ST. Mary's university

SCHOOL OF GRADUATE STUDIES
DEPARTEMENT OF PROJECT MANAGEMENT

Cause of project delay on the road project in Addis Ababa: The case of Beshale Condominium Asphalt Road Project

By

Bethelhem Alemu Tegegn

ID-SGS/0534/15A

CAUSE OF PROJECT DELAY ON THE ROAD PROJECT IN ADDIS ABABA: THE CASE OF BESHALE CONDOMINIUM ASPHALT ROAD PROJECT

BY

BETHELHEM ALEMU

A THESIS SUBMITTED TO ST. MARY'S UNIVERISTY, SCHOOL OF GRADUATE STUDIES IN PARTIAL FULFILLMENT OF THE REQUIRMENTS FOR THE DEGREE OF MASTER OF PROJECT MANAGEMENT.

CAUSE OF PROJECT DELAY ON THE ROAD PROJECT IN ADDIS ABABA: THE CASE OF BESHALE CONDOMINIUM ASPHALT ROAD PROJECT

JUNE, 2024

ADDIS ABABA, ETHIOPIA

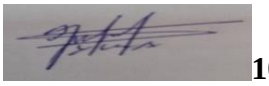
ST. MARY'S UNIVERSITY COLLEGE
SCHOOL OF GRADUATE STUDIES

BY

BETHELHEM ALEMU

ADVISOR: MARU SHETE (PhD)

APPROVED BY BOARD OF EXAMINERS

_____	_____
Dean, Graduate Studies	**Signature**
MARU SHETE (PhD)	_____
Advisor	**Signature**
Yilkal Wassie (ASST. Prof)	 **10/07/24**
External Examiner	**Signature** **10/07/24**
Muluadam alemu (PhD)	_____
Internal Examiner	**Signature**

ACKNOWLEDGEMENTS

First my innumerable praise to the Almighty God for giving me the opportunity, capacity and guidance throughout my life. Next I am deeply grateful and indebted Dr. Maru Shete (PhD) my advisor, for his valuable guidance and understanding through all the preparation of this paper. I would like to pass my deepest gratitude to my family and spouse for their encouragement, suggestions, guidance and overall assistance to Successful accomplishment of my life.

I would also like to extend my gratitude to Beshale Condominium Asphalt Road Project staffs from contractors, consultants and client that provided me important information for my research.

Contents

List of table

List of figure

Abstract

The timely completion of road construction projects is critical for economic development and public convenience. However, these projects frequently experience significant delays due to a variety of factors related to different stakeholders. This study investigates the impact of contractor, client, consultant, and other stakeholder-related factors on Beshale Condominium Asphalt road construction Project delay. Utilizing a mixed-methods research approach, including both correlation and regression analyses, the study identifies strong positive relationships between these factors and project delays, with contractor-related issues emerging as the most critical. The results align with existing literature, emphasizing the importance of effective project management, timely decision-making, and efficient regulatory processes. These findings provide actionable insights for construction professionals and policymakers aimed at mitigating delays and enhancing the efficiency of road construction projects. It also recommended to improve the good communication between construction parties, realistic project time stakeholder's participation and improve right of way accusation system.

Key words: Road construction project delays, Contractor related factor, Consultant, client ,stakeholder, Beshale Condominium road project.

Chapter One

INTRODUCTION

1.1. BACKGROUND OF THE STUDY

An infrastructure with high quality roads enable market to tread goods and service in safe and timely manner indeed road infrastructure project provide better condition for assessing health education employment and other social aspect both in rural and urban reigns. (Guillermo, Karen, & Eugenio, 2020)

The construction industry significantly contributes to sustainable economic development by generating output, creating jobs, and generating income. It also fulfills physical and social needs like shelter and infrastructure. (syuhaida & Sedar , 2012)

In construction project delay could be defined as the time overturn or either beyond the contract date or beyond the date that the parties agreed upon for delivery of project out comes. (Assaf & Al-Hejji, 2006)

Delays are one of the major problems construction industry faces. Delays can lead to many negative effects such as arbitration between owners and contractors, increased cost, loss of productivity and revenue, and contract termination. Various studies have been carried out to highlight the general causes of delays and suggest possible remedial measures to minimize the effect of delays on a project. (Khahro & Memon, 2018)

Schedule delay refer to a situation where a construction project does not come to completion with in the planed period. Time is an integral part of every plan accompany develops for performing contract work. There is a relationship between the schedule, the scoop of work, and project condition. Changes to any one or more of the above three can affect the compensation level and time of completion (Kaliba.c, Chabota.k, Mundia.M, & Kanyuta.M, 2009)

In developing countries, road transportation is critical for accelerating economic development. However, it is clear to observe that Ethiopia has poor infrastructure that needs a well- organized and successful infrastructure projects.

This research study, the Addis Ababa road authority's projected and budgeted Beshale condominium asphalt road building project which failed to be finished with the originally specified time frames and pre-agreed financial and time limits. Beshale Condominium Road project have started in March, 2021 and was expected to be completed in 8 month 25 days with a capital budget of 324,332,045.22 Birr and the length of 3.6 kilometers. But evidence from the consultant office show that only 78% of the project scheduled plan is completed in more than 33 months. (Beshale condominium asphalt road project Yearly report , 2023)

There are similar researches in the past which show that the primary reason of road project delay are poor project management, price escalation, and claims. However the potential causes of road project management, price escalation, and claims. However the potential causes of road project delay vary from one project to other due to various environmental factors, scope, and technological advancement, social, cultural political and economic situation.

Thus this research help to identify the actual Cause of delay in order to minimize and avoid the delays and their corresponding expenses.

1.2. Statement of the problem

Road project delays are an insistent and costly problem causing social disruptions, environmental impacts and economic losses. In spite of extensive research, many projects continue to exceed deadlines budgets. This research aims to investigate the root causes of road project delays which can help to assess their consequences and identify effective strategies for mitigation and prevention.

The complex interaction of internal and external factors contributes to road project delays, making it difficult implement targeted solutions and to identify the exact causes. This research seeks to develop an incisive significance and interactions in different contexts.

The cascading cause of road project delay are often underestimated, affecting project stakeholders, economic development, and public well-being.

This research focuses on Beshale Condominium Asphalt Road project which is taking more than seven times the original contract completion day and even did not completed until this day.

According to the report of Gogot consulting engineers plc. Which is the consultant of this project the project was started on March01, 2021 and was planned to be end after 8 months and 25 days on November 25, 2021 by contract price of 324,332,045.22 ETB. However, the time elapsed for this project is 33 months up to January 14, 2024 and also the revised contract price of the project became 390,763,331.88ETB. This project aimed to facilitate access for the Beshale Condominium households and village around it to the main road. But the house owners have not been able to use the house until now due to the delay in the road construction. In addition to this the local residents are complaining of the noise and dust from under construction road and loss of access to the main road. (Beshale condominium asphalt road project Yearly report , 2023)

There are numerous resources which study the project delay and identify the cause of construction schedule over turn. Causes and effects of delay in Oromia roads construction projects studies the main cause for Oromia reign road construction delay and the consequence of delay. The research identified several gaps by the understanding of delays in Oromia road construction projects. But the study focused on completed and ongoing road projects administered by the Oromia Road Authority, which may not fully capture the broader spectrum of road construction projects in the other area. Only 39 questioner was held by representing 10 projects. (Firdisa, 2018)

Delay in Construction of High way and Expressway projects (Kumar, 2020) also discuss the important factors affecting the delays in Indian Highway and Expressway Construction industry,

The study focuses specifically on High way and Expressway Construction Project in India. Therefore, the finding and proposed framework may not be directly applicable to construction projects in other countries or regions with different regulatory environments, infrastructure system, and socio-economic factors. The study was conducted with in a specific timeframe, and the factors contributing to delays in construction projects may evolve over time. Therefore, the study's findings may not fully capture the most current challenges and dynamics in the highway and expressway construction industry.

The other one is an Investigation in to factors causing delays in road construction projects in Kenya (Seboru.A, 2015) the study have a few gap that should be considered. Primarily, the study only focused on the construction phase of the project, and did not consider delays that may occur during the design phase. Secondly, the data collection was limited to consulting Engineers firms

and contractors situated in Nairobi, which may not be representative of the entire country. Additionally, the sample size of 31 consultants and contractors used in the study may be considered small, and consultants and contractors are not the only parties others also need to be added.

Beside the mentioned gap on the listed researches they also lack of justified methodologies in quantifying and analyzing delays happens to be the greater challenge difficulty with delay claim resolution can be attributed to a number of problems including lack of uniformity in the application of delay identifying methodologies, lack of sufficient guidance from contacts and poor planning practice. This research use both descriptive statics and inferential statics to identify the major factor to see the relationship between independent variables and also between dependent and dependent variable .it also concentrate on one project by narrowing its scope it find outs specific Couse.

Although these researches said many about road project delay and its effect, it is important to consider the unique factors of each project when analyzing causes of delays. It would be helpful to review the previous studies and determine what factors were considered in their analyses, and whether additional factors specific to the Beshale Condominium Asphalt project.

This research is important because, if the delay is not found and a corrective project management choice is not taken quickly, the project could end up costing more and taking longer than expected. This causes a lot of problems and dissatisfies everyone engaged in the building process. These days, delays are a major obstacle to the growth of developing countries such as Ethiopia, and their effects can significantly affect the efficacy and efficiency of the project. Minimizing these delays can be achieved by determining their actual causes. Therefore, in order to reduce their impact and prevent them in any construction project, it is crucial to identify the true reasons of delays.

1.3. Basic Research Questions

- What is the major causes of road construction project delay on Beshale Condominium Asphalt Road Project?
- Which project participant determine the performance of beshale condominium Asphalt Road project?

- What are the stakeholder management activities determine the progress of beshale condominium Asphalt Road project?

1.4. General Objective

- To assess the major cause of Beshale condominium Asphalt Road Project delay.

1.5. Specific Objective

- To identify the major cause of delay in road construction project of beshale condominium Asphalt Road Project.
- To examine which project participant determine the performance of Beshale Condominium Asphalt Road Project.
- To examine stakeholder management practice in Beshale Condominium Asphalt Road Project

1.6. Significance of the study

This study identifies main cause of beshale condominium road project and contribute to a more clear understanding of the problem. Improved understanding of delay cause and their interplay with project variables can lead to more solid planning process and efficient resource allocation within road construction projects.

One of the three pillars of construction project management along with cost and quality is time, which makes this task critical. A study on project delays will lead to a better understanding of causes of inefficiency in road construction projects. Once the most significance delay causing factors are identified, the parties to the projects shall then be able to channel their energies and resource to the specific factors thereby reducing delays to the projects. (Masafari.A, 2015)

1.7. Scope of the Study

The scope of the study was limited to of beshale condominium road project in Addis Ababa. The basic focus of the study was to gather insight from key stakeholders, including project owners, contractors, and consultants who participated in these road construction projects within the specified timeframe.

1.8. Limitation

There were some problems which I face while undertaking this study. The first is problems on data collection, which most respondents did not return the questioner on time. Also there was difficulty to access full documents of delay causes for case study. Another limitation for this study is time limitation.

1.9. Organization of the study

This Paper has five chapters, in which the first is the introduction part containing background of the study, statement of the problem, research question background of the study, significance of the study, scope of the study as well as organization of the study. The second chapter is all about reviewing literature of related studies and hypothesis. In chapter three the research methodology is conducted and analyzed through research design, population sample size sampling techniques type of data method of data analysis. In chapter four data are gathered and analyzed using responder's answers. Finally in chapter five, summary, conclusion and recommendation are given based on finding of research. The reference used for the research are listened at the end of the research report followed by the appendix.

Chapter two

Literature Review

2.1. Project

A project is a temporary endeavor undertaken to create a unique product, service, or result. Like most organizational effort, the major goal of a project is to satisfy a customer's need. Beyond this fundamental similarity, the characteristics of a project help differentiate it from other endeavors of the organization. The major characteristics of a project are an established objective, A defined life span with a beginning and an end, usually, the involvement of several departments and professionals, typically, doing something that has never been done before &Specific time, cost, and performance requirements (Larson E. W., 2011).

2.2. Project management

Project management practices attempt completion of the project as intended; getting it done most efficiently by minimizing cost and achieving external goals related to customer needs (HOWELL, 2002) . Goals appear straightforward and achievable, however, projects continue to run late, exceed their budgets or fail to meet project objectives (Hyvari, 2006) .

2.3. Project management knowledge areas

Project Management Knowledge Areas are the essential components of project management, which provide the basis for managing projects and achieving successful outcomes (Henderson, 2023) .

Project Integration Management includes the processes required to ensure that the various elements of the project are properly coordinated. It involves making tradeoffs among competing objectives and alternatives to meet or exceed stake-holder needs and expectations. According to Project Integration Management includes Project Plan Development, Project Plan Execution, & Integrated Change Control. An overview of the major processes. Project Integration Management involves the unification, consolidation, articulation, and integrative actions that are

crucial for project completion. It includes coordinating all project elements and managing the interdependencies to ensure that the project objectives are met (Larson E. W., 2018).

Project Scope Management This is a process of defining all the work that needs to be accomplished to deliver a product or service with the specified features and functions. In the project management domain, the work breakdown structure is the final output of the project scope definition process (Jemal Mustafaev, 2015).

The major project scope management processes include initiating the project, developing a written scope statement, dividing the project into manageable components, formalizing acceptance of the scope, and controlling changes to the scope through scope planning, scope definition, scope verification, and scope change control. Project scope management includes the processes required to ensure that the project includes all the work needed, and only the work needed, to complete the project successfully (Heagney, 2016).

Project Time Management includes the processes required to ensure timely completion of the project. An overview of the following major processes in developing the project time schedule:

Activity Definition identifying the specific activities that must be performed to produce the various project deliverables. The process involves activity sequencing, which involves documenting interactivity dependencies, estimating work periods for individual activities, creating a project schedule based on activity sequences, durations, and resource requirements, and controlling changes to the schedule. These processes interact with other knowledge areas and work together to ensure effective project management. Project schedule management is the process of ensuring timely completion of the project, including activities such as defining activities, sequencing activities, estimating activity durations, developing the schedule, and controlling the schedule (Kerzner H. , 2017).

Project Cost Management includes the processes required to ensure that the project is completed within the approved budget.

The process of resource planning involves determining the necessary resources (people, equipment, materials) and quantities for project activities. It involves cost estimation, which estimates the costs needed to complete the project. Cost budgeting allocates the overall cost estimate to individual work activities, while cost control controls changes to the project budget.

Project cost management includes the processes involved in planning, estimating, budgeting, financing, funding, managing, and controlling costs so that the project can be completed within the approved budget (Lock, 2020).

Project Quality Management includes the processes required to ensure that the project will satisfy the needs for which it was undertaken. It includes "all activities of the overall management function that determine the quality policy, objectives, and responsibilities and implements them by means such as quality planning, quality assurance, quality control, and quality improvement, within the quality system. The project quality management process involves three main stages: quality planning, which identifies relevant quality standards, regular evaluation of overall performance to ensure compliance with these standards, and quality control, which monitors specific project results to identify causes of unsatisfactory performance and identifies ways to eliminate them. Project Quality Management is the process of ensuring that all project activities necessary to design, plan, and implement a project are effective and efficient with respect to the purpose and performance of the project. It involves quality planning, quality assurance, and quality control, ensuring that the project deliverables meet the standards and requirements set out at the start of the project (Kerzner H. , 2017).

Stakeholder management is the process by which you organize, monitor and improve your relationships with your stakeholders. It involves systematically identifying stakeholders; analyzing their needs and expectations; and planning and implementing various tasks to engage with them. Project Human Resource Management includes the processes required to make the most effective use of the people involved with the project. It includes all the project stakeholders' sponsors, customers, partners, individual contributors, and the others major processes include organizational planning, staff acquisition, and team development, which involve identifying and assigning project roles, responsibilities, and reporting relationships, and developing individual and group competencies to enhance project performance. Stakeholder management focuses on systematically engaging stakeholders, understanding their needs and concerns, and managing their expectations to ensure project success. It includes continuous communication and relationship-building efforts (Bourne, 2016).

Project Communications Management includes the processes required to ensure timely and appropriate generation, collection, dissemination, storage, and ultimate disposition of project

information. It provides the critical links among people, ideas, and information that are necessary for success. Everyone involved in the project must be prepared to send and receive communications, and must understand how the communications in which they are involved as individuals affect the project as a whole. The overview of the following major processes are communications, Information Distribution, Performance reporting, and Administrative Closure generating. In these processes planning determining the information and communications needs of the stakeholders: who needs what information, when they will need it, and how it will be given to them, making needed information available to project stakeholders in a timely manner, performance reporting collecting and disseminating performance information, status reporting, progress measurement, and forecasting, gathering, and disseminating information to formalize a phase or project completion. Project communications management includes the processes required to ensure timely and appropriate planning, collection, creation, distribution, storage, retrieval, management, control, monitoring, and the ultimate disposition of project information (Burke, 2013).

Risk management is the systematic process of identifying, analyzing, and responding to project risk. It includes maximizing the probability and consequences of positive events and minimizing the probability and consequences of adverse events to project objectives. Risk Management Planning deciding how to approach and plan the risk management activities for a project.

The process of risk identification involves identifying potential project risks, conducting a qualitative risk analysis to prioritize their impact on project objectives, and a quantitative risk analysis to measure their probability and consequences. Risk response planning involves developing procedures to enhance opportunities and reduce threats, while risk monitoring and control involve monitoring residual risks, identifying new risks, executing risk reduction plans, and evaluating their effectiveness throughout the project life cycle. Project risk management involves the processes of conducting risk management planning, identification, analysis, response planning, response implementation, and monitoring risk on a project to increase the likelihood and impact of positive events and decrease the likelihood and impact of negative events (Hillson, 2012).

Project Procurement Management includes the processes required to acquire goods and services, to attain project scope, from outside the performing organization. For simplicity, goods and services, whether one or many, will generally be referred to as a product. An overview of the major processes the process involves procurement planning, solicitation planning, source selection, contract administration, and contract closeout. It involves determining procurement requirements, identifying potential sources, obtaining quotations, bids, offers, and proposals, selecting a source, managing relationships with sellers, and completing and settling contracts, including resolution of open items. Project procurement management includes the processes necessary to purchase or acquire products, services, or results needed from outside the project team (Fleming, 2003).

2.4. Construction project participants

Although there are different stakeholders in construction project (Admin, 2021) states these major participants who play great role on the progress and successfulness of the project (Admin, 2021)

Contractor: The contractor is responsible for the physical construction and execution of the project. They oversee the day-to-day operations, manage the construction crew, and ensure that the project is completed within the specified time frame and budget. The contractor is the key player in turning the project plans into reality. Contractors are responsible for the actual construction activities, including earthworks, laying foundations, paving, and finishing tasks. They manage labor, materials, and equipment on-site. They manage day-to-day operations, ensuring work progresses according to schedule, within budget, and meets quality standards. Contractors ensure that all construction activities comply with local safety standards and environmental regulations (Choodhry & Lqbal, 2013) & (Odah & Battaineh, 2002).

Clients: Clients range from business people, private individuals, property development companies, local government units, the central government, or other similar entities. They have the plan, vision, and role in describing what the construction companies will build, approve the concept, and fund the project. Since the project revolves around their specific needs, they are automatically the first point of contact. Key roles a client plays include Ensuring that management arrangements are in place for the project, Select a resourced and competent

Principal contractor, ensure there is enough time and resources available for all parts of the project, facilitate co-operation between their employees and contractors.

The construction company then assesses the client's desires. It ensures that it will meet all the specifications the client lays down. In case of alterations, they must duly notify the client of such changes. According to (Doloi, Sawhney, Lyer, & Rentala, 2012) client is responsible to Project Financing which include providing the necessary funds for the project, ensuring financial resources are available for completion. Defining Project Requirements is also clients' responsibility by setting the scope, objectives, and requirements of the project, ensuring the final output meets their needs. The major one is Decision Making Clients make critical decisions regarding design changes, budget adjustments, and approval of completed works.

Consultants: Consultants are an indispensable part of a construction project because they have a primordial role in advising clients on different fronts. It could pertain to the design, government regulations, costs, etc. They are critical during the project's design phase and ensure that it has the structural strength that can aptly support the design and construction cost. They can be architects, cost consultants, civil engineers, mechanical engineers, and electrical engineers.

Consulting firms have a pool of experts at your disposal who have often worked with similar projects and can give you helpful advice regarding yours. They can also anticipate issues and help you prevent them. Key roles of a construction consultant are to offer an expert opinion when a client needs it regarding technical or civil engineering issues (It could be for a short time or prolonged), Investigation of Problems. In case of any issues, the consultant might need to visit the site to inspect and review data and identify the cause plus find solutions, Develop and provide engineering and economic feasibility reports after surveying and studying the sites, help in the engineering design process by studying plans and specifications to direct the contractors accordingly. They can also advise you on what you will need for the project.

There for consultant has responsibility of Design and Planning by involving in the initial design and planning stages, creating detailed project blueprints and technical specifications. They also Supervise and Quality Control by oversee the contractor's work to ensure compliance with the design and technical standards, conducting regular inspections and tests. Consultants act as intermediaries between the client and the contractor. Facilitating communication and resolving technical issues (Love, Edwards, & Irani, 2008).

Other Stakeholders: Role and Contributions of this stakeholders are different as they are different type's example Regulatory Bodies ensure the project adheres to local, regional, and national regulations and standards. They issue necessary permits and conduct inspections. While Community and Environmental Groups Provide input on the project's environmental and social impact, advocating for sustainable practices and community benefits. Also Suppliers and Subcontractors can be considered who Provide materials, equipment, and specialized labor necessary for the project, contributing to the timely and quality completion of tasks (Freeman, 1984).

2.5. Types of delay

Critical and Non-Critical Delay

Critical Delay is the type of delay that affects the project completion time or date. This type of delay happens in critical activity (critical path) in CPM scheduling, It foils the contractor from completing the work in the scheduled completion time as the parties agreed upon in the contract (Tawfek & Bera, 2018).

Non-Critical Delay It is the type of delay that does not affect the completion date of the project because this type of delay happens in non-critical activity in CPM scheduling, but it affects the progress of the activities (Tawfek & Bera, 2018).

Excusable and non- Excusable

Excusable Delay is the type of delay that occurs due to an unexpected event which can be controlled neither by the contractor nor the subcontractor. The following events are responsible for excusable delay (Flood, Fire, Acts of God, General labor strikes, usually severe weather, etc.) The analyst should consider the documents of the contract before s/he draws any conclusion about the excusable delay based on the preceding definitions (Nejat.Z, 2018).

Non Excusable Delays are events that are within the contractor's control or that are foreseeable Some example of non-excusable delays are late performance of subcontractors, untimely performance by suppliers, faulty workmanship by the contractor and subcontractors and project specific labor strike caused by either the contractor s unwillingness to meet with labor representatives or by unfair labor practices (Nejat.Z, 2018).

Compensable or Non Compensable

A compensable delay is a delay where the Contractor is entitled to a time extension and to additional compensation. Relating back to the excusable and non-excusable delays, only excusable delays can be compensable (Nejat.Z, 2018).

A non-compensable delay means that although an excusable delay may have occurred, the contractor is not entitled to any added compensation resulting from the excusable delay. Thus, the question of wheatear a delay is compensable must be answered. Additionally, anon-excusable delay warrants neither additional compensation nor a time extension Weather or not a delay is compensable depends primarily on the terms of the contract. In most cases. A Contract specifically notes the kinds of delays that are non-compensable, for which the contractor does not receive an additional money but may be allowed a time extension (Nejat.Z, 2018).

Concurrent or Non Concurrent

Concurrent delay mostly refers to the situation where two or more delay activities occur at different times but the impact is felt (In whole or in part) at the same time. It occurs when both parties to the construction contract (owner and contractor) delay the project during an excusable but non compensable delay (such as severe weather conditions). Such delays do not necessarily have to occur simultaneously but can be on two parallel critical path chains. Concurrent delays may also be an excusable delay with compensation which may grant some reliefs to the contractor in the form of extension of time, remission of liquidated damages and sometimes potential delay of damages subject to the given circumstance and the contractual agreement. In the same vein, a concurrent delay may also be inexcusable where the delay of the contractor, though concurrent with that of the owner, had a more severe impact on the finishing date (Nejat.Z, 2018).

2.6. Couse for delay

The seven reasons for delays in Indian construction were identified by research on the subject and included the following: the client, the contractor, the consultant, the material, the equipment,

the labor, and the external factor. From this, the three primary factors are delays connected to contractors, followed by delays related to clients and consultants (Prakash B Rao, 2014).

Contractor-related: Factors related to the contractor's liability are low qualification of the contractor's technical staff, shortage of materials at the construction site, design defects and defective work, poor qualification and experience of the workers, lack of construction site, low labor productivity, financial problems, coordination problems with by others, conflicts in the schedule of subcontractors during the implementation of the project, lack of employees of the construction contractor, poor construction management and delays in the mobilization of the construction. (Prakash B Rao, 2014). Also according (Choodhry & Lqbal, 2013) & (Odah & Battaineh, 2002) Inefficiencies in scheduling, resource allocation, and site management by contractors can lead to significant delays. Contractors may face delays due to inadequate workforce or lack of necessary equipment, impacting project timelines.

Consultant-related: Factors that are related to the responsibility of the consultant are the absence of workers at the consultant's workplace, lack of experience on the part of the consultant, insufficient experience of the consultant, delays in approving major changes in the scope of work, errors and inconsistencies in the design documents (Prakash B Rao, 2014).

Owner/Clint related factor: Factors related to owner liability are delays in site delivery, lack of job knowledge, slowness in decision-making, lack of coordination with contractors, change of orders by the owner during construction (substitution and addition of new work to the project and change in specifications), financial problems (delayed payments, financial difficulties and economic problems), slowness in the decision-making process and poor communication and coordination (Prakash B Rao, 2014). Even there are another related causes Clients often cause delays through slow decision-making processes, particularly in approving design changes, budget increases, or contract variations. Delays can occur if clients fail to provide sufficient or timely funding. Leading to interruptions in the construction process (Doloi, Sawhney, Lyer, & Rentala, 2012).

Other stakeholder related factor: Permit and Approval Delays: Regulatory bodies may cause delays due to lengthy procedures for obtaining necessary permits and approvals.

Compliance with New Regulations: Projects may be delayed when new regulations are introduced during construction, requiring adjustments to plans and processes.

Community Opposition: Delays may occur due to protests or opposition from local communities concerned about the environmental and social impacts of the construction project.

Environmental Approvals: Securing environmental clearances and adhering to sustainability practices can introduce delays, especially if additional studies or modifications are required (Olader & Landin, 2005) & (El-Gohary, Osman, & El-Diraby, 2006).

2.7. Empirical review

Mekonnen & Asfaw, (2013) investigated the reasons behind Ethiopian Road project delays using document analysis and stakeholder perspective. By interviewing project stakeholders and analyzing project papers, the study looked at road project delay in Ethiopia. According to study findings, insufficient project planning, sub-contractor performance, hold-ups in getting clearance and permits, difficult acquiring land, and financial limitations were the primary reasons for delay in Ethiopia. Stakeholder also mentioned tensions within the community, a shortage of competent labor, and governmental meddling as major causes.

By the title of identifying factor contributing to road project delay in Ethiopia: Perspective from stakeholders and document analysis (Alemrew & Mulugeta, 2013) conducted stakeholder interview and document analysis to investigate road project delays in Ethiopia. According to the study, poor project planning and design, hold-ups in getting approval and permission, difficult with land acquisition, subpar contractor performance, and financial limitation were the primary reasons for delays. Inadequate project monitoring and oversight, a lack of agency cooperation, and bureaucratic inefficiencies were all mentioned by stakeholder as significance issues.

Ololade, (2018) Discovered in another study conducted in Nigeria that insufficient project planning, sub-contractor performance, hold-ups in getting clearance and permits, difficult acquiring right-of-way, and financial limitation were the primary reason for delays in Nigeria. In addition, political meddling, poor oversight, and corruption were cited by stakeholders as major causes. Using a way of disturbing questioner surveys to project stakeholders.

Li et al (2019) research made in china finding shows that institutional issues, such as drawn-out approval procedures, complex rules, and ineffective bureaucracy, were the primary drivers of

delay. Inadequate project planning, modifications to the design, and issues with agency collaboration were further reasons. The study also emphasized the impact of outside variables including the environment and societal unrest. Through the collection of data from project documentation, interview, and site visits, the study examined road project delays in China.

These empirical studies illustrate frequent reason for delays in road projects, such as insufficient planning, incompetent project management, hold-ups in getting approvals and permits, difficulties' acquiring land, and financial limitations. The significance of outside variable including political unpredictability, economic volatility, and institutional inefficiencies is also emphasized. It is crucial to remember that various locations and situations may have distinct reasons for delays in road projects. In order to inform targeted mitigation initiatives, further empirical study is required to investigate the reason behind delay in particular project.

By the title of Assessing the cause of overturn in building and road construction projects; the case of Addis Ababa Ethiopia. Negesa.A.B, (2022) Identifies the factor causing time overturn of construction projects in the city. The study aimed to identify the factors causing time overrun in construction projects in the city. It focused on examining the underlying causes of time delays in road and building construction projects to find out the factors leading to specific challenges. The study categorized the identified factors under different groups based on their similarity in origin to understand the severity level and adverse impact of each.

The study identified a total of seven influential factors causing time overrun in construction projects, with some factors not previously mentioned in other studies conducted in the city within the last ten years. The significance and impact of these factors change over time due to technological advancements and the emergence of new factors, emphasizing the need for continuous and regular studies on the subject matter. Four remedial measures were proposed to control the occurrence of time overrun, focusing on proper responsibility assignment, application of earned value principle, detailed work breakdown structure, and project software for effective scheduling and tracking.

The objective of the study on Delay in Construction Projects: Types, Causes, and Effects, wrote by Tawfek.A.M & Bera.D.K,(2018) is to discuss the types of construction project delays, identify their causes, and analyze their effects. The study aims to provide insights into the

various aspects of delays in construction projects, including their classification, reasons behind them, and the consequences they can have on project completion, cost, and overall success.

The study on Delay in Construction Projects concludes that delays are a common issue in the construction industry, leading to time and cost overruns. The study discusses various types of delays, their causes, and effects, highlighting the importance of understanding and managing delays to minimize their impact on project delivery. It emphasizes the need for proactive planning, effective project management practices, and early identification of delay causes to mitigate the risks associated with delays in construction projects.

Latif,Q.B.a.i, Saadi,A.M.D.A, & Rahman,i.a,(2019) Studied by the title of Identification of Delay Factors in the Oman Construction Industry to analyze and identify the key factors causing delays in construction projects in Oman. The main goal is to provide insights into the factors that lead to project delays during various phases of construction, including planning, design, construction, finishing, and miscellaneous stages. By understanding these delay factors, the study aims to help construction industry professionals, including clients, consultants, and contractors, in improving project management practices to reduce or avoid delays in future construction projects.

The study on the Identification of Delay Factors in the Oman Construction Industry utilized a quantitative method through a structured questionnaire to evaluate construction professionals' perceptions regarding management flaws contributing to project delays.

The study on the Identification of Delay Factors in the Oman Construction Industry concluded that there are numerous factors contributing to delays in construction projects in Oman. The research highlighted the significance of factors causing delays during different phases of construction, including planning, design, construction, finishing, and miscellaneous stages. And it explains these factors in detail.

2.8. Conceptual framework

Understanding and mitigating road project delays is crucial for efficient infrastructure development. In the previous section the theoretical cause of road project delay is discussed as Contractor – related, Consultant-related, Owner/Client related factor. In this case the delay is dependent variable while the various cause which affect the project progress and result delays are independent variables.

To make it clearer and more understandable the cause-and-effect relationship for analyzing and categorizing road project delays here is a possible conceptual framework.

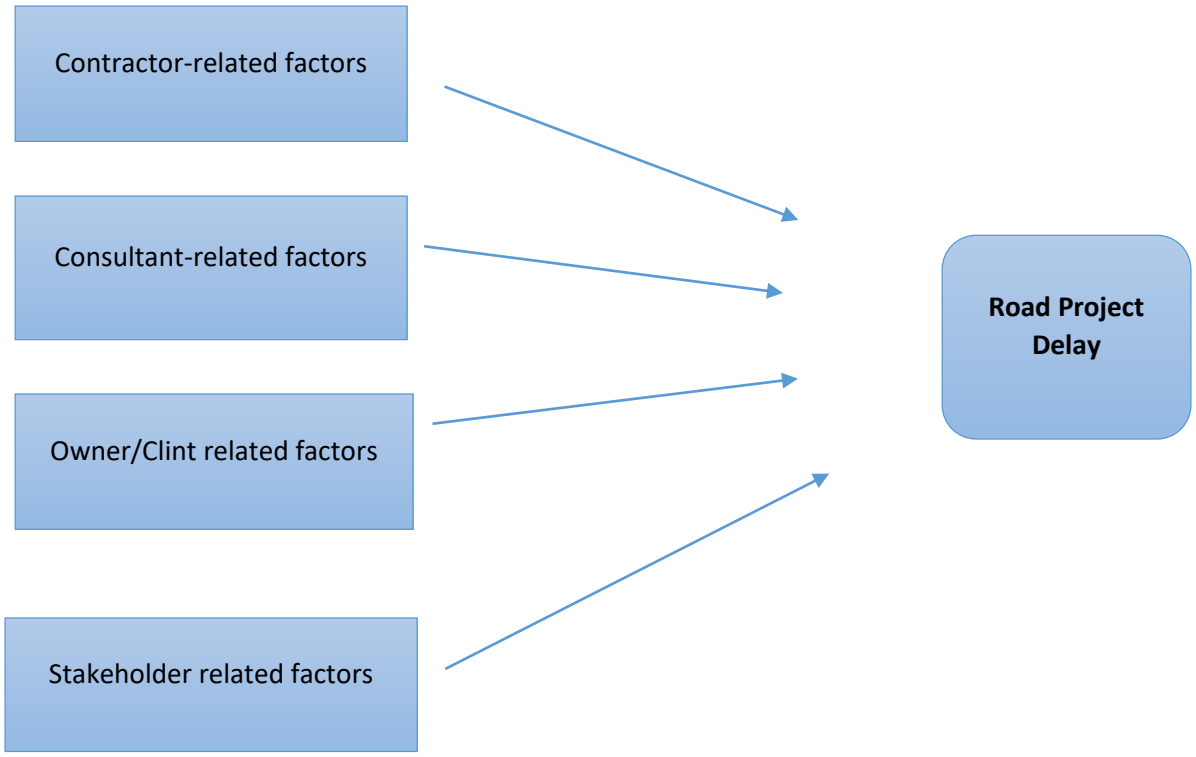


Figure 0-1 conceptual framework

2.9. Hypothesis

• **H1-** Contractor related factors is cause of road construction project delay on Beshale Condominium Asphalt Road Project.

• **H2** - client related factor is the major cause of road construction .project delay on Beshale Condominium Asphalt Road Project.

• **H3** - Consultant related factors is the major cause of road construction .project delay on Beshale Condominium Asphalt Road Project.

• **H4**- stakeholder related factor is the major cause of road construction .project delay on Beshale Condominium Asphalt Road Project.

Chapter Three

Methodology

This chapter deals with the methodology and procedures that were followed to determine the style and methods of collecting information and data from the study population through office and field sources. The study determines the factors that influence the duration of Beshale condominium asphalt road construction projects based on the results of all the reviewed studies. This chapter discusses research design, population, sample size and sampling design, data collection methods, the validity and reliability of instruments, methods of data analysis, as well as the research ethics that have been followed in the research.

3.1. Research design and approach

Sabine, (2004) discuss the importance of using both qualitative and quantitative methods in research to increase overall strength, address objectives, and ensure validity and reliable results. The researcher utilized a sequential mixed-methods approach to gather data.

The study employed a mixed approach that combines quantitative and qualitative methods. While the quantitative strategy makes it easier for the reader to understand by providing numerical data that can be examined and connected, the qualitative technique aids in gaining a deeper knowledge of an individual's insight and suggestions.

Using the appropriate type of data analysis and matching the methodologies to the research objectives are made possible by a well-planned research design.

3.2. Population, sample size and sampling technique

3.2.1. Target population

According to Sekaran, (2003) research population can be defined as the entire group of individual, event or object that have common binding characteristics or traits and researcher

wishes to investigate. In this study the concept of population is understood as the set of individual from which the research samples will be drawn.

In this research purposive sampling was be used in order to get accurate answers from direct participant of the project. The focus population of this study will be among the client/owner, consultants& contractors. Which include project managers, office engineers, site engineers, and supervisors with experience in the road construction industry and currently involving in Beshale condominium asphalt road project. The total population of this study is 50.

3.2.2. Sampling technique

Purposive or judgmental sampling is one of the non-probability sampling techniques which enable researchers to use their judgment to select case that will beast enable to answer there research questions and to meet their objective. saunders, Lewis, & Thornhill, (2019) in this research purposive or judgmental sampling was used in order to get accurate answers from direct participant of the project.

3.2.3. Sample size

Sample size is determined using Solvin's method, with a 95 % confidence level and a 5 % error margin. If you want to use Slovin's formula to estimate a population percentage, you'll need to use a 95 % confidence coefficient Tejada & Punzalan, (2012). The sampling formula used to obtain the sample size for small and medium enterprises in Addis Ababa workers and leaders is as follows:

Thus,

$$n = \frac{N}{1+Ne^2}$$

Where, n = is the sample size

N = is the population size (50)

$$n = \frac{50}{1+50(0.05)^2} \approx 45$$

e = error tolerance (0.05)

So that using the above formula the sample size of this study is 45 from total population of 50. This sample was taken from contractor consultant client and counter parts from utility developing organizations (Ethiopian electric utility, Addis Ababa water supply, Ethio tele com).

It addresses resident engineer of the project, project manager, site engineers, office engineers, material quality cruse, surveyors, inspectors, counterpart from AACRA and from utility developing organizations. Since the study is on single project the sample size was limited selected individual who are expected to have enough information about the project.

3.2.4. Data type and Data source

The study used primary and secondary data collection tools that are suitable for explanatory research designs. Primary data which was collected from the staff of the project, and secondary data which are collected from different sources existing in the office documents. It include reports, contractual agreements, published and unpublished documents related to the project, and other materials related to the cause and effects of the delay in the Beshale condominium asphalt road construction project.

3.2.5. Data Collection Instrument

After selecting the research design, appropriate instruments must be selected for data collection. In this section, different tools are planned to be used for collecting data based on the type of research design. The most common associated tools with quantitative research are (Bryman, 2008) questionnaire/ survey, observation schedules, coding frames and existing document analysis. From these instruments questionnaire was used for this study. Questionnaire is selected because it is the most typical and cost effective methods of data collection. Survey questionnaire provides huge quantities of descriptive information on the research questions to be answered.

3.2.6. Data Analysis

The study intends to assess the determinants of project implementation delay of the road project. The cause and effect (casual) relationship between variables were assessed throughout the study .this make it appropriate for the study to implement explanatory research design. Analysis of data in this research was done by using statistical tools correlation and multiple regressions.

In the study four hypotheses are analyzed using methods of statistical inference. Pearson Correlation analysis was conducted to test the existence of significant relationship between the delay factors and project delay. Then, the multiple regression analyses were also conducted to determine by how much percent the independent variable i.e. delay factors explain the dependent variable which is Beshale condominium road project delay.

The SPSS software program did help with the analysis of quantitative data. The researcher coded and edited the data to ensure that the responses are consistent and logically complete. Following editing, the data was analyzed both qualitatively and quantitatively for information gathered with a variety of data collection tools.

Base on the conceptual model of the study, mathematically the relationship between delay factors and project completion is expressed in the multiple regression equation as:

$$Y = X0 + X1 (PI) + X2 (PPD) + X3 (I) + X4 (MECS) + X5 (C) + X6 (PC) + e$$

Where: Y= PD= Project Delay.

PI = Project Initiation.

PPD = Project Planning/Design system.

I = Improper Implementation.

MECS = Project Monitoring, Evaluation and Controlling system

C = Poor Communication.

PC = Improper Project Closure

X0= the constant parameter.

X1= Coefficient of Project Initiation.

X2= Coefficient of Project Planning/Design system.

X3= Coefficient of Improper Implementation.

X4= Coefficient of Project Monitoring, Evaluation and Controlling.

X5= Coefficient of Poor Communication.

X6= Coefficient of Improper Project Closure.

e = error term

In accordance with the above mathematical model the constructed hypothesis are tested by considering significance level of each constant parameter in multiple regression analysis.

3.2.7. Reliability and validity

So that Validity refers to the extent to which a research study measures what it intends to measure and accurately represents the phenomenon under investigation. In the proposed research to ensure content validity, a comprehensive review of existing literature and consultation with experts in the field are conducted to develop the research instruments and interview protocols. This helps to ensure that the questions and measures used in both the quantitative and qualitative components of the study adequately capture the key variables of interest.

Reliability refers to the consistency and stability of the research findings. In the quantitative research approach, internal consistency was assessed using appropriate statistical tests such as Cronbach's alpha for scales and measures used to assess variables. High values of Cronbach's alpha typically above 0.70 indicate good internal consistency. For the interpretation of this coefficient were considered to evaluate the results of the analysis. Cα> 0.8, 'Excellent’; 0.8> Cα> 0.7 'Good'; 0.7> Cα>0.5 'Satisfactory' and Cα <0.5 ' Poor'.

The reliability of the measurement items of the scales were verified to ensure their internal consistency and stability using Cronbach's Alpha Coefficient. The results yielded are shown in the table below:

Variable	Cronbach's Alpha	Item	Remark
Contractor related factors	0.831	13	Reliable
Client related factors	0.765	12	Reliable
Consultant related factors	0.921	11	Reliable
Stockholder related factors	0.736	6	Reliable

Source: Survey Result, 2024 **Table 0-1 Reliability Table**

Chapter Four

Data analysis interpretation and presentation of study finding

4.1 Introduction

This chapter presents the result of statistical test and analysis carried out with the aim of figuring out the major causes of road project delay at Beshale condominium rod project.to generate row data for analysis this study uses survey and case study . The survey was used to collect data from sampled population in short period of time. The purpose of the questioner was to know the common reason that cause project delay

Descriptive analysis was held to describe the characteristics of respondent. And correlation test have been applied to see the relationship of independent factors. Further regression analysis has been used to determine the relationship of dependent and independent variable. And the result are discussed on subsequent sections.

4.2 Response rate

Total of 45 questioner was issued to the respondent and 37 of them are returned which is 37/45*100=82.22%. According to Mugenda (2003) response rate of 50% is adequate for analysis and reporting; rate of 60% is good and response rate beyond 70% is excellent. There for 82.22 % was considered adequate for this study.

4.3 Demographic characteristics of respondent

The below table shows the summery of respondent characteristics. As we can see from the table above 59.5% of total respondents are male while the rest 40.5 are female this shows us the gender distribution gap is fair. Regarding the age of the respondent 15(40.54%) of the respondents are between 18-30 years old; 14(37.84%) of respondents are between 30-40 years old; 6(16.22%) of respondents are aged between 40-50 years old and 2(5.4%) of respondents are above 50 years old this show that most of the employee are on their productive age.

On the study the majority respondents 26(70.3%) are degree holders and 5(13.5%) are masters degree holders and the rest 6(16.2%) are diploma graduate. Regarding to their experience 25(67.57%) of the respondents have between 1-10 years of experience; 18.92% which is 7

respondents have between 11-20 years of experience; 5(13.51%) of the respondents have an experience between21-30.

The study had embraces the following professionals on the project. When we see the respondent position on the study project manager1 (2.7%), Resident Engineer 2 (5.4%), Utility representatives 2(5.4%), Site engineers7 (18.92%), project Coordinators 2(5.4%) Other project members like office engineers, surveyors, inspectors, human resource manager are 23(62.16%) of total respondent.

Item	Category	frequency	Percentage
Gender	Male	22	59.5
	Female	15	40.5
Age	18-30	15	40.54
	30-40	14	37.84
	40-50	6	16.22
	Above 50	2	5.4
	Total	37	100%
Educational Background	TVET/Diploma	6	16.2
	Degree	26	70.3
	Masters	5	13.5
	Total	37	100%
Respondent position in the project	Project Manager	1	2.703
	Resident Engineer	2	5.405
	Utility representatives	2	5.405
	Site engineer	7	18.919
	project Coordinator	2	5.405
	Other	23	62.162
	Total	37	100%
Experience	1-10	25	67.57
	11-20	7	18.92
	21-30	5	13.51
	Total	37	100%

Source: Survey Result, 2024

Table 0-1Demographic characteristics of respondent

4.4 Descriptive statistics

In this section the measurement finding of dependent variable and independent variables are discussed the study uses the classification system for interpreting the result of 5- points Likert scale survey. The classification is based on mean score of respondents to the survey questioner. The mean score show us the respondents view towards the factors that are considered as variable affecting delay of project.

4.4.2 Contractor related factors

Descriptive Statistics

	N	Mean	Std. Deviation
Improper construction methods implemented by contractor	37	3.0000	1.02740
Inadequate contractor experience causing error	37	2.9189	.95389
Ineffective planning and scheduling of project by contractor	37	3.0000	.97183
Delays in sub-contractor‘s work	37	3.2432	.95468
Shortage of site labor	37	2.5135	1.04407
Coordination problems with others	37	3.1892	1.72945
Shortage of materials/Equipment on site	37	3.1892	1.12640
Delay in commencement	37	3.0270	1.09256
Reworks due to defects/ in construction materials	37	3.0270	1.01342
Financing by contractor during construction	37	3.0811	1.01046
Contractors inefficiency in handling resources	37	2.9459	1.07873
Lack of adequate training on construction management techniques for Contractor‘s staffs	37	3.0811	1.03758
Inadequate experience of contractor	37	2.9189	.92431
Valid N (list wise)	37		

Source: Survey Result, 2024

Table 0-2 Descriptive statistics of contractor related factors

Improper construction methods implemented by contractor: perceived as neutral with a mean value of 3.00 and relatively high standard deviation of 1.02740 suggests a moderate level of variability in how respondents perceived the impact of improper construction methods implemented by the contractor.

Inadequate contractor experience causing error: is ranked slightly under neutral with mean value of 2.9189. The standard deviation of 0.95389 is relatively low, indicating a more consistent perception among respondents regarding the impact of inadequate contractor experience causing errors.

Ineffective planning and scheduling of project by contractor: perceived as neutral with a mean value of mean: 3.0000 and standard deviation of 0.97183 suggests a moderate level of variability in how respondents perceived the impact of ineffective planning and scheduling by the contractor.

Delays in sub-contractor's work: is ranked moderately above neutral with a mean value of 3.2432. The standard deviation of 0.95468 indicates a relatively low level of variability in how respondents perceived the impact of delays in sub-contractor's work

Shortage of site labor: the respondent disagreed with shortage of site labor this factor is ranked mean value of 2.5135and standard deviation of 1.04407 represents a moderate level of variability in how respondents viewed the impact of shortage of site labor.

Coordination problems with others: this factor is ranked slightly above neutral with mean value of 3.1892 and high standard deviation of 1.72945 indicates a significant level of variability in how respondents perceived the impact of coordination problems with others.

Shortage of materials/Equipment on site: this factor is ranked slightly above neutral with mean value of 3.1892. The standard deviation of 1.12640 represents a moderately high level of variability in how respondents viewed the impact of shortages of materials and equipment on site.

Delay in commencement: is ranked almost neutral with a mean value of 3.0270. The standard deviation of 1.09256 suggests a moderate level of variability in how respondents perceived the impact of delays in project commencement.

The same with commencement reworks due to defects/ in construction materials this factor is ranked slightly above neutral with mean value of 3.0270. The standard deviation of 1.01342 represents a moderate level of variability in how respondents viewed the impact of reworks due to defects or issues with construction materials.

Financing by contractor during construction: is also ranked almost neutral with a mean value of 3.0811. Standard Deviation is 1.0104601046 indicates a moderate level of variability in how respondents perceived the impact of contractor financing during construction. This implies that

the significance of this factor may have differed depending on project-specific financial arrangements or the contractor's financial stability.

Contractor's inefficiency in handling resources: this factor is almost neutral. With a mean value of 2.9459. The standard deviation of 1.07873 suggests a moderate level of variability in how respondents viewed the impact of contractor inefficiency in handling resources

Lack of adequate training on construction management techniques for Contractor's staffs: is also ranked almost neutral with a mean value of 3.0811. The standard deviation of 1.03758 represents a moderate level of variability in how respondents perceived the impact of a lack of adequate training on construction management techniques for the contractor's staff.

Inadequate experience of contractor: this factor is almost neutral. With a mean value of 2.9189. The standard deviation of 0.92431 is relatively low, indicating a more consistent perception among respondents regarding the impact of inadequate contractor experience.

The study identifies contractor-related factors such as performance, communication, and adherence to timelines as significant contributors to project delays. This finding aligns with the broader literature, which emphasizes the critical role of contractor efficiency and resource management in project success. According to Howell, (2002), effective project management practices are essential for minimizing costs and achieving project goals, while Hyvari, (2006) noted that many projects fail to meet their timelines due to inefficiencies in contractor performance.

4.4.3 Client related factors

Descriptive Statistics

	N	Minimum	Maximum	Mean	Std. Deviation
Slowness of the owner decision making process	37	2.00	5.00	3.5135	.96095
Change orders by owner during construction (variation)	37	2.00	5.00	3.4054	.86472
Owner financial problems/client finance/economic ability for the project	37	2.00	5.00	3.2432	.92512
Right of way Casus	37	1.00	5.00	3.8108	1.32995
Lack of coordination with the contractor and utility providers (Ethio Telecom, AWSSA& EEPC)	37	2.00	5.00	4.0541	.97028
Land Acquisition, Resettlement and Compensation Related Causes	37	1.00	5.00	3.3784	1.08912
Local Authority (werda, sub city &Mire office)	37	1.00	5.00	2.7027	.93882

Unrealistic contract duration and requirements imposed by owner	37	1.00	3.00	2.0811	.68225
Type of project bidding and award (selection based on least bidder)	37	2.00	5.00	3.8011	.75933
Poor communication & coordination of the owner with other parties	37	2.00	5.00	3.3784	.95310
Delays in contractors progress payment by owner	37	2.00	5.00	3.5405	.90045
Delay in approval of completed work by owner/client	37	2.00	5.00	3.2432	.89460
Valid N (list wise)	37				

Source: Survey Result, 2024 **Table 0-3 Descriptive statistics of client related factors**

Slowness of the owner decision-making process: The mean value of 3.5135 indicates that, on average, respondents perceived the slowness of the owner's decision-making process to be moderate to high. This suggests that delays caused by the owner's decision-making were a significant factor in project delays. The standard deviation of 0.96095 shows that there was a moderate amount of variability in responses.

Change orders by owner during construction (variation): With a mean of 3.4054, change orders by the owner during construction were perceived to be moderate on average. This suggests that changes requested by the owner during the construction phase added complexity and potentially led to delays. The standard deviation of 0.86472 indicates a moderate amount of variability in reported change orders.

Owner financial problems/client finance/economic ability for the project: The mean value of 3.2432 suggests that issues related to owner financial problems or economic ability were perceived to be moderate on average. This factor likely contributed to uncertainties and challenges in project funding and execution. The standard deviation of 0.92512 indicates a moderate amount of variability in reported financial issues.

Right of way issues: With a mean of 3.8108, right of way issues were perceived to be relatively high on average. This factor likely caused significant disruptions and delays, mainly in Beshale project where land acquisition or access rights were critical. The standard deviation of 1.32995 indicates a considerable variability in reported right of way issues.

Lack of coordination with the contractor and utility providers: The mean value of 4.0541 indicates that lack of coordination with contractors and utility providers was perceived to be high on average. Poor coordination likely led to inefficiencies, rework, and delays in project execution. The standard deviation of 0.97028 shows a moderate amount of variability in reported coordination issues.

Weather conditions: With a mean value of 3.4865, weather conditions were perceived to be moderate on average. This suggests that weather-related disruptions may have contributed to project delays, particularly in projects sensitive to seasonal changes or adverse weather patterns. The standard deviation of 1.14494 indicates a moderate amount of variability in reported weather impacts.

Delays in getting permits/approvals: The mean value of 3.8919 indicates that delays in obtaining permits and approvals were perceived to be relatively high on average. This factor likely led to bureaucratic hurdles and administrative delays the project. The standard deviation of 1.08592 shows a moderate amount of variability in reported permit-related delays.

Design errors and omissions: With a mean of 3.5676, design errors and omissions were perceived to be moderate on average. This suggests that deficiencies in project designs may have led to rework and delays during the construction phase. The standard deviation of 1.03738 indicates a moderate amount of variability in reported design-related issues.

Inadequate contractor experience: The mean value of 3.4459 indicates that inadequate contractor experience was perceived to be moderate on average. This suggests that the lack of expertise among contractors may have contributed to project inefficiencies and delays. The standard deviation of 1.08153 shows a moderate amount of variability in reported contractor experience issues.

Material delivery delays: With a mean of 3.5811, material delivery delays were perceived to be moderate on average. This factor likely caused disruptions and schedule adjustments due to late or inconsistent material supplies. The standard deviation of 1.04454 indicates a moderate amount of variability in reported material delivery issues.

Client-related factors, including clear project requirements, prompt decision-making, and fair payment terms, are also crucial for project success. This is consistent with the literature, which

highlights the importance of proactive client involvement and effective communication between clients and contractors. For instance, the Project Management Institute (PMI, 2013) emphasizes the need for clear project scope and timely decisions to avoid delays.

4.4.4 Consultant related factor

Descriptive Statistics

	N	Mean	Std. Deviation
Delay of design submittal from consultant	37	3.0811	1.29911
Delay in approving major changes in the scope of work	37	2.9459	1.12906
Inspection delays (delay in performing inspection and testing by consultant)	37	2.4865	1.14556
Lack of experience of consultant in construction projects;	37	2.4054	1.14162
Poor communication and coordination of the consultant with other parties	37	2.9459	1.26811
Mistakes and discrepancies in design documents	37	2.4865	1.04407
Rework due to change of design or deviation order	37	2.7838	.85424
Wrong or improper (poor) (inappropriate) design	37	2.5946	.95625
Lack of consultant's site staff	37	2.3514	1.15989
Poor contract management	37	3.0541	.94122
Inaccurate site investigation	37	2.9459	.94122
Valid N (list wise)	37		

Source: Survey Result, 2024 **Table 0-4 Descriptive Statistics for consultant related factors**

Delay of design submittal from consultant: This appears to be one of the most significant issues, with a relatively high mean score of 3.0811 and a large standard deviation of 1.29911. This suggests that delays in the consultant's design submittal were a common problem.

Delay in approving major changes in the scope of work: This factor had the next highest mean score of 2.9459 and a moderately high standard deviation of 1.12906. This indicates that delays in approving major scope changes were a significant challenge, but the view of respondent on extent of the impact varied.

Inspection delays (delay in performing inspection and testing by consultant): had mean score of 2.4865 which is under the neutral and a standard deviation of 1.14556 suggest that inspection and testing delays by the consultant were a moderate issue.

Lack of experience of consultant in construction projects: With a mean of 2.4054 and a standard deviation of 1.14162, the lack of the consultant's experience in construction projects was perceived as a moderate challenge, but the perception of respondent of the significance varied.

Poor communication and coordination of the consultant with other parties: This factor had relatively a high mean score of 2.9459 and a relatively high standard deviation of 1.26811, indicating that poor communication and coordination between the consultant and other stakeholders was a significant issue, but the view of respondent on extent of the impact.

Mistakes and discrepancies in design documents: the respondents have negative attitude on this factor with the mean score of 2.4865 and a standard deviation of 1.04407 suggest that mistakes and discrepancies in the design documents were a moderate challenge, with the significance varying in impression of respondent.

Rework due to change of design or deviation order: With a mean of 2.7838 and a relatively low standard deviation of 0.85424, rework due to design changes or deviation orders was perceived as a consistent challenge on the project.

Wrong or improper (poor) (inappropriate) design: The mean score of 2.5946 and a moderate standard deviation of 0.95625 suggest that poor or inappropriate design was a moderate challenge, with the significance varying on the project.

Lack of consultant's site staff: This factor had a mean of 2.3514 and a standard deviation of 1.15989, indicating that the lack of consultant's site staff was perceived as a moderate issue, with the impact varying on the project.

Poor contract management: With a high mean score of 3.0541 and a relatively low standard deviation of 0.94122, poor contract management was consistently seen as a significant challenge on the project. This suggests that effective contract management is a fundamental aspect of construction project success that project teams strive to address.

Inaccurate site investigation: The mean score of 2.9459 and a standard deviation of 0.94122 indicate that inaccurate site investigations were perceived as a significant challenge, with the impact varying moderately on the project. The study highlights the importance of consultant-related factors such as expertise, responsiveness, and coordination abilities. This is supported by

the literature, where skilled. Consultants are seen as essential for providing accurate designs, timely approvals, and effective project supervision. (Jemal Mustafaev, 2015) Discusses the critical role of consultants in project scope management and ensuring project deliverables meet specified requirements.

4.4.5 Stakeholders related factors

Descriptive Statistics

	N	Mean	Std. Deviation
Opposition and protest of community against the project.	37	3.2432	1.21118
Community rising concern on the project during the planning and permitting stage	37	3.5135	1.09599
Land acquisition ,compensation and relocation issues	37	3.6216	1.08912
Engaging with local community to understand their need and concern	37	2.7297	1.04479
The complex process which involves multiple agencies or encounters unexpected regulatory	37	3.2162	1.03105
The community good willing to cooperate for the construction process.	37	2.9189	1.13965
Valid N (list wise)	37		

Source: Survey Result, 2024 **Table 0-5 Descriptive Statistics for stakeholder related factors**

Opposition and protest of community against the project: The mean score of 3.2432 and a standard deviation of 1.21118 indicate that community opposition and protests were a significant challenge on the project, but there is moderate amount of variability in the responses, with some respondent likely holding more extreme views in either direction.

Community rising concern on the project during the planning and permitting stage: With relatively a high mean score of 3.5135 and a standard deviation of 1.09599, rising community concerns during the planning and permitting stages were a major issue. The variability in the response suggests that some respondent likely holding more extreme views in either direction.

Land acquisition, compensation, and relocation issues: This factor had relatively the highest mean score of 3.6216 and a standard deviation of 1.08912, indicating that land-related challenges were consistently a significant concern on the project. The moderate variability suggests that some respondent likely holding more extreme views in either direction.

Engaging with the local community to understand their needs and concerns: The mean score of 2.7297 which is under neutral and a standard deviation of 1.04479 suggest that engaging with the

local community was perceived as a moderate challenge, the insight of respondents on the impact.

The complex process involving multiple agencies or encountering unexpected regulatory issues: With a mean of 3.2162 and a standard deviation of 1.03105, the complexity of the regulatory and multi-agency processes was consistently seen as a significant challenge, but the rank given by respondents for the extent of the impact varies.

The community's good willingness to cooperate for the construction process: The mean score of 2.9189 and a standard deviation of 1.13965 indicate that the community's willingness to cooperate was perceived as a moderate challenge, with the impact varying on the project. Stakeholder-related factors were found to have the most significant impact on project delays. Effective stakeholder management, which includes addressing community concerns, ensuring regulatory compliance, and securing financial support, is crucial. This finding is echoed in the literature, where stakeholder engagement is often cited as a key determinant of project success.

Effective stakeholder management is crucial for mitigating delays and ensuring project objectives are met (Latif,Q.B.a.i, Saadi,A.M.D.A, & Rahman,i.a, 2019).

4.5 Correlation analysis

Correlation coefficient is used to specify the strength and the direction of the relationship between the independent variables (Contractor related factors, client related factors, Consultant related factor, and stakeholders related factors) and the dependent variable i.e. project delay. The results of the correlation between these variables are shown in Table below. As it is indicated in the Table below, generally there is a positive, strong and statistically significant correlation between project delay factors and project delay at 1% level of significance ($P<0.01$) which signifies the project delay factors on the project delay. Above neutral with mean value of 3.2432 and standard deviation 0.89460.

Correlations

		Contractor related factors	client related factors	consultant related factor	stakeholder related factor	project performance
Contractor related factors	Pearson Correlation	1				
	Sig. (2-tailed)					
	N	37				
client related factors	Pearson Correlation	.771**	1			
	Sig. (2-tailed)	.000				
	N	37	37			
consultant related factor	Pearson Correlation	.836**	.917**	1		
	Sig. (2-tailed)	.000	.000			
	N	37	37	37		
stakeholder related factor	Pearson Correlation	.851**	.861**	.903**		
	Sig. (2-tailed)	.000	.000	.000		
	N	37	37	37	37	
project performance	Pearson Correlation	.862**	.862**	.913**	.951**	
	Sig. (2-tailed)	.000	.000	.000	.000	
	N	37	37	37	37	37

**. Correlation is significant at the 0.01 level (2-tailed).

Source: Survey Result, 2024 **Table 0-6Correlations matrix**

In order to change the variables to continuous data the average summative scores of the Likert items were computed to conform to the assumption. Then Pearson correlation test was conducted at 95% confidence interval and a 2-tailed 5% confidence level.

Contractor related factors have a strong positive correlation with client related factors (r=0.771), consultant related factors (r = 0.836), and stakeholder related factors (r = 0.85 l). These

Correlations are all statistically significant at the 0.01 level. This show that contractor related factors, such as performance, communication, and adherence to timelines, are strongly positively correlated with client related factors, consultant related factors, and stakeholder related factors.

This means that when contractor related factors improve, there is a strong tendency for client satisfaction, consultant effectiveness, and stakeholder engagement to also improve.
Client related factors also show strong positive correlations with contractor related factors (r =0.771), consultant related factors (r = 0.917), and stakeholder related factors (r = 0.861).

Again, these correlations are statistically significant at the 0.01 level. Therefore client related factors, such as clear project requirements, prompt decision-making, and fair payment terms, show strong positive correlations with contractor related factors, consultant related factors, and stakeholder related factors. This suggests that positive client interactions can have a significant impact on the performance and relationships of contractors, consultants, and stakeholders.

Consultant related factors exhibit strong positive correlations with contractor related factors (r= 0.836), client related factors (r = 0.917), and stakeholder related factors (r = 0.903). These

Correlations are statistically significant at the 0.01 level. Accordingly Consultant related factors, including expertise, responsiveness, and coordination abilities, also exhibit strong positive correlations with contractor related factors, client related factors, and stakeholder related factors.

This indicates that effective consultants can contribute to positive outcomes for contractors, clients, and stakeholders.

Stakeholder related factors have strong positive correlations with contractor related factors (r= 0.851), client related factors (r = 0.861), and consultant related factors (r = 0.903). These

Correlations are statistically significant at the 0.01 level. Lastly, stakeholder related factors, such as community impact, regulatory compliance, and financial support, demonstrate strong positive correlations with contractor related factors, client related factors, and consultant related factors. This suggests that engaged and supportive stakeholders can influence the performance and relationships of contractors and other project participants.

4.6 Regression analysis

The regression analysis was conducted to identify by how much the independent variable explains the dependent variable. In this study, regression was employed to examine the effect of the independent delay factors (Contractor related factors, client related factors, Consultant related factor, and stakeholders related factors) on dependent variable project delay.

4.6.2 Testing assumptions of linear regression model

To ensure the validity and reliability of the model's results testing the assumptions of a linear regression model is performed. Checking the assumptions helps determine whether the model is appropriate for the given data and whether the inferences drawn from the model are valid. In this study assumptions of multi collinearity, linearity, and normality are implemented.

4.6.2.1. *Tests for Normality*

To make sure that the assumptions of the statistical tests are being met, it is crucial to verify the normality of the residuals and the dependent variable's distribution when analyzing data with SPSS. After verifying that the sample data set originated from the same normal population, the normality test was utilized to determine the likelihood that the random variable would reflect the population. The study verifies normality by utilizing a graphical approach (histogram) and a Normal P-P plot to examine the residuals of regression models for normal distribution. Because of the bell-shaped histogram, it may be concluded that the residual errors follow a normal distribution. As a result, the regularly distributed error term assumption is unaffected.

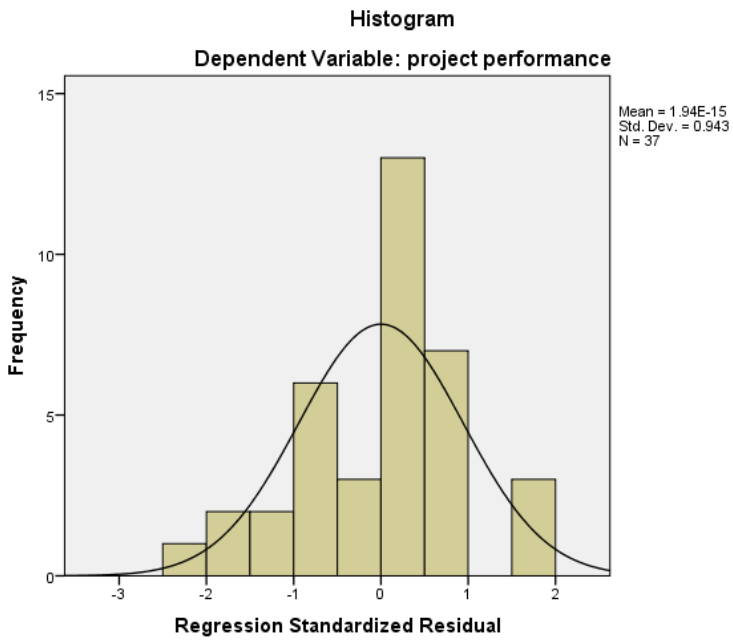


Figure 0-1 histogram Plot of Regression Standardized Residual

The Skewness and kurtosis measures should be as close to zero as possible. In reality, however, data are often skewed and kurtotic. A small departure from zero is therefore no problem as long as the measures are not too large compare to their standard errors. Divide the measure (statistic) by its standard error using a calculator the z value should be somewhere between - 1.96 and + 1.96.

Statistics

		Contractor related factors	client related factors	consultant related factor	stakeholder related factor	project performance
N	Valid	37	37	37	37	37
	Missing	4	4	4	4	4
Skewness		.156	.316	-.066	.530	.603
Std. Error of Skewness		.388	.388	.388	.388	.388

Source: Survey Result, 2024 **Table 0-7 Skewness table**

Skewness is a measure of the asymmetry of the distribution of a variable. A skewness value of 0 indicates a perfectly symmetric distribution. Positive skewness indicates a distribution with a longer right tail, meaning there are more observations on the higher end of the scale. Negative skewness indicates a distribution with a longer left tail, meaning there are more observations on the lower end of the scale.

The skewness value of Contractor related factors is (0.156). This positive value indicates that the distribution of contractor related factors has a slightly longer right tail, meaning there are more observations on the higher end of the scale.

The skewness value of Client related factors is (0.316). This positive skewness value indicates that the distribution of client related factors has a slightly longer right tail, meaning there are more observations on the higher end of the scale.

The skewness value of Consultant related factors is (-0.066). This negative skewness value indicates that the distribution of consultant related factor has a slightly longer left tail, meaning there are more observations on the lower end of the scale.

The skewness value of Stakeholder related factors is (0.530). This positive skewness value indicates that the distribution of stakeholder related factor has a longer right tail, meaning there are more observations on the higher end of the scale.

The skewness value of Stakeholder related factors is (0.603). This positive skewness value indicates that the distribution of project performance has a longer right tail, meaning there are more observations on the higher end of the scale.

Statistics

		Contractor related factors	client related factors	consultant related factor	stakeholder related factor	project performance
N	Valid	37	37	37	37	37
	Missing	4	4	4	4	4
Kurtosis		-.608	-.604	-.100	-.129	.951
Std. Error of Kurtosis		.759	.759	.759	.759	.759

Source: Survey Result, 2024 **Table 0-8 Kurtosis table**

Kurtosis is a measure of the "peakedness" or "flatness" of the distribution of a variable. A kurtosis value of 0 indicates a normal (mesokurtic) distribution. Positive kurtosis indicates a distribution that is more peaked (leptokurtic) than a normal distribution, with thicker tails.

Negative kurtosis indicates a distribution that is more flat (platykurtic) than a normal distribution, with thinner tails.

The Contractor related factors kurtosis value is (-0.608). This negative kurtosis value indicates that the distribution of contractor related factors is more flat (platykurtic) than a normal distribution, with thinner tails.

The Client related factors kurtosis value is (-0.604). This negative kurtosis value indicates that the distribution of client related factors is more flat (platykurtic) than a normal distribution, with thinner tails.

The Consultant related factors kurtosis value is (-0.100). This negative kurtosis value indicates that the distribution of consultant related factor is slightly more flat (platykurtic) than a normal distribution, with thinner tails.

The Stakeholder related factors kurtosis value is (-0.129). This negative kurtosis value indicates that the distribution of stakeholder related factor is slightly more flat (platykurtic) than a normal distribution, with thinner tails.

The Project performance related factors kurtosis value is (0.951). This positive kurtosis value indicates that the distribution of project performance is more peaked (leptokurtic) than a normal distribution, with thicker tails.

In summary, the kurtosis values suggest that the distributions of the variables are generally more flat (platykurtic) than a normal distribution, with the exception of project performance, which is more peaked (leptokurtic) than a normal distribution. The standard error of kurtosis provides information about the reliability of the kurtosis estimates. These distributional characteristics should be considered when selecting appropriate statistical techniques and interpreting the results of the analysis.

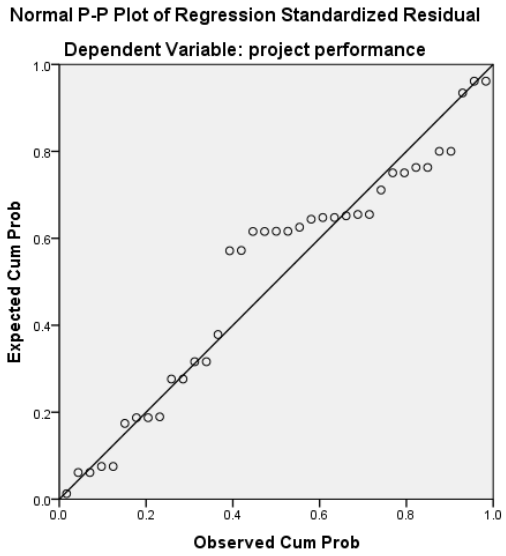


Figure 0-2 normal p-p plot of Regression Standardized Residual

The standardized residual plot is used in this study in order to evaluate the homoscedasticity assumption of the linear regression model. The standardized residual plot is diagnostic plot; the standardized residuals are calculated by dividing the residuals by their standard deviation.

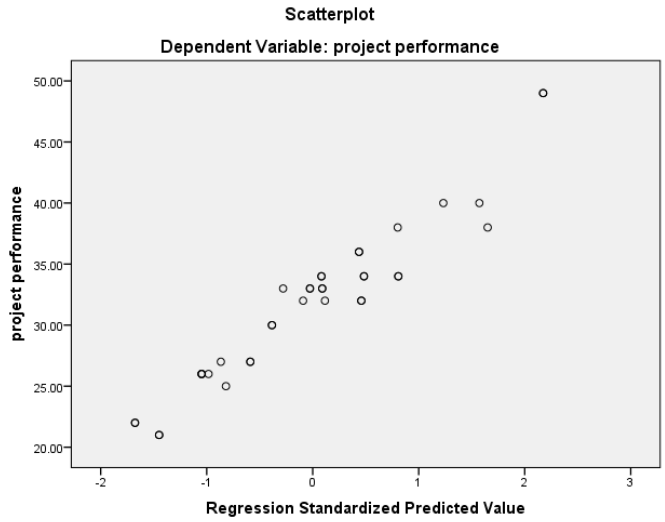


Figure 0-3 scatterplot of Standardized Residuals

As shown on above the scatter plot output appears that the spots are diffused and do not form a clear specific pattern. The absence of structured sequence either disintegrating or clustering from the source leads to a conclusion that the regression model doesn't have heteroscedasticity problem.

4.7 Multiple regression analysis

Table 0-9 model summary

Model Summary[b]

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Durbin-Watson
1	.961[a]	.924	.915	1.92140	2.425

a. Predictors: (Constant), stakholder related factor, Contractor related factors, client related factors, consultant related factor

b. Dependent Variable: project performance

Source: Survey Result, 2024

The R-squared value is 0.924, which means that the independent vanables (stakeholder related factors, contractor related factors, client related factors, and consultant related factors) explain

92.4% of the variance in the dependent variable (project performance). And adjusted R-Squared value is 0.915, which takes into account the number of independent variables in the model and provides a more conservative estimate of the model's explanatory power.

The standard error of the estimate is 1.92140, which represents the average amount of error in the model's predictions of the dependent variable. Durbin-Watson Statistic: The Durbin-Watson statistic is 2.425, which is close to the ideal value of 2, indicating that there is little evidence of autocorrelation in the residuals (the differences between the observed and predicted values of the dependent variable).

Overall, the high R-squared and adjusted R-squared values suggest that the model has a strong explanatory power, and the Durbin-Watson statistic suggests that the model's assumptions are not violated.

ANOVA[a]

Model		Sum of Squares	Df	Mean Square	F	Sig.
1	Regression	1438.187	4	359.547	.9731	.000[b]
	Residual	118.137	32	3.692		
	Total	1556.324	36			

a. Dependent Variable: project performance

b. Predictors: (Constant), stakeholder related factor, Contractor related factors, client related factors, consultant related factor

Source: Survey Result, 2024 **Table 0-10 ANOVA Table**

F-ratio is the ratio of the regression mean square to the residual mean square. It tests the overall significance of the regression model .p-value associated with the F-statistic indicates that the regression model is statistically significant at a very high level ($p < 0.001$), meaning that the independent variables collectively have a significant effect on the dependent variable.

Table 0-11 regression Coefficients

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.	Collinearity Statistics	
		B	Std. Error	Beta			Tolerance	VIF
1	(Constant)	1.136	1.710		.665	.0.112		
	Contractor related factors	.100	.074	.131	1.350	.003	.250	1.996
	client related factors	.018	.096	.024	.189	.013	.152	1.578
	consultant related factor	.221	.147	.230	1.499	.005	.101	1.892
	stakeholder related factor	.537	.111	.611	4.829	.000	.148	1.752

a. Dependent Variable: project performance

Source: Survey Result, 2024

The values of the unstandardized Beta Coefficients (B) indicate the effects of each independent variable on dependent variable. Furthermore, the values of the unstandardized Beta Coefficients in the Beta column of the Table 4.10 above, indicate which independent variable (determinants of delay) makes the strongest contribution to explain the dependent variable (project delay), when the variance explained by all other independent variables in the model is controlled. The t value and the sig (p) value indicate whether the independent variable is significantly contributing to the prediction of the dependent variable.

H1- *Contractor related factors is cause of road construction project delay on Beshale Condominium Asphalt Road Project.*

The contractor related factors unstandardized coefficient (B) 15 0.100, meaning a one-unit increase in contractor related factors is associated with a 0.100 increase in project performance, holding all other factors constant. The standardized coefficient (Beta) is 0.131, indicating that a one standard deviation increase in contractor related factors is associated with a 0.131 standard deviation increase in project performance. The p-value (Sig) is 0.003, which is less than the commonly used significance level of 0.05. This means the effect of contractor related factors on project performance is statistically significant at the 95% confidence level.

Odah & Battaineh,(2002) Identified poor project management and resource allocation by contractors as significant causes of delays in Jordanian construction projects, supporting the hypothetical correlation. (Choodhry & Lqbal, 2013)Similarly found that contractor inefficiencies, including poor risk management and scheduling, were critical delay factors in Pakistani construction projects

H2 *- client related factor is the major cause of road construction .project delay on Beshale Condominium Asphalt Road Project.*

The unstandardized coefficient (B) of Client related factors is 0.018. Meaning a one-unit increase in client related factors is associated with a 0.018 increase in project performance, holding all other factors constant.

The standardized coefficient (Beta) is 0.024, indicating that a one standard deviation increase in client related factors is associated with a 0.024 standard deviation increase in project performance. The p-value (Sig.) is 0.013, which is less than the commonly used significance level of 0.05. This means the effect of client related factors on project performance is statistically significant at the 95% confidence level.

Doloi, Sawhney, Lyer, & Rentala, (2012) Found that slow decision-making and financial issues from clients were major contributors to delays in Indian construction projects, aligning with the high correlation in the hypothetical result: (Assaf & Al-Hejji, 2006) also reported that client-related delays, particularly due to delayed approvals and changes in project scope, were significant factors causing delays in large construction projects in Saudi Arabia.

H3 *- Consultant related factors is the major cause of road construction .project delay on Beshale Condominium Asphalt Road Project.*

When we look at consultant related factors the unstandardized coefficient (B) 1s 0.221, meaning a one-unit increase in consultant related factors is associated with a 0.221 increase in project performance, holding all other factors constant. The standardized coefficient (Beta) is 0.230, indicating that a one standard deviation increase in consultant related factors is associated with a 0.230 standard deviation increase in project performance. The p-value (Sig.) 1s 0.003. Which is less than the commonly used significance level of 0.05. This means the effect of consultant related factors on project performance is statistically significant at the 95% confidence level.

Love, Edwards, & Irani, (2008) Highlighted that design-induced rework and errors by consultants significantly impact project timelines, consistent with the moderate correlation found in the hypothetical result. (Assaf & Al-Hejji, 2006)Also pointed out that slow supervision and quality inspections by consultants lead to delays, which aligns with the hypothetical correlation.

H4*- stakeholder related factor is the major cause of road construction .project delay on Beshale Condominium Asphalt Road Project*

The forth factor for this study Stakeholder related factors have The unstandardized coefficient (B) of 0.537, meaning a one-unit increase in stakeholder related factors is associated with a 0.537 increase in project performance, holding all other factors constant. The standardized coefficient (Beta) is 0.611, indicating that a one standard deviation increase in stakeholder related factors is associated with a 0.611 standard deviation increase in project performance. The p-value (Sig.) is 0.000, which is less than the commonly used significance level of 0.05. This means the effect of stakeholder related factors on project performance is statistically significant at the 95% confidence level.

Olader & Landin, (2005) found that community opposition and environmental considerations can cause delays, but these factors typically have a lower impact compared to client and regulatory delays, which is consistent with the moderate correlation in the hypothetical result. El-Gohary, Osman, & El-Diraby, (2006) similarly emphasized that while community and environmental concerns are important, their impact on delays is often less compared to other factors like regulatory and client-related delays.

This analysis shows that all four independent variables have statistically significant effects on project performance at the 95% confidence level the stakeholder related factor has the strongest impact, followed by the consultant related factor, contractor related factors, and client related factors.

The Collinearity Statistics (Tolerance and VIF) indicate that multicollinearity is not a major concern in this model, as all VIF values are below the commonly used threshold of 10.

Overall, this regression analysis suggests that effectively managing the contractor, client, consultant, and stakeholder related factors is crucial for improving project performance.

Hypothesis	Tool	Beta	Sig.	Outcome
H1-Contractor related factor is the major cause of road construction. project delay on Beshale Condominium Asphalt Road Project	Multiple Regression	0.131	0.003	Accepted
H2- Client related factor is the major cause of road construction. project delay on Beshale Condominium Asphalt Road Project	Multiple Regression	0.024	0.013	Accepted
H3-Consultant related factor is the major cause of road construction. project delay on Beshale Condominium Asphalt Road Project	Multiple Regression	0.23	0.005	Accepted
H4-Stakeholder related factor is the major cause of road construction. project delay on Beshale Condominium Asphalt Road Project	Multiple Regression	0.611	0.000	Accepted

Source: Survey Result, 2024 **Table 0-12 summery of hypothesis testing of regression.**

Chapter Five

Summary of findings conclusion and recommendation

This chapter deals with the summary of major findings of the study and conclusions drawn from the analysis made. Furthermore, based on the findings of the study, possible recommendations are made.

5.1. Summary of Major Findings

The main purpose of this study is to investigate the effect project participant performance and management at Beshale condominium asphalt road project. To examine the effect of factors of project delay, the specific objectives were formulated to investigate the determinants of delay in project progress.

Before going to the main analysis of the study, a reliability test was administered to check whether the questionnaire is reliable or not In this regard, as Table 1 illustrates, all the questionnaires were reliable and acceptable with total Cronbach's Alpha result of 0.874.

The demographic data provided indicates that the sample consists of a predominantly male population, with 59.5% male respondents and 40.5% female respondents. The majority of the respondents (40.54%) fall within the 18-30 age group, followed by the 30-40 age group (37.84%), the 40-50 age group (16.22%), and those above 50 years old (5.4%). In terms of educational background, the majority of the respondents (70.3%) hold a degree. When it comes to the respondents' positions within the projects, the majority (62.162%) fall under the "Other" category, followed by Site Engineers (18.919%), Resident Engineers (5.405%), Utility representatives (5.405%), Project Coordinators (5.405%), and Project Managers (2.703%). Regarding experience, the majority of the respondents (67.57%) have 1-10 years of experience, white 18.92% have 11-20 years of experience and 13.51% have 21-30 years of experience

In order to change the variables to continuous data, the average summative scores of the Liken items were computed to conform to the assumption. Then, a Pearson correlation test was conducted at a 95% confidence interval and a 2-tailed 5% confidence level The results show that contractor related factors have a strong positive correlation with client related factors (r-D.771),

consultant related factors (1-0.836), and stakeholder related factors (-0.851). These correlations are all statistically significant at the 0.01 level, indicating that when contractor related factors (such as performance, communication, and adherence to timelines) improve, there is a strong tendency for client satisfaction, consultant effectiveness, and stakeholder engagement to also improve

Finally, a multiple regression analysis was conducted to test the hypothesis. In this regard, Table 45 shows the results of multiple regressions. The result shows that the model tested is significant ($p < 0.000$) with the adjusted R square 0.915. This value indicates that 91.5 % of delay occurred is attributed to the four independent variables entered into the regression. The remaining 8.5% of the variance in project completion may attribute to other factors. Regarding the hypothesis as Table 4.6 illustrated, since the beta coefficients were found significant, the four hypothesis in the study are accepted. Additionally, the findings revealed that, stakeholder management is found being the most dominant factor in determining project delay of Beshale condominium asphalt road project.

5.2. Conclusion

The conclusions of the whole study was be made through comparison of the project objectives and the end results. The comprehensive aim of this study has been largely achieved in a number of ways. There are evidence has shown that Beshale condominium asphalt road projects completion are influenced by various determinants.

The study concludes contractor consultant client and stakeholders have huge impact on the project progress. The study found strong positive correlations between the various factors related to project success. Contractor-related factors, such as performance, communication, and adherence to timelines, were shown to have a robust positive relationship with client-related factors, consultant-related factors, and stakeholder-related factors. This indicates that when contractors perform well, it tends to lead to higher client satisfaction, more effective consultants, and greater stakeholder engagement.

Similarly, client-related factors, including clear project requirements, prompt decision-making, and fair payment terms, exhibited strong positive correlations with contractor performance, consultant effectiveness, and stakeholder involvement. This suggests that clients who actively

manage the project and maintain positive relationships can positively impact the overall project dynamics.

The analysis also revealed that consultant-related factors, encompassing expertise, responsiveness, and coordination abilities, are strongly and positively correlated with contractor performance, client satisfaction, and stakeholder engagement. This implies that competent and well-coordinated consultants can contribute significantly to the success of a project by facilitating effective collaboration between the various parties.

Lastly, stakeholder-related factors, such as community impact, regulatory compliance, and financial support, were found to have a strong positive relationship with contractor performance, client satisfaction, and consultant effectiveness. This indicates that engaged and supportive stakeholders can influence the overall project outcomes in a positive manner.

In summary, the study highlights the interconnected nature of the different factors involved in project success. Improvements in one area, be it contractor performance, client management, consultant expertise, or stakeholder engagement, tend to have a positive ripple effect on the other aspects of the project, underscoring the importance of a holistic and collaborative approach to project delivery.

5.3 RECOMMENDATION

Aligned with the above conclusion, the researcher proposes the following corrective measures that shall be considered by concerned parties.

As finding of the study shows Owner and External Stakeholder have vital role on the project delay so that the researcher recommend that to Focus on Improving Owner and External Stakeholder Management is respectable for better progress.

This can be done by:

- Implement measures to enhance coordination and communication between the contractor, owner, and utility providers to address the issue of "Lack of coordination with the contractor and utility providers"

- Develop a robust right-of-way acquisition and management process to mitigate delays related to "Right of way Casus"
- Streamline the owner's decision-making process and ensure timely approvals to address the "Slowness of the owner decision making process"
- Review and optimize the contract duration and requirements to align with realistic project timelines and capabilities.

In order to improve project progress by Strengthen Consultant Management it is recommended to

- Implement measures to ensure timely design submittal and approval processes to address the "Delay of design submittal from consultant".
- Enhance contract management practices to improve the "Poor contract management' by the consultant.
- Provide training or guidance to consultants to improve their experience and capabilities in construction project management.
- Improve communication and coordination between the consultant and other project stakeholders to address the "Poor communication and coordination of the consultant with other parties".

References

Adand, K. (2023, November 7). *Major type of project in construction*. Retrieved from https://www.getpowerplay.in

Admin. (2021, November 14). *Role of construction companies,consultant and clients in construction*. Retrieved from SANA Global Projects: https://www.sanaglobalprojects.com

Alemrew, & Mulugeta. (2013). Identifying factor contributing to road project delay in Ethiopia: Perspective from stakeholders and document analysis.

Assaf, & A.-H. S. (2006). Cause of Delay in large construction project. *int J project Managemet, 24*(4), 349-57.

(2023). *Beshale condominium asphalt road project Yearly report .* Addis ababa: Gogot consulting engineers.

Bourne, L. (2016). Stakeholder Relationship Management:. *A Maturity Model for Organizational Implementation*.

Bryman, A. (2008). Social research methods 3rd edition.

Burke, R. (2013). Planing and control Techniques. *PROJECT MANAGEMENT*.

Canive, T. (2020). *OSINNAPS*. Retrieved from Online Project management.

Choodhry, R. M., & Lqbal, K. (2013). Identification of risk management system in construction industry in Pakistan. *Jornal of mamagement in engineering,*, 29(1),42-49.

Doloi, H., Sawhney, A., Lyer, K., & Rentala, S. (2012).). "Analysing factors affecting delays in Indian construction projects. *International Journal of Project Management* , 30(4),479-489.

El-Gohary, N., Osman, H., & El-Diraby, T. E. (2006). "Stakeholder management for public-private partnerships. " *International Journal of Project Management,*, 24(7), 595-604.

Firdisa. (2018). The cause of oromia regin road construction delay. *AAU Repostery*.

Freeman, R. E. (1984). Strategic Management: A Stakeholder Approach.

G. M.-A., K. C., & E. P. (2020, August). Delay causes in road infrastructure projects in developing countries. pp. 19(2):220-234.

Heagney, J. (2016). Fundamentals of Project Management. *AMACOM*.

Henderson, L. (2023, December 19). *Ten key project management knowledge areas* . Retrieved from (PMBOK): https://niftpm.com/blog/project management knowledge areas -pmb ok/

Hillson, D. (2012). Practical project risk management. *The ATOM methodology management concepts*.

HOWELL, L. a. (2002). The underlaying theory of project management is obsolete. *Proc. of the project managment inistitute research conference*, (pp. 293-302).

Hyvari. (2006). Success of project in different organizetional conditions. *Project Management Jornal*, 31-41.

Jemal Mustafaev. (2015). *prject scope management.* london: Tayler & Francis group.

Kaliba.c, Chabota.k, Mundia.M, & Kanyuta.M. (2009). Cost escalation and schadule delays in road construction projectin Zambia. *International jornal of project management*, 522-531.

Kerzner, H. (2017). A Systems Approach to Planning, Scheduling, and Controlling. *Project Management*.

Kerzner, H. (2017). Project Management. *(A Systems Approach to Planning, Scheduling, and Controlling*.

Khahro, S. H., & Memon, Z. A. (2018). Non excusable delays in construction industry: A causal study. *Engineering, Thecnology & applied science research*, 3561-64.

Kometa, s., Olomolaiye , P., & Harris, F. (1994). Construction cliants influencing project consultant. *Journal of construction management and economics*, 433-443.

Kumar. (2020). Delay in Construction of High way and Expressway projects in India.

kumar, R. (2010). *researech methodology.*

Larson, E. W. (2011). *project management the managerial proces.* New York,: McGraw-Hill/Irwin,.

Larson, E. W. (2018). Project Management. *The Managerial Process. McGraw-Hill Education*.

Latif,Q.B.a.i, Saadi,A.M.D.A, & Rahman,i.a. (2019). Identifcation of delay factor in Oman Construction Industry. *International Jornal of Sustainable construction engineering*.

Lock, D. (2020). Project Management. . *Routledge*.

Love, P. E., Edwards, J. D., & Irani, Z. (2008). "Forensic project management: An exploratory examination of the causal behavior of design-induced rework. " *IEEE Transactions on Engineering Management,* , 55(2), 234-247. .

Masafari.A. (2015). An investigation in to factors causing delays in road construction projects in Kenya. *American jornal of civil engineering*, 51-63.

Mekonnen, & Asfaw. (2013). Couse of Ethiopian road construction project delay.

Negesa.A.B. (2022). Assessing the cause of time overturn in bulding and road constructionprojects. *jornal of engineering*, 1-14.

Nejat.Z. (2018). *Delaysin_Construction_Project_Twana_Ahmed*. Retrieved from www.academia.edu: http://www.academia.edu/36230092

Odah, A. M., & Battaineh, H. T. (2002). Causes of construction delay: Traditional contracts. *International jornal of project management*, 20(1), 67-73.

Olader, S., & Landin, A. (2005). Evaluation of stakeholder influence in the implementation of construction projects. " *International Journal of Project Management,* , 23(4), 321-328.

Ololade. (2018). factor affectes road construction progress in nigeria.

PMI. (2013). *project management body of knowledge.* Beijing: 5th edition, Publitiong house of electronics industry.

Prakash B Rao, c. j. (2014). Causes of delays in construction projects. *International Jornal of current research*, 7219-7222.

s. i., & Sedar . (2012, February). Roal of construction industryin economic development of turkmenistan. *29*(2), 883-890.

Sabine, L. B. (2004). Hand book of stastical analysis using SPSS.

saunders, Lewis, & Thornhill. (2019). *Research Methods for business students 8th edition.* New york.

Seboru.A. (2015). Factors causing delays in road construction projects in Kenya.

Sekaran. (2003). Research methodology and research method.

T. A., & B. D. (2018). Retrieved from http://www.researchgate.net: http://www.researchgate.net

Tawfek.A.M, & Bera.D.K. (2018). Delay in construction project: Types causes and effects.

The NEA research bulletin. (1960). *Bulletin* (Vol. 38:99). the NEA.

Annex

Questionnaire

Dear Sir/ Madam

This questionnaire will be used for conducting research for the Partial fulfillment of master's degree in project management in St. Mary's University.

I, Bethelhem, with the guidance and support of my advisor is here to conduct a research survey on the Topic: "Cause of project delay on the road project in Addis Ababa: The case of Beshale Condominium Asphalt Road Project".

This Questionnaire is designed in two parts. Part one is designed to collect general information and Part two is designed to find out Factor affecting Beshale condominium road project progress . I kindly request you to respond to all questions and be assured that there is no right or wrong answer. Your honest and full response is invaluable for the success and accuracy of this Study. I am very grateful for taking your time and I like to assure you that your response will be kept confidential and will only be used for this Research purpose.

Thank you in advance,

Section I- Respondent Background

1. Gender: Male ☐ Female ☐

2. Age: ----------Years

3. Level of education:

Less than diploma ☐ TVET/diploma ☐ Degree ☐ Masters ☐

4. Respondent poison in the company

Project Manager ☐ Resident Engineer ☐ Supervisor ☐ Site Engineer ☐
Counteract Administration ☐ Project Coordinator ☐ Other, specify _____

5. Which of the stakeholder are you? (Please choose one).

Client ☐ Consultant ☐ Contractor ☐ Others ☐

6. For how long have you worked in construction industry? (In Years) _____Years

Section II: Please, tick "✓" in the appropriate columns for your response for closed - ended questions among the provided alternatives that can contribute to assessment of major causes of road construction project delay on Beshale Condominium Asphalt Road Project. Using the following scale:

1= Very Low, 2= Low, 3= Neutral, 4= High, 5= Extremely High

Cause of project delay In Categories		Measurement Scale				
		1	2	3	4	5
A	**How do you rate the contribution of Contractor's responsibility related factors on Road project delay?**					
1	Improper construction methods implemented by contractor					
2	Inadequate contractor experience causing error					
3	Ineffective planning and scheduling of project by contractor					
4	Delays in sub-contractor's work					

5	Shortage of site labor					
6	Coordination problems with others					
7	Shortage of materials/Equipment on site					
8	Delay in commencement					
9	Reworks due to defects/ in construction materials					
10	Financing by contractor during construction					
11	Contractors inefficiency in handling resources					
12	Lack of adequate training on construction management techniques for Contractor‘s staffs					
13	Inadequate experience of contractor					
B	**How do you rate the contribution of Owner responsibility related factors on Road project delay?**					
1	Slowness of the owner decision making process					
2	Change orders by owner during construction (variation)					
3	Owner financial problems/client finance/economic ability for the project					
4	Right of way Casus					
5	Lack of coordination with the contractor and utility providers (Ethio Telecom, AWSSA& EEPC)					
6	Land Acquisition, Resettlement and Compensation Related Causes					
7	Land Acquisition, Resettlement and Compensation Related Causes					
8	Local Authority (werda, sub city &Mire office)					
9	Unrealistic contract duration and requirements imposed by owner					
10	Type of project bidding and award (selection based on least bidder)					
11	Poor communication & coordination of the owner with other parties					
12	Delays in contractors progress payment by owner					
13	Delay in approval of completed work by owner/client					
14	Poor communication and coordination of the owner with other parties.					
D	**How do you rate the contribution of Consultant responsibility related factors on Road project delay?**					

1	Delay of design submittal from consultant					
2	Delay in approving major changes in the scope of work					
3	Inspection delays (delay in performing inspection and testing by consultant)					
4	Lack of experience of consultant in construction projects;					
5	Poor communication and coordination of the consultant with other parties					
6	Mistakes and discrepancies in design documents					
7	Rework due to change of design or deviation order					
8	Wrong or improper (poor) (inappropriate) design					
9	Lack of consultant's site staff					
10	Inadequate experience of consultant;					
11	Poor contract management					
12	Inaccurate site investigation					
E	**How do you rate the contribution of stakeholders on Road project delay?**					
1	Opposition and protest of community against the project.					
2	Community rising concern on the project during the planning and permitting stage					
3	Land acquisition ,compensation and relocation issues					
4	Engaging with local community to understand their need and concern					
5	The complex process which involves multiple agencies or encounters unexpected regulatory					
6	The community good willing to cooperate for the construction process.					
F	**Project performance indicator**					
1	The project is completed on time					
2	The project achieved its schedule (Scope)					
3	The project meets its specifications					
4	The project is completed within budget					

Section III: write your response in the space provided for open-ended questions.

1. What are the main reasons of road project delay?

_____
_____
_____
_____
_____

2. If there are any additional factors that have an impact on construction project delay you can list on the space provided below.

_____
_____
_____
_____
_____
_____