



**ADDIS ABABA UNIVERSITY
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SCHOOL OF COMMERCE
DEPARTMENT OF PROJECT MANAGEMENT**

**Causes of Construction Claims in Active Ethiopian Road
Administration (ERA) Road Projects**

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Causes of Construction Claims in Active Ethiopian Road Administration (ERA)
Road Projects

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Declaration

I, Anteneh Tsigu Nigusse, hereby declare that this thesis entitled “Causes of Construction Claims in Active Ethiopian Road Administration (ERA) Road Projects” is my own original work and has not been submitted for any degree in any other University.

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Letter of Certification

This is to certify that Anteneh Tsigu Nigusse has carried out this research on the topic " Causes of Construction Claims in Active Ethiopian Road Administration (ERA) Road Projects " under my supervision. This work is original in the nature and suitable for submission in partial fulfilment of the requirement for the award of Masters of Arts Degree in Project Management and the student has my permission to present it for assessment.

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This is to certify that the thesis prepared by Anteneh Tsigu Nigusse entitled: “Causes of Construction Claims in Active Ethiopian Road Administration (ERA) Road Projects” submitted in partial fulfilment of the requirements for the degree of Degree of Master of Arts in Project Management complies with the regulations of the University and meets the accepted standards with respect to originality and quality.

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Coordinator	Signature	Date

Abstract

The research determined the most frequent cause of claims in federal road construction projects in the intention to reduce likelihood of occurrence of claims. The research has identified 35 causes of claims and categorised them in to five. The study has adopted a descriptive research design with quantitative research approach and in order to achieve the objective of the study the research have used primary data collection though a valid and reliable questionnaire survey. Consequently, questionnaires were distributed to consultants/employers' representative/, Employer/ERA/ and contractors which are involved in federal road construction projects which have progressed 70% and above, this is done in order to find various claim causes. Relative importance index was used to determine the most important factor/causes/ causing claims, each factor was ranked from their category and as a whole. The research finding shows from the whole ranking the most significant/frequent/ causes that contributed to the generation of claims are variations between original and actual quantities, unpredictable change in material price, interference from stakeholders (beneficiaries, local community, and authorities), unforeseeable ground conditions by all parties, delay in completion of the work, respectively are the top 5 underlying (root) causes of claims under the research scope. The study recommended practitioners to have defined scope of work, providing appropriate price escalation, increasing the contingency of project, avoid one sided clause in contract document, timely handling over the site, timely evaluation of claims, carefully manage cash flows by contractors and legal and technical counsel before entering the contract.

Keyword: Project, Claim, Ethiopian Road Administration/ERA/, Relative Importance index

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List of Acronyms and Abbreviations

DB	Design Build
DBB	Design Bid Build
ERA	Ethiopian Road Authority
ETB	Ethiopian Birr
ETCA	Ethiopian Transport Construction Authority
FPPA	Federal Public Procurement Agency
FIDIC	Fédération Internationale des Ingénieurs Conseils (International Federation of Consulting Engineers)
IHA	Imperial Highway Authority
MoWUD	Ministry of Works and Urban Development
RII	Relative Importance Index
RSDP	Road Sector Development Program
SPSS	Statistical Package for Social Sciences
USD	United States Dollar

CHAPTER ONE: INTRODUCTION

1.1. Background of the Study

Roads are a vital component of a country's transportation infrastructure, and they play a key role in its socioeconomic growth. It is vital to the country's development and growth. It also helps to alleviate poverty by providing employment, social, health, and educational services. Road transport, which still accounts for 95 percent of the movement of people and products in Ethiopia, plays a dynamic role in promoting economic development in the context of Ethiopia's geography, settlement patterns, and economic activity (Alemu, 2021).

By providing for the efficient movement of goods and people, road transportation enables for better use of land and natural resources, greater agricultural production and marketing, access to social services, and chances for long-term growth. Previously inaccessible areas of Ethiopia have been linked to towns and cities by road networks, allowing locals to obtain better medical care, education, and market access for their produce (ERA, 2016).

A total of 128,470 km of road has been physically constructed during the last two decades, excluding normal maintenance and community roads. During this time period the overall budget for planned works was ETB 232.5 billion, however the ultimate expenditure was ETB 266.2 billion (USD 17.4 billion). RSDP was only able to produce 86 percent of the physical performance compared to the plan, despite a 15% cost increase. Despite the fact that ERA and the RSDP have made great progress, road coverage and quality remain poor, and ERA still has a lot of work ahead of it (ERA, 2016).

A claim is a demand or request for something to which one has a legal right. Cost overruns, mismanaged jobs, legal entanglements, and bad practices on the part of various contractors are all reasons for claims in the construction sector. Owners and engineers frequently perceive them as a contractor's attempt to cover up bidding flaws or omissions. This is a fallacy, as claims are an important part of the construction process, and strong claim management concepts are just as vital as good engineering, safety, and commercial principles (Clough, 2000; Dessa, 2003).

claims are considered one of the most importance items that could cause a harmful effect in organizations and for the construction industry. The submission of claims has become common practice and a significant feature in many construction projects. Claims can be frequent in large projects and can cause budgetary difficulties to owners. They may cause financial difficulties, restriction of cash flow, and loss of liquidity to contractors. Understanding of the causes of claims is vital to avoiding or reducing claims in the construction industry (Abd El-Razek, 2007).

Claims are the primary source of problems in the construction industry. Construction claims are considered by numerous project participants to be one of the most disruptive and unpleasant events of a project (Ho, 2004); (Hadikusumo, 2015). Active familiarity and awareness of potential claim situation is a prerequisite to successful project management (Betty, 1993).

Potential risks associated with claims and contract parties' priorities should be proper management of those risks, the contractor must be able to recognize and to identify a claim situation when it first develops, not after it has become a controversy (Paul Levin, 1986). claim management is done in a broader aspect in different literatures and Researches. Also causes of claims are investigated in some literatures but causes of claims will vary from time to time & varies among different industries.

Therefore, the research has identified the root causes of claims under the study scope. This Research will help the road construction industry in enhancing its claim and risk management by predicting the likelihood of claim occurrence. Furthermore, the research helps to deliver project with less cost overrun and time overrun by reducing claims emanated.

1.2. Background of the Organization

Highways were created during the Italian occupation to meet military control requirements rather than to promote the country's economic development. Following the evacuation of the Italian occupiers, the Imperial Highway Authority (IHA) was formed with the mission of rehabilitating/restoring and expanding the country's road network, as well as specific responsibilities for planning, designing, constructing, and maintaining roadways. In addition to the Highway Department, the Ethiopian Roads Authority (ERA) has been re-established, which includes the Rural Roads Department (Tolera, 2018).

According to the Ethiopian Roads Authority Profile, road development had a considerable deal of success prior to the second Italian occupation, from 1896 and 1936. Emperor Menilik was reputed to be a skilled road builder who took part in the work himself. The route from Eritrea to Addis Ababa, as well as the road from Addis to Addis-Alem, were completed in 1903. The first asphalt roads appeared at the same time as the first asphalt roads in Addis Ababa (Tolera, 2018).

The Ethiopian Transport Construction Authority (ETCA) was created in 1980 by the Military Government that assumed control in 1974. Following the transition from a command-based to a market-based economy in 1991, ERA was re-established with the goal of providing effective road travel and transportation administration. Rural roads were assigned to regional self-governments as part of the reform, while main roads were assigned to ERA as part of the Federal Government's responsibilities (Tolera, 2018). ERA's role in rural roads was initially confined to providing help to Regional Governments in the form of overall network planning, training, and technical assistance. To deal with the situation, ERA was re-established in 1997 with the goal of developing and administering highways and ensuring road construction standards. With the formation of the new cabinet of ministers in October 2001, a Ministry of Infrastructure, later renamed the Ministry of Works and Urban Development, was established with the task of developing the nation's infrastructure. One of the organizations, ERA, is in charge of developing long- and short-term plans and strategies for road construction, design, and maintenance of trunk and major link roads, as well as contract administration (Tolera, 2018).

Ethiopia's Ethiopian Road Authority constructs federal roadways (ERA). According to Proclamation No. 80/1997, ERA is a legally autonomous institution responsible for the management of the country's roadways. The Ethiopian Roads Authority manages the trunk and main links that make up the federal road network system, according to the proclamation. Ethiopia's Ethiopian Road Authority constructs federal roadways (ERA). According to Proclamation No. 80/1997, ERA is a legally autonomous institution responsible for the management of the country's roadways. The Ethiopian Roads Authority manages the trunk and main links that make up the federal road network system, according to the proclamation.

The Ethiopian Roads Authority (ERA) is a legally independent institution that was founded on January 26, 1951. The Authority has undergone a series of institutional changes since its inception, the most recent of which was enacted in July 2011 by Council of Ministers Regulation No. 247/2011. This law backs up the separation of the operational and regulatory wings into two separate bodies, allowing ERA to concentrate on road network development and asset management rather than road building and maintenance. As a result, according to the aforementioned rule, the major objectives of ERA are to construct and manage roads, provide favourable conditions for the coordinated growth of roads networks, and play a leading role in the creation and regulation of standards in the sector (Tsegaye, 2018).

The government recognized the importance of road transportation in supporting social and economic growth, as well as its role as a catalyst for achieving poverty reduction goals, and developed the Road Sector Development Program (RSDP) in 1997, which has been implemented in four phases over the last 18 years. Over the course of the RSDP's eighteen years, tremendous progress has been made in the restoration and growth of Ethiopia's road network. The performance has improved over the last fifteen years, but there is still room for improvement. One of the primary issues is a lack of implementation capacity (Tolera, 2018).

1.3. Statement of the Problem

Many project participants regard construction claims to be one of the most disruptive and disagreeable aspects of the project (Ho, 2004). Today, more claims are filed against construction projects than at any other period in history; Due to the intense competition, contractors have been driven to compete on projects with the smallest profit margins in order to stay in business (Ho, 2004). Projects are growing increasingly and are becoming complex and risky as a result of their multiparty character (Shawel, 2017). Contractors have been put under even more pressure to build more complex and dangerous projects with fewer resources and earnings (Shawel, 2017). Given these circumstances, it's unsurprising that the number of construction-related claims continues to rise (Ho, 2004).

The increasing complexity of construction projects, the industry's price structure, and the legal approach used by owners and contractors have resulted in a significant increase in the number of claims submitted (Levin, 1998). According to a study conducted in Oman, the most significant effects in building projects are the extension of time, the stoppage of work, and the delay in payment (Al-Mohsin, 2012). According to a survey conducted in western Canada, the vast majority of claims involved delays, which in some cases surpassed the original contract period by more than 100 percent. Furthermore, more than half of these claims resulted in additional expenses of at least 30% of the contract's initial value (Semple, 1994). Ethiopian studies outline the financial effects of claims, as well as the effects on project completion time and project execution itself (Dinku, 2003). Despite there are different literatures in causes of claims there are no researches done deeply before in Federal Road construction projects of Ethiopia, Thus, the research has identified the causes of claims and their frequency of occurrence in road construction projects of Ethiopian Road Administration.

In the construction sector, understanding the causes of claims is critical to avoiding or minimizing claims (Abd El-Razek, 2007). Thus, considering this the research have investigated by identifying the main causes of claims from different literature review and determined causes of claims that are common in currently active road projects and also the research have ranked the causes identified based on their frequency of occurrence relative to one another.

1.4. Research Questions

- What are the causes of claims in active Road projects of ERA?
- What are the most frequently occurring cause of claims in active Road construction projects of ERA?

1.5. Research Objectives

1.5.1. General Objective

- The objective of this paper is to investigate the causes of claims in the current situations of road projects which are under ERA.

1.5.2. Specific Objectives.

- Identifying the most Frequent causes of claim in active road construction projects of ERA.
- Rank the causes of claims for road projects which are currently ongoing in ERA.

1.6. Significant of the Study

Huge amount of the national budget is allocated for infrastructure development; one of which is road construction. Therefore, the success of the projects means success of the overall country's development program.

Construction claims are considered by many project participants to be one of the most disruptive and unpleasant events of a project. Reviewing the type of claim, identifying causes of claims, indicating the frequency of causes of claims and ranking the causes can help in reducing claims in federal road projects, which in return minimizes cost overrun and time overrun. In addition, this research study can also serve as a basis for future related researchers on this or related area.

This research study is significant for project owners (government, agencies, companies and individuals) contractors and consultants in providing knowledge in causes of road construction claims to facilitate the implementation of road project. It can also give them an insight on where should one concentrate to successfully manage contractual claims in road construction projects.

Further, it enhances the contractor, employer (ERA) and the consultant (employer representative) to where shall to give attention in their risk and claim management of road construction projects to accomplish the projects on time, within budgeted cost and desired quality by avoiding unnecessary dispute.

1.7. Scope of the Study

In the research an attempt is made to identify the causes of claims from different literatures, and identify causes of claims in federal road projects which have a Design Bid Build type of project delivery. The federal road projects usually use FIDIC (International Federation of Consulting Engineers) IV/1989 and in some cases FPPA (Federal Public Procurement Agency) condition of contract, both are considered in identifying the causes of claims besides the empirical study. Also, the research scope is focused on causes of claims in currently active/ ongoing Road Projects which are at least 70% progressed; this kind of population is selected because claims occur as the project goes near the completion rather than at the beginning of the implementation. Claim experts, project managers, Resident engineers, Project engineers and Contract administrators from currently active Federal Road Projects were requested to respond to the questioners provided.

1.8. Limitation

The research is limited to identifying and ranking the frequency of causes in Design Bid Build Road projects of ERA; this is done to reduce the scope of the research considering the scattered geographical locations of projects (which makes it difficult to collect data), Thus, this have limited the scope of the research to be narrower.

1.9. Organization of the study

There are five chapters in this research. The background of the investigation, the statement of the problems, the research question and objectives, the significance of the study, its scope, and limitations all are included in the first chapter, which is the introduction part. The important literatures linked to the topic are studied and provided as theoretical, empirical, and conceptual reviews in the second chapter. The research methodologies are discussed in the third chapter, which includes the research approach and design, answers to what the sample is and why it was chosen, data sources, and

data collection devices. The fourth chapter consists to addressing the research findings and their interpretation, while the fifth chapter is dedicated to drawing conclusions and making recommendations.

1.10. Definition of key terms

Project: - A temporary endeavour undertaken to create a unique result (PMBOK, 2017).

Project Management: - The application of knowledge, skills, tools, and techniques to project activities to meet the project requirements, effectively and efficiently (PMBOK, 2017).

Contract: - A contract is an agreement between two or more parties in which each party agrees to do or refrain from doing something in exchange for the right to what the other promises (Bunni, 2005).

Claim: The most technical definition of claims is the statement of an alleged entitlement by a claimant (Chappell, 2011).

CHAPTER TWO: REVIEW OF RELATED LITERATURE

2.1.Theoretical Review

2.1.1. Introduction

The Construction industry has a tremendous impact on socioeconomic growth. The industry is a separate component of the economy that contributes directly to economic growth (Ababa, 2006). Every year, the Ethiopian government invests billions of Birr in new facilities to strengthen the country's infrastructure. The Ethiopian government created the RSDP in 1997, with a goal of constructing 128,466 kilometres by the end of 2014, with 110,466 kilometres completed so far (ERA, 2014). Local contractors contributed 42 percent of the allocated expenditure, working on 278 projects (ERA, 2014). Over the last 17 years, 41.2 percent of total RSDP expenditure has gone to road rehabilitation and upgrading, 28.8% to link road construction, 5.7 percent to federal road maintenance, 8% to regional road maintenance, 11.7 percent to Woreda road maintenance, 2.8 percent to institutional support projects, and the rest to other federal activities. (ERA, 2014).

More claims are filed against construction projects today than at any other period in history. Due to the intense competition, contractors have been driven to bid on projects with the smallest profit margins in order to stay in business. Projects are growing increasingly complex and risky as a result of their multiparty character. Contractors have been put under increased pressure to build increasingly complex and riskier projects with fewer resources and profitability. Given these circumstances, it's unsurprising that the number of construction-related claims continues to rise. (Ho, 2004).

This chapter is devoted to presenting a review of literatures that are related to the research questions being analysed, identifying study gaps and preparing a theoretical build-up for the study and familiarizing readers with the study area. claims are initially defined, after understanding the concept of claims, further literature describing the types of claims is presented. With this understanding of claims, more insight is given into the causes of claims, provision of contracts in claim and variables are identified from claim specialists and different literatures, which have contributed to the

enhancement of claims management and project management in the current practices of construction projects.

2.1.2. Design Bid Build Project Delivery

According to Jackson Barbara, the typical approach of project delivery is commonly design-bid-build, and the traditional accountabilities apply. The owner first engages an architect or engineer to design the building or structure in this scenario. The design professional creates a design by following the three typical design phases: schematic design, design development, and contract documents. The design expert is normally chosen based on qualifications and is typically compensated for his or her services with a fee or a portion of the building cost (Jackson, 2020).

The owner chooses the general contractor who will perform the construction and construction management services when the designs and specifications are completed. The most frequent way to choose a general contractor under this system is by low price or low bid: many competing builders estimate the project based on the contract documents, and the builder with the lowest price wins the contract (Jackson, 2020). Typically, the general contractor subcontracts certain aspects of the project to specialised contractors. Thus, the owner has two different contracts, one with the designer and one with the contractor, in this system. All dealings between the designer and the contractor proceed through the owner in this system. Between the designer and the contractor, there is no legal agreement. This process is quite linear in nature, and the contractor has no say in how the effects are designed. The contractor's sole responsibility is to complete the job as specified in the plans and specifications, and he or she will use the various construction management duties to do so (Jackson, 2020). The owner guarantees the contractor's designs and specifications are sufficient under the design-bid-build procedure. The owner is responsible for correcting any gaps between the plans, specifications, and the owner's requirements, as well as any faults and omissions in the design (Jackson 2004).

2.1.3. Definition of Contract

Two of the many definitions that attempt to encompass the core nature of a contract are listed here:

- 'A contract is an agreement between two or more parties in which each party agrees to do or refrain from doing something in exchange for the right to what the other promises' (Bunni, 2005).
- A contract is defined as an agreement between two or more people to create, modify, or terminate proprietary obligations (Negarit, 1960).

Article 1678 of Ethiopia's Civil Code states that in order to have a legally binding contract, the following elements must be met:

- A clear intention to form a legal relationship and be bound by the contract's terms;
- An agreement between the parties based on one party's offer and the other party's unconditional acceptance of that offer;
- A consideration is an exchange of an act or promise of an act, such as a pledge to do labour or services in exchange for the provision of a benefit (payment);
- Each party's legal ability to contract, which cannot be exceeded by either party; and a legal aim.

2.1.4. Claims perception

2.1.4.1. Claim

The Oxford Companion to Law defines a claim as "a broad phrase for the statement of a right to money, property, or a remedy" (Bunni, 2005).

A construction claim, according to Levin (1998), is a demand or assertion by one of the parties demanding, as a matter of right, contract term adjustment or interpretation, payment of money, time extension, or other relief with respect to the contract terms. (Levin, 1998).

Claims, according to Vincent.P-Smith and D, are a generic phrase for asserting a right to money, property, or a remedy. In the construction business, claims refer to a

contractor's request for an extension of time or more payment for work performed on behalf of the employer for which a readily recognized amount cannot be determined under the contract's terms (Powell-Smith, 1999).

Some academics have published extensively on the subject of construction claims. Scott is one of these scholars, who defined claims as "the statement of a right." (Scott, 1990). Construction claims, according to Monsey 1993, are "change orders that have not been accepted by the various contract parties." (Monsey, 1993). A construction claim, according to Dr. Wubishet, it is a demand for additional compensation, modification of the parties' contractual responsibilities, or any other alteration to the contractual circumstances or terms. (Jekale, 2006).

A claim is described as a request, demand, application for payment, or notification of suspected entitlement to which the contractor believes he is entitled, properly or unjustly at this point, and for which no agreement has been made (Murdoch, 2002).

The most technical definition of claims is the statement of an alleged entitlement by a claimant, most typically by the contractor asking additional time and/or payment as a direct outcome or scenario implied in the contract's terms and conditions (Chappell, 2011).

2.1.4.2. Content of claim

It is essential that for every claim, the contractor to provide for the engineer/employer/ employer's representative the appropriately documented claims, Scott suggests the following points to be included in claim documents (Scott, 1992).

Introduction: - detailing the claimants, providing a summary of the project, and the elements that have given birth to the claim The conclusion of the introduction should clarify that the contractor is seeking reimbursement for direct loss and/or expense (Scott, 1992).

Contract details: - Included are the contract form and revisions used, the date of site possession, the completion date, the practical completion date, and the liquidated

damage rate, among other things. More crucially, all written contract conditions on which the contractor must rely, as well as any inferred terms that may be advertised, should be documented. Misrepresentation and other common law principles should be highlighted (Scott, 1992).

A narrative: - stating the elements that give rise to the claim in chronological sequence. This will need to be linked back to the contract terms to indicate how, when, and where the breach happened. All written applications for reimbursement of direct loss and/or expense should be identified here and referenced to in the submission's appendices. A certain effect document, such as a schedule of events, is included by the contractor (Scott, 1992).

Quantum: - This section shall include all computations leading up to the direct loss and/or expense, as well as all essential supporting evidence such as time sheets, invoices, and so on, which will be referenced to an appendix (Scott, 1992).

Appendix: - Each document or collection of papers should have an appendix reference that corresponds to the narrative's relevant reference. (Scott, 1992)

2.1.5. Type of claims and their classification

There are several different approaches for categorizing construction claims. Chappell divides claims into two categories. The first group divides claim into two categories based on their goals (Chappell, 2008).

They are as follows: -

1. Request for additional time to finish the contract
2. Make a claim for additional money due to the contract, and
3. Make a claim for both time and money.

The second group classifies claims based on their legal foundations and divides it in to three categories (Chappell, 2008).

I. Contractual claims

Contractual claims are those that fall under the contract's specific stipulations, such as ground conditions, valuation, modifications, late information, and delays in checking completed work. Such claims account for the majority of claims, and the contract

conditions specify the circumstances in which they may be made and how they will be handled. For example, the employer might make a design change, and if this happens, the contract specifies a method for the contractor to seek compensation by filing a simple contractual claim (Kahssay, 2003).

II. Ex-contractual claims

Ex-contractual claims (also known as extra-contractual claims) arise from a breach of contract, which might be expressed or implied. Extra work incurred as a result of substandard material given by the employer is an example of an ex-contractual claim. These are claims that are either not made under the terms of the contract or are supposedly made under them but are considered legally unenforceable by the employer because they do not come within the terms of the contract (Haswell, 2013). Such claims generally involve the recovery of damages, and while they may fall outside the scope of the contract, they are nonetheless subject to its settlement (Kahssay, 2003).

III. Ex-gratia claims

Ex-gratia claims are those in which the contractor believes he has moral reasons that are not supported by the contract or the law: additional expenses incurred due to quickly rising prices (Chappell, 2008).

An 'ex-gratia' claim could be filed to recover costs expended by the contractor that benefited the employer but for which there is no basis for recovery under the contract. Chappell divided claims into contractual claims, common law claims, quantum meruit claims, and ex-gratia claims, similar to the previous works. Common law claims are claims for damages based on a common law breach of contract and/or legally enforceable claims for a breach of another component of the law, such as tort, copyright infringement, or a breach under statute.

IV. Quantum meruit claims

Furthermore, where no price has been agreed upon, quantum meruit claims provide a remedy. The legal Latin term "Quantum Meruit" can be translated as "what is earned" or "what is worth." A legal obligation to pay on a quantum meruit may be imposed (1)

where work is performed under a contract but no price is agreed upon, (2) where work is performed under a contract that is believed to be valid but is actually void, (3) where a reasonable sum is agreed upon, and (4) where work is performed in response to a party's request but without a contract. In other words, this is known as "a claim in quasi-contract" or "a claim in contract." (Chappell, 2008).

Adrian offered the final group (1988). He divided claims into four categories. In order to make the calculation of claim damages easier: (Adrian, 1988)

a. Delay claims

This type of claim occurs when a contractor is unable to complete his work within the time frame he had scheduled. Increased costs, material shortages, new delivery and packaging systems, and new technology in terms of designs and specifications are all major sources of delay claims. Delay claims are frequently described as the most straightforward to assess and compute.

b. Scope-of-Work claims

The issue of culpability in scope-of-work claims is sometimes ambiguous. This sort of claim is less deterministic in terms of damages than delay claims. It is rarely distinct from other forms of claims.

c. Acceleration claims

Acceleration claims, also known as productivity loss claims, typically arise as a result of a delay or scope-of-work claim, in which a contractor is needed to complete his tasks in less time than intended, or to use different or extra resources to speed up its production system.

d. Changing-site-condition claims

"Changing-site-condition" or "differing-site-condition" refers to physical circumstances at the job site that differ considerably from those specified in the

construction contract or those that would be expected in a similar job. Any delay, disruption, or change in circumstances or scope of work is bound to have an impact on expenditure or income, whether for the contractor, the employer, or both. Subcontractors may be affected as well. In some circumstances, the contractor (or subcontractor) bears the risk, whereas in others, the employer bears it. One party may have a claim against the other if there is a contract violation or a contractual provision to claim loss or damage (Wright, 2016).

According to the Manuals and Guidelines which is intended to support the Road sector development programme for Ethiopia volume 6A identifies and classifies types of claims under construction contract as claims for extensions of time, claims for additional costs and claims for breach of contract and elaborates it with connecting FIDIC Contract clauses (Were, 2020).

A. Claims for Extensions of Time

Clause 44.1 Extension of Time from Completion is the most important clause dealing with EOT. Other clauses specify the conditions in which a right to an extension of time may arise, but they all refer to this article as the one that specifies the method to be followed in order to get an extension of time. Clause 12.2 Not Foreseeable Physical Obstructions or Conditions is an example of such a clause. If the contractor experiences such conditions, the engineer shall determine any time extension to which the contractor is entitled under Clause (Were, 2020).

An extension of time clause is important because it ensures that the employer retains the ability to deduct liquidated damages. If the article dealing with liquidated damages is disputed, it will only be considered as legal if it also includes provisions for extensions of time for delays caused by the employer's or engineer's actions or inaction (Were, 2020).

Prolongations of time Clauses will normally outline the types of delays for which the contractor may be eligible for a time extension; they may also clearly exclude certain types of delays from consideration. Such clauses will also detail delays that are beyond

either party's control, such as force majeure or unusually severe weather conditions (Were, 2020).

It's important to distinguish between simultaneous and subsequent delays. Concurrent claims are for the same time period or for time periods that overlap. Any sections of a time extension claim that overlap with another claim are considered concurrent. Multiple extensions for the same length of time are not permitted (Were, 2020).

Claims or parts of claims that do not overlap with other claims are considered successive claims for an extension of time. There could be several claims that overlap. Only one extension can result from the overlapping portions of successful applications for a time extension. If a successful claim overlaps an unsuccessful claim, the overlapping period should be granted a time extension (Were, 2020).

Claims for non-critical tasks that do not affect the completion schedule should not be granted extensions of time. A contractor's claim for additional expenses resulting from delays in non-critical activities may be acceptable, but not for a time extension. Claims of this like would be brought as a disruption claim (Were, 2020).

When Conditions of Particular Application (COPA) are applied to eliminate some causes of delays from consideration for time extensions, the contractor takes on more risk. Higher pricing will result from this imposition. In extreme situations, shifting risk to the contractor may render certain contract clauses null and void if a claim is brought to arbitration or litigation. It should be highlighted, however, that once the contracting parties have signed the contract, any claims must be justified exclusively by the accessible contract requirements from the signed instrument. Any significant gaps in the contract's terms should be discussed, and minutes of negotiations should be included in the addendum (Were, 2020).

If the entire common objective and purpose of the agreement is to complete projects, validating the contract by extending the completion period should be managed in a WIN WIN manner. As a result, COPA should not be designed to prevent exits, especially for the Employer. For example, unless there are neutral causes for Time Extension, such as Adverse Weather, the Employer will address cost-related time extension claims or

feverish activity sacrificing quality in order to maintain the original completion schedule (Were, 2020).

An EOT benefits the contractor by releasing him from liability for damages for delays (typically liquidated damages) for any period previous to the extended contract completion date, as well as allowing for reprogramming of the works to completion. Similarly, the EOT benefits the Employer by establishing a new contract completion date, preventing 'at large' time for completion of the works, and allowing for coordination/planning of its own activities (Were, 2020).

If a contractor is assigned unexpected risks, it is critical that the contractor to whom the contract is granted is capable of managing those risks. (Were, 2020). It is critical that time extensions offered to the contractor are granted in a timely way; Failure to do so results in the completion date not being extended, and the contractor becoming liable for liquidated damages, despite the fact that the contractor should have been allowed an extension of time to avoid these issues (Were, 2020).

If the contractor's actions or lack of actions prohibit him from obtaining practical completion by the contract's deadline, time can be extended. This means that the contractor is no longer bound by the contract period, but just has to perform the work in a fair amount of time (Were, 2020).

When the contractual process for establishing a time extension fails, time is set at large. This can happen if the Employer interferes with the determination or refuses to give approval so that the Engineer can publish his findings within the Contract's deadline (Were, 2020).

There is no date from which liquidated damages can be calculated if time is chosen arbitrarily. If the employer wants any compensation, he must show that the delay caused actual damage. (Were, 2020).

If time is established arbitrarily, the contractor may claim that the contract is no longer legitimate and that he should be paid on a quantum meruit basis for work completed after the deadline. This implies he'd be paid a fair price for the labour, which could be higher than the amount he'd be entitled to under the contract (Were, 2020).

B. Claims for Additional Costs

In a FIDIC 4 contract, claims for additional expenses might be based on a variety of terms. These allegations can be broken down into two categories. (Were, 2020).

i. Default by the Employer

The conduct or lack of action on the part of the employer or an agent of the employer is the fundamental cause of the claim in this division. Failure to give site access as required by the approved program is an example of the former. Interference by an employer's employee or another contractor is an example of the latter. (Were, 2020).

ii. Default by the Engineer

The claim in the second division stems from the engineer's actions or inaction. This could be caused by delays in the contractor receiving drawings or instructions. (Were, 2020).

C. Claims for Breach of Contract

A contractual claim for breach of contract is based on contract provisions that outline the events that result in breaches of contract and the remedy available to the injured party in the case of such a breach. Clause 63 of FIDIC 4 deals with contractor default, while Clause 69 deals with employer default. Other than claims for breach of contract, most claims are based on the basis of disruption, prolongation, acceleration, or global grounds. Extensions of time, additional charges, or both may be claimed (Were, 2020).

i. Disruption Claims

When a contractor is prohibited from carrying out work in line with an established schedule, his work is disrupted. If the prevention is caused by one or more of the contract's specified circumstances, the contractor may be entitled to a time extension, additional expenses, or both. Access delays, design modifications, delays in supplying drawings, delays in providing instructions, and failing to respond to a request for information within a defined time frame are all common sources of disruption. A

disruption has the effect of preventing the contractor from operating efficiently or in a logical order. When a contractor is prohibited from carrying out work in line with an established schedule, his work is disrupted. If the prevention is caused by one or more of the contract's specified circumstances, the contractor may be entitled to a time extension, additional expenses, or both (Were, 2020).

The contractor's on-site equipment may no longer be appropriate for the type or quantity of work currently required due to a design change. Productivity declines as a result of inefficient and poor use of equipment and labour. A single incident may not cause a critical task to be delayed, but numerous incidents may, necessitating a time extension (Were, 2020).

Loss of productivity and uneconomic usage of equipment occur as a result of interruption and may be used to support a claim, provided they are not caused by an occurrence that is the contractor's fault (Were, 2020).

Disruption claims are difficult to evaluate. Comprehensive, up-to-date records are required. It is also necessary to refer to the approved program that was in existence at the time of the alleged disruption (Were, 2020).

ii. Prolongation Claims

Prolongation is a delay in a vital task that extends the time it takes to complete the entire project. It is quite likely that a time extension will be justified if the cause of the delay is not the contractor's fault. (Were, 2020).

Extensions of time come with greater costs for the contractor due to the increased length of the contract period. Maintenance of the contractor's site facilities; providing facilities for the engineer; longer usage of equipment that may be required for another project; off-site and head office expenditures; finance and insurance costs; and many other potential associated claims might all result in additional costs. Clause 44.1 outlines the circumstances in which a contractor may request a time extension. After "...proper consultation with the Employer...", the engineer must assess what is meant by "...being such as fairly to entitle the Contractor to an extension of the Time for Completion of the Works..." and the extent of such extension of time (Were, 2020).

One thing to evaluate is whether the delay has resulted in an extension of the critical route, which necessitates a time extension. A key aspect to remember is that if a non-critical operation is delayed, an extension of time will not be granted because the overall completion time will not be affected. However, if this occurs, a claim for additional costs as a disruption claim may be filed (Were, 2020).

iii. Acceleration Claims

When a contractor claims that he has had to mobilize more resources to finish the work within the existing completion schedule due to no fault of his own, he is making an acceleration claim. An increase in the quantity or scope of labour without a matching increase in time could cause this. (Were, 2020).

If a contractor submits a request for an extension of time under the contract that is either rejected or not responded to, he may claim that he was forced to accelerate progress in order to complete the works within the un-extended time for completion so that he is not subject to liquidated damages deductions (Were, 2020).

The engineer may notify the contractor if the contractor's progress is such that the engineer believes the work will not be finished in the required time and the slow rate of progress is not due to any incident that would qualify the contractor for a time extension. Clause 46 then requires the contractor to take whatever efforts are necessary to hasten progress in order to meet the deadline. The contractor is not entitled to any additional compensation for any expenditures incurred in accelerating work (Were, 2020).

Costs of working more hours; supplying extra labour; providing extra or different equipment, including the costs of bringing items to site; and advancing the delivery of items to be supplied by subcontractors, such as structural steel members, are all examples of acceleration claims (Were, 2020).

iv. Global Claims

Claims must be proven under FIDIC 4 and other kinds of contract. Clause 44 for extensions of time and Clause 53 for claims for additional costs define the method that must be followed by a contractor when submitting a claim (Were, 2020).

A contractor is required to submit thorough, current evidence to justify every part of each claim. Each cost or time claim must be based on a specific dollar amount. This means that each part of each claim must demonstrate a clear relationship between cause and effect (Were, 2020).

However, depending on the law relevant to the contract, it may be permitted to present a single global claim covering many aspects of a claim in some circumstances and jurisdictions. When the consequence of an action or lack of action by the employer, his agent, or the engineer can be proven to have resulted in increased expenses to the contractor, but it is not possible to correlate each aspect of the claim to a specific sum in the claim, this can happen (Were, 2020).

Global claims are strongly opposed by engineers, employers, and arbitrators. This is because the contractor claims additional charges without necessarily giving proof of any contract breach or detailed grounds for any claim entitlement. These claims are especially difficult to evaluate because a contractor does not offer factual information linked to each element of a claim that may be evaluated for correctness, relevance, or adherence to contract requirements (Were, 2020).

2.1.6. Causes of Claim

Following the presentation of a claim, the owner and contractor can either agree to the claim and establish a change order or modification, or they might disagree and form a construction contract dispute. Analysing the different types and causes of claims is a crucial step towards resolving them (Ren, 2003) (Janney, 1996).

The construction industry needs to create strategies and techniques to limit or prevent claims as project participants become more aware of the high costs and hazards connected with claims and subsequent litigation. Despite the fact that construction lawsuits are common and difficult to resolve, many people do not seek legal guidance

because it is either unavailable or prohibitively expensive (Barrie Donald S, 1976) (Diekmann, 1985).

Contract claims can originate from a variety of reasons. Depending on the specific terms and conditions of the contract, a contractor may or may not be entitled to claim and recover costs, losses, expenses, or damages for specific reasons. On a construction project, claims might emerge for a variety of reasons. Claims in construction contracts can arise when contractual parties fail to meet performance standards, whether they are linked to completion time, construction cost, quality, and intended purpose, or safety, health, and environmental implications. Unprecedented political, economic, social, and technological uncertainty can also be key contributors to claims (Elghandour, 2006). In general, construction claims arise as a result of the following factors:

Documentation

- Inadequate information on, or flaws and/or discrepancies in drawings
- Inadequate information on, or flaws and/or discrepancies in drawings
- Frequent reprinting of drawings
- Disputes about the priority of documents where conflicts exist
- Insufficient plans and specifications

The site

- Late or insufficient site possession
- The information provided by the principal was incorrectly formatted.
- Conflicts with neighbouring principals (injunctions etc.)
- Site circumstances have changed (misrepresented or unexpected)
- Poor construction site management and administration;

Execution of works

- Contractors' construction methods have been forced to alter.
- Regulatory changes
- faulty materials or craftsmanship
- It is no longer possible to complete the task;

Subcontracting

- Late assignment of nominated subcontracts that the contractor is required to appoint as subcontractors by the employer.
- Default by nominated subcontractors.

Time

- Changes to the works' order and sequence
- Delays induced by the principle or agents of the principal
- Weather-related delays and other factors outside the contractor's control
- Completion time shortened
- Productivity loss.
- Delays in contract construction and completion;
- Delays in material delivery and supply;

Payment and adjustments of contract sum

- Variations, such as whether or not an item is a variant and disagreements over their value.
- Changes to measured amounts and/or relevant applicable rates
- Delays in completion
- Resident engineer's late 'under-certification' of progress payments
- Principal's late payment
- Resident engineer's late 'under-certification' of progress payments
- Principal's late payment
- Inconsistencies in cost adjustment formula interpretation
- Principal's deduction of liquidated and ascertained damages
- Weather that causes construction to be slowed or stopped

And other reasons like

- Changes requested by the owner;
- Conflicts between those involved in the project's development;
- Contract termination by the owner or the contractor;
- Failure to appropriately organize and coordinate the work; and

- Failure of parties to cooperate with one another in the performance of the task (Wilson, 2002)

Jekale 2006, claims that the occurrence of deviations from the commitments made under the construction contract during the performance of the construction contract may be a cause for claims. These deviations could show up in terms of or in respect to (Jekale, 2006): -

- Time to finish;
- cost of construction;
- quality of performance; and
- Requirement of Safety

Furthermore, the allegation of the following criteria may result in claims (Jekale, 2006).

- Incomplete or ambiguous tender and/or contract documents;
- Stakeholders' poor or ineffective management of duties; and
- Unforeseen or uncertain situations during execution of the Construction Project;

Longbottom and Rawling (2008) summarize the causes of claims into a few that can be either excusable (e.g., earthquake), compensable (e.g., variations, discrepancies in information, late information, and projector postponement), or both (e.g., variations, discrepancies in information, late information, and projector postponement) (Longbottom, 2008).

Both time and cost claims in fact can lead in most situations to undesirable consequences. On the level of relationships between the contracting parties, they can have a very undesirable effect. This is attributed to the fact that in most occasions, claims have a relevantly high tendency to cause disputes, conflicts and alienation between the various key stakeholders or contract parties. Consequently, disputes in most situations result in expensive and remorse proceedings like arbitration and litigation (Cheung, 1998). Since unresolved claims are the basis for the existence of construction disputes.

A direct outcome of claims would be completion schedule delay, assuming the Contractor is able to establish his entitlements to additional time post contract expiry. If the claim is managed appropriately, the contractor can further ensure the award of cost compensation. The strong link between claims and time delays can also result in cost escalation. In other words, the increase in the amount of money required to construct the project far beyond the initial allocated budget (Kaliba, 2009)

2.1.7. Provisions of standard conditions on claims

2.2.4.1. Claims within the Provisions of the Contract

Contractual claims are those that fall under the contract's specific stipulations, such as ground conditions, valuation, modifications, late information, and delays in checking completed work. They emerge and are handled with according to the contract's terms. Such claims account for the majority of claims, and the contract conditions specify the circumstances in which they may be made and how they will be handled. For example, the employer may make a design change, and if this happens, the contract specifies a method for the contractor to seek compensation by filing a simple contractual claim (Kahssay, 2003).

These claims come from the contract's specific provisions and are handled by the engineer. Contractual claims are referred to as such since they emerge from a contract (Ababa, 2006). Such claims are based on a clause or clauses in the contract which specifically allow the contractor to put in a claim in certain decreed circumstances (Kahssay, 2003).

2.2.4.2. FIDIC, 1987 provisions on claim

The usage of standard forms has become prevalent in the building sector. They exist at both the national and international levels (for example, FPPA). Civil law standard forms typically predominate in national marketplaces, although English-speaking contract terms are preferred on an international level. The International Federation of Consulting Engineers' standard forms are the most frequently utilized in the international field for several reasons (FIDIC). The FIDIC contract range consists of three major formats

known as the Red Book, Yellow Book, and Silver Book. Contracts come in a variety of forms (Jaeger, 2010).

FIDIC was created in 1913 by national organisations from three European countries, and by 2005, it had a membership of over 60 countries. The most often used form of Conditions of the Contract for construction of building and engineering works is FIDIC 87 (FIDIC IV), generally known as the FIDIC Red book, among the several FIDIC issued documents (Corbett, 1991).

The FIDIC RED BOOK (Construction) is a contract type in which the Employer creates the design and the Contractor gets compensated based on measurements. As a result, the Red Book follows the standard procurement process of Design, Bid, and Build. Estimated amounts are used to calculate the Accepted Contract Amount. The Contractor is compensated for the real amount of work he completed (Jaeger, 2010).

The FIDIC contract general conditions (Fourth Edition 1987, Reprinted 1992 with additional amendments) are divided into 25 groups or articles, each of which has 72 sub-articles or clauses. FIDIC General Conditions of the Contract (Fourth Edition 1987, Reprinted 1992) is particularly mentioned in this thesis using either FIDIC 1987 or FIDIC IV, which both represent the identical contract conditions (Corbett, 1991).

Contractors making claims must carefully follow the methods outlined in the contract requirements, offer a breakdown of alleged additional costs and time, and provide sufficient documentation to increase their chances of success (Kululanga, 2001). On the other hand, project owners must adhere to an all-encompassing, step-by-step method for tracking and handling contractor claims (Abdul-Malak, 2002) (Scott, 1990).

In road projects, for DBB with unit Price Contract type, FIDIC 1987 and FPPA Conditions are Contracts are commonly used as a General Conditions of the Contract. (Gezahegne, 2015).

There are certain clauses, which provide the contractor with opportunities for increasing the contract price, and certain clauses that entitle the employer to receive payments from the contractor. These clauses are listed in tables 1 and 2.

Clause No.	Clause title	Entitlement
5.2	Ambiguities or discrepancies among several documents forming the contract	Additional Cost+ Time Extensions
6.3 & 6.4	Delay in engineering drawings within reasonable time	Additional Cost + Time Extensions
12.2	Physical conditions or obstructions which cannot be predictable	Additional Cost + Time Extensions
17.1	Setting out (errors based on incorrect data)	Additional Cost + Profit
18.1	Exploratory boreholes	Additional Cost + Profit
20.3	Repairs and employer's risks	Additional Cost + Profit
27.1	Fossils, antiquities, structures	Additional Cost + Time Extensions
31.2	Opportunities to other contractors	Additional Cost + Profit
36.5	Additional tests	Additional Cost + Time Extensions
38.2	Uncovering and making openings to inspected works	Additional cost
40.2	Suspension	Additional Cost + Time extension
42.2	Employer's failure to give possession	Additional Cost + Time Extension
50.1	Search for defects	Additional cost
51.1	Variations	Additional cost + Profit
52.1& 52.2	Extra payment for variation orders	Additional cost + Profit
52.3	Fifteen percent reduction or decrease	+ Cost
65.3	Damage to works by special risks	Additional cost + profit
65.5	Increased costs arising from special risks	Additional cost
65.8	Termination of contract	Additional cost + profit
69	Default by the Employer	Additional cost + Time Extension
70.1	Increase or decrease in cost	By formula
70.2	Changes in legislation	+ Cost

25.3	Contractor's failure on insurance	No notice
30.3 & 30.4	Damages to highways and bridges	Consult
37.4	Rejection of materials and plants	Engineer's notice
39.2	Contractor's failure to obey engineer (improper work and materials)	Engineer's notice
46.1	Rate of progress	Engineer's notice
47.1	Failure to complete on time(liquidated damage)	Engineer's notice
49.4	Failure of the contractor to do repairs	Engineer's notice
59.5	failure to prove payment to sub-contractors	Engineer's notice
63.3	Default by the contractor	Engineer's notice
64.1	Urgent remedial work	Engineer's notice
65.8	Payment on termination	Engineer's notice
69	Default by the Employer	Additional cost + Time Extension
70.1	Increase or decrease in cost	By formula
70.2	Changes in legislation	+ Cost
71	Currency and rate of exchange	Additional cost + profit

Table 1: Clauses of contractor's entitlements

Sources: FIDIC 1987

Table 2: Clauses for employer's recovery of money from contractor

Clause No.	Clause title	Entitlement
25.3	Contractor's failure on insurance	No notice
30.3 & 30.4	Damages to highways and bridges	Consult
37.4	Rejection of materials and plants	Engineer's notice
39.2	Contractor's failure to obey engineer (improper work and materials)	Engineer's notice
46.1	Rate of progress	Engineer's notice
47.1	Failure to complete on time(liquidated damage)	Engineer's notice
49.4	Failure of the contractor to do repairs	Engineer's notice
59.5	failure to prove payment to sub-contractors	Engineer's notice
63.3	Default by the contractor	Engineer's notice
64.1	Urgent remedial work	Engineer's notice
65.8	Payment on termination	Engineer's notice

Sources: FIDIC 1987

In General, In the FIDIC form of contract, the principal bases of claim, which may be submitted, are among others the following: 1) Costs associated with the encountering of physical obstructions and conditions which would not have been foreseeable by an experienced Contractor (Clause 12.2), 2) Errors in setting out which are based on

incorrect written data Supplied by the Engineer (Clause 17.1), 3) Loss or damage due to employer's risks (Clause 20.3), 4) Indemnities that the employer has contractually undertaken to assume (Clause 22.3), 5) Fossils or discovery of things of geological or archaeological interest (Clause 27.1), 6) Delays caused by other interfacing contractors (Clause 31.2), 7) Uncovering work that has already been completed (Clause 38.2), 8) Suspension of the work ordered by the Engineer (Clause 40.2), 9) Late Possession of the site, which is as a result of a failure of the employer to give the required handover (Clause 42.2), 10) Remedying defects not the responsibility of the Contractor (Clause 49.3) , 11) Searching for defects which are not the fault of the Contractor (Clause 50.1), 12) Valuation of variations which may include alternations, additions and/or omissions (Clause 52), 13) Provisional sums pending a proper valuation of the variation under Clause 52 above (Clause 58), 14) Special Risks which very often include war, hostilities, contamination, riots and other such risks (Clause 65) and 15) Fluctuations of labour costs (if provided for) and subsequent legislation that adversely effects the project (Clause 70) (Jaeger, 2010).

2.2.4.3. FPPA, 2006 provision on claim

According to The Ethiopian Federal Government Procurement and Property Administration, The Public Procurement and Property Administration Agency as an autonomous Federal Government organ having its own juridical personality was restabilised which is accountable to the Minister. Form its many objectives the agency works for the prevalence of uniform and consistent system of public procurement and property administration at national level. Also, the agency works to harmonize the system of public procurement and property administration with the internationally recognized standard and the agency have a function of prepare, update and issue authorized versions of the standard bidding documents, procedural forms and any other attendant documents pertaining to procurement and property administration (Proclamation, 2009).

The following table revises claim clauses provided in the standard condition of contract by public procurement agency:

Clause No.	Clause title	Entitlement
A. General		
2.3	Discrepancies among several documents of the contract.	Additional Cost + Time Extensions
7.1	The contractor shall not assign the sub-contractor without the approval of the Employer in writing	Liquidated damage
8.1	Cooperation with other contractors	Additional Cost
11.2	Repairs due to damages, loss or injury from any of the excepted risks	Additional Cost
12.1	Repairs due to damages, loss or injury from any of the Employer's risks.	Time Extensions
13.3	Contractors' failure to insure	Repayment
16.1	Execution of the work in accordance with the specifications and drawings	Cost + Release from performance
18.4	The contractor to comply with third parties approval for the design of temporary works.	Additional Cost
20.1	Historical or other interest discoveries	Additional Cost + Time Extensions
21.1 Possession of site	Possession of site	Additional Cost + Time Extensions
B. Time control		
27.1&27.3	Updates of program submittals including change to sequence.	- cost
28.1&28.2&29.2	Variation and delay due to variation	Additional Cost + Time extension
29.1	Acceleration	Additional Cost
30.1	Delayed orders by the Engineer	Additional Cost + Time extension
C. Quality control		
33.1	Identify defects and uncover the works	Additional Cost
34.1	Additional tests instructed by the Engineer	Additional Cost
35.1	Correction of defects	Time extension
36.1	Uncorrected defects	Repayment
D. Cost control		
38.1	Changes in the bill of quantities (adjustment of rates)	Cost +/-
39.1	Variations	+/- Cost
43.1& 43.2	Interest on delayed payment	Additional cost

44.1 b	Employer affects other contractor who is under the contract by modification of schedules	Additional cost
44.1 c	Delay on drawings, specifications, or instructions required for execution of the work on time	Cost
45.1	Tax adjustments by the Engineer	Cost
46.1	Currency restriction	Cost
49.1	Liquidated damage	Cost
49.2	Overpayment of liquidate damage	Cost
50.1	Bonus to the contractor at the rate per calendar date	Cost
51.1-3	Delay on advance payment	Cost
58.1	Operating and maintenance manuals as required	Repayment
60.1	Termination of contract if the total amount due to the Employer exceeds any payment due to the contractor	Cost
60.2	Termination of contract	Cost
61.1	Contractor's default	Repayment/termination
62.1	Frustration like war	Release from performance

Table 3: Standard bidding document for the procurement of works
Source: FPPA 2006

The provisions of the two-standard condition of contract are more or less the same except the following points.

- PPA condition of contract studies under the classification general, time control, quality control, cost control, finishing of the contract.
- PPA condition of contract has separately listed those events that are compensable under clause 44.

2.3. Empirical Review

2.3.1. Causes of construction claims

In reviewing of related literature; Many research on claims and claim management are conducted for construction industry in different countries; but a complete cause of claims in Road construction industry in Ethiopia had not been studied. relevant issues for this research are reviewed from different sources.

Contractors claims, including common law claims (which arise from causes outside of the express contractual terms.), ex gratia claims (which have no legal foundation but are claims that the contractor believes the Employer has a moral obligation to meet), and contractual claims (which arise from the express provisions of the contract and are the most common kind of claim) may pertain to any or all of the following: Fluctuations, variations, time extension, loss and/or Expenses incurred as a result of issues preventing the project's regular progress (Birchall, 2007).

The study in China outlines the causes of contractors' claims as: external risk (socio-political risks, economic risks, and natural hazards), clients' organizational behaviour (untimely payment, change orders, and inefficient processing), and project definition in contract (unclear scope of works, and unclear technical specification) (Shen, 2017).

According to the study conducted in Oman owners are the main sources of claim followed by consultant and contractor with equal percent (Al-Mohsin, 2012). Al-Mohsin studied 26 causes of claims in construction industry and collected data from 45 projects with specific criteria in Oman. Al-Mohsin divided these factors into four categories based on the origin of claims: owner related factors, consultant related factors, contractor related factors and contract document related factors (Al-Mohsin, 2012).

The study conducted in India indicate the most frequent causes of claim includes payment related claim, change related claim, delay claim, extra work claim, contractual work claim, different in pricing and measuring claim, different site condition claim, acceleration claim, damage claim and contract termination claim (Shah, 2014). Also, Chaphalkar and Iyer in their study of a total of 52 arbitration awards in India found that, out of the 52 arbitration awards, 38 awards are pertained to delay related claims (Chaphalkar, 2014).

Zineldin in his study in the Emirates of Dubai and Abu Dhabi using data from 124 claims, revealed that the types of claims in construction projects in UAE can be classified into six main types: contract ambiguity claims, delay claims, acceleration claims, changes claims, extra-work claims and different site condition claims

(Zaneldin, 2006). In his study revealed that the most frequent causes of claims in construction projects in UAE are: change orders, delay caused by owner, oral change orders by owner, delay in payments by owner (Zaneldin, 2006).

Dickmann and Nelson have found that the most common causes for a contract claim are design changes and errors. A comprehensive analysis of claims indicated that 46% resulted from design errors. An additional 28% were due to either discretionary or mandatory changes. Thus 72% of all contract claims can be traced to design changes, extra work, and errors (Diekmann, 1985).

Abd El-Razek et al. reviewed the causes of claims in the international literature and then modified these causes according to the Egyptian construction industry using semi-structured interviews with 10 experts. The modified list included 17 causes. Three case studies were utilized during their research to further investigate the occurrence of each cause in the project. They found that the most frequent causes were: variations initiated by owner/consultant, inferior quality of design, drawings and / or specifications, delays of approval of shop drawings, instructions and decision making and stakeholders involved in the project (Abd El-Razek, 2007).

Mohamed et al. investigated 31 factors causing claims in Egyptian construction industry and concluded that the most disputable claim factors are extension of time, delay interim payment from client, qualification of team work, variations order by owner, poorly written contracts, late supply of equipment and material, incomplete drawings and specification and cooperation and communication nature (Mohamed, 2014).

Sibanyama et al. during their study on causes of claims in the Zambian construction categorized 20 causes of claims according to the 4 phases of a construction project: pre tender; contract formulation; construction and post construction phases (Sibanyama, 2012).

Research made in Indian construction industry showed that the most important factors that contributed to the generation of claims are delay in handing over site, variation between actual and original quantities, excessive change orders by owner, delay of shop

drawings approval by owner's representative, and scope change of the project. The results also showed that the most frequent claim type in Indian construction projects is extra-work claims (Al-Qershi, 2017), also A-Qershi categorized causes of claims in to owner/owner's representative related, contractor related claims, contract document related factors, project related factors, contractual relationship related factor and external factors.

The result of study in Nigeria revealed that changes or modifications of scope that increase consequential cost beyond initial cost. Variation and late confirmation of variations, design professionals, failure to remain within the client budget and design objectives, discrepancies/ambiguities in the context documents, late information delivery, over measurement and under measurement of work by consultants to work in progress, design and specification oversight, error or omissions resulting from uncoordinated civil structural, architectural as the most important underlying causes (Ekhator, 2016).

The study in Niger state Nigeria outlines the causes of construction claim as Unrealistic time targets, Poor communication, Incomplete tender information, Slow client response (decisions), Inadequate design information, Inaccurate design information, Effects of high inflation in the construction sector, Inadequate site investigations, Inadequate contract administration, Uncontrollable external events, Increased complexity of building projects, Increase in government regulations, Unclear risk allocation, Increased competition due to decrease in the number of projects in the area, A decrease in profits, Withdrawal of governmental support hitherto extended to the contractor (Bajere, 2017).

The study conducted in Ethiopia at Yeka sub city indicated the top three main causes of claim as 1) client related causes of claim (Payment delays for contractor ; Inadequate construction details, Sequence of work directed by owner; 2) contractor related causes of claim (Variation work, Non adherence to site instructions, Project coordination problems) 3) contract document related causes(Leverage for enforcement of schedule specification, Power of individual party vaguely specified, Permitting responsibilities Vague) (Zenebe, 2016).

The study conducted in Ethiopia revealed the causes of claim as claims due to the late handing over of the site, financial claim due to variation of work and time extension claim due to design issues (Dinku, 2003). According to the case study made by Reta, Ashenafi Bassa, Matusala Alyew, Ashebir on Southern Nation Nationality and People Region (SNNPR), Ethiopia; sources of claim causes are sub-divided in to three and also there relative important was ranked as follows (Reta, 2019): -

Client related causes of claim ranked as:

1. Delay in payment (cash flow problem),
2. change of client's requirement,
3. Finance limitation to fund the project,
4. Oral change order (failure to give written instruction) and
5. Lack of awareness about construction;

Contractor related causes of claim ranked as:

1. Change of Market price (material cost and labour cost)
2. Variation
3. Poor communication with other parties
4. Extension of time (delay in completion time)
5. Lack of project management

Contract Document Related Causes of Claim ranked as

1. Incomplete design/ contract document
2. Variation between executed work and original work
3. Document management problem (non -computerization)
4. Discrepancy between documents
5. Ambiguous (unclear) contract (Reta, 2019).

Most of these studies result shows differences; This difference indicates that the underlying causes of claims vary from country to country, from time to time and from industry to industry. Hence, this study has an objective of identifying the underlying causes of federal Road construction project claims which are under Ethiopian Road Administration.

2.4. Conceptual Framework of the study

There are different Causes of Claims suggested by several authors. Considering the literatures reviewed this Research will take the common Causes of claims identified and combine them all in a category so as to identify the causes of claims from different perspectives in the organization under study. Therefore, according to literature reviewed, based on the interrelationship the causes of claims can be grouped as Employer/ Employer's Representative, Contractors related Causes, Contract Document related causes, Project Related causes, External Factors, Contractual relationship related causes.

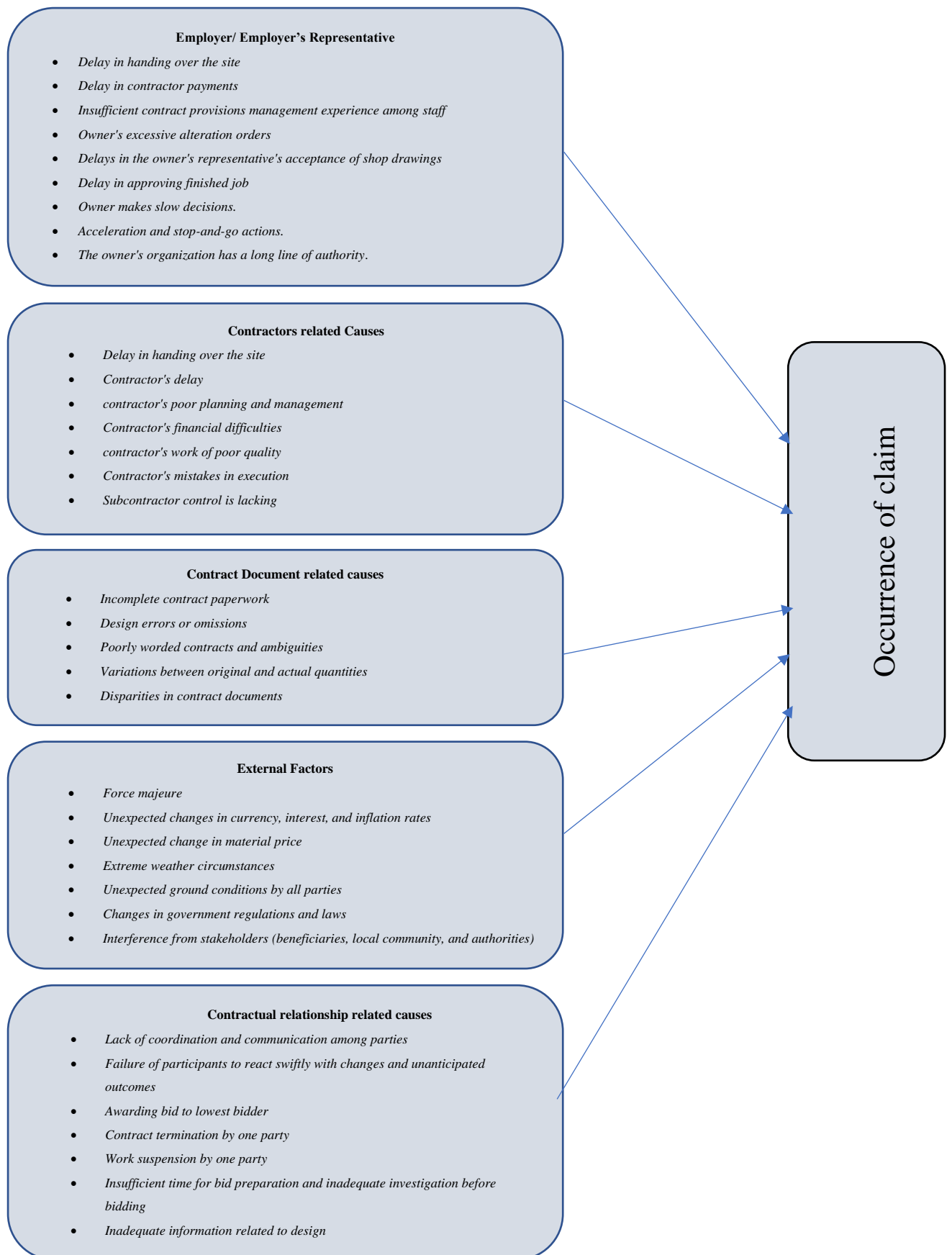


Figure 1: Conceptual Framework

Sources: self-compiled from literature review

CHAPTER THREE: METHODOLOGY

3.1. Introduction

This chapter is dedicated to the presentation and discussion of the most appropriate research method for achieving the research's goals. It comprises the various methods for conducting scientific research and determining the relevant methods.

The research approach, methods, and design to be employed by the study are presented in this chapter, which also highlights the population and difficulties related to sampling process, sample size determination, and data collection instrument. In addition, the chapter discusses data collecting and analysis methods, as well as Scale Reliability and Validity.

3.2. Research Approach

Quantitative and qualitative research approaches are the two most used research methods in the research world (Naoum, 2012). Quantitative research frequently entails the use of statistical analysis to connect what is known with what can be learned through study (Trochim, 2006), whereas qualitative research is centred on description (Jebreen, 2012).

This research uses quantitative research approach, this is due to the fact that it is adequate to get information for the research questions that are related to the selected road projects. questionnaire data are collected and quantitatively examined to identify relative important index and rankings.

3.3. Research Design

There are three types of research designs: exploratory (which emphasizes the discovery of new ideas and insights), descriptive (which is concerned with determining the frequency with which an event occurs or the relationship between variables), and explanatory (which is concerned with determining the frequency with which an event

occurs or the relationship between variables, concerned with determining the cause-and-effect relationships) (Adams, 2007).

The research used descriptive research, since descriptive research uses ‘to portray an accurate profile of persons, events or situations’ and are aimed at finding out “what is,” (Robson, 2002). This design was chosen because the study aims to identify and describe the causes of DBB Road construction projects which are currently active under ERA.

3.4. Research Population and Sampling

The research population of the study are federal road projects which are currently active/ongoing with a project delivery of DBB (Design Bid Build) and with 70% and above actual accumulated progress. The reason behind using projects which have 70% and above actual accumulated progress is due to the fact that occurrence of claim is greater than the others, and also Ethiopian Public Procurement Directive (2010) states the projects which are completed 70% are considered as completed for bidding purpose, thus, causes of claims can be identified in depth. More over all respondents have a position of Claim expert, project managers, Resident engineers, Project engineers and Contract administrators in the project, attended higher level education and have an experience in the selected road project.

According to ERA Performance Evaluation Reported on March, 2022, there are 113 Road projects which are being implemented by Local contractors and 72 projects by international contractors (ERA, 2022). From this population there are 103 DBB delivery type projects which are done by local contractors and 65 projects by international contractors, in total a total there are 168 projects under DBB. From this population the research is focused on projects which are completed 70% and above, this is done because since the research focuses on causes of claim, the number of claims will increase as the projects goes near the completion rather than at the beginning of the implementation of the project. According to ERA’s performance evaluation reporting on March 2022, there are 33 federal road projects done by local and international contractors with 70% actual accumulated progress (ERA, 2022).

3.4.1. Sample Design

A sample means some members of a society who represent the society and are homogenous with other members. Involving the whole population is unmanageable and costly for the researcher with limited time, resources and money. So, sample of population have to be selected and relevant results to the population studied have to be generalized (Walliman, 2010).

However, since the respondents of the questionnaire are small and manageable, the researcher used census type of survey design and simply took all DBB projects which are identified in the research population. A complete enumeration of all items in the population is known as a census inquiry. It can be presumed that in such an inquiry, when all items are covered, no element of chance is left and highest accuracy is obtained. However, it needs to be emphasized that when the universe is a small one, it is no use resorting to a sample survey (Kothari, 2004).

3.4.2. Sample size

A census is the procedure of systematically acquiring and recording information about the members of a given population (Creswell, 2003). Since the target population is small no formula is used, from the research population all the road projects identified in the research population is taken for this study.

3.5. Data collection

Data gathering process refers to the way by which a researcher collects relevant data to answer the study questions. The two basic methods through which researchers can obtain data are primary and secondary sources. A primary data source is created when a researcher collects new data, such as through observations, interviews, or questionnaires, and then analyses it. Secondary data, on the other hand, is data that has already been acquired, used, and archived for a different purpose (Saunders, 2009). The data collection method used in this research is only primary source, this is achieved by using a valid and reliable structured questionnaire.

3.5.1. Primary Source

The primary source of data for the research is a well-designed questionnaire which is completed by Claim experts, project managers, Resident engineers, Project engineers, site supervisors and Contract administrators for the randomly selected road projects.

The questions were designed related to the research objectives, the Survey is designed based on Likert Scale on the objective of the study to find out the causes of claims in ongoing road projects of ERA. The Survey is framed in such a way that individuals who are familiar with the project's claims. The questionnaire basically consists of two sections as detailed below.

1. Respondent Background - This is to collect the basic information of the respondent.
2. Causes of claims - This is used to collect the data on different causes of claims happened in that particular project.

The questionnaire is based on Likert Scale of five ordinal measures from one (1) to five (5) according to level contributing. According to John F. (2001), Likert Scale is easier to use for respondent to express their level of opinion. For the frequency of cause's occurrence, each scale represents the rating as shown in Table 3.

Table 4: Likert Scale for frequency of occurrence of causes of claims

Category	Never	Rarely	Sometimes	often	Greatly often
Rating	1	2	3	4	5

Source: John F. (2001)

3.6. Data Analysis

In construction research, relative index techniques have been regularly utilized to measure attitudes toward measured variables. According to Chan and Kumaraswamy, the mean and standard deviation of each individual factor do not show any relationship between them, and because of this the relative importance index was utilized by several researchers in their research. This technique has been used by different researchers like

(Akadiri, 2011), (Olomolaiye, 2009), (Chan, 1997) and (Adgate, 2002). The relative importance index is a well-known method for combining the scores of variables rated on an ordinal scale by respondents (Chan, 1997). Chan and Kumaraswamy employed the "relative importance index" (RII) method to estimate the relative ranking of factor (Chan, 1997). The research also used this technique; the following are the steps for analysing the research:

- a) Calculating the Relative Importance index (RII),

$$RII = \frac{1n_1 + 2n_2 + 3n_3 + 4n_4 + 5n_5}{A * N}$$

Where,

RII = Relative Importance Index, (Chan, 1997)

n1, n2, n3, n4, n5 = Number of respondents answer each factor

1, 2, 3, 4, 5 = weight given for each factor (ranging from 1 to 5),

A = highest weight (i.e., 5 in our case),

N = total number of respondents.

- b) Ranking of factors in each category based on the Relative Importance Index (RII).

The data collected was summarized by using SPSS Version 26 analysis and Microsoft Excel. The analysis determines the relative importance and rank causes of claims in federal road construction of ERA.

3.7. Scale, Reliability and Validity

According to (Akadiri, 2011), The scale of the Relative Importance Index (RII) can further reflect the respondents, the scales are levelled in to five categories as shown in Table-4.

Table 5: RII importance level

RII values	Importance level	
$0.8 \leq RII \leq 1$	High	H

$0.6 \leq RII \leq 0.8$	High-medium	H-M
$0.4 \leq RII \leq 0.6$	Medium	M
$0.2 \leq RII \leq 0.4$	Medium- Low	M- L
$0 \leq RII \leq 0.2$	Low	L

Source: (Akadiri, 2011)

Content validity of the questionnaire was estimated by submitting the questionnaire to few experts of claim in road construction industry and be revised until all approve the content.

Reliability, according to Saunders (2009), is the degree to which your data gathering techniques or analysis procedures will produce consistent results. Cronbach's Alpha is used to determine data dependability (Saunders, 2009).

Cronbach's Alpha is determined as part of the reliability test to see how reliable the results are and whether they would provide similar generalized results if the sample size was increased (Field, 2010). According to William and Barry (2010), scales with a coefficient alpha between 0.80 and 0.96 have very good reliability, scales with a coefficient alpha between 0.70 and 0.80 have good reliability, scales with an alpha value between 0.60 and 0.70 have fair reliability, and scales with a coefficient alpha below 0.60 have poor reliability. The Alpha value goes from 1.0 for a perfect score to zero for a poor score; a desirable alpha value is 0.70 or above (Naoum, 2012). As a result, the survey's Cronbach's Alpha values show good reliability, and the results are presented in table 5. Therefore, all causes of claims identified are acceptable for further analysis.

Table 6: Cronbach Alpha Value

No.	Variables/causes	Cronbach's Alpha Value	Number of Items
1	Employer/ Employer's Representative related causes of claims	0.93	9
2	Contractor related Causes of Claims	0.918	7
3	Contract Document related causes of claims	0.913	5

4	External Causes of claims	0.718	7
5	Contractual relationship related causes of claims	0.924	7
	Overall		35

Source: own survey SPSS version 26

3.8. Ethical Considerations

The researcher collected data using several instruments from various sources. The researcher makes every attempt to acknowledge items mentioned, and he or she assumes responsibility for maintaining the secrecy of respondents' opinions and the unanimity of the remainder of the data.

CHAPTER FOUR: RESULTS AND DISCUSSION

4.1. Introduction

In this chapter the result found where analysed and discussed in relation with the objective of the study. In order to identify the causes of the claim in Ethiopian Federal Road projects various causes of claims are categorised in to six groups namely Employer/ Employer's Representative related causes of claims, Contractor related Causes of Claims, Contract Document related causes of claims, External Causes of claims, Contractual relationship related causes of claims in the questioner. The presentation starts with the response rate, followed by the analysis of the respondents and interpreted using SPSS. Later, findings from the questioner are presented and discussed. The questionnaire was distributed to the parties who are involved in federal road construction projects, to fully identify the frequency on the occurrence of causes of claims projects with a progress of 70 % and above are selected, A total of 33 questionnaires were sent to the all projects.

4.1.1. Response rate and demographic data

In order to conduct this research a questioner is prepared and distributed. A total of 33 questioners were distributed to all projects under the scope. The questionnaires were distributed to Claim experts, project managers, Resident engineers, Project engineers, & site supervisors of the projects.; all the questioners are managed to be collected. In addition, all questioners are returned. So, the analysis is done on 100% response rate.

From the 33 projects the respondents have identified that 32 projects used FIDIC condition of contract and only 1 project have adopted FPPA condition of contract. This shows that almost all causes of claims identified and rated by respondents are on projects with FIDIC condition of contract.

From the total respondents 33.33% of the respondents are from contractors, 27.3% are from employer (ERA) and the rest 39.39% are from consultant's side. This shows that the three stakeholders of the project are almost equally responded.

Out of the 33 respondents, the collected data depicts that the respondents of claim experts are 45.5%, project engineers are 6.1%, project engineers/from ERA are 36.4%, Resident engineers are 3% and Site Supervisor 9.1%. This shows that all respondents have a knowledge on the projects they are involved

Out of the 33 respondents, the collection of data shows that 15.2% have an experience of 1-5 years, 66.67% have 6-15 years and 18.2% have above 15 years. This shows that the respondents have ample experience in federal road projects.

Table 7: Respondents demographic data

No.	Variable	Frequency	Percentile
1	Condition of FIDIC	32	97
	Contract the project used FPPA	1	3
2	Respondents' Employer	9	27.3
	organization from Consultant	13	39.4
	Contractor	11	33.3
3	Respondent Claim Expert	15	45.5
	Designation in the Project Manager	2	6.1
	project Project Engineer/from ERA	12	36.4
	Resident Engineer	1	3
	Site Supervisor	3	9.1
4	Year of Relevant 1 to 5 years	5	15.2
	work experience 6 to 15 years	22	66.7
	Above 15 years	6	18.2

Source: Own survey SPSS version 26

4.2. Identification and Ranking of Causes of Claims in Federal Road projects

Construction Claim is universally evident reality and is counted as a common problem in construction projects. Claims in road construction projects emerge because of various factors. The objective of conducting the analysis for this section is to identify the factors under the groups of causes identified from the literature review and ranking them according to their relative importance towards the federal road projects under the research scope.

These causes are classified in to five main categories:

- I. Employer/ Employer's Representative related causes of claim
- II. Contractor related causes of claim
- III. Contract Document related causes of claim
- IV. External Causes of claim
- V. Contractual relationship related causes of claim

Relative importance index RII was calculated for each claim causes which are under the categories. Then ranking of the causes based on RII was calculated to reveal the most influential factors within each category of causes and from all causes in general.

4.2.1. RII and ranking of Employer/ Employer's Representative related causes of claim

According to the respondents, the result in this category shows the most relatively important (frequent) causes of claims by Employer/ Employer's representative. This are ranked based on their RII, Thus in this category Delay in handling over the site (RII=0.75) in ranked 1st , Owner's excessive change orders (RII=0.61) is ranked 2nd and others in this category are ranked as shown in Table 8.

Table 8: Employer/ Employer's Representative related causes of claim mean, RII and Ranking

No.	Employer/ Employer's Representative related causes of claim	Mean	RII	Rank
1	Delay in handing over the site	3.73	0.75	1
2	Delay in contractor payments	2.67	0.53	4

3	Lack of Insufficient contract provisions management experience among staffs	2.52	0.50	5
4	Owner's excessive change orders	3.06	0.61	2
5	Delays in the owner's representative's acceptance of shop drawings	2.24	0.45	8
6	Delay in approving finished works	2.27	0.45	7
7	slow decision making	2.76	0.55	3
8	Acceleration and stop-and-go actions	2.33	0.47	6
9	The owner's organization has a long line of authority	2.18	0.44	9

Source: Own survey SPSS version 26

4.2.2. RII and ranking of Contractor related causes of claim

According to the respondents, the most frequent and highly ranked Contractor related causes of claim in federal road project are Delay in completion of the work (RII=0.75), financial failure of the contractor (RII=0.73), and Poor planning and management (RII=0.7) are ranked from one to three based on their Relative Importance index. Ranking of variables in this category based on their RII as shown on Table 9.

Table 9: Contractor related causes of claim mean, RII and Ranking

No.	Contractor related causes of claim	Mean	RII	Rank
1	Delay in starting work	2.55	0.51	6
2	Poor planning and management	3.48	0.70	3
3	financial failure of the contractor	3.67	0.73	2
4	Quality related problems	2.76	0.55	4
5	mistakes in execution	2.39	0.48	7
6	Lack on control of sub-contractors	2.73	0.55	5
7	Delay in completion of the work	3.73	0.75	1

Source: Own survey SPSS version 26

4.2.3. RII and ranking of Contract Document related causes of claim

According to the respondents, the result in this category shows that the most frequent causes of claim under contract document related causes. The most frequent cause is

variation between original and actual quantities (RII=0.86), Design errors or omissions (RII=0.67), Incomplete contract document (RII=0.57), Discrepancy & conflict in contract documents (RII=0.56) and poorly written contracts and ambiguities (RII=0.48) are ranked respectively based on their RII as shown on Table 10.

Table 10: Contract Document related causes of claim; mean, RII and Ranking

No.	Contract Document related causes of claim	Mean	RII	Rank
1	Incomplete contract document	2.85	0.57	3
2	Design errors or omissions	3.33	0.67	2
3	Poorly written contracts and ambiguities	2.39	0.48	5
4	Variations between original and actual quantities	4.30	0.86	1
5	Discrepancy & conflict in contract documents	2.79	0.56	4

Source: Own survey SPSS version 26

4.2.4. RII and ranking External Causes of claim

According to the respondents, the result in this category shows that the most frequent causes under external claim cause, in this category the most frequent cause are Unpredictable change in material prices (RII=0.82), Interference from stakeholders (beneficiaries, local community, and authorities) (RII=0.77), Unforeseeable ground conditions by all parties (RII=0.75), Unexpected changes in currency, interest, and inflation rates (RII=0.71), Unforeseen weather condition (RII=0.68), Force majeure (RII=0.64) and Changes in government regulations and laws (RII=0.55) respectively are ranked based on their RII as shown on Table 11.

Table 11: External Causes of claim mean, RII and ranking

No.	External Causes of claim	Mean	RII	Rank
1	Force majeure	3.21	0.64	6
2	Unexpected changes in currency, interest, and inflation rates	3.55	0.71	4
3	Unpredictable change in material price	4.09	0.82	1
4	Unforeseen weather condition	3.42	0.68	5
5	Unforeseeable ground conditions by all parties	3.76	0.75	3
6	Changes in government regulations and laws	2.73	0.55	7

7	Interference from stakeholders (beneficiaries, local community, and authorities)	3.85	0.77	2
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Source: Own survey SPSS version 26

4.2.5. RII and ranking Contractual relationship related causes of claim by respondents

According to the respondents, the result in this category shows that the most frequent Contractual relationship related causes. The most frequent cause of claim is Unpredictable change in material prices (RII=0.82), Interference from stakeholders (beneficiaries, local community, and authorities) (RII=0.77), Unforeseeable ground conditions by all parties (RII=0.75), Unexpected changes in currency, interest, and inflation rates (RII=0.71), Unforeseen weather condition (RII=0.68), Force majeure (RII=0.64) and Changes in government regulations and laws (RII=0.55) are ranked based on their RII as shown on Table 11.

Table 12: Contractual relationship related causes of claim mean, RII and Ranking

No.	Contractual relationship related causes of claim	Mean	RII	Rank
1	Lack of coordination and communication among parties	2.79	0.56	4
2	Failure of participants to react swiftly with changes and unanticipated outcomes	2.82	0.56	3
3	Awarding bid to lowest bidder	2.97	0.59	2
4	Contract termination by one party	2.21	0.44	7
5	Work suspension by one party	2.45	0.49	6
6	Insufficient time for bid preparation and inadequate investigation before bidding	2.58	0.52	5
7	Inadequate information related to design	3.24	0.65	1

Source: Own survey SPSS version 26

4.3. Importance level of causes of claims

In summary, the 5 categories (Employer/ Employer's Representative related causes of claim, Contractor related causes of claim, Contract Document related causes of claim, External Causes of claim, and Contractual relationship related causes of claim) are

tabulated below in Table 13 with their importance level. Importance level is set on chapter 3 of this research. As observed in table 13 none of the criteria have fall under lower importance level, this clearly shows all that the identified variables are important/ frequent causes of claims in currently active federal road projects under the researches scope.

Table 13: Importance level and chronological ranking of causes of claim

No.	Causes of Claim	RII	Rank	Importance level
1	<i>Employer/ Employers' Representative related causes of claim</i>	0.75	1	H-M
2		0.61	2	H-M
3		0.55	3	M
4		0.53	4	M
5		0.50	5	M
6		0.47	6	M
7		0.45	7	M
8		0.45	8	M
9		0.44	9	M
10	<i>Contractor related causes of claim</i>	0.75	1	H-M
11		0.73	2	H-M
12		0.70	3	H-M
13		0.55	4	M
14		0.55	5	M
15		0.51	6	M
16		0.48	7	M
17	<i>Contract Document related causes of claim</i>	0.86	1	H
18		0.67	2	H-M
19		0.57	3	M
20		0.56	4	M
21		0.48	5	M

22	<i>External Causes of claim</i>	Unpredictable change in material price	0.82	1	H
23		Interference from stakeholders (beneficiaries, local community, and authorities)	0.77	2	H-M
24		Unforeseeable ground conditions by all parties	0.75	3	H-M
25		Unexpected changes in currency, interest, and inflation rates	0.71	4	H-M
26		Unforeseen weather condition	0.68	5	H-M
27		Force majeure	0.64	6	H-M
28		Changes in government regulations and laws	0.55	7	M
29		<i>Contractual relationship related causes of claim</i>	Inadequate information related to design	0.65	1
30	Awarding bid to lowest bidder		0.59	2	M
31	Failure of participants to react swiftly with changes and unanticipated outcomes		0.56	3	M
32	Lack of coordination and communication among parties		0.56	4	M
33	Insufficient time for bid preparation and inadequate investigation before bidding		0.52	5	M
34	Work suspension by one party		0.49	6	M
35	Contract termination by one party		0.44	7	M

Source: Own survey SPSS version 26

4.4. Ranking overall causes of claim

The overall causes of claims are together ranked based of their RII and importance level are illustrated in Table 13 From this variation between original and actual quantities, Unpredictable change in material price and Interference from stakeholders (beneficiaries, local community, and authorities) are the top 3 causes of claims under the research scope.

Table 14: Ranking overall causes of claim

No.	Causes of Claim	RII	Over all Ranking	Importance level
17	Variations between original and actual quantities	0.86	1	H
22	Unpredictable change in material price	0.82	2	H
23	Interference from stakeholders (beneficiaries, local community, and authorities)	0.77	3	H-M
24	Unforeseeable ground conditions by all parties	0.75	4	H-M
10	Delay in completion of the work	0.75	5	H-M
1	Delay in handing over the site	0.75	6	H-M
11	financial failure of the contractor	0.73	7	H-M
25	Unexpected changes in currency, interest, and inflation rates	0.71	8	H-M
12	Poor planning and management	0.70	9	H-M
26	Unforeseen weather condition	0.68	10	H-M
18	Design errors or omissions	0.67	11	H-M
29	Inadequate information related to design	0.65	12	H-M
27	Force majeure	0.64	13	H-M
2	Owner's excessive change orders	0.61	14	H-M
30	Awarding bid to lowest bidder	0.59	15	M
19	Incomplete contract document	0.57	16	M
31	Failure of participants to react swiftly with changes and unanticipated outcomes	0.56	17	M
20	Discrepancy & conflict in contract documents	0.56	18	M
32	Lack of coordination and communication among parties	0.56	19	M
3	slow decision making	0.55	20	M
13	Quality related problems	0.55	21	M
28	Changes in government regulations and laws	0.55	22	M
14	Lack on control of sub-contractors	0.55	23	M
4	Delay in contractor payments	0.53	24	M
33	Insufficient time for bid preparation and inadequate investigation before bidding	0.52	25	M

15	Delay in starting work	0.51	26	M
5	Lack of Insufficient contract provisions management experience among staffs	0.50	27	M
34	Work suspension by one party	0.49	28	M
21	Poorly written contracts and ambiguities	0.48	29	M
16	mistakes in execution	0.48	30	M
6	Acceleration and stop-and-go actions	0.47	31	M
7	Delay in approving finished works	0.45	32	M
8	Delays in the owner's representative's acceptance of shop drawings	0.45	33	M
35	Contract termination by one party	0.44	34	M

Source: Own survey SPSS version 26

4.5. Interpretation and Discussion

As per the literature review, the research categories cause of claims in to Employer/ Employer's Representative related causes of claim, Contractor related causes of claim, Contract Document related causes of claim, External Causes of claim, and Contractual relationship related causes of claim. the Relative importance index indicates that none of the identified variables have an importance level of Low.

4.5.1. Employer/ Employer's Representative related causes of claim

In this category there are 9 claim causes which are ranked based on their RII; from the descriptive analysis there ranking from first to last are: - Delay in handing over the site, Owner's excessive change orders, slow decision making, Delay in contractor payments, Lack of Insufficient contract provisions management experience among staffs, Acceleration and stop-and-go actions, Delay in approving finished works, Delays in the owner's representative's acceptance of shop drawings, and The owner's organization has a long line of authority respectively.

4.5.2. Contractor related causes of claim

In this category there are 6 claim causes which are ranked based on their RII; from the descriptive analysis there ranking from first to last are: - Delay in completion of the

work, financial failure of the contractor, Poor planning and management, Quality related problems, Lack on control of sub-contractors, Delay in starting work, and mistakes in execution respectively.

4.5.3. Contract Document related causes of claim

In this category there are 5 claim causes which are ranked based on their RII; from the descriptive analysis there ranking from first to last are: - Variations between original and actual quantities, Design errors or omissions, Incomplete contract document, Discrepancy & conflict in contract documents, and poorly written contracts and ambiguities respectively.

4.5.4. External Causes of claim

In this category there are 7 claim causes which are ranked based on their RII; from the descriptive analysis there ranking from first to last are: - Unpredictable change in material price, Interference from stakeholders (beneficiaries, local community, and authorities), Unforeseeable ground conditions by all parties, unexpected changes in currency, interest, and inflation rates, Unforeseen weather condition, Force majeure, and Changes in government regulations and laws respectively.

4.5.5. Contractual relationship related causes of claim

In this category there are 7 claim causes which are ranked based on their RII; from the descriptive analysis there ranking from first to last are: - Inadequate information related to design, Awarding bid to lowest bidder, Failure of participants to react swiftly with changes and unanticipated outcomes, Lack of coordination and communication among parties, Insufficient time for bid preparation and inadequate investigation before bidding, Work suspension by one party, and Contract termination by one party respectively.

4.5.6. Overall causes of claim in federal road projects

In general, based on the respondents the causes identified have an importance level of high, medium-high, medium and medium-low, and none of the causes identified are within the range of Low. Therefore, all causes should be considered in developing the contract document and also this causes should all be carefully emphasised in identification of risk in road construction industry.

Variations between original and actual quantities have been ranked first compared to all causes of claims and it have a H (High) importance level based on its RII, this shows that this cause is frequently causing claims in currently active road projects of ERA. This claim causes have been also identified to be the most important causes of claim in Indian, Nigerian and Egypt construction industry according to Al-Qershi, 2017, Ekhaton, 2016, Abd El-Razek, 2007 respectively.

Unpredictable change in material price is the other cause of claim with an importance level of H (High), considering its RII from all causes identified it is ranked in second place. In research made by Reta, 2019 ranked change in market price in first place under the category of contract related causes.

Interference from stakeholders (beneficiaries, local community, and authorities) is the third ranked cause based on its RII. This cause is also identified to be the most usual causes in Egypt according to Abd El-Razek, 2007.

The above three are the top three causes of claims in currently active road projects of ERA. The other causes of claims are ranked in chronological order on Table 13.

In summary, the outcome of analysis from this study can be said to be of a great relevance to the road construction industry. Just like any other construction industries, the Ethiopian road construction is also prone and liable to claim. The factors that cause claim in road construction industry varies across different countries based on the condition of a particular country and period of time. In addition, the environment condition of a country significantly influences the extent to which construction projects to be vulnerable to claims and the effects may are pronounced. There are many factors

that produce claim on road construction projects, however in this study the factors are limited to 35 factors. These delays causing factors are grouped in 5 categories, they were ranked according to the Relative Importance Index and based on the RII they are categorised in to five importance levels.

CHAPTER FIVE: SUMMARY, CONCLUSIONS, AND RECOMMENDATIONS

3.1. Summary

This section presents the summary of the most significant findings from the results and discussion section of the previous chapter.

Data was collected from primary sources (Claim experts, project managers, Resident engineers, Project engineers, and site supervisors of the 33 projects) through a structured questionnaire. Almost all of the projects have adopted FIDIC condition of contract, thus it can be said that there is dominance in using of this condition of contract and claim causes identified and ranked in this research are mostly for currently active federal road projects which are adopting FIDIC. The respondents' organizational background is almost equally distributed in to consultant, contractor and client, this shows that causes of claims are identified from the three major stakeholders of the project. The majority of the respondents have a related work experience of 6 to 15 years and considering ERA's Terms of Reference for consultants and contractors on the minimum educational background for their employees, the respondents have a knowhow in claims and causes of claims in federal road projects. By checking the reliability of the data collection instrument, each cause was found valid and reliable to proceed with the research. Then descriptive statistics was used to identify the RII, rank the causes based on the RII and determine importance level for each cause. Subsequently, from all cause of claim variations between original and actual quantities, unpredictable change in material price and interference from stakeholders (beneficiaries, local community, and authorities), unforeseeable ground conditions by all parties, delay in completion of the work, delay in handing over the site, financial failure of the contractor, unexpected changes in currency, interest, and inflation rates, poor planning and management are ranked from one to ten respectively and also based on the importance level all causes identified are implanting claims.

3.2. Conclusion

This section presents conclusions which provide answers to the research questions forwarded in chapter one.

Claims in federal road projects refers to any claim which are merely entitled by contractors for extension of time, additional cost and breach of contract for a particular road project. Claims will result in cost and time over run of projects. This study examined a variety of research conducted by various researchers and determined the most appropriate classification which suits projects under the research scope.

The objective of the study is to identify the major and most frequent causes of claims in federal road construction projects, the researcher found that the sources of claims can be categorized in to Employer/ Employer's Representative related, Contract document related causes, Contractor related, External causes, and Contractual relationship causes of claims. The research determined that all causes identified in each category are causing claims but the frequency of occurrence of claims varies. Despite the difference in the frequency of the occurrence of claims, all of the causes are occurring claims.

In the category of Employer/ Employer's Representative causes of claims, Delay in handing over the site, Owner's excessive change orders, slow decision making, Delay in contractor payments are the major causes which are occurring claims. In the category of Contractor related causes of claim, Delay in completion of the work, financial failure of the contractor, Poor planning and management, and Quality related problems are the major causes which are occurring claims In the category of Contract Document related causes of claim, Variations between original and actual quantities, Design errors or omissions, Incomplete contract document, and Discrepancy & conflict in contract documents are the main causes which are occurring claims. In the category of External Causes of claim, Unpredictable change in material price, Interference from stakeholders (beneficiaries, local community, and authorities), Unforeseeable ground conditions by all parties, unexpected changes in currency, interest, and inflation rates, and Unforeseen weather condition are the main causes which are occurring claims. In the category of Contractual relationship related causes of claim Inadequate information related to design, awarding bid to lowest bidder, Failure of participants to, react swiftly with

changes and unanticipated outcomes, and Lack of coordination and communication among party are the major causes which are occurring claims.

The research have concluded from the overall causes that, Variations between original and actual quantities, Unpredictable change in material price, Interference from stakeholders (beneficiaries, local community, and authorities), Unforeseeable ground conditions by all parties, Delay in completion of the work, Delay in handing over the site, financial failure of the contractor, Unexpected changes in currency, interest, and inflation rates, Poor planning and management found to be satisfactory, and unforeseen weather condition are the top ten causes which are causing claims in federal road projects of Ethiopia. Using the identified frequent causes, claims can be reduced by identifying them in the early stages of risk management.

3.3. Recommendations

This section contains recommendations for potential stakeholders which are under the scope of this research.

Based on the research findings and reviewed literatures, the researcher suggests that Currently active road projects which are in implementation stage should identify any causes which can emanate claims and avoiding these risks can reduce the occurrence of claims.

As it has been discussed in the literature review, claims have a high tendency to cause cost and time overrun in a project. This means reducing causes of claims can reduce unpredictable additional time and cost for the projects. Thus, every stakeholder which are identified as a cause should contribute in avoiding claims before they occur this is done by having an in-depth understanding of causes of claims.

3.3.1. Recommendations for practice

Based on the conclusion reached, this section contains recommendations for prospective stakeholders of the topic under discussion.

Construction professionals may follow these recommendations in order to avoid and manage their claims. Furthermore, this study was conducted in Federal Road projects which have a project delivery of DBB, so the recommendations may only generalize to an extent of the research scope. Project parties should use the following actions to minimize claims and deal with the causes;

For Employer/ ERA and Employer's Representatives

- In order to reduce variation between original and actual quantities Owners and their representatives before presenting the documents, the scope of the work must be defined and fixed. A complete set of plans and specifications specifying the project's scope with sufficient details decreases the likelihood of frequent and subsequent changes and extra work claims.
- To reduce the claims related to unpredictability of change in material price the employer should utilize appropriate indexation for price escalations in material prices so that this issue can be resolved swiftly and peacefully between the parties.
- Claims related to unexpected changes in currency, inflation and interest can be reduced by assigning risks to the party which have most control over it and also by increasing the percentage of contingency provided in specific condition of contract (condition of particular application) cost claims can be reduced/avoided, compensate risk takers fairly.
- The owner should avoid one-sided clauses in contracts and well-drafted unbiased contracts should be employed in the federal road construction industry to avoid claims linked to unforeseen and unexpected events.
- Owners should make sure they understand their contract's duties and obligations, one of which is to turn over possession of the site to the contractors in a timely manner so as to avoid claims related to it.
- Owners should regularly and promptly release the bill of payments to the contractors for the work approved by the employer's representative, and also the consultant should approve the payments within the time specified in the contract.

- Owners are recommended to admit and accept the genuine claims of the contractor at an early stage without further delay, this can make the contractor's cashflow affected, and it will cause additional claims related to this
- Giving the design team enough time to prepare clear, full contract documents with no or few errors and conflicts will in return reduce claims emanating from the contractor.

For contactors

- Contractors' delays in completing work can be decreased by effectively implementing the planned work methodology and following the work program supplied by the contractor.
- Contractors should carefully manage their financial liquidity, controlling payments made to them (advance payments, interim payments, and other types of payments) in order to perform the task according to the specifications.
- Before entering into a contract, legal and technical counsel should be acquired to ensure that the employer's interests are properly and appropriately reflected in the contract.
- Claims related to poor planning and management can be reduced by preparing a good work program and submitting the work programs for employers' representative within the time specified in contract document. also establishing good communication channels in order to have good coordination with all stakeholders throughout the project will reduce this causes of claims.

3.3.2. Recommendations for further study

Similar studies should be done on causes of claims in road construction projects which have a project delivery of Design Build, in order to obtain a full picture of all road projects and also severity of causes of claims should be studied in order to obtain the impact of this causes. This kind of researches should be done ones in a while in order to find any other causes and to have an information on the causes of claims in road construction projects.

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Annex I: Questionnaire

Section I. DEMOGRAPHIC DATA

Instructions: Please tick [✓] in the provided space which is the most suitable answer.

The project name (optional)

Name _____

The condition of contract the project used

FIDIC FPPA

Type of organization you are from

Employer Consultant Contractor

Respondent Designation in the project

Claim Expert Project Manager Project Engineer from ERA
 Resident Engineer Site Supervisor

Years of Related Work Experience (General)

1 to 5 years 6 to 15 years Above 15 years

Section II. Causes of claims

1. Based on your experience in the road project you are involved now, rate the *Employer/ Employer's representative causes* which have contributed for the occurrence of claim. Please tick [✓] in the provided space which is the most suitable answer.

1= Never 2= Rarely 3= Sometimes 4= Often 5= Greatly often

No.	Employer/ Employer's Representative related causes of claim	1	2	3	4	5
1	<i>Delay in handing over the site</i>					
2	<i>Delay in contractor payments</i>					

3	<i>Lack of Insufficient contract provisions management experience among staffs</i>					
4	<i>Owner's excessive change orders</i>					
5	<i>Delays in the owner's representative's acceptance of shop drawings</i>					
6	<i>Delay in approving finished works</i>					
7	<i>Slow decision making of owners</i>					
8	<i>Acceleration and stop-and-go actions.</i>					
9	<i>The owner's organization has a long line of authority.</i>					

2. Based on your experience in the road project you are involved now, rate the **Contractor related Causes** which have contributed for the occurrence of claim. Please tick [✓] in the provided space which is the most suitable answer.

1= Never 2= Rarely 3= Sometimes 4= Often 5= Greatly often

No.	Contractor related causes of claim	1	2	3	4	5
1	<i>Delay in starting work</i>					
2	<i>Poor planning and management</i>					
3	<i>financial failure of the contractor</i>					
4	<i>Quality related problems</i>					
5	<i>mistakes in execution</i>					
6	<i>Lack on control of sub-contractors</i>					
7	<i>Delay in completion of the work</i>					

3. Based on your experience in the road project you are involved now, rate the **Contract Document related causes** which have contributed for the occurrence of claim. Please tick [✓] in the provided space which is the most suitable answer.

1= Never 2= Rarely 3= Sometimes 4= Often 5= Greatly often

No.	Contract Document related causes of claim	1	2	3	4	5
1	<i>Incomplete contract document</i>					

2	<i>Design errors or omissions</i>					
3	<i>Poorly written contracts and ambiguities</i>					
4	<i>Variations between original and actual quantities</i>					
5	<i>Discrepancy & conflict in contract documents</i>					

4. Based on your experience in the road project you are involved now, rate the **External Causes** which have contributed for the occurrence of claim. Please tick [✓] in the provided space which is the most suitable answer.

1= Never 2= Rarely 3= Sometimes 4= Often 5= Greatly often

No.	External Causes of claim	1	2	3	4	5
1	<i>Force majeure</i>					
2	<i>Unexpected changes in currency, interest, and inflation rates</i>					
3	<i>Unpredictable change in material price</i>					
4	<i>Unforeseen weather condition</i>					
5	<i>Unforeseeable ground conditions by all parties</i>					
6	<i>Changes in government regulations and laws</i>					
7	<i>Interference from stakeholders (beneficiaries, local community, and authorities)</i>					

5. Based on your experience in the road project you are involved now, rate the **Contractual relationship related causes** which have contributed for the occurrence of claim. Please tick [✓] in the provided space which is the most suitable answer.

1= Never 2= Rarely 3= Sometimes 4= Often 5= Greatly often

No.	Contractual relationship related causes of claim	1	2	3	4	5
1	<i>Lack of coordination and communication among parties</i>					
2	<i>Failure of participants to react swiftly with changes and unanticipated outcomes</i>					

3	<i>Awarding bid to lowest bidder</i>					
4	<i>Contract termination by one party</i>					
5	<i>Work suspension by one party</i>					
6	<i>Insufficient time for bid preparation and inadequate investigation before bidding</i>					
7	<i>Inadequate information related to design</i>					