings. They could not suggest one common causes of project delay for all projects. Based on this truth, the investigator would suggest what has been identified in the results of the study that have significant impact on the project delay based Beta Coefficient. Four independent variables are identified in this study have significant impact on the institutional project delays. Therefore, the studied organization should work a lot to under external related cause, material & equ't related, Contractor related a problem and construction project planning. Since these factors have the great impact for the delay of organization projects and their effect would affect the whole aspect of organization development. The organization should work a lot at least on the followings major perspectives:

For Clients:

Clients are those parties, which are the ultimate user or owner of projects. In this regard, they are the one who at first place want to have the project completed on time and budget. However, they have to participate on the process of making their dream come true rather than giving the responsibility to others and blame them for the occurrence of delay and their effect. Thus, the following are the suggestions made to the client:

- To prevent delays, the project's scope should not be altered. Engaging closely with both consultants and contractors to understand and know that design changes during construction period have no adverse effects on the critical activities to avoid causing delays.

- Every request for a modification order needs to be examined to determine how it will affect the planned level of work quality, scope, and cost, as well as any potential claims and work interruption unnecessary disputes and litigation.

For Consultants:

The consultant plays a great role in translating client's idea in to plans, drawings and specifications. Since most of the projects in Ethiopia are designed and supervised by the same consultant, their impact on quality, time and cost of the project is substantial. In addition, since they are involved on projects starting from the conceptual phase to the completion of the projects their importance is higher. Therefore, the following points are forwarded to consultants of the road's projects:

- Consultants must revise and approve the design documents on time and clients also shall make a timely and prompt decision
- They have to do a proper planning and scheduling by considering the fluctuation and the current escalation of the material prices.
- Implementing all design changes while following each and every critical change of design towards the project during the execution of the works while not compromising the desired outcome of the final project.

Consultants are recommended to review and approve design documents, shop drawings, and payments of contractor to avoid any delay or cost overruns of the project. Consultants are advised to hire qualified and experienced technical staff to manage the project, so they would be able to overcome any technical or management problems that happen. In order to prevent time and expense overruns, it is also recommended that consultants possess a high level of training and expertise in order to provide pertinent instruction at the right moment and to be ready to respond to any queries from contractors. Consultants should be adaptable when assessing the work of contractors. They should consider compromising between cost and high quality.

For Contractors:

The Contractor is the one, which plays the important role to change the blue print into real world project. On this process the contractor have the responsibility of managing the different resources, which are intended to the project to the success of the project. Therefore, the following are expected from contractors:

- The contractors should select experienced sub-contractors and supervise them continuously to avoid delay that caused by the sub contactors.
- The contractors have to follow the specifications and guidelines that set by the client in order to avoid reworks.

Having adequate experience for a required assignment, deploy competent project team and employ appropriate construction methods for the required assignment to avoid any delay towards the project.

- Hiring a qualified and responsible subcontractor. The subcontractors must be involved with a proper contractual agreement with a contractor that can transfer risk from contractor to subcontractors.
- Having a good site manager for a smooth execution of works and planning their works properly and provide the entire schedule to clients for smooth flow of the construction project while avoiding any delay.
- Good communication channel must be used by the contracting parties to entire free flow of information to avoid delays.

External Related Recommendations

- Collaborating with all project stakeholders to ensure that all issues are resolved during the construction phase in order to prevent delaying the intended execution time throughout the litigation process.
- By doing a proper planning in the design and execution time to avoid any unanticipated occurrences that may extend the construction duration, raise costs, and cause property damage and injury to project participants. Having insurance could help to reduce the effect of costs in the event of delay occurrence.
- Shortage of construction materials**:** makes it important to study the availability of construction materials needed whether it is for the road construction or any other type of construction.

✓ The need to implement a national database with the quantity works list for different construction projects.

✓ A need for greater care on the part of the owners when they prepare their schedules and preliminary programs;

✓ Raising awareness with those involved about the risks inherent to construction.

- ✓ A need to optimize management with a basis on qualification and the use of more adequate techniques.

❖ The result of this study discovered that a determinant has an effect on construction projects delay and 84.1% of the variation of construction projects delay is explained by the overall determinant (external related cause, material & equ't related, Contractor related a problem and construction project planning). So, the organization better gives more attention to the selected determinant (external related cause and material & equ't related) and improves them continue to deliver better construction project and able to compete in the market.

5.4. Suggestion for the Future Research

The main focuses of this section are going to give some suggestions for the future researcher who is voluntary to conducting on the construction organizations specifically on construction projects delay and determinants. Therefore, the followings are some suggestions for future researchers on the area of the study.

- ➢ This study directly focuses on the determinants of construction projects delay: case of (Yeka sub city construction office) so; it was limited in geographical coverage. Due to this, it was not able to assess the perception of the overall construction about the determinants to the organization. So, it was suggested the future researcher, they will try to cover a large geographical coverage to increases the probability of representing the total other sub city construction office.
- ➢ The result of this study shows that there is some gap between the expectation of the site experts and admin staffs and the actual or perceived determinants of construction projects delay of Yeka sub city construction office. So future researcher will be conducting their study on whether the construction office fills this gap or not.
- ➢ Finally, the coming researcher can study the determinants of construction projects delay with limited variables in Yeka sub city construction office. Therefore, a similar study could be conducted including other factors with more case studies conducting at other sub city. Moreover, others would be conducted study with mixed research approach at different areas and sectors.

Reference

A., A. (2006). Delays in public building construction projects and their consequences, MSc thesis submitted to Addis Ababa Institute of Technology. p.66-74.

Abadir, H. &. (2011)). Project Management maturity in the construction industry of developing countries: the case of Ethiopian Contructors. Msc Thesis, University of Maryland, USA.

Abinayasri, E., Anandakumar, S., & Krishnamoorthy,V. (2017)). An Empirical Study on Key Determinants of Construction Delay. . *International Research Journal of Engineering and Technology*, p: 2395-0072.

Ahmed, A. C. (2002). Construction delays in Florida: an empiricalstudy, Florida International University of Munmi. p.1-34.

Aibinu, A.A, & Jagboro. (2002). The effects of construction delays on project delivery in Nigerian construction industry. *International Journal of project Management*, pp.593.

Al Hammadi, S & Nawab, M. (2016). Study of Delay Factors in Construction Projects. *International Advanced Research Journal in Science, Engineering and Technology*.

Alhaji & Danladi. (2012). Causes of delay in Nigeria construction industry. *Interdisciplinary Journal of Contemporary Research in Business*, p.785-794.

Kaming, P.F; Olomolaiye, P.O. Holt, G.D and Harris, F.C. (2012). Factors Influencing Construction Time and Cost Overruns on High-Rise Projects in Indonesia. *Construction Management and Economics, 15*, 83-94.

Kariungi, S. . (2014). Determinants of Timely Completion of Projects in Kenya: A Case of Kenya Power and Lighting Company, Thika. ABC Journal of Advanced Research. (p); 2312-2354.

Kraiem, Z. I., & Diekmann, J. E. . (1987). Concurrent delays in construction projects. *Journal of Construction Engineering and Management,, 113(4)*, 591-602.

Seboru, M. (2015). An Investigation into Factors Causing Delays in Road Construction Projects in Kenya. American Journal of Civil Engineering. *3(3)*, 51-63.

Zewdu, Z. T. . (2016). Construction Projects Delay and Their Antidotes: The Case of Ethiopian Construction Sector . *International Journal of Business and Economics Research*, 113-122.

APPENDIX A

ADDIS COLLEGE

SCHOOL OF GRADUATE STUDIES

DEPARTMENT OF PROJECT MANAGEMENT

Dear participant!

My name is Tamiru Kifle I am a student attending a post graduate program in Addis college, Department of project management; currently I will undertake research on "**Determinants of construction projects delay: case of (Yeka sub city construction office).”** For this study, you are select census consultants, clients, contractors and subcontractors of the Yeka sub city construction office in Addis Ababa. As a participant and before getting your consent, you need to know all necessary information related to the study which will be detailed as follows.

Confidentiality: Your name will not be written in this form and any information you tell us will not be disclosed to third party. Your participation is voluntary and you are not obligated to answer any question you do not wish to answer. If you feel discomfort with the question, it is your right to drop it any time you want. If you have questions regarding this study or would like to be informed of the results after its completion, please feel free to contact the principal investigator.

Address of the principal investigator: phone number 0913674013

Email: tamirukifle@gmail.com

SECTION A

PART I. Background Characteristics: Please ticks (√) and fill in the blanks under each given questions and if you select others please specify.

1. Sex

A) Male B) Male

2.AGE

A) 18-30 B) 31-40 C) 41-50 D) 51-60

3. Educational Qualification

A) Diploma B) BA/BSC degree C) MA/ MSC D) PHD E) Others, Please specify

4. Your Area of Profession

A) Project Manager B) Resident engineer

C) Site Engineer/office engineer D) Contract administration E) Supervisor F) other, specify _____

SECTION B

Part I: General Information, (Form Client, Contractors and Consultants) please ticks (√) and fill in the blanks under each given questions and if you select others please specify

1. A Project you are involved is:

A) Completed B) Currently under Construction

2. Time elapsed yet for on-going projects: A) <1 years B) 2-3 years C) 4-5 years D) >6 years E) others please specify

SECTION-2: In this part of the questionnaire, there are questions that are related issues of the Determinants of construction projects delay. Therefore, using the following table, please circle your opinion on the following statements which best describe your level of Determinants of construction projects delay; scale: (Strongly Agree=5, Agree=4, Neutral=3, Disagree=2, strongly Disagree=1).

1. Determinants of construction projects delay

1.1 Questions related to construction project financing

S/N	**construction project financing**	**SD(1)**	**D(2)**	**ND(3)**	**A(4)**	**SA(5)**
1	Limited Finances					
2	Financial Administration					
3	Project Finances Diversions					
4	Serious budget deflect resulted from fluctuation and price escalation					
5	Utilization of low price of civil work in estimation of the cost					
6	Cost escalation on various items					
7	Cash flow issues					

1.2 Questions related to construction project planning

	construction project planning					
1	The residential building projects' pre-planning is appalling.					
2	Project Schedule planning has not been achieved due to poor coordination					
3	Plans at the Yeka sub city construction office have been damaged by outside intervention.					
4	Identify the resource allocated for the project					
5	Set the specified date of project accomplishment					
6	Identify what procedure should be done					

1.3 Questions related to material & equ't related

	material & equ't related					
1	The Projects in the site have been delayed due to low quality of materials					
2	Shortage of construction material has led to delayed projects					
3	Late delivery of construction material has led to delayed projects					
4	Frequent equipment breakdowns					
5	Low efficiency of equipment					
6	Changes in material types and specifications during construction					
7	Shortage of construction materials					
8	Poor procurement strategies of construction material					
9	Escalation of prices in material					

1.4. Questions related to External related cause

	external related cause					
1	Delay in obtaining the required document from concerned government offices, municipality, regional environmental offices					
2	Delay in land acquisition					
3	Delay in providing services for utilities such as water, electricity, etc.					
4	Delay in clearances form various regulatory agencies					
5	Unforeseeable reasons such as adverse natural calamities, etc.					
6	Delay in sub-contractors work , in adequate contractor's work					
7	Seasonality of works to be performed					
8	Political instability (eg. Security issues)					
9	Price fluctuations (inflation/escalation)					

1.5 Questions related to contractor related a problem

	contractor related a problem					
1	Poor communication and Coordination					
2	Delay in sub - contractor work					
3	Inadequate contractors experience.					
4	Poor safety conditions on site					
5	Rework due to errors during construction					
6	Conflicts between contractor and other parties					
7	Under estimation of cost of the project by contractor					
8	Poor qualification of contractor's technical staff					
9	Shortage in material/equipment/tool on site					

1.6 Questions related to supervision of work

	supervision of work					
1	Projects in the site have been delayed due to ineffective monitoring					
2	Proper feedback is missing in supervisors leading to delays					
3	Poor decisions making from the supervisors has led to delayed projects					

SECTION-3: Questions related to construction projects delay

1. Please indicate the degree to which the following statements concerning construction projects delay.

	construction projects delay					
1	Poor quality output					
2	Time overrun (repayment and rescheduling request)					
3	Cost overrun (additional variation payment request)					
4	Bad public relation					
5	Disputes and claim					
6	Total rejection/Abandonment					
7	Arbitration					
8	Litigation					

SECTION C: INTERVIEW QUESTION

The following are interview questions for selected key respondents on the mitigation methods of project delay.

1. What is your general opinion about the construction project regarding construction delay in Yeka sub city construction office?

2. What is your company's strategy towards time management and zero delay performance?

4. What are the different causes of delay in construction projects?

5. What are the project delay mitigation methods for owner causing delay factors from your experience?

6. What are the project delay mitigation methods for contractor causing delay factors from your experience?

7. What are the project delay mitigation methods for external causing delay factors from your experience?

8. If you have comments regarding delay, kindly request to write here

10. If you have other opinion/experience on determinants of delay in project rather than mentioned above kindly request to add here ……..

11. How do you see the coordination and communication of project stakeholders (client, contractor, and consultant)?

THANK YOU!!!