DETERMINANT OF COST AND TIME OVERRUN IN CONSTRUCTION PROJECTS (CASE OF HEBRON CONSTRUCTION COMPANY.)

BY BNORAYEHU SHMELS

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ADVISOR: MESFIN TESFAYE (PhD)

A THESIS SUBMITTED TO ST .MAYR'S UNIVERISTY SCHOOL OF GRADUATED STUDIES IN PARTIAL FULFILMENTS OF THE REQUIRMENTS FOR MASTRS OF ARTS DEGREE IN MASTERS OF BUSSINESS ADMINISTRATION

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APPROVED BY BOARD OF EXAMINERS

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DECLARATION

I, The Undersigned, declare that this thesis is my original work, prepared under the guidance of Dr. Mesfin Tesfaye. All sources of material used for thesis have been duly acknowledged. I further confirm that the thesis has not be summited either in the part or in the full to any other higher learning institution for the purpose of earning any degree.

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ENDORSEMENT

This thesis has been summited to St. Mary .University, School of Graduate

Studies for examination with my approval as a university

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ACRONYMS

TOR= Time overrun

COR=Cost overrun

COVID-19=Corona virus disease

ABSTRACT

The study aims to identify determinate of cost and time overrun the case of Hebron Construction Company. The study was look sociopolitical, economic, and managerial and construction technique and design changes are major causes for the occurrences of cost and time overrun. This study also used descriptive and explanatory research design and quantitative research approach were used and the primary sources of data were collected from 74 respondents in Hebron Construction Company. The sampling techniques used in this study were census sampling method. For data analysis Multiple Regression and Descriptive statistics were used. The result of this study were indicated that sociopolitical, economical. managerial and construction techniques and design changes were identified as causes of cost and time overrun in Hebron Construction project .Finally this study recommended that Hebron Construction Company the concerned body to provide a good planning and scheduling are continuing process during construction and match with the resources and time to develop the work avoid cost and time overrun.

***Key words**; - Likert scale, cost overrun. Time overrun, Construction Project, Political Instability. Design Change.*

Chapter one

Introduction of the study

This chapter is explaining about the general idea and relevance of the study.it defines the background of study, statement of the problem, objectives of the study .research question, significance of the study. Scope and limitations of the study and organization of the study.

1.1 Back ground of the study

Current practice of the construction industry shows that rare event most construction project are completed on the scheduled time. Budgeted cost and desired quality. The main reason behind is the construction industry's nature is more vulnerable than other industries. This is believed to be due to complex and dynamic nature of construction projects, as well as the involvement of a large number of participants and organizations with varying goals and priorities. As a result. Claims and disputes become common phenomena especially on large civil engineering contracts. The impact of construction delay does not just affect the construction industry alone but touches the whole economy of concerned countries (Teo and, Loosemore (2001).

Even though it's crucial, most building projects (in both developed and developing countries) experience delays. Which makes it a serious issue (Sanni-Anibire, M. O., Mohamad Zin, R., & Olatunji, S. O. (2022). However, one of the biggest issues facing the worldwide construction sector is construction delay Khumalo, and Choga, I. (2017). Construction projects frequently encounter delays in their completion, which has long been an issue for the sector and is frequently reported in various nations (Mohammed, Z., & Bello, U.).The handling of a construction project may be delayed due to unanticipated ground conditions, extra work, changes, suspensions of work, bad weather, etc. Such delays can be identified and taken into consideration depending on their causes and effects. Project delays in the building industry have detrimental implications. Delays can have a variety of negative effects, including late completion, disagreements,a loss of the construction company's reputation, the loss of future project opportunities, a loss or reduction in profit margins, an organization's insolvency, the termination of the contract, etc.

The Ethiopian construction industry is expected to expand by 4.7% in real terms in 2021-up from a growth rateof 3.1% in 2020.construction activities held up relatively well despite the outbreak of the Corona virus (COVID- 19) pandemic. Even though Ethiopia has its own several ancient civil- stations, from the 60s there is a great influence by the international style of architectural design.

The demand for housing and project management services is rising as Ethiopian development grows more complex. All stakeholders engaged in the building process may find it difficult when project management is usedto track progress against deadlines, costs against bids or budgets, and quality against specifications. Due to considerations including construction complexity, the involvement of many interest groups such project owners, end users, consultants, contractors, financiers, materials, equipment, and project funding, very few projects in Ethiopia are successfully finished on time and within budget. The climatic conditions, the political, economic, and legal environments. Despite predictions that the construction industry will expand this year, the uncertain political environment that has been established poses a potential downside risk. due to the violence that broke outin November 2020 between the Ethiopian federal government and the armed rebel group of the tigray area. This would undermine investor confidence, which would have an impact on the economy and the building sector.

In Ethiopia most of the project exceed their completed time and cost higher than their allocated contract cost and budget. Time and cost overrun in this context is found to be extremely significant and serious problem in Hebron Construction Company. Hebron construction established on June 2002 E.C, currently our company is Grade one General Constructor to execute any construction and related works. Hebron Construction is one of the emerging construction firm in Ethiopia that aim to provide a wide range of civil works and related infrastructure development service such as construction of irrigation, buildings, roads, water related construction works and other development works. In Hebron construction almost 100% of the project is facing the time and cost overrun for the last decade which makes the research more significant to solve the problem in Hebron Construction Company.

1.2 Statement of the problem

There have been numerous studies done on the following elements that affect cost and time overruns in building projects in both developed and developing nations. More of these studies should be conducted in developing nations, particularly Egypt, to address the serious issue of cost overruns in the building industry. Previous scholars looked at the variables influencing construction prices from various angles. However, there are many cost aspects to take into account depending on the country.

Following the review of the literature, the researcher gleaned the following information: noted that bad contract management and changes in material pricing are the two main contributors to cost overruns in building projects in Iraq, followed by a poor evaluation of the designs and changes in design. Ekab(2016).

Failure to identify the correct contractor and mistakes in computation are the three main causes of construction project delays that result in cost overruns in Sweden.

Furthermore, noted that the most influencing factors are client demands on quality, poor design and delays in design, unrealistic contract duration and requirements imposed lack of experience, late delivery of materials and equipment, relationship between management and labor, fluctuation of material prices, cash flow and financial difficulties faced by contractors, and shortages of materials Malaysian cost overrun impacting variables. Memon, A. H., (2013).

In Malaysia, a study looked into large projects and found that the most significant factors were the contractor's cash flow and financial challenges, their poor site management and supervision, their lack of contractor experience, their lack of site workers, and their incorrect planning and scheduling, while changes to the project's scope and frequent design changes had the least impact on construction costs Memon, A. H., (2010).

Based on the aforementioned prior study, the motivation for the current study was to identify key influencing elements or bottlenecks that have a significant impact on the occurrences of cost and time overruns in building projects. The difficulties for cost overrun were thought to be sociopolitical factor due to political interference andinstability, economic factor due to economic instability, exchange rate fluctuation, fluctuation in raw material price, managerial factor due to delays in decision making process, poor project management leadership style, andowners interference, construction techniques and design factor due to frequent design change, design error and mistakes, unfinished design when the tender was submitted,

The causes of cost and time overruns in building contractors were determined to be inadequate design, delays in the design process, risk management strategy, time limits for payment, financial component owing to delay in progress payment by customers, and poor financial control on site. The researcher is looking into the causes of cost and time overruns in construction industry to help with the current study.

The primary reason for conducting this study are to fill a knowledge gap that none of the preceding studies had addressed, particularly those related to cost and time overruns in Hebron Construction Company. Therefore, by identifying instances of cost and time overrun, facilitating suitable action to avoid the issue, and attempting to address the following fundamental research concerns, this study will prove crucial in filling the knowledge gap;

Therefore, by identifying the causes that lead to cost and time overruns on Hebron construction projects and facilitating relevant steps to avoid their occurrence, this study may prove crucial in closing the knowledge gap. It also aims to address the following fundamental research questions;

1.3 Research Question

The research will attempt to assess cost and time overrun in Hebron construction company.by trying to address the following question

1, To What extent socio political factors affecting cost and time overrun on Hebron Construction Company?

2, To what extent What are the Economic factors affecting cost and time overrun on Hebron Construction Company?

3, To what extent What are the managerial factors affecting cost and time overrun on Hebron Construction Company?

4. To What extent what are the construction techniques and design Change affecting cost and time overrun on Hebron Construction Company?

1.4 Objective of the Study

1. 4. 1 General Objective

The general objective of this study is to identify factor affecting time and budget overrun in construction projectsin the case of Hebron Construction Company.

1.4.2 Specific Objective

1. To investigate socio- political factors affecting cost and time overrun on Hebron Construction Company.
2. To determine Economic factors affects cost and time overrun on Hebron Construction Company.
3. To assess managerial factors affects cost and time overrun on Hebron Construction Company.
4. To examine construction techniques and design change affects cost and time overrun on Hebron Construction Company.

1.5 Significant of Study

The study is very important to the fill researcher gap by finding out the factor affecting of cost and time overrun in construction which affect the overall economies of the country.

The outcome of this study would help the government, policy maker and construction company's on the contribution of minimizing or avoiding of cost and time overrun of construction in Ethiopia.

The research will do for the purpose of filling knowledge gap and have several of significant which considered important to contractors, clients, consultants and all parties involved in construction projects about ways of improving their current methods of time and cost management.

In Hebron Construction Company. Have no well-documented research on assessing construction cost and time overrun. As a result, this research will be bridge to fill the gap in the literature about assessing construction cost and time overrun.

This research will also serve as a resource base to other scholars and researchers interested in caring out further research in this topic it will assess how to minimize or avoid additional cost and time in the construction project on Hebron Construction Company.

1.6 Scope of Your Study

This study would be focuses on the factors that affect of construction cost and time management of project performance in Hebron Construction Company. The scope of the study was focus on two major areas; geographical and contextually areas.

Geographical scope: Geographically the research is limited to Hebron Construction Company. And data collection will be limit in head offices and project sites.

Sectorial scope: There are various sectors in construction industry such as road, water works and bridge that are managed by different governmental offices. Hence sectorial scope of this research is building and road construction project,

Project stage scope: factors affects cost and time overrun in construction project can be assessed at different stages of projects relating to the objectives of stakeholders particular to the stage. Each stages has its own deliverables that can be reviewed whether the stage's goal is attained or not by using various measurement. Therefore, project stage scope of the research is limited to construction stage of the project.

Contextually cost and time management practice has effect on project performance. There will be identified different kinds of factors in socio political .economical, managerial practice and construction techniques.

Accordingly, the study was intends to assess the factors affecting cost and time overrun in project of Hebron Construction Company only.

1.7 Limitation of The Study

The limitation of this study would be it conducts only on construction project that are carried out by Hebron Construction Company. And short time given to the research limit the research to go to a large scope.

1.8 Definition of Terms

Construction cost overrun means at any particular time, the amount by which total project category costs exceed Budgeted category cost.

Construction time overrun is a situation in which projects due to some factors related to contractors, clients, consultants and other fail to be completed in the contractual or agreed period.

Grade one general contractors are biggest construction contractor's classification in Ethiopia. Who qualified to undertake construction of building, roads railways, bridges, airports, dams and other related works?

1.9 Organization study

The research is generally organized in to five chapters and reference, chapter one deals with introduction, which talks about the general idea and relevance of the study. It defined the background, problem of statement, and the general and specific objectives of study, significant of study, scope and limitation of study. The second chapter of the study reviewed related literatures regarding the topic area and provided exhaustive information about the main subjects of the study by reviewing the works of different authors. The third chapter explained about the methodology implemented in order to come out the findings of the study. The chapter explained about research design and approach, sampling techniques and size, source of data and collection , Data analysis techniques, validity and reliability of study and Ethical consideration. The analysis and results section, which is covered in Chapter 4, includes analysis, and a response rate for the questionnaire. The study's summery, conclusion and recommendation are included in the fifth and final chapter, along with suggestions for additional research.

Chapter Two

Literature review

This chapter lists earlier writings on the topic of time and expense overruns and offers a brief discussion of earlier conclusions. The chapter also discusses the conventional classification that has been applied in this field. The definitions, factors that contribute to time and cost overruns, their impacts, and possible remedies are given and analyzed.

Overview

The economy of every nation is significantly influenced by the construction sector. It is one of the components that provide essential elements for the growth of any economy.

The economy's construction sector is a significant contributor, and it significantly affects the productivity and efficiency of other sectors as well. Without the creation of infrastructure facilities, considerable investment in themanufacturing, agricultural, or service sectors is impossible. The improvement of project performance through cost minimization, completion of projects within their allotted budget and time restrictions, and improvement of quality is one of the key aims and policies of any public or private sectors dealing with the execution of projects.

The two main issues in construction management are time and money. Numerous factors, which vary depending on the types of projects, locations, sizes, and scopes, are related to delays and cost overruns. It is a widespread problem in the global construction sector, particularly in underdeveloped nations. Large construction projects have drawn the interest of many scholars due to their complexity and financial requirements.

2. 1 Theoretical Review

2.1.1 Time overrun

A condition when a construction project does not complete within the designed schedule" is the definition oftime overrun. The framework is used to identify the key elements responsible for time overruns.

In Hong Kong to assess and determine the relative relevance of major elements that contributed to construction project delays. In two categories—(a) the involvement of the clients, consultants, and contractor in the local construction project and (b) project type—they assessed and compiled a list of the primary reasons for delays.

According to the findings of this study, there are five main reasons why construction projects get behind schedule poor site management and supervision, unanticipated

According to contractor, consultant, and client perceptions identified the factors that contribute to time overruns as payment delays, weather conditions, inaccurate planning and scheduling of the project by contractors, inexperienced technical staff of contractors, excess work on their plates,a labor shortage, a delay in approving extra work, and poor site management and supervision of contractors. In effective time management. , Patil, A. P. (2017).

A quantitative analysis in Jordan to determine the reasons why building projects are delayed. The designers, user changes, climate changes, site conditions, delayed material delivery, prevailing economic conditions, and an increase in quantity were compiled as the seven main causes of building delays.

A Delay is when it goes beyond either the contract's stipulated completion date or the date on which the parties agreed the project would be delivered. This essay seeks to reduce the factors that contribute to build delays. Many things can cause a project to be delayed, including insufficient project management, missing finances, modifications to the drawings, and ineffective communication. Rajawat, B. S., & Mudgal, B. P

This study focuses on unforeseen issues that frequently caused unwelcome delays in project completion during the conception, planning, and construction phases. In Saudi Arabia, a survey was carried out to identify the precise causes of project delays. This was accomplished byconducting a critical examination of the literature and a survey of consultants, project

managers, and engineers involved in construction projects in order to get their comments. Major delay causes have been identified as the significance of the project owner's involvement, contractor-related issues, financing-related issues, materials- related issues, and design documentation. Shabbab Al Hammadi, M. Sadique Nawab (2016).

According to their similarity in origin, classified twenty-one factors causing time delays into four different groups (contractor, consultant, client, and external environment-related factors) (Shambel and Dixit, 2018).In their study on the assessment of time overruns in construction projects in the city. There were numerous factors that were not accessed since not all of the components that were present in the study domain were addressed. For instance, despite their negative effects on project timeline performance, he did not take into account the material, labor, equipment, financial, government authority, social, and economic aspects.

Additionally, Siraw's study only accessed around 29 parameters that contributed to project time delays; these factors were not checked for similarity, making it challenging to determine the severity of the factors by group. The work of Siraw lacked inclusivity, much as the study done by Shambel and Dixit which was done on construction projects throughout the city.

As a result, the current study sought to uncover both already-existing and recently-emerging elements that could be contributing to the city's construction projects' schedule overruns. Additionally, the most significant causes of the given issue are determined and prioritized according to the severity of those causes. Last but not least, workable corrective actions are suggested to decrease the risky effects of schedule overrun on the overall success of construction projects in the city.

2.1.2 Cost overrun

Cost management is a crucial element in determining the success of a project and a crucial instrument in regulating and enhancing the cost performance of construction projects. Cost management aids in keeping the project within its allocated spending limit. Cost overruns in projects are frequently caused by poor cost management. Budgeting, estimating, cost

planning and control, cash flow forecasting, cost code system, financialcost reporting, and judgment are key cost management approaches. A project budget's overall planning process iscrucial because it assesses the financial effects of the plan and offers financial input so that it may be monitored and adjusted. looked into a number of factors that can cause construction projects to go over budget, including poor project planning, construction delays, scope changes, poor planning and implementation, lack of equipment and raw material supply from contractors, lack of resources (such as power, money, and associated auxiliaries), adelay in government decision-making, and the ineffectiveness of specific coordinating bodies. Morris, S. (1990).

Conducted research on the difference between the estimated and actual costs of public works projects. His goal was to determine whether the real cost and predicted cost differed in any way. He used a variety of techniques and discovered that technical, economic, psychological, and political issues all play a rolein the discrepancy between real and expected costs. He deduced from various considerations that the actual cost of every infrastructure project will exceed the estimated cost. He continued by saying that strategic deception is the primary cause of cost underestimation, rather than just error. Flyvbjerg, B., Holm, M. S., & Buhl, S. (2002).

Looked at 42 key variables that affect construction costs in Saudi Arabia. The study came to the conclusion that incorrect planning, poor financial control on site, lack of experience managing contracts, and material costs are factors that contribute to high construction costs after using severity index to gauge their relative importance for owners, consultants, contractors, and combinations of respondents. Bubshait, A. A., & AL-Juwairah, Y. A. (2002).

In Turkey, identified 40 characteristics that contribute to cost overruns in residential project building. The main causes are poor planning, incorrect project cost estimates, high costs of necessary resources, a shortage of skilled labor, high costs of building supplies, and expensive land prices. Durdyev, S., Ismail, S., & Bakar, N. A. (2012).

Discovered a qualitative study methodology to gather crucial data on the primary causes of cost overruns in building construction projects.The respondents ranked the issues in order of their perceived importance, and the results suggest that changes in material prices, a lack of prior experience with contract work,a lack of time, and incomplete designs are the main causes of cost overruns. Kasimu, M. A. (2012).

The top five factors influencing cost overrun in construction projects, are economic instability, political condition, material price volatility, level of competition, and currency exchange. Shete, A. N., & Kothawade, V. D. (2016).

Questioned construction experts and contractors. It was determined that the contractors and consultant listed the following as the top ten most crucial factors: subcontractors, poor planning, sluggish decision-making, insufficient contractor experience, financing, and payments. necessary changes to the scope of thework. Odeh, A. M., & Battaineh, H. T. (2002).

About 150 respondents were questioned to determine the reasons why construction projects in Malaysia go over budget. He looked at the top 10 delays' causes out of a total of 28 reasons in this study. The following list is the top ten causes: Poor planning, poor site management, inexperienced contractors, inadequate client funding and payments for completed work, issues with subcontractors, a lack of materials, a labor shortage, equipment availability issues, and mistakes made during the construction stage are all factors that should be addressed. Sambasivan, M., & Soon, Y. W. (2007.

Infrastructure projects built in Ethiopia with contract values over 100 million Ethiopian Birr are reportedly subject to an average time delay of 175%, according to a study by (Solomon et al, 2021). Some projects can go beyond budget by up to 327% in terms of time, which has a sizable impact on costs. Construction projects with contract values between $50 million and $100 million also lag beyond schedule by 300%.

2.2 Factor leading to cost and time overrun in construction industry

The causes of differences in the project's expected cost, also known as the planned cost (PC), and actual cost (AC), are numerous and will be discussed in more detail later. As a result, the researcher evaluated numerous studies that addressed the causes of cost and time overruns in construction projects. According to numerous studies, 90% of construction projects underestimate costs, and this figure rises in underdeveloped nations due to a lack of project management expertise. Therefore, a variety of factors that vary from project to project and location to location might result in cost and time overruns. . Many earlier research will be

examined, cost overrun will be detected, and its causes will be clarified Ammar, M. et al, (2009).

An unanticipated expenditure that exceeds the budgeted amount because the real cost was underestimated when budgeting is referred to as a cost overrun, cost rise, or budget overrun. Cost escalation, which is used to representan anticipated increase in a planned cost owing to factors like inflation, should be distinguished from cost overrun

2.2.1 Socio political factors

While bureaucrats are recruited by the government to carry out these policies, politicians are chosen by the general public to make decisions about public policy, including the delivery of public projects. Politicians may be compelled to raise the quality of public projects that could increase their chances of gaining votes when they face intense political competition in their communities. As a result, they might try to get beyond obstacles like the corruption, indifference, or indifference of officials. There is evidence that political rivalry can enhance the completion of public project Markus and Tanis,(2010).contend that efforts to establish international regimes or, more broadly, institutional arrangements in international society, are dominated by project management techniques that are crucial but poorly understood in deciding whether such efforts succeed or fail. In order to distinguish between the three types of leadership that frequently participate in efforts to construct international institutions, structural leadership, entrepreneurial leadership, and intellectual leadership, an analysis of the nature of project management serves as a springboard. Holland et al , (2009).

2.2.2 Economic factors

Reaffirm that the political climate has an impact on how a project is built. Chism, N., & Armstrong, G. (2010). Political stability was one of the twenty-seven key success variables that identified in their analysis of sets of critical success elements in sixty-three articles. Fortune, J., & White, D. (2006).

shifting government policies are a significant external risk factor that works against projects' success. The amount of overall economic activity and the resources available for building are referred to as economic environmental concerns.

124 claims linked to the spectrum of the projects or typical project to analyze the variation and claims in construction projects in Dubai and Abu Dhabi in the United Arab Emirates. He came to the following conclusions: 1) The design team should be given a reasonable amount of time to createcontract documents that are clear and complete and have no or few errors and discrepancies; 2) Effective quality control mechanisms and techniques should be established to reduce errors, mismatches, and discrepancies in the contract documents; 3) Special contracting provisions and practices should be added to the contract document; and In order to handle the stricter scheduling constraints, a strategy must be implemented. Memo, Rahman, and Azis ,(2012)

Identified a number of factors that contribute to building project delays in Saudi Arabia, including inadequate labor and design flaws as well as inadequate drawing preparation and design approval processes. Sultan, B., & Alaghbari, W. E. (2014).

To execute projects on time and within the initial budget projected is a problem that construction companies throughout the world frequently face. A key element and indicator of project success is frequently the timely completion of projects. The utilization of projects as pillars in an organization's strategic management has drawn more attention in recent years Weiss, J., & Potts, D. (Eds.). (2012).Any project's success is greatly influenced by how long it takes to complete and how much it costs, from beginning to end. This directly affects management choices including budgets, goals, and standards Seddon, J. (2008).

In a study on the reasons behind delays in construction projects in Kuwait, discovered that: Slow financial and payment procedures; Slow decision-making; Limited authority among supervision staff; Risk allocation primarily on the contractor; and Lack of coordination of design drawings were the main culprits. Al Tabtabai, H. M. (2002). In a research of time and cost performance in construction projects in Malaysia found that just 21% of public sector projects and 33% of private sector projects were finished on time. Memon, A. H., Rahman, I. A., & Azis, A. A. A. (2012).

2.2.3 Managerial factor

The analysis of factors indicated that main factors affect cost and time overrun in construction of residential project Managerial factors (inappropriate project cost estimation,

improper planning, and high cost of required resource, lack of skilled person, Durdyev, S., Ismail, S., & Bakar, N. A. (2012). *1*(1), 3-12.

A cost and time overrun also known as a cost rise or budgeting overrub , entails unexpected costs incurred due to an underestimation of actual cost during budgeting, Flyvbjerg, B. (2002).

2.3 Empirical literature review

Numerous studies on the causes of cost and time overruns in construction projects have been conducted in both developed and developing nations. They are summarized here. More of these studies should be conducted in developing nations, particularly Egypt, to address the serious issue of cost overruns in the building industry. Previous scholars looked at the variables influencing construction prices from various angles. However, there aremany cost aspects to take into account depending on the country. Following the review of the literature, the researcher gleaned the following information:

While noted that inadequate evaluation of drawings and changes in design are the primary causes ofcost overruns in building projects in Iraq, poor contract management and fluctuating material prices are also significant contributing factors. (Ekab ,2009).

A Number of factors, including decision-making regarding tenders that depend on the size of the contractor, contractor's classification status, and type of main client, corruption in land sales, and the government's subpar role in monitoring material prices, contribute to cost overruns in construction projects in the Kingdom of Saudi Arabia. Alfouzan (2016).

However the delay in project handover is the sole thing that can lead to cost overruns in Bosnia and Herzegovina. Žujo, V. & Amel et.al (2010). In addition, found that the lack of construction cost data, the location of the project, the economic stability of Nigeria, the scarcity of materials, government policies (laws and regulations), the dominance of foreign firms and aids in the construction industry, and the lack of material shortages are the junior factors that lead to cost overruns in Nigeria. Ameh, A. A. (2010).

Failure to identify the correct contractor and mistakes in computation are the three main causes of construction project delays that result in cost overruns in Sweden. Gajewska, E., & Ropel, M. (2011). Furthermore noted that the most influencing factors are client demands on quality, poor design and delays in design, unrealistic contract duration and requirements

imposed lack of experience, late delivery of materials and equipment, relationship between management and labor, fluctuation of material prices, cash flow and financial difficulties faced by contractors, and shortages of materials are the most influencing factors in cost overrun and time overrun in Malaysia. Ismail, I., Memon, A. H., & Rahman, I. A. (2013).

Contrarily noted that Croatia's lack of experience; design mistakes, scheduling blunder, and failure to adhere to contractual quality criteria were all to blame. Banaitiene, N., & Banaitis, A. (2012).. In addition noted that the lack of project management throughout execution—including inadequate and ineffective labor, delays, changes in the scope of work and the project's location, law and order—is one of the main causes of cost over runs in Uganda Apolot, S. (2012).

In addition, explained that the main reasons for cost overruns of construction projects in Australia are contractor's deficiencies in planning and scheduling at the tender stage, methods/techniques of cons effective monitoring and feedback process, complexity of design and construction, improper control over site resource allocations, and complexity of design and construction Complexity of design and construction, improper control over site resource allocations, and complexity of design and construction. Doloi, H. (2013).

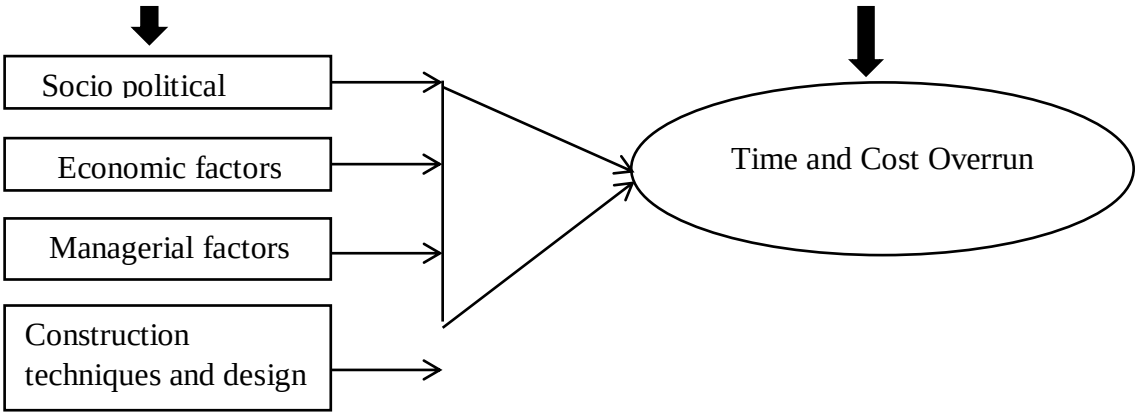
Changes in project scope, material prices, poor project cost estimation, additional work requested by the owner, donor policy of awarding contracts at the lowest price, fluctuations in the cost of building materials, delays in project completion time, fraudulent practices, kickbacks, corruption, and economic instability/political unrest are the junior factors that lead to cost overruns in Egypt. El-Ahwal, M., El-Attar, S. S., & Abdel-Hafez, W. A. (2016).

2.4 Conceptual frame work

A description of how the variables connected to one another was provided by the conceptual framework. Both dependent and independent variables are defined here. The study's independent variables are sociopolitical circumstances, economic factors, managerial factors, construction methods, and design modifications.

Independent variable

Dependent variable



Source: Developed by the researcher 2023

Fig 1 conceptual frame work model

2.5 Knowledge gap identification

Construction projects are renowned for falling behind schedule, going over budget, being tardy, and being burdened with scope creep, as well as for having poor communication protocols and insufficient controls for managing scope change. This is particularly evident in non-profit organizations (Guerin, 2012). If the project's goals and achievements are to be met, timely and within budget project completion is essential. A project that is finished within budget demonstrates overall project planning, management, and implementation efficiency as well as competent project status monitoring.

The causes of cost and time overruns on construction projects for building contractors have received little research from inconsistent construction organizations. The purpose of this study was to close this knowledge gapby examining the following factors in Hebron Construction Company

Chapter 3

Research methodology

The purpose of the study was to identify the factor leading to delay in construction of Hebron Construction Company. This chapter describes research design and methodology, sample selection, data source and procedure, data type, data collection method, data analysis method, research population, and method of data analysis.

3.1 Research design

The research designs adopted in this research were descriptive and explanatory research design. The descriptive research types to describe what it is or what the situation looks likes based on the information, different facts and factors regarding the problem during the time of study. And explanatory research design to Understand, explain and predict the cause and effect relationship between variables that is sociopolitical, economical, managerial and construction techniques and design factors (independent variable) and cost and time overrun (dependent variable).

3.2 Research approach

The two fundamental methods of research are quantitative and qualitative (Leedy et al. 2005). In order to keep the respondents within bounds, Quantitative research approaches were adopted with structured close-ended questionnaires to collect the measurable data. Quantitative research answers questions through a controlled logical process, allowing for the collection of numerical data, the prediction, and the measurement of variables.

3.3 Target Populations

The respondent were selected based on their experience from different Hebron construction company is project by use of involvement and work experienced 74 persons in Hebron construction Company selected professional like General Manager, finance manager, project manager, site and office engineer, project coordinator, Forman ,electrical engineer, sanitary engineer, surveyor and construction engineer.

3.4 Sampling size and techniques

3.4.1 Sampling Techniques

Studying a sample selection allows for greater accuracy of results, greater speeds of data collection, lower cost of research and availability of the population elements a probability sampling design will be use and it is census sampling.

A Census sample is a statistical investigation in which the data are collected for each and every unit of population a complete enumeration of items in the population. For contractor, client and consultants because they are limited in number of target population.

3.4.2 Sampling size

Among the most important element of research, the sample size is the one that addresses the characteristics of whole file series with confidence. To stick with good statistical validity, the study made use a representative sample size. For this study, maximum care is given to get the highest sample size (OSP,2005). The Target Populations for the study were 50 professional staffs who are currently working on projects of Hebron Construction Company, 12 from client side and 12 from consultant side. Total target population for the study were 74.

Table 3.1

Project selected in Hebron Construction P.L.C For questioner

Project Name	**Location**	**Skilled Man Power**			**Total**
		Contractor	**Consultant**	**Client**	
Lead star collage school	Bishoftu	4	1	1	6
Dipo site	Dukem	3	1	1	5
Elite pharmatical plc	Dukem	5	1	1	7
Tedecha B+G+5 Commercial center	Bishoftu	7	1	1	9
Akaki G+4 Mixed Use Building	Akaki Addis Abeba	5	1	1	7
Lebu G+4 Apartment	Lebu Addis Abeba	4	1	1	6
Dormitory	Dombi Dollo University	4	2	2	8
Auditorium	//	3	1	1	5
Staff Office	//	5	1	1	7
FM Studio	//	10	2	2	14
Total		**50**	**12**	**12**	**74**

3.5 Source of data and collection

Understanding how the actual completion time and cost differ from the contract is making easier by this. A thorough questionnaire is creating to determine the factor affect time and expense overruns in building projects. It is given out to the General managers, finance manager, project manager, site and office engineer, project coordinator, Forman and consultant. Who control daily construction operation.

Method of gathering data: filed work (primary data collection). The literature review is intended to focus the questions that the research has raise in time and expense overruns causes.

Primary data source were collected, for the data process and procedures, the study used a five point Likert scale, The questionnaire also asks for general information about the respondents, such as their backgrounds and construction experience. Generally speaking, the data gathered had been utilized to pinpoint the Factor affect cost time and overrun in Hebron Construction Company. and present recommendations that the Hebron Construction Company will use to lessen claims and dispute

3.6 Data analysis techniques

In order to solve the research problem, achieve the research objective, answer the research questions, and interpret the data, data analysis is a technique that uses facts and figures.

For data analysis multi linear regression model and Descriptive statistics were used to identify factors affecting cost and time overrun. Socio political, Economical. Managerial and construction techniques and design change are examples of dependent variables. Time and price are independent variables.

The data collected from questionnaire analyzed mainly by the help of SPSS Version 20 After the collected data rearranged, edited and calculated in order to become complete, it was analyzed using descriptive Statistics, and multiple liner regression analysis. The descriptive statistics (mean, frequency, percentage and standard deviations) is use to analyze the general trends of the data and multiple liner regression employed to know cause and effect of the relationship between variable and to see how well linear

combinations of independent variable can predict the dependent variable. In addition to those Spearman correlation was used to determine the relationship between the variable.

3.6.1 Descriptive analysis

By tabulating (arranging the data in a table format), descriptive analysis was used to condense the data into a summary format, and descriptive statistics, such as frequencies, percentages, means, and standard deviation, were used to discuss the data.

3.6.2 Inferential analysis

Through study of the data, inferential statistics enables one to determine the link between two or more variables and how various independent variables may contribute to the variance in a dependent variable (Sekaran, 2000). The Spearman Correlation Coefficient and a linear regression analysis were used as inferential statistics in this investigation

3.6.3 Spearman Correlation Coefficient.

A popular statistical technique for determining an index of the relationships between two variables when the interactions are linear and when the correlation between the two variables is continuous is the Spearman Correlation Coefficient.

3.6.4 Multiple Linear regression

The expansion of basic linear regression analysis known as multiple linear regression analysis examines the relationship between one continuous continuous dependent variable and two or more independent variables. Based on the dependent variable's covariance with all relevant independent variables, a prediction about the dependent variable is what this analysis's

for data process and procedure this study will Use a Regression,

COR&TOR $=\beta 0+\beta 1SPF+\beta 2EF+\beta 3MF+\beta 4CTDF+\varepsilon$…….. (1)

Where:

CTDF = Construction Techniques and Design change Factor;

COR = Cost Overrun;

TOR =Time Overrun;

SPF = Socio Political Factor;

EF = Economic Factor;

MF = Managerial Factor;

ε = Error Term;

β = Coefficient

3.7 Validity and Reliability

Reliability and validity was conducted to ensure the accuracy of the method and data collected.

3.7.1 Reliability

Reliability is typically will use to determine whether or not each respondent's response is consistent. Cronbach's Alpha coefficient was used to test the reliability of the collected data. According to Roberta Heale and Twycross (2015), reliability is the consistency of measurement. Values for Cronbach's Alpha range from 0 to 1, with 0.7 serving as the minimum acceptable value.

Table 3 2

Analysis of Cornbach's Alpha Value for reality test

Categories of factors	No of Cronbach's alpha	Cronbach's alpha	Interpretation
Socio political Factor	5	0.756	**Acceptable**
Economical Factor	6	0.797	**Acceptable**
Managerial Factor	5	0.765	**Acceptable**
Construction design change and technology factor	6	0.756	**Acceptable**
Cost and Time overrun	8	0.765	**Acceptable**
Avarage Cronbach's Alpha Value	**30**	**0.807**	**Good**

Source- Author Calculation based on survey data

Using Cronbach's alpha approach, a reliability test is performed to assess the stability and consistency of the data. The statistical analysis used in this study was done with SPSS Version 20.Almost all Cronbach's alpha values from time and cost overruns are more than 0.7, which denotes a better level of internal consistency.

3.7.2 Validity

Define a concept's precise measurement range. multiple types of validity, such as construct validity, face validity, content validity, and criteria validity, enable It is feasible to guarantee that participants are providing honest and sincere information that supports the attainment of study validity by avoiding any bias in data collection and preconceived assumptions by providing a clear and intelligible questionnaire. A questionnaire was employed by the researcher to increase the validity of the study.

3.8 Ethical consideration

While conducting research, ethical factors must be taken into account. The participants' rights and dignity must first be respect and protect.

Before being ask for their answers, respondents will express the study's goal in unambiguous terms. Prior to the study, complete consent from the subjects should be obtained. Any forms of communicationon the research are Carrie out in an honest and open manner.

The research data should be keep confidential to a sufficient degree. The names, races, and religions of the respondents will not question.

CHAPTER FOUR

RESULTS AND DISCUSSION

This study's goal was to evaluate Hebron Construction Company time and cost overruns. This chapter discusses the presentation, analysis, and interpretation of data about the Determinants of time and cost overrun in Hebron Construction Company that was gathered through questioner.

4.1 Analysis of Survey Data.

4.1.2 Questionnaire Response Rate

Three contractual parties—the contractor, clients, and consultants—who are currently involved in Hebron Construction projects were given the questionnaire via an online survey tool as well as in-person distribution.

74 individuals were chosen for the questionnaire, by taking into account the function of each stakeholder in projects.

Table 4.1

Summary of Questionnaire distributed and Questionnaire Returned

Group	Questionnaire Distributed		Questionnaire Returned	
	NO	%	NO	%
Contractor	50	67.6	48	66.7
Client	12	16.2	12	16.7
Consultant	12	16.2	12	16.7
Total	74	100	72	100

From table result distributed questioner 74 and returned 72 there is 2 missing questionary so research analysis based on 72 respondent response.

4.2 Demographic Characteristics of Respondents

This part provided general information about the respondent personal characteristics and organization information in terms of gender, organization type, experience, the level of education and area of proficiency in the field of construction.

Variable	Categories	Frequency	Percentage %
Gender	Male	22	30.6
	Female	50	69.4
	Total	72	100
Types of Organization	Contractor	48	66..7
	Client	12	16.7
	Consultant	12	16.7
	Total	72	100
Academical Background	Certificate	3	4.2
	Diploma	6	8.3
	Degree	35	48.6
	Masters	23	31.9

	PhD	5	6.9
	Total	72	100
Work experience	Less than 5	18	25
	Between 5 and 10	27	37.5
	Between 10 and 15	21	29.2
	Greater than 15	6	8.3
	Total	72	100
Area of Proficiency	Project Coordinator	10	13.9
	Project Manger	10	13.9
	Office Engineer	12	16.7
	Site Engineer	18	25
	Forman	10	13.9
	Finance manager	6	8.3
	Resident engineer	6	8.3
	Total	72	100

In this study seventy two responses were taken table shows the gender distribution of respondent in which the majority of the respondent were male representing 50(69.4%) while the female represented 22(30.6%).the fact that the majority of the respondent were male shows that males have more in company so there is no gender equality the researcher recommend the company will working in balancing of female and male number in company

Table indicated that 48(66.7%) of the respondent were Contractor, 12(16.7%) were Client and the remaining 12(16.7%) of them were Consultant. Majority of participant of this study are from the contractor side.

Table show as the Academic Back ground of the respondents it was observed that the respondents Completing Certificate were 3(4.2%), Diploma 6 (8.3%), First degree holders were 35(48.6%) respondents, Master's degree were 23(31.9%) and PhD were 5(6.9%) of respondents. This shows that most of the respondents are degree and master's degree holders and hence most of the participants of this study have good educational background.

When we look in terms of experience,18(25%) of the team member have an experience Less than 5years, 27(37.5%) have an experience of 5-10years and 21(29.2%) have an experience of 10-15 and lastly 6(8.3%) have experience for over 15 years. The Majority of questionnaires were filled by highly working experienced staff, it helps the researcher to collect qualitative and satisfactory response.

Descriptive Analysis

Descriptive Analysis Socio political factors

N.B On Five Likert Scale: SA=Strongly agree, AG=Agree, NU=Neutral, DA Disagree, SD=Strongly Disagree.

Table 4.7

Factor's Indicating Socio Political Factors for the Occurrence of Cost and Time overrun

		1		2		3		4		5		mean	SD
1	**Socio political factors**	**F**	**%**	**F**	**%**	**F**	**%**	**F**	**%**	**F**	**%**		

1.1	Highly political interference affect cost and time overrun in the project	5	6.8	3	4.1	11	15.1	18	24.7	35	47.9	4.04	1.20
1.2	Current political instability has a negative impact on the project cost and time overrun	6	8.2	6	8.2	4	5.5	27	37	29	39.7	3.93	1.24
1.3	Social and cultural factors have high influence on the project's cost and time over run	6	8.2	22	30.1	17	23.3	15	20.5	12	16.4	3.06	1.24
1.4	In high degree government organization corruption contribute to cost and time overrun in project	7	9.6	6	8.2	7	9.6	21	28.8	31	42.5	3.88	1.32
1.5	High bureaucracy in government agencies affect the project's cost and time overruns	6	8.2	8	11	5	6.8	29	39.7	24	32.9	3.79	1.26
	Grand Mean											3.74	1.25

Source: SPSS outputs from own survey data, 2023

The survey results indicated in above table Shows that according to **Political interference 47.9 % and 24.7%** of respondents are indicated agreement .The finding reviled that the **Political instability** the respondent response **39.7% and 37%** agreement. **Social and cultural factor** indicated **30.1% and 23.3%** indicated **disagreement** .according to **governmental organization corruption** the respondent response **42.5% and 28.8% agreemen**t. According to **Bureaucracy 39.7% and 32.9%** indicated **agreement.**

To describe the mean score of participant, mean score measurement used by Pihie, Z. A. L., & Akmaliah, Z. (2009). was applied where mean score; ≥ 4.5=Very High, 3.51-4.51=High, 2.51-3.5=Moderate ,1.51-2.5=Low;<1.5= very Low

The results of the table show that on the idea regarding with highly political interference in above has the mean score of 4.04 with1.20 standard deviation. Therefore these imply that the respondents are agreed highly with this statement.

According to sequence result of table, on the idea regarding with current political instability with (X=3.93, STD=1.24), In high degree governmental organization corruption with (X=3.88,STD=1.32), High bureaucracy in governmental agency with (X=3.79,STD=1.26) ,Social and Cultural factors with (X=3.06, STD=1.24),.

As we can see in the above that all except social and cultural factor others statement has high mean score and social and cultural factor has moderate mean score so sociopolitical factors are main factor affect cost and time overrun in project.

In general the average mean for sociopolitical factors on cost and time overrun M=3.74. Mean score recorded was high. This implies that generally Socio political factors highly affect cost and time overrun in project

Descriptive Analysis Economic Factors

Table 4.8

Factor's Indicating Economical Factors for the Occurrence of Cost and Time overrun

		1		2		3		4		5		mean	SD
1	Economic factors	F	%	F	%	F	%	F	%	F	%		
1.1	Exchange rate fluctuation affect	7	9.6	6	8.2	10	13.7	17	23.3	31	42.5	3.83	1.34

	cost and time overrun in the project												
1.2	High economic instability have impact on project cost and time overrun	5	6.8	5	6.8	4	5.5	24	32.9	34	46.6	4.06	1.20
1.3	Financial difficulties of project owners have high level of influence on the project cost and time overrun	8	11	3	4.1	4	5.5	24	32.9	33	45.2	3.98	1.31
1.4	Fluctuation in raw material price affect the project cost and time overrun	8	11	2	2.7	8	11	14	19.2	40	54.8	4.06	1.34
1.5	High machinery cost have high degree of contribution to cost and time overruns in the project	6	8.2	7	9.6	7	9.6	22	30.1	28	38.4	3.84	1.29
1.6	Cash flow and financial difficulties faced by contractors have impact on the project cost and time overrun	4	5.5	9	12.3	13	17.8	29	39.7	17	23.3	3.64	1.14
	Grand Mean											3.9	1.27

Source: SPSS outputs from own survey data, 2023

The survey results indicated in above table Shows that according to **Exchanging rate fluctuation 42.5 % and 23.3 %** of respondentsresponse are indicated **agreement** .The finding reviled that the **Economic instability** the respondent response **46.6 % and 32.9 % agreement. Financial difficulties of project owners** indicated **45.2 % and 32.9 %** indicated **agreement** .according to **Fluctuation in raw material price** the respondent response **54.8% and 19.2 % agreemen**t. According to **Machinery cost 38.4% and 30.1%** indicated **agreement.** The finding results **Cash flow and financial difficulties 39.7% and 23.3%** of respondent response **39.7% and 23.3%** indicated **agreement.**

To describe the mean score of participant, mean score measurement used by Pihie, Z. A. L., & Akmaliah, Z. (2009). was applied where mean score; ≥ 4.5=Very High, 3.51-4.51=High, 2.51-3.5=Moderate ,1.51-2.5=Low;<1.5= very Low

According to sequence result of table, on the idea regarding with Financial difficulties of project owners with (X=3.98, STD=1.34), High machinery cost with (X=3.84,STD=1.29), Exchange rate fluctuation with (X=3.83,STD=1.34) ,Cash flow and financial difficulties with (X=3.64, STD=1.14),.Generally the average mean for Economic factors on cost and time overrun M=3.9. Mean score recorded high. This implies that Economic factors highly affect cost and time overrun in project.

Descriptive Analysis Managerial Factor

Table 4.9

Factor's Indicating Managerial Factors for the Occurrence of Cost and Time overrun

		1		2		3		4		5		Mean	SD
1	Managerial factors	F	%	F	%	F	%	F	%	F	%		
1.1	Poor project management leadership style contribute to cost and time overruns in the project	5	6.8	4	5.5	9	12.3	22	30.1	32	43.8	4	1.20

1.2	Poor design assumption (planning) have impact on the project cost and time overruns	3	4.1	8	11	11	15	26	35.6	24	32.9	3.83	1.14
1.3	Delays in decision making process have high level of influence on the project cost and time overruns	4	5.5	4	5.5	6	8.2	32	43.8	26	35.6	4	1.09
1.4	Owners interference contribute to cost and time overruns in the project	3	4.1	8	11	11	15.1	26	35.6	24	32.9	3.83	1.14
1.5	Poor site management and supervision affect the project's cost and time overrun	5	6.8	4	5.5	9	12.3	22	30.1	31	42.5	3.99	1.20
	Grand Mean											3.93	1.15

Source: SPSS outputs from own survey data, 2023

The survey results indicated in above table Shows that according to **Project management leadership 43.8 % and 30.1 %** of respondents response are indicated **agreement** .The finding reviled that the **Design assumption** the respondent response **35.6 % and 32.9 % agreement. Decision making** indicated **43.8 % and 35.6 %** indicated **agreement** .according to **Owners interference** the respondent response **35.6 % and 32.9 % agreemen**t. According to **Site management 42.5 % and 30.1%** indicated **agreement.**

To describe the mean score of participant, mean score measurement used by Pihie, Z. A. L., & Akmaliah, Z. (2009). was applied where mean score; ≥ 4.5=Very High, 3.51-4.51=High, 2.51-3.5=Moderate ,1.51-2.5=Low;<1.5= very Low From the above table regarding to managerial factors, poor project management leadership style with (X=4, STD= 1.20) with Delays in decision making process with (X=4, STD=1.09) Poor site management and supervision with (X=3.99, STD=1.20), Owners interference with (X=3.83, STD=1.14) , Poor design assumption with (X=3.83, STD=1.14),

In general the average mean for Managerial factors on cost and time overrun M=3.93. Mean score recorded high. This implies that Managerial factors highly affect cost and time overrun in project.

Descriptive Analysis Construction techniques and design changes

Table 4.10

Factor's Indicating Construction techniques and design changes Factors for the Occurrence of Cost and Time overrun

		1		2		3		4		5		Mean	SD
1	Construction techniques and design	F	%	F	%	F	%	F	%	F	%		
1.1	Frequent design changes contribute to cost and time overruns in the project	33	45.2	25	34.2	7	9.6	2	2.7	4	5.5	1.86	1.09
1.2	Incomplete design at time of tender have impact on the project's cost and time over run	36	49.3	22	30.1	8	11	5	6.8	71	97.3	1.82	1.11
1.3	Design errors and mistakes have high	28	38.4	21	28.8	12	16.4	5	6.8	6	8.2	2.17	1.26

	influence on the project's cost and time overruns												
1.4	Lack of risk management strategy contribute to cost and time overrun in the project	28	38.4	21	28.8	12	16.4	5	6.8	6	8.2	2.17	1.26
1.5	Delay in approval of design documents affect the project's cost and time over runs	36	49.3	22	30.1	8	11	5	6.8	0	0	1.82	1.11
1.6	Lack of technical knowledge and experience have impact on the project cost and time overrun	33	45.2	25	34.2	7	9.6	2	2.7	4	5.5	1.86	1.09
	Grand Mean											1.95	1.15

Source: SPSS outputs from own survey data, 2023

The survey results indicated in above table Shows that according to **Frequent design changes 45.2 % and 34.2%** of respondents response are indicated **disagreement** .The finding reviled that the **Incomplete design at time of tender** the respondent response **97.3 % and 6.8 % agreement. Design errors and mistakes** indicated **38.4 % and 28.8 %** indicated **disagreement** .according to **Risk management strategy** the respondent response **38.4 % and 28.8 % disagreemen**t. According to **Approval of design documents 49.3 % and 30.1 %** indicated **disagreement.** The finding results **Technical knowledge and experience 45.2 % and 34.2 %** of respondent response indicated **disagreement.**

To describe the mean score of participant, mean score measurement used by Pihie, Z. A. L., & Akmaliah, Z. (2009). was applied where mean score; > 4.5=Very High, 3.51-4.51=High, 2.51-3.5=Moderate ,1.51-2.5=Low;<1.5= very Low

From the above table regarding to Construction design and technology factors, Design errors and mistakes first factor affect with (X=2.17, STD= 1.26) Lack of technical knowledge and experience second factor with (X=2.17, STD=1.26), frequently design changes third factor affect with (X=1.86, STD=1.09), with Lack of technical knowledge fourth factor affect with (X=1.86, STD=1.09), incomplete design at time of tender fifth factor (X=1.82, STD=1.11), Delay in approval of design document last factor affect with (X=1.82, STD=1.11),

In general the average mean for Construction techniques and design factors on cost and time overrun M=1.95. Mean score recorded Moderate. This implies that Construction techniques and design factors Moderate affect cost and time overrun in project.

4.2 Results of Inferential Statistics

Inferential Statistics was used to make interpretation and forecasting concerning the population of the investigation. Spearman Correlation and regression model were used to show relationship on the variables under exploration.

4.2.1 Correlation Analysis

In this section, the researcher tried to investigate the correlation between the independent variable, i.e Sociopolitical factors, Economical Factors, managerial Factors and Construction design and technology with dependent of cost and time overrun the researcher employed the Correlation Coefficient in line with the level of significance to examine the direction and strength of the correlation between the independent variables.

A correlation coefficient is a very useful means to summarize the relationship between two variables with a single number that falls between -1 and +1 Field, A. P. (2005). As per the guide line suggested by Field, A. P. (2005) the strength of relationship 0.1 to 0.29 shows week relationship; 0.3 to 0.49 is moderate ;>0.5 shows the strong relationship between the

two variables. Hence, in this study correlation analysis was used to examine the relationship the strength of correlations can be interpreted as follows:

Table 4.11

Range for Correlation Coefficients and Strength of Correlation

Correlation Coefficients	Strength of Correlation
r=± 0.10 up to r=± 0.29	Weak
r=± 0.30 up to r=± 0.49	Moderate
r=± 0.50 up to r=± 1.00	Strong

Source: Field, A. P. (2005)

In this study, Spearman Correlation Coefficient was used to determine whether there is a significant relationship between sociopolitical factors, Economical Factors, managerial Factors and Construction design and technology with dependent of cost and time overrun. The following section presents the results of correlation on the relationship between independent variables and dependent variables. Table below indicates that the correlation coefficients for the relationships between independent variable (Socio political factors, Economical Factors, managerial Factors and Construction design and technology) and dependent variable (cost and time overrun) are linear positive range in Strong Correlation Coefficient.

Table 4.12

Correlation matrix for Socio Political Factors (SP), Economical Factors (EF), Managerial Factors (MF) Construction technology and design (CTD) and Cost and Time overrun.

Correlation

Spearman Correlations		Socio Political factor	Economical Factor	Managerial Factor	Construction Design and Technology	Cost and Time Overrun
Socio Political factor	Correlation	1				
	Sig. (2-tailed)					
	N	72				
Economical Factor	Correlation	.583**	1			
	Sig. (2-tailed)	0				
	N	72	72			
Managerial Factor	Correlation	.367**	.227*	1		
	Sig. (2-tailed)	0.002	0.055			
	N	72	72	72		
Construction Design and Technology	Correlation	0.228	0.281	0.095	1	
	Sig. (2-tailed)	0.054	0.017	0.428		
	N	72	72	72	72	
Cost and Time Overrun	Correlation	.643**	.717**	.435**	.315*	1
	Sig. (2-tailed)	0	0	0	0.007	
	N	72	72	72	72	72

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

* Correlation is significant at the 0.05 level (2-tailed).

Sources; SPSS results of the own survey 2023

As illustrated on table above the relationship between Sociopolitical factors, Economical Factors, managerial Factors and Construction design and technology are found to have positive association with Time and Cost Overrun.

Spearman correlation for the Cost and Time Overrun with Sociopolitical factor correlation result ($r= 0.648$, $p< 0.05$). According to result there is Strong relationship between sociopolitical factors with Time and Cost Overrun.

Spearman correlation for the Cost and Time Overrun with Economic factor tests shows significant positive correlation ($r= 0.717$, $p< 0.05$). According to result there is Strong relationship between Economic factors with Time and Cost Overrun.

Spearman correlation for the Cost and Time Overrun with managerial factor tests shows significant positive correlation ($r= 0.435$, $p< 0.05$). According to result there is Moderate relationship between managerial factors with Time and Cost Overrun.

Spearman correlation for the Cost and Time Overrun with Construction design and technology factor tests shows significant positive correlation ($r= 0.315$, $p< 0.05$). According to result there is Weak relationship between Construction design and technology factors with Time and Cost Overrun.

Therefore Sociopolitical factors, Economical Factors, managerial Factors and Construction design and technology can be the better predictors of Time and Cost Overrun.

4.3.2 Regression analysis

Regression models can be used in an explanatory study where researcher is interested in predicting the value of dependent variable based on the value of independent variable. While in case of more than one independent variables in the study, researcher has to make use of multiple regression models.

4.3.3 Multiple Linear Regression Model

Normality test

This indicates that the residuals should follow the projected distribution. The output of the descriptive statistics also includes skewness and kurtosis values, which reveal information about the distribution of scores between the two groups. The standard errors for these statistics are shown. The asymmetry is measured by skewness. The normal distribution has a zero skewness and is symmetric. A log right tail is present in a distribution with a significant positive skewness. A log left tail is present in a distribution with a significant negative skewness. A general rule is that a skewness value more than twice its standard error denotes a break from symmetry. On the other hand, kurtosis measures how closely observations cluster around a center point. For a standard deviation the kurtosis has a value of 0. Positive kurtosis means that, compared to a normal distribution, the observations are more centered around the distribution's center and have thinner tails up until the distribution's extreme value, after which the tails of the leptokurtic distribution are thicker compared to those of a normal distribution.

Table 4.13

multiple regressions requires that the independent variables in the analysis be normality distributed

Descriptive Statistics

	N	Mean	Std. Deviation	Skewness		Kurtosis	
	Statistic	Statistic	Statistic	Statistic	Std. Error	Statistic	Std. Error
SPMEAN	72	3.7417	0.94314	-1.126	0.283	0.817	0.559
EFMEAN	72	3.9065	1.05183	-1.374	0.283	1.336	0.559
MFMEAN	72	3.9312	0.79543	-1.083	0.283	1.439	0.559
CTDMEAN	72	1.9491	0.87083	2.286	0.283	4.895	0.559
COANDTOMEAN	72	3.7785	0.95988	-1.422	0.283	1.537	0.559
Valid N (listwise)	72						

A distribution is called approximate normal if skeweness or kurtoses of the data are between -1 and 1. The skewness statistics for managerial factors (-1.083) and construction design and technology (2.286) are within the acceptable range for (-1.0 to + 1.0) . However skeweness statistics of -1.126 in socio political factor and -1.374 in economic factors is outside the acceptable range.

The kurtosis statistics of socio political factor is 0.817 are within acceptable range for (-1.0 to +1.0) .but kurtosis statistics of managerial factors is 1.439, economical factor is 1.336 and construction design and technology is 4.895 is outside the acceptable range.

In skewness statistics all factors are not within acceptable range its indicated variables in the analysis be which hasn't normality distribution in kurtosis statistics also only sociopolitical are in acceptable range its indicated in the analysis be normality distribution.

But the central limit theorem states that the sampling distribution of the mean will always follow a normal distribution under the following condition:- The sample size is sufficiently large This condition is usually met if the sample size is n ≥ 30.

Linearity test and Homoscedasticity test

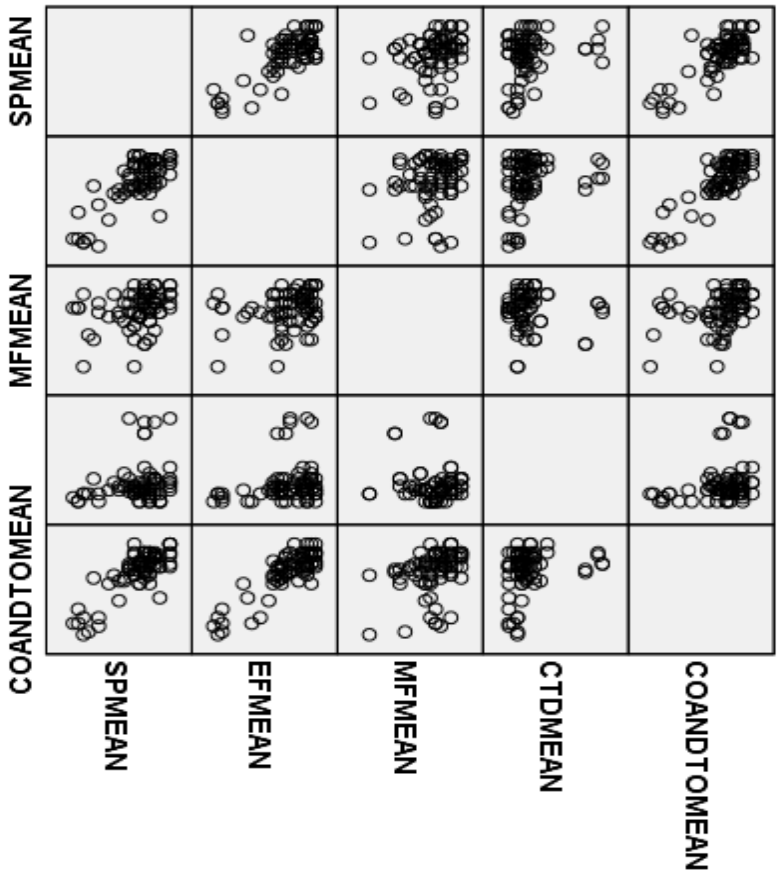


Fig.2 ***Scatter plot to test Linearity and Homoscedasticity***

Multiple regressions also assume the range of variance for the dependent variance is uniform for all values of independent variables. With such small plots it's hard to assess the homogeneity assumption.

However, inspection of the plots shows good variability in the plots and we will proceed with the analysis assuming homoscedasticity is not a major problem.

Multiple regressions assume a linear relationship between the independent variable and dependent variable. The all plots in the matrix show scatterplot for the dependent variable with each of the independent variable.

As visual inspection a little hard to determine based on these plots suggests that the relationship with sociopolitical factors, economical factors and managerial factors and construction design and technology are with cost and time overrun is linear. For now, we assumed the relationship is **linear.**

Tests of Coilinearity diagnoses

High levels of linear dependency (correlation) between several independent variables are referred to as multi-collinearity. When a regression model contains a large number of independent variables, it frequently occurs. This is due to the possibility that several of them quantify the same concepts or phenomena. If several correlations between the predictor variables exist,

We examine the correlations among the independent variables, If they are larger than 0.90, we would be concerned about multicollinearity.

This research use Spearman Correlation as we see above table none of the coefficients are greater than 0.90 so we assume multicollinearity is not a problem.

4.3.4 Regression Model analysis

Table 4.14

Regression Model Summery

Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	F Change	df 1	df 2	Sig.F	Durbin-Watson
1	.904a	0.817	0.806	0.42299	74.657	4	67	.000	1.880

a Predictors: (Constant), CTD Mean, EF Mean, MF Mean, SP Mean

b Dependent Variable: CO and TO Mean

Source; SPSS result of the own survey 2023

F-Test is called parametric test because the presence of parameter in the F-test. When doing regression analysis we determine Whether or not there is a relationship between the Independent variable and the Dependent variable by examining the ANOVA table. This can be thought of the overall fit of the regression model.

F-Test of overall significant in regression is a test of whether or not your linear regression model provided a better fit to a dataset than a model with no predictor variable. If the F test statistic is significant, we can assume the Independent variable, taken together; have a relationship it Dependent variable. In this case the probability of the F statistic for the regression analysis 0.000, less than level of significance of 0.05 so accepted fit of regression model.

The R Square statistic tells us the proportion of variance in the Dependent Variable that is accounted for by the Independent Variables. In this case the model accounts for 81.7% of the variance in the Independent Variables, Cost and Time overrun. The adjusted R Square is slightly lower, indicating 80.6% of the variance is accounted for by the model.

The results from the table above designated that a combination Sociopolitical, Economical factors. Managerial factors and Construction technology and design had 81.7 %(R Square=0.817) predictive likelihood of effect to cost and time overrun. The predictor variable explains 81.7% of the variation in cost and time overrun measured by which was attributed to Socio political factors, Economical factors, Managerial factors and Construction technology and design. From the findings, 18.3% of the variance is unexplained. In the outcome, Based on the researcher investigation there is no standard measures that predict the value of R, R2 and adjusted R. Generally from regression analysis R2 is 0.817 which is high according to Chin, W. W. (1998) recommendation,.

The Durbin-Watson statistic is used to test for independent residuals. The value of Durbin – Watson statistic ranges from 0 to 4.

As general rule, the residuals are independent (not correlated) if the Durbin-Watson statistic is approximately 2, and an acceptable range is 1,50-2.50. In this case, Durbin-Watson is 1.880, Close to 2 and within acceptable range. Therefore the result of this study indicated that the variables fulfill the independence of residuals.

The result in the above table indicates the overall model significance, as this board helps us to make sure the above model (on the model summery table) is a significant predictor of the outcome i,e Cost and time overrun and its evidenced that the model is statistically predictor cost and time overrun of project. for the response that the P-value is less than 0.05 therefore, a significant amount of cost and time overrun is influenced by Sociopolitical factors, Economical Factors, managerial Factors and Construction design and technology, Furthermore it can be concluded as the overall regression model is significant F=74.65,P<0.05,R square=0.817 (i.e the regression model is a good fit of the data).

4.3.5 Coefficients of Regression Model

Table 4.15

The coefficients of the Regression model

Coefficients a

Model		Unstandardized Coefficients		Standardized Coefficients		
		B	Std. Error	Beta	t	Sig.
1	(Constant)	-0.203	0.302		-0.673	0.503
	SPMEAN	0.322	0.087	0.316	3.68	0.000
	EFMEAN	0.519	0.076	0.569	6.785	0.000
	MFMEAN	0.145	0.067	0.12	2.15	0.035
	CTDMEAN	0.093	0.06	0.084	1.549	0.126

a Dependent Variable: COANDTOMEAN

Sources; SPSS results of the own survey 2023

The Regression Equation

The model was Specified as followed;-

COR&TOR =β0+β1SPF+β2EF+β3MF+β4CTDF +ε……..

COR&TOR=-0.203+0.322SP+0.519EF+0.145MF+0.093CTD+0.302

Where by COR=Cost overrun , TOR= Time overrun , β0 was the constant term of the model, β1to β5 were coefficient of independent variables and ε was the error term, SP=sociopolitical factors, EF=economic factors, MF=managerial factors and CTD=construction techniques and design factors.

The equation above inferred that cost and time overrun on construction project was influenced by sociopolitical, economical, managerial and construction technology and design factors. Based on the above table the regression coefficient

There is a significant positive relationship between Economic factor and Cost and time overrun

Economical Factor

The sig. level for the variable "economical factor " is 0.000, which is less than our alpha level of 0.05. Looking at B Coefficient , we see that is it is positive, indicated that economic factors increases cost and time overrun increases, we would expect that for every 1% increases in economic factors , there would be 51.9% unit increase in cost and time overrun. This supports our research question and we conclude that an economic factor is a significant predictor of cost and time overrun.

“There is a significance effect and positive relationship between Economical factors and Cos and time overrun” is accepted. This finding similar with *Negalign Nigatu Oynaka (2020).*

There is a significant positive relationship between Sociopolitical factor and Cost and time overrun

Socio Political factors

The sig. level for the variable “sociopolitical factor “ is 0.000, which is less than our alpha level of 0.05. Looking at B Coefficient , we see that is it is positive, indicated that sociopolitical factors increases cost and time overrun increases, we would expect that for every 1% increases in sociopolitical factors , there would be 32.2% unit increase in cost and time overrun. This supports our research question and we conclude that socio political factors is a significant predictor of cost and time overrun next to economic factors.

“There is a significance effect and positive relationship between Sociopolitical factors and Cost and time overrun” is accepted. This finding similar with *Negalign Nigatu Oynaka (2020).*

There is a significant positive relationship between Managerial factor and Cost and time overrun

Managerial Factors

The sig. level for the variable “sociopolitical factor “ is 0.035, which is less than our alpha level of 0.05. Looking at B Coefficient , we see that is it is positive, indicated that sociopolitical factors increases cost and time overrun increases, we would expect that for every 1% increases in sociopolitical factors , there would be 14.5% unit increase in cost and time overrun. This supports our research question and we conclude that socio political factors is a significant predictor of cost and time overrun next to economic factors.

“There is a significance effect and positive relationship between Sociopolitical factors and Cos and time overrun” is accepted. This finding similar with *Negalign Nigatu Oynaka (2020).*

There is a significant positive relationship between Construction design and technology factor and Cost and time overrun Construction techniques and design change

Construction design and technology factor

Construction design and technology factors when we look B Coefficient indicated that construction design and technology factors are positively related with cases for the occurrence of cost and time overrun. And also sig. level for the variable "construction design and technology Factor" is 0.126, which is greater than our alpha of 0.05. and beta value of . "There is insignificance effect and Positive relationship between Construction design and technology factors and Cost and time overrun" is reject. But This finding similar with *Negalign Nigatu Oynaka (2020).*but the result is different because of the current condition of country the above three factor dominated this factor .

CHAPTER FIVE

5, SUMMARY OF FINDING, CONCLUSION AND RECOMMENDATIONS

5.1 Summary of Findings

To achieve the study project objectives a reliability test was conducted on selected items under the questionnaire and as per table number a Cronbach's alpha result **0.807** founds and the questionnaire founds to be acceptable and reliable.

The demography of respondents described under table In general the average mean for **Managerial factors** on cost and time overrun **M=3.93**. Mean score recorded high. This implies that Managerial factors most highly affect cost and time overrun in project.

the average mean for **Economic factors** on cost and time overrun **M=3.9**. Mean score recorded high. This implies that Economic factors highly affect cost and time overrun in project.

In general the average mean for **sociopolitical factors** on cost and time overrun **M=3.74**. Mean score recorded was high. This implies that generally Socio political factors highly affect cost and time overrun in project

The average mean for **Construction techniques and design factors** on cost and time overrun **M=1.95**.Mean score recorded Moderate. This implies that Construction techniques and design factors Moderate affect cost and time overrun in project.

On the other hand, correlation analysis made and table depicts that all independent variables

i.e sociopolitical factors,. Economic factors, Managerial factors and Construction techniques and design factors are significantly correlated with dependent variable i.e. (cost and time overrun) at 1% level of significance. The highest correlation is attached to Economical factor (r=0.717), followed by sociopolitical (r=0.643), managerial factors (r=0.435), Construction techniques and design factors (r=0.315). The researcher conducts multi collinearity test before conducting multiple regression hence,variables used in the study are free from co-linearity.

In conclusion, multiple regression analysis was conducted to test the hypothesis and table depicts results of multiple regression and the tested model result shows 0.786 adjusted R2 at p<0.000 significance level. The value indicates that 78.6 % of delay occurred is attributed to the four independent variables that are indicated under this study. 21.4% of the variance in project implementation delay may arise from other factors. Hence, the pre-established 4 hypotheses are 3 of them accepted by referring the β values under table asa result, the factor (socio political factor. economical factor. managerial factor).

5.2 CONCLUSION

Based on the broad objective the study makes the following conclusion with regard to the specific objectives and research questions that guided the study. It was found that four most significant factors causing time and cost overrun in construction project in Hebron Construction Company were as follows;

The correlation results indicated that sociopolitical factors, economic factors managerial factors and construction techniques and design factors are positively significantly correlated with cost and time overrun in construction projects in Hebron Construction Company.

The descriptive results show sociopolitical factors, due to Political interference; Political instability, Governmental organization corruption Bureaucracy and social and cultural factor can be a major cause that leads to cost and time overrun..

The results also shows that economic factors, due to Exchange rate fluctuation, Economical instability, Finical difficulties of project owners, Fluctuation in raw material price, High machinery cost and Financial difficulties faced by contractors are the major factors leads to cost and time overrun.

Regarding managerial factors due to Poor project management leadership, Delays in decision making and Poor site management Poor design assumption and Owner interference are the major factors for the occurrence of cost and time overrun.

The output related with the construction techniques and design factors due to Design errors and mistakes, Lack of risk management strategy Lack of technical knowledge and experience frequent design change incomplete design at time of tender and Delay in approval of design documents are the not major factors for the occurrence of cost and time overrun.

One of independent variable that was economical factor was positively and significantly related with cost and time overrun of project Therefore, **Economical factor** is 1st factor affect cost and time overrun of project.

The second explanatory value that was sociopolitical factor which has a positively and significantly affect cost and time overrun conclude that **Sociopolitical factors** is the 2nd factor affect cost and time overrun of the project.

The third explanatory value that was managerial factor which has a positively and significantly affect cost and time overrun conclude that **managerial factors** is the 3rd factor affect cost and time overrun of the project.

But fourth explanatory value that was construction technique and design factor which has a positively and insignificantly affect cost and time overrun conclude that **Construction technique and design factors** not significantly affect cost and time overrun of the project.

Finally access of economical. Socio political factors and managerial factors has the most significant factor affect cost and time overrun of project but construction design and technology factor are not affect cost and time overrun in Hebron construction company projects.

5.3 RECOMMENDATION

It is apparent that construction project needs to seriously consider all the internal and external factors causing cost and time overrun. Based on the analysis of research finding the following recommendations are advocated for further research;

The study recommended that governmental body emphasize on the problems of cost and time overrun by clearly and effectively communicating the construction project and working progress and the concerned body should be ensure the Political stability and minimizing Political interference, Governmental organization corruption and Bureaucracy during the selection of project and implementation of the project in order to reduce the occurrence of cost and time overrun.

The contractor be aware about the future economic factors in order to minimize the risk related with exchange rate fluctuation, economic instability, financial difficulties of project owners, fluctuation in raw material price, high machinery cost and cash flow and financial difficulties faced by contractors.

With Regarding to Managerial factor this study provides in a construction project the managerial activity give a good attention to design and implement a process or structure appropriate to the problem and circumstance to clearly organization goal, a manage the external environment, focus on task. Improve project management leadership style Clarify line authority and give a good decision making in order to solve the problem related with managerial factor causes to occurrence of cost and time overrun.

Finally this study recommended that in Hebron construction project the concerned body need provided a good planning and scheduling are continuing process during a construction and match with the resources and time to develop the work to avoid cost and time overrun. The concerned bodies conceder economical fluctuation during planning of the project and revise the bid document such as technical specification during bill of quantities and the design of the project in a good way.

Limitation and Future Research Area

Future workers in this field can refer to the untapped region that follows. First off, since only contractors, consultants, and owners were included in the study, any other researcher might have chosen to include laborers, vendors, government regulators, etc. as their study population.

Second, anyone with an interest in this topic is welcome to research the elements influencing cost and time overruns in building construction projects on a different site than the one Hebron Construction Company chose for this study. In other words, various building construction projects can be used to evaluate replication.

Thirdly, because of time and resource limitations, this study report solely examines sociopolitical, economic, managerial, construction method, and design modification aspects. The four independent variables (sociopolitical factor, economic factor, managerial factor, and building technique and design modification) were shown to account for 81.7% of the variability of performance measures. This suggests that 18.3% of the variability in performance measures may be attributable to other factors that were not examined in this study. So, the remaining components can be uncovered by any volunteer researcher. Last but not least, the researcher's ability to analyze documents was hindered by the contractors' and consultants' lack of or unwillingness to provide support.

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Appendix

Department of business administration

The purpose of this questionnaire is to gather relevant data that will be used in undertaking a study entitled as “Determinants of cost and time overrun in Construction Project”.in case of Hebron Construction Company. The success of this study defendant on utmost, cooperation of all targeted respondent, the information that will be obtained from the questionnaire will not identify individual respondent in the study. That means your response will be used in aggregate terms. We would also like to assure you that, the information you provide will be solely used for academic purpose only and the will be treated with strict confidentiality.

YOUR KINDLY COOPERATION IS APPRECIATED IN ADVANCE!!

Please put tick mark (x) on the box provided and write your answer for those open ended questions.

Part one; Personal data

1.1 Please specify your gender; Male ☐ Female ☐

1.2 Which organization do you represent?

☐ Contractor ☐ Client ☐ Consultant ☐ Other

1.3 Academic Background

☐ Certificate ☐ Diploma ☐ Degree ☐ Masters ☐ PhD ☐ Other Specify

1.4 Work experience in the Construction Project (in years)

☐ Less than 5 ☐ Between 5 and 10 ☐ Between 11 and 15 ☐ Greater than 15

1.5 Your area of Proficiency

☐ Project manager ☐ Project Coordinator ☐ Office Engineer ☐ Site Engineer

☐ Forman ☐ Finance manager ☐ Resident Engineer ☐ Other

Part two ; DETERMINENT OF TIME AND COST OVERRUN IN HEBRON CONSTRUCTION PROJECTS.

N.B On Five point Likert scale; SA=strongly agree, AG = Agree, NU=natural, DA= disagree, SD=strongly disagree

Table 1.1 Factors Indicating for Occurrence of Cost and Time Overrun

Key: 1=SD, 2=D, 3=N, 4=A, 5=SA

Factors for occurrence of cost and time overrun	1	2	3	4	5
1, Socio political factors					
1.1, highly Political interference affect cost and time overruns in the project					
1.2, Current Political instability has negative impact on the project cost and time overrun					
1.3,Social and cultural factors have high influence on the project's cost and time over runs					
1.4, High degree government organization corruption contribute to cost and time overrun in project					
1.5, High Bureaucracy in government agencies affect the project's cost and time overruns					
2, Economical factors					
2.1, Exchange rate fluctuation affect cost and time overrun in the project					
2.2, High Economic instability have impact on project					

cost and time overrun

2.3, Financial difficulties of project owners have high level of influence on the project cost and time overrun

2.4, Fluctuation in raw material price affect the project cost and time overrun

2.5, High machinery cost have high degree of contribution to cost and time overruns in the project

2,6, Cash flow and financial difficulties faced by contractors have impact on the project cost and time overrun

3, Managerial factors

3.1, Poor project management leadership style contribute to cost and time overruns in the project

3.2, Poor design assumptions(planning) have impact on the project cost and time overruns

3.3, Delays in decision making process have high level of influence on the project cost and time overruns

3.4, Owners interference contribute to cost and time overruns in the project

3.5, Poor site management and supervision affect the project's cost and time overrun

4, Construction techniques and design

4.1, Frequent design changes contribute to cost and time overruns in the project

4.2, Incomplete design at time of tender have impact on the project's cost and time overruns

4.3, Design errors and mistakes have high influence on

the project’s cost and time overruns

4.4, lack of Risk management strategy contribute to cost and time overrun in the project

4.5, Delay in approval of design documents affect the project’s cost and time overruns

4.6, Lack of technical knowledge and experience have impact on the project cost and time overrun

5 time overrun and cost overrun

5.1 time and cost overrun become causes of construction project delay

5.2 time and cost overrun have impact on project’s timeline and overall success

5.3 time and cost overrun affect the economical capacity of country

5.4 unexpected factors such as changes in regulations or unforeseen obstacles have impact the project’s timeline and lead to time and cost overrun