ADDIS ABABA UNIVERSITY

COLLEGE OF BUSINESS AND ECONOMICS

SCHOOL OF COMMERCE

ASSESEMENT OF CAUSES OF PROJECT DELAY IN HERITAGE BUILDING CONSERVATION AT ETHIOPIAN HERITAGE AUTHORITY (EHA)

BY

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A project thesis work submitted to Addis Ababa University College of Business and Economics School of Commerce in Partial Fulfillment of the Requirements for the Degree of Master of Arts in Project Management (MAPM)

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DECLARATION

I, Getachew Tekalign hereby affirm that following, study titled ‘an assessment on causes of heritage building conservation project delay at Ethiopian heritage authority (EHA)’ is an original piece of work produced by me and has been written as a partial fulfillment of the requirements for the completion of Degree of Master of Arts in Project Management (MAPM).

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Abstract

This study investigated the causes of delay in implementing heritage building conservation projects, using a descriptive research design and a quantitative approach to collect rich data. Data were collected from a randomly selected sample of forty-six participants, including clients, consultants, contractors, and external stakeholders involved in Ethiopian Heritage Authority projects. Participants responded to closed-ended Likert scale questions, and the data underwent descriptive statistical analysis, focusing on importance indexes and factor ranking using the Relative Importance Index (RII). The analysis revealed bureaucratic procedures within client organizations as a common cause of delay. Conflicts with subcontractors, poor planning and scheduling, lack of experience, and inadequate qualification of the technical staff were identified as influential causes of delay by contractors. Poor contract management was identified as an influential cause of project delays by consultants. Late approval of changes and price escalation were causes of delay for clients and external stakeholders, respectively. Recommendations include internal reviews for identifying bureaucratic inefficiencies by clients, improvement of project management skills by consultants, and clear communication with subcontractors by contractors, enhancing planning and scheduling practices by contractors, training clients on change approval procedures by consultants, improvement on the selection criteria followed by intense evaluation of potential contractors by clients. Suggestions are also proposed for further study and exploration aimed at expanding the current research by delving deeper into specific aspects, incorporating additional variables, or employing alternative analytical techniques, such as regression analysis, as the writer suggests. The provided recommendations offer valuable guidance for future researchers seeking to advance knowledge in the field of delay in implementing heritage building conservation projects. In conclusion, this study contributes to the existing body of knowledge by comprehensively assessing the factors that cause delays in implementing heritage building conservation projects. The findings offer valuable insights and practical implications for managers, project implementers, and researchers, thus fostering the development of effective strategies and interventions in the context of heritage building project implementation.

Keywords: Delay, Causes of Delay, Ethiopian Heritage Authority, heritage building conservation project, Relative Importance Index (RII)

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CHAPTER ONE

1 INTRODUCTION

1.1 Introduction

Conservation of cultural heritage buildings involves restoration, protection and reconstruction which are an integral part of construction endeavors. Conservation projects in general conservation of heritage buildings projects in particular have many uncertainties which make implementation very difficult. Evidences show that the construction industry in developing countries often faces unavoidable delays during projects, which can occur at various stages of construction, including completion. The successful completion of a conservation project is typically defined as meeting the designated timeframe, budget, specifications, and satisfying the stakeholders involved. The ability to finish a conservation project on time is often regarded as a significant measure of its success by clients, contractors, consultants, and other relevant parties. However, many projects fail to adhere to the expected schedule and instead experience delays due to the uncertainties and unique circumstances inherent in conservation projects, Therefore, delay considered as one of the most common problems causing a multitude negative effect on projects, and its participating partiesIt is also true in the conservation works that is being implemented in the country. It is important to complete conservation projects on time and within budget. When this does not happen, study shall be conducted to identify the causes of project delays in the conservation endeavors so as to take measure to alleviate the problem.

1.2 Background of the study

Ethiopia having plenty of tangible cultural heritages across the length and breadth of the country including historic buildings can benefit from the tourism industry provided that the cultural heritages are well protected. According to Maria J. (2011), tourism has a positive effect on local economic development, which can therefore reduce poverty in target communities and countries. The problem of construction delays is a worldwide issue that affects not only the construction industry but also the economy system. Such delays are a common occurrence in construction projects and can range from minor to major. Government reports indicate that delays in conservation work was a prominent problem facing almost all projects. For example, a conservation project implementation at Ethiopian heritage authority is not far from satisfactory.

The term "delay" refers to the length of time it takes to complete a project beyond the agreed-upon deadline. Projects in general and conservation of cultural heritage buildings in particular often experience delays, which can be categorized as justifiable or non-justifiable. Delays can occur due to various factors, such as owner, consultant, contractor and external factors like material, labor, turnover etc. Delays are problematic, causing inefficiencies, conflicts, and legal disputes.

For a variety of reasons historical preservation is crucial. Historical and cultural heritages are important assets that represent the identity and cultural heritage of a community. We can make sure that future generations have the chance to appreciate and learn about their cultural history by maintaining these assets. Additionally, cultural heritages can be extremely important to the growth of tourism, which can support economic development and job creation. We can encourage a sense of pride and identity among local communities as well as cross-cultural exchange and understanding by preserving and promoting cultural heritages. Last but not least, preserving

heritages can aid in safeguarding significant historical and architectural landmarks, which are frequently irreplaceable and offer insightful views into the past, UNESCO (2016).

Cultural buildings can have several economic uses, including, attract tourists, which can lead to increased spending in the local economy. Visitors to cultural buildings may also need to pay for transportation, lodging, and food, which can further boost the local economy. Cultural buildings often require staff to operate and maintain them. This can create jobs in fields such as curatorial work, visitor services, maintenance, and security. Cultural buildings can increase the value of nearby real estate, as they can be seen as attractive amenities that enhance the local community. This can lead to increased property values, which can benefit property owners and the local tax base. Overall, cultural buildings can have a positive impact on the local economy by attracting tourists, creating jobs, generating revenue, and increasing real estate values. Sofia F. Franc et.al, (2018)

Ethiopian Heritage Authority, EHA, is dedicated to the preservation, protection and promotion of Ethiopian cultural Heritages. It has a variety of responsibilities which includes Identifying and designating cultural heritage sites, conservation and restoration of cultural heritage sites in Ethiopia as well as conducting research documenting findings and communicating.

Among the different departments of EHA, heritage conservation department is responsible for the conservation, and protection of Ethiopia's cultural heritage sites, including both tangible and intangible heritage to safeguard Ethiopia's rich cultural heritage for future generations. Few instances of projects undertaken by the EHA are;-

- The Restoration of Gondar World Heritage site, Fasil Ghebbi (A UNESCO World Heritage site).
- Restoration of the Jimma Abba Jifar palace: A historic palace situated in the city of Jimma, Ethiopia.
- Conservation of traditional buildings: The ARCCH has been working to conserve traditional buildings, such as the vernacular architecture found in many rural areas of the country.
- Preservation of the Lalibela rock-hewn churches: (A UNESCO world heritage site.)
- Preservation of the al Negashi mosque: (al Negashi is a historic mosque located in northern Ethiopia, and is an important religious and cultural site for Ethiopian Muslims.)

EHA faces several challenges in its efforts to preserve and protect Ethiopia's cultural heritage. These challenges may lead to delay of projects that EHA has been implementing. Some of these challenges include

- War and conflict in different parts of the Country.
- Lack of expertise in the field specific to the conservation endeavors.
- Lack of financial resources
- Climate change
- Political instability in areas where conservation projects undergo.
- Lack of public awareness
- Limited access to technology
- Limited institutional capacity
- Limited international cooperation
- Lack of documentation

- Inadequate infrastructure
- Political will
- Changing societal values
- Natural disasters
- Theft and looting
- Lack of community involvement

Hence, it becomes crucial to confirm that these difficulties may indeed be the elements that contribute to delays in implementing conservation projects for heritage buildings. Numerous research endeavors have been undertaken to identify the factors and outcomes associated with delays in newly constructed projects. However, projects focusing on heritage preservation pose distinct challenges owing to their substantial degree of unpredictability. Thus, the study provides a comprehensive analysis of the various elements that contribute to project delays, assessing the level of seriousness associated with each issue within the specific case being examined.

1.3 Statement of the problem

Delay in construction project in general has a negative consequence on clients, contractors, consultants, and countries in terms of relationships, developing mistrust, litigation, arbitration, and cash-flow problems. A conservation project, like any other project, may be regarded as a successful endeavor until it satisfies the cost, time, and quality limitations applied to it. However, it is not uncommon to see a construction project failing to achieve its goal within the specified cost, time, and quality. In order to counter the unforeseen delays beforehand the realm of “Project management” is resorted to which helps mitigating the delays.

The problem is a critical in the case study organization which implements conservation of heritage building projects. The project delay of the Jimma Abajifar restoration serves as an illustrative case. The Jimma Abajifar restoration project aimed to revive and preserve the historical significance of the Jimma Abajifar Palace, a notable cultural landmark in Jimma, Ethiopia. However, the project encountered significant delays. Factors such as the complex nature of the restoration work, difficulties in finding conservators who possessed the expertise necessary to execute the restoration work in accordance with the palace's original design and construction techniques, securing adequate funding for the project which initially fell short of the actual restoration costs, unforeseen technical difficulties and hidden structural damages and deterioration that became apparent as the restoration work progressed are among the challenges the project faced. These challenges are suspected to be the cause for delayed performance of conservation projects for Jimma Abajifar restoration work.

Thus, the issue of delays in conservation construction projects is serious and needs to be investigated further in order to find the cause of the delays. The most significant elements that contribute to project delays will be noted in this study.

1.4 Research Questions

a) What are the common issues related to all project participants that impact the implementation of heritage building conservation projects, contributing to project delays

b) What are the client-related issues that impact the implementation of heritage building conservation projects, contributing to project delays?

c) What are the contractor-related issues that impact the implementation of heritage building conservation projects, contributing to project delays?

d) What are the consultant-related issues that impact the implementation of heritage building conservation projects, contributing to project delays?

e) What are the external-related issues that impact the implementation of heritage building conservation projects, contributing to project delays?

1.5 Research Objective

1.5.1 General Objective

The general objective of the study is to identify the causes of project delays in the implementation of heritage building conservation projects at EHA (Ethiopian Heritage Authority).

1.5.2 Specific Objectives.

a) To identify the most common causes of delays in conservation projects for heritage buildings from the overall perspectives of project participants at the Ethiopian Heritage Authority.

b) To identify the most significant causes of delays in conservation projects for heritage buildings from the clients perspectives at the Ethiopian Heritage Authority.

c) To identify the most significant causes of delays in conservation projects for heritage buildings from the contractors perspectives at the Ethiopian Heritage Authority.

d) To identify the most significant causes of delays in conservation projects for heritage buildings from the consultants perspectives at the Ethiopian Heritage Authority.

e) To identify the most significant causes of delays in conservation projects for heritage buildings from the externals perspectives at the Ethiopian Heritage Authority.

1.6 Significance of the study

The primary objectives of cost, performance and time are clear benchmarks against which to judge success or failure when (or soon after) a project is finished and handed over to the customer. The project manager needs to understand what each of these objectives implies and how the three can interrelate with each other. Late completion of a project will not please the project purchaser or sponsor, to say the least. Common problems to projects is failure to start work on time, very long delays can be caused by different sources. EHA is experiencing such problems in its course of project implementation. Several researches on the causes of project delays have been done on new construction areas which are very supportive for this study. Whereas, According to the knowledge of the writer, very few researches have been done on the title specific and no researches are there on the research lists that are related to the Ethiopian context. A study on conservation project delays will help the heritage Authority to understand more about the factors that hinder conservation project implementation.

The purpose of the study is to examine factors causing delay to the conservation of heritage building project implementation at EHA from the perspective of external and internal parties or factors. Therefore, the output of the study will enable the project managers responsible for heritage

building conservation to identify the factors leading to their project work delay and rectify in their future endeavor. The paper will also add to the existing body of knowledge in the specific field.

1.7 Scope of the study

The study concentrates on the conservation work project of cultural heritage buildings within EHA, which has the responsibility of preserving, protecting and promoting Ethiopian cultural heritages. The writer only examines the causes of heritage building conservation delay on projects from the viewpoints of contractor, consultant, client and external factors.

1.8 Methodology

The study used a descriptive research design and a quantitative approach to collect rich data from the experiences and ideas of the participants. The literature reviews helped to identify the factors that affect the completion of construction projects. The literature reviews mainly focused on previous studies on time delay issues on construction projects as a whole, and those factors that are relevant to conservation of heritage building projects as well. Furthermore, questionnaires were prepared and distributed to engineers who have participated in the conservation and construction projects in collaboration with EHA like representatives of client, consultant or contractor to analyze and rank the factors of delay based on their relative importance.

1.9 Limitation of the study

The research was conducted over a relatively short period, and as a result, it might not have fully captured the long-term causes of delay in heritage building projects ‘lack of longitudinal data’. Not having access to longitudinal data, the study might miss out on understanding how certain factors causing delay in heritage building projects evolve and interact over an extended period. Some delay-causing factors may manifest or intensify over time, while others may diminish or become less significant. Without this long-term perspective, the study's findings might not provide a comprehensive understanding of the dynamics and complexities of delay causes in the context of heritage building conservation projects.

The findings and conclusions of the study may not fully capture the diverse causes that could contribute to project delays in specific locations within Ethiopia. This means that the study did not explore the specific challenges or factors that could influence project delays in different regions or geographical contexts.

The research is concentrated on a particular group of factors that are believed to contribute to delays in conservation projects. However, this focus could lead to the omission of other important variables that might also have an impact on such projects but were not included in the study. As a result, the findings and conclusions of the research may not fully encompass the entire range of factors that could affect conservation projects' delays, limiting the generalizability of the issue.

The research did not establish definitive causal relationships between factors and delays. Therefore, it is challenging to determine whether the identified factors directly cause delays or if they are merely correlated with delays.

1.10 Organization of the research report.

This thesis has five chapters. The research background and objectives are introduced in the first chapter. The second chapter reviews the literature on the topics. The data collection and analysis methods, study approach and study design of the research methodology are described in the third chapter. The fourth chapter analyzes the research findings. The fifth chapter provides conclusions and recommendations. The references used for the study are cited at the end of the chapter five; the thesis also has appendices with relevant data and information.

CHAPTER TWO

2 REVIEW OF RELATED LITERATURE

2.1 Introduction

This chapter discusses the theoretical, empirical and conceptual assessment on the topic of identifying the factors that led to delay of implementation of building conservation projects from the perspective of parties involving in the project. In the literature review strategies for identifying and ranking the key causes in conservation are identified. This chapter examines the various delay issues that might occur in various project environments and countries and cause delays in the completion of conservation projects. This section discusses and presents the factors that contribute to delays arising from contractors, owners, consultants and other external parties.

One of the motivating factors for the research endeavor on heritage building conservation is the topic's socioeconomic importance. The most crucial and necessary procedures in the study are reviewing the key components of the body of knowledge currently available on the specific issue and shape the research problem for scientific investigation.

2.2 Theoretical Reviews

2.2.1 What is project?

A project is a temporary endeavor undertaken to create a unique product, service or result. (PMI, 2017.p.32) It involves actions that are planned, executed and controlled so that an objective set is met within a predetermined scope budget and time. The temporary nature of a project suggests that it has a clear beginning and end. Every project produces special product, service or result. Because of the fact that projects are temporary in their nature, the success of a project is measured in terms of accomplishing it within the constraints of scope, time and budget.

Effective project management0 is crucial to guarantee that projects are completed on schedule, within budget, and anticipated quality standards. Planning, implementation and controlling project activities and monitoring and managing project problems, changes and risks are all part of project management.

2.2.2 The concepts of heritage building conservation.

Conservation is a measure taken in order to extend the life of historic structures .According to the international council of monuments and sites (ICOMOS), building conservation work involves all actions aimed at safeguarding the tangible cultural heritage through the protection, restoration, and reconstruction, of buildings, and sites." According to Dictionary, the free dictionary, a building is closed structure with walls, and roof. It is more or less a permanent structure.

According to, ICOMOS (2011), the aim of heritage building conservation is to preserve and maintain the existing buildings and structures. This work includes activities such as

- Assessing the present condition of the building and any damage or deterioration.
- Developing a conservation plan that outlines the objectives, scope and methods of the conservation work.
- Carrying out repairs and maintenance work to address any damage or deterioration.
- Ensuring any new work is compatible with the existing building's material, design, and context.
- Monitoring the building's condition over time to identify any new issues that may rise.

In conservation projects the design, and the materials used for construction are highly important for an authentic performance.

2.2.3 Conservation Approach

In heritage building conservation there are three approaches employed. S.N Harun (2011)

Restoration:-It is a process of recovering a structure and its setting as they appear at some point in time by removing the latter work and replacing the missing original work. When authentic documents are available the reassembling of displaced components is possible.

Preservation:-The goal of preservation is to prevent additional deterioration, decay or dilapidation and also maintaining structural safety and well-being. Preservation should be done in such a way that evidence of the construction shall not be concealed.

Reconstruction: It refers to the method of properly copying the form and details of a disappeared structure or a portion of it as it appeared at some point in time by new one. Reconstruction is suitable when a site is incomplete and rebuilding is required for its survival as well as when it reveals the cultural significance of the place as a whole.

2.2.4 Similarity and differences between construction and conservation project.

A construction project is an organized process of constructing, restoring, modifying and adapting a building structure, or other built assets. One of the most significant differences between building conservation work and construction work is the emphasis on preservation versus creation. Building conservation work aims to preserve existing structures and materials, while construction work aims to develop new structures using new materials and techniques. Building conservation project

involves the use of construction work methodologies in implementation of the project. Both require knowledge of project management for their successful completion.

2.2.5 Definition of project delays

Construction Projects are basically bounded by time and scope, initiated to produce a unique product. The commencement of implementing projects could begin with a lot of uncertainties leading to delays. Construction delays are defined as time lag, either positive or negative as compared to the predetermined project schedule.

According to Rauzana (2016), delays in construction projects demands longer implementation time than the plan schedule defined in the contract document Kikwasi (2012) defines delay in construction as a longer construction period than allowed in a contract document or past the deadline that the parties agreed for project completion.

2.2.6 Contributors for Delays

Construction delays are a widely known problem not only in Pakistan but also in all countries. S.A. Assaf, S (2006). Project delays are frequently encountered issues in construction projects A.Sulivan F.C Harris (1986). Delays in heritage building conservation projects happen due .to several reasons, however, there are several unforeseen circumstances and variables arising from different sources that have an impact on conservation projects .The participation and performance of parties contractual relationship, environmental and site factors ,resource availability etc. are some major

contributors. Delays in construction projects are typically classified into two types: internal and external causes. Internal causes stem from the involved parties in the contract, such as the contractor, client, or consultant. In contrast, external causes refer to events that are outside the parties' control. Ahmed et.al (2003) the capacity limitations of clients, contractors, and consultants in India often have a negative impact on heritage conservation projects. Due to budget constraints and limited knowledge, expensive methods such as non-destructive testing, 3D imaging techniques, and extensive research for assessing the condition of structures are often not feasible. As a result, the selection of agencies based solely on price and procurement of work through traditional contracts can result in poor project performance in terms of time, cost, quality, and safety. Debopan et.al (2017)

2.2.6.1 Client

The client-related factors are the ones that correspond to the type, individuality, experience, financial situation, awareness, organization, construction complexity, confidence, extent, and risk-handling. Delays are caused on by the client's needs-driven actions or inactions that violate the terms of the contract. The contractor would be entitled to compensate against these losses where the project owner was the cause for the delay. Owner-related factors include things like the owner's lack of experience, financial difficulties, a slow decision-making process, unrealistic contract requirements and deadlines, the owner's poor coordination and communication with other parties, the delay in handing over the construction site to the contractors, etc.

2.2.6.2 Contractor

Contractors are individuals who are actively involved in a contract for a construction project and are in charge of managing and carrying out that project while it is still in progress on the construction site. A contractor is a person who agrees to execute and complete any construction task. The faults and errors due to the contractor will result in delay and waste of money and time. S. Ahmad, et.al (2002). Sambasivan and Soon (2007) argue that weak planning by the contractor, ineffective site management, and the contractor's lack of experience are the main contributors to delays. The main reasons for delays include concerns with contractors' finances, subcontractors, and the quality of their work. Zaneldin, E.K. (2006). Similar to this, Yaw Frimpong and Oluwoye (2003) demonstrated that contractor-related variables are a significant cause of building project delays.

2.2.6.3 Consultant

Delays may also be caused by faults with the consultant, such as errors in design, late acceptance of tests and drawings, a lack of experience on the consultant's part, a shortage of site employees, bad project management, etc. Alaghbari, et al.(2007) outlined a few potential causes of consultant delays, including a lack of a consultant site engineer, inadequate knowledge on the consultant's part, inexperience on the part of the consultant site staff, a delay in decision-making, lack of documents, and a slow flow of information. In this situation, the contractor will be able to request a time extension or financial compensation, but the client will not be able to request liquidated damages because the consultant is the client's agent and under their control.

2.2.6.4 External (others)

Clients, consultants, contractors, and external parties can all be categorized as the main causes for construction delays. Ghenbasha et al (2017) These various parties' distinct ranking matrices may be applied to the numerous reasons that were thought to delay projects. Alemayehu Dula(2021) listed external factors as obstacles in material supply, accidents in construction, Labor strike, personnel turnover, political unrest, local governor obstruction, poor security, Bureaucracy in procurement methods, corruption, natural disaster, lack of political commitment from the government, act of god, lack of quarry site, price escalation.

2.2.6 Types of delay

A project where a schedule is utilized in planning experience delay .It is also true for construction projects. It is what is being delayed that determines if a project or some other deadline, such as a milestone will be finalized late. It is essential to have a thorough understanding of the common forms of delays before discussing delay analysis. Delay can be divided into four categories in general. P.M. Mignosa and A.M. (2009)

- Critical (non-critical) Delays
- Excusable (non-excusable) delays
- -Compensable (non-compensable) delays
- -Concurrent (non-concurrent) delays

2.2.6.1.1 Critical (non-critical) Delays

Critical delays are the ones that have an impact on the project's completion or, in some situations, a milestone date. Noncritical delays do not have an impact on the project's completion or a milestone date. Yogita Gajare1, et.al (2015)

2.2.6.2 Excusable (non-excusable) delays

A delay that can be excused is one brought about by an unforeseen circumstance beyond the control of the contractor or the subcontractor. For instance: widespread labor unrest, fires, and divine interventions. Events that are under the contractor's control or that are expected to occur constitute non-excusable delays. Delays that are entirely the fault of the contractor or its suppliers are known as inexcusable delays (non-excusable delays). Yogita Gajare1, Pankaj Attarde2, Dr. D. K. Parbat (2015)

Table 2.1 delay categories taken from Yogita Gajarel1 study

Delay categories			
Excusable	Non excusable	Compensable	Non compensable
Beyond Contractor's control	subcontractors delay	Excusable	Caused by third party or
Owner caused change	Contractor’s slowness	Possiblity fof pay	No possibility for pay
Government agency actions	Suppliers out of schedule	Owner controlled	beyond Owner control
Altered site condition	Workmanship problems	owner caused change	bad weather
missed specification	Project specific strike	altered site condition	Strike
General strike,flood etc	Equipment stolen	late release of drawings	Acts of the government

2.2.6.3 -Compensable (non-compensable) delays

A compensable delay is one for which the contractor is entitled to both an extension of time and additional compensation. Owner-caused delays are ones that are compensable. For instance ,The owner's architect's delayed release of drawings . Non-compensable delays imply that, despite the possibility of an excused delay, the contractor is not entitled to any additional payment as a result of the excused delay. Non-compensable delays are those brought about by other parties or situations that are out of the contractor's and owner's control. Typical examples include unusual weather, strikes, government acts, etc. Yogita Gajare1et.al.(2015)

2.2.6.4 Concurrent delay

Concurrent delay occurs when two or more delays happen simultaneously or overlap to some extent. This situation can arise when both the owner and contractor cause a delay in the construction project during an excusable but non-compensable delay, such as severe weather conditions. In such cases, neither party can be held solely responsible for the delay or be liable for damages. Concurrent delays may also be excusable with compensation, which may provide some relief to the contractor, such as an extension of time, remission of liquidated damages, or delay damages subject to contractual agreements. However, concurrent delays may also be inexcusable if the contractor's delay has a more severe impact on the project's completion date, despite the delay being concurrent with the owner's.

2.3 Empirical Review

2.3.1 Delay Category

International institutions like ICOMOS (International Council on Monuments and Sites.) and UNESCO (United Nations Educational, Scientific and Cultural Organization) are dedicated to the conservation, protection and enhancement of world's cultural heritage. The cultural heritage is a general term for tangible and intangible heritages, for the purpose of this research the writer focuses on the tangible but building structures.

The goal of conserving heritage buildings is to safeguard and uphold their current structural and physical condition keeping the outstanding values protected. This involves various tasks such as evaluating the current state of the building and identifying any harm or decay, creating a preservation plan that specifies the goals, extent, and techniques of the conservation efforts, fixing and maintaining the building to rectify any damage or deterioration, guaranteeing that any new construction is harmonious with the building's existing materials, design, and setting, and regularly monitoring the building's condition to detect any potential problems that may arise.

Conservation of building structure project and construction project has many similarities in their approach that both require knowledge of project management for their successful completion. One of the difference as it is noticed from literature is the focus given by heritage building conservation on preservation, restoration and reconstruction than creation of a new structure.

For decades, researchers have conducted numerous studies on the subject of construction project delays, identifying various factors and groups of factors that contribute to their occurrence. Delays are a persistent issue in the construction industry and can negatively impact a project's success in

terms of cost, time, quality, and safety. Among the factors that can cause construction project delays are clients, users, consultants, designers, owners, contractors, and suppliers. However, a recent study has reorganized these factors into three main categories: consultant-related, contractor-related, and client-related. These categories are considered to be the most significant contributors to construction project delays. As clients, consultants, and contractors play critical roles in construction projects, it is crucial to investigate their responsibilities and experiences to gain a better understanding of the factors causing delays, particularly those that are non-excusable. This study aims to identify the significant factors that cause delays in construction projects or conservation of building structure projects.

2.3.2 Delay factor related to consultants

There have been various studies that have identified factors related to consultants that result in delays in schedules. Kang (2010) found that delays were caused by major changes taking too long to be approved, mistakes and discrepancies in design documents, not utilizing advanced engineering design software, inadequate details in drawings, delays in producing design documents, insufficient data collection and survey before design, poor communication and coordination, and consultants lacking sufficient experience. Meanwhile, Ashraf and Ghanim (2016) found that delays in the construction sector in Jordan were caused by errors in design and contract documents, changes in the original design, inefficient drawings, and the unavailability of consultant staff on site. s studies sorted consultant related factors that cause time delay .Alaghbari, et al.(2007) outlined a few potential causes of consultant delays, including a lack of a consultant site engineer, inadequate knowledge on the consultant's part, inexperience on the part of the consultant site staff, a delay in decision-making, lack of documents, and a slow flow of information. In this

situation, the contractor will be able to request a time extension or financial compensation, but the client will not be able to request liquidated damages because the consultant is the client's agent and under their control. All of these factors were related to consultants.

2.3.3 Delay factor related to clients

Various studies have discovered a delay factor that is client or owner-related. There are a number of owner-related factors that might cause project timeline delays. Inadequate finance or financing, failure to supply sufficient resources or staff, changes in project scope or requirements, delays in making timely decisions or obtaining necessary approvals, and irrational project timelines or expectations are a few of these issues. Other factors may include unexpected events such as natural disasters or external economic conditions. All of these factors can contribute to delays in project schedules and affect the overall success of the project.

The factors related to the client can include their type, individuality, experience, financial situation, awareness, organization, construction complexity, confidence, extent, and risk-handling, and they can contribute to delays when the client's actions or inactions violate the terms of the contract. In situations where the project owner is responsible for the delay, the contractor may be entitled to compensation for losses incurred. On the other hand, owner-related factors can include the owner's lack of experience, financial difficulties, slow decision-making, unrealistic contract requirements and deadlines, poor coordination and communication with other parties, delay in handing over the construction site to contractors, among others

According to a study conducted by Odeh and Battaineh (2002), some of the owner-related factors that can cause schedule delays include changes in project scope or requirements, delays in decision

making or providing approvals, inadequate funding or financing, unrealistic expectations, and insufficient resources or personnel.

Kang (2010) found that there were several factors that caused delays in construction projects, including delays in revising and approving design documents, change orders by the owner, slow approval of shop drawing and sample materials, slow decision-making processes, poor communication and coordination, conflicts between joint ownership of the project, delays in furnishing and delivering the site, suspension of work by the owner, and delays in progress payments.

In essence, consultants are primarily responsible for design-related delays in a project, while contractors bear the major responsibility for delays related to construction. Delays caused by contractors are often attributed to poor managerial skills, including a lack of planning and understanding of accounting principles. Delays caused by issues such as late submission of drawings, frequent change orders, and inadequate site information can lead to claims from both main contractors and subcontractors, and can result in lengthy court battles with significant financial consequences. Finally, delays due to financial or administrative causes hold an intermediate position in terms of their overall importance.

2.3.4 Delay factor related to contractor

Adiam (2016) listed the top seven delays-causing variables. These include the contractor's poor management of finances, poor site management and supervision, ineffective planning and scheduling of work, weakness in adhering to the planned work schedule, delay in site mobilization,

lack of a field survey by the contractor prior to the start of the work, and ineffective involvement of the contractor's head office in the project.

Assaf and Al-Hejji (2006) identified various issues that can cause problems in project execution, including difficulties in financing, conflicts with sub-contractors' schedules, errors leading to rework, conflicts with other parties (consultants and owners), poor site management and supervision, ineffective communication and coordination, inadequate planning and scheduling, improper construction methods, delays in subcontractors' work, inadequate contractor work, frequent changes of sub-contractors, poor qualification of technical staff, and delays in site mobilization. In, Haseeb(2011) stated that the most significant factors affecting contractors are a lack of new equipment, substandard materials used in construction, and unfair relationships between subcontractors and employees, which contribute to delays.

2.3.5 Delay factor related to External (Others)

Clients, consultants, contractors, and external parties can all be categorized as the main causes for construction delays. Ghenbasha et al (2017) These various parties' distinct ranking matrices may be applied to the numerous reasons that were thought to delay projects. Alemayehu Dula(2021) listed external factors as obstacles in material supply, accidents in construction, Labor strike, personnel turnover, political unrest, local governor obstruction, poor security, Bureaucracy in procurement methods, corruption, natural disaster, lack of political commitment from the government, act of god, lack of quarry site, price escalation.

2.3.6 Categorizing delays

The researcher has selected 40 independent variables from previous literature reviews and has classified them into External, client, contractor, and consultant-related factors. These factors have been used as the foundation for the questionnaire in the current study.

Table 2.2 Table of categorized consultant based delay

No	Delay related to consultant
1	Poor communication and coordination of the consultant with contractors and clients.
2	Delay during inspection and testing by the consultant.
3	Absence of consultant's resident staff (Engineers, Conservators, etc.).
4	Inadequate experience of consultant.
5	Mistakes in the design documents (e.g. error or omission in specifications, plan, limited surveys of existing building etc).
6	Poor contract management (e.g. inadequate inspection, poor documentation, inaccurate report, etc.).
7	Delay in design documents preparation by consultant.
8	Inaccurate damage investigation .

Table 2.3 Table of categorized client based delay

No	Delay related to Client
9	Late site Handover after the project agreement signed off to get access to the site.
10	Bureaucracy (multi layered system and process) in client organization that make decision making slow.
11	Poor communication among stakeholders (e.g Regional cultural and tourism bureaus, local communities, UNESCO, etc.)
12	Delay in payment to the contractors (e.g. Due to forgetful employee, absence of internet, invoice, etc.)
13	Client financial problem (e.g. insufficient budget, change in regulation, etc.)
14	Project termination by owner (e.g change in priority, lack of budget, poor performance etc.
15	The right to do conservation on the heritage building owned by third party.
16	Late approval of changes

Table 2.4 Table of categorized contractor based delay

No	**Delay related to Contractor**
17	Poor qualification of the contractor's technical staff.
18	Lack of contractors' materials on site; (lime, stone, etc.).
19	Error during construction stage (e.g. Improper alignment, mixing and compaction, poor material quality, etc.).
20	Lack of contractor's experience(lacking previous experience of conservation work on building structures).
21	Inability in financing the project during construction by the contractor.

22	Poor planning and scheduling of work by contractor.
23	Conflicts with sub-contractors (e.g. due to scope changes, inability to make payment on time, etc.).
24	Poor site management and supervision by contractors.
25	Contractors inefficiency in handling resources.
26	failure in the planned work schedule by the contractors.
27	Rework due to error during construction(Repeat and correct the work that was already completed but did not meet the quality).
28	Poor project manager skills.

Table 2.5 Table of categorized external factor based delay

No	Delay related to External Factor
29	Employee turnover, due to external factor like personal case, family case, health problem, need of higher pay, retirement etc.)
30	Corruption (threats to get money from conservation work, abuse of power, etc.)
31	Lack of quarry site like lime, stone, selected materials, sand etc.
32	Price escalation (the rise of the cost of an input beyond agreed acceptable limit.)

33	Accidents in construction (injuries, electric shock, burn, chemical exposure, death etc.)
34	Labor strikes (General)like economic strike, political strike etc)
35	Bad Weather conditions (rain causing flooding, wind causing material and equipment displacement, excessive heat causing sunburn to workers, snow causing safety hazard to workers etc.)
36	Political instability (like violence, ethnic conflict etc.)
37	Interference of local authorities (for example regional Government to provide or withdraw their financial share, grant or refuse to access quarry sites ,provision of security etc.)
38	Bureaucracy in procurement methods employed
39	Natural disasters like thunder, disease, earthquakes etc.
40	Lack of political commitment from Government (local/regional) (e.g. failure to act in favor of conserving heritage properties, slow decision making in matter of challenges in conservation work etc.)

CHAPTER THREE

3 METHODOLOGIES

3.1 Introduction

The research designs and technique employed in this research are presented in this chapter. Additionally, it provides definitions of significant statistical tools that are relevant to this research, sampling strategies used, and analysis methods used.

3.2 Research Design

It is proposed that the study is going to be carried out using a descriptive research design. For this study, quantitative or numerical description of attitude, or opinions of participants is used to evaluate the perception of parties involved in the construction process. A review of the literature was conducted to investigate the factors impacting the completion of construction projects. The literature reviewed primarily focused on prior studies relating to time delay difficulties on construction projects in general. Furthermore, questionnaires were prepared and distributed to respondents in order to analyze the responses and rank the causes of delay in order of importance. The questionnaires are sent to engineers and conservators, who have worked on conservation projects with EHA as an employee, partner, contractor, and consultant.

3.3 Target Population

Study participants are composed of architects, civil engineers, managers, and conservators, from the target population who have been engaged in the conservation projects that the authority is engaged. Because of the restrictions in number the researcher uses stratified sampling or cluster to reduce the sample size and at the same time making sure the sample is representative of the larger population. From the target population, the researcher distributed questionnaires to the respondents

of architects, civil engineers, managers and conservators. These respondents are drawn from construction and conservation sectors. Conservators who are directly working in conservation directorate of EHA, The chosen respondents are perceived to be working in dealing with conservation matters. Nine conservators from Ethiopian Heritage Authority (client), fourteen engineers/conservators from different contracting organizations(contractor) and nine engineers/conservators(Consultants) who have been working with EHA and fourteen Heritage administering organizations, largely conservators and managers are selected for the purpose of this study,

The main aim of choosing this type of population is to be able to get current and past information from respondents who have participated in the implementation of conservation projects or owns heritage buildings and thus experienced the implementation delay challenges that the projects face.

Table 3.1: Sample survey

Category	**Frequency**	**Percentage**
Clients	9	19.56
Contractors	14	30.43
Consultants	9	19.56
External	14	30.43
Total	46	100

3.4 Research Instruments

In this study, primary data was collected by the use of distributed questionnaires to the respondents. The study questionnaires are prepared and distributed to the selected samples of involved parties, contractors, owners, consultants and others in order to determine the causes of delay in the

completion of conservation projects. A questionnaire was developed to assess the perceptions of clients, consultants and contractors and other participants on the relative importance of delay factors in conservation of heritage building projects. It was a structured questionnaire and it contained open-ended and close-ended questions. An open opportunity was left to the respondents to include and rate variables that might have been missed out by the researcher to discover additional causes of the project completion time specific to the conservation projects. The questionnaire was designed based on the objectives of the study, to point out the most important factor of conservation of heritage building project delays.

3.5 Methods of data analysis

The data were analyzed using descriptive statistics. The relative importance indices were calculated for each question within the form using the statistical techniques used for ranking elements in the order of their importance as seen or indicated by the participants.

Descriptive statistics are used to summarize and organize characteristics of a data set. They comprise three main categories - Frequency Distribution, Measures of Central Tendency, and Measures of Variability.

3.6 Relative importance Index

The relative importance index (RII) measures a factor's weight in respondents' perceptions. The highest weighting factor has RII = 1, followed by the next lowest weighting factor with RII = 2, and so on. The weighting is determined by adding the Rensis Likert allocation and dividing it by the total number of responses. The Relative Importance Index (RII) was used to rank each one of the factors of construction for delays. Relative Importance Index (RII) calculation and factor ranking for each category are steps in the analysis of data. The various factors were ranked using

the RII. This made it easier to calculate each variable's incremental contribution when paired with other variables as well as its proportionate contribution. The range of RII values is 0 to 1, with a greater RII number indicating a more significant delay factor. The following is the relative importance index formula;

$$RII = \frac{\sum \mathbf{W}}{\mathbf{A} * \mathbf{N}}$$

Where W is weighing as assigned on Likert;s scale by each respondent in a range from 1 to 5

N is sample size (total number of resonates.

A is the highest weight or 5.

CHAPTER FOUR

4 FINDINGS AND DISCUSSIONS

4.1 Introduction

The results of the writer's study are presented and explained for the reader in this chapter. The chapter includes a description of the major study findings, and a discussion of relevant research. The results are explained to the readers in the discussion part, along with the implications of the findings. Additionally, study limitations are acknowledged.

The purpose of this chapter is to discuss the challenges associated with survey questionnaire distribution and response rates, respondents' classifications, distribution of work experience, gathering responses, and subsequent analysis of the responses from professionals who represent the four factor groups of client, consultant, contractor and external involved in the conservation project. The outcomes of the questions designed to pinpoint causes of delay and rank their level of importance are included in the results and discussion.

4.2 Basic information of respondents

Descriptive statistics provide a summary of the main characteristics of a see (table 4.0) a result from dataset (SPSS-27.) The following descriptive statistics for different groups:

Table 4.0 Descriptive Statistics

	N	Mean	Std. Deviation
Mean consultant	36	3.4931	0.60132
mean client	36	3.5868	0.61805
Mean contractors	36	3.2477	0.50611
Mean others	36	3.1389	0.66518
Valid N	36		

Understanding the fundamental characteristics and behaviors of research participants is crucial for data analysis and the generation of insightful study result. The researcher collected basic information from research participants that can be useful in analyzing the data and drawing meaningful conclusion from the research.

Mean Consultant: The mean rating for consultants is 3.4931, with a standard deviation of 0.60132. This indicates that, on average, consultants were rated positively, and there was a moderate amount of variability in the ratings among respondents.

Mean Client: The mean rating for clients is 3.5868, with a standard deviation of 0.61805. This suggests that, on average, clients were rated slightly higher than consultants, and there was a moderate amount of variability in the ratings among respondents.

Mean Contractors: The mean rating for contractors is 3.2477, with a standard deviation of 0.50611. This indicates that, on average, contractors received slightly lower ratings compared to consultants and clients. The standard deviation suggests a relatively lower variability in the ratings among respondents compared to the other groups.

Mean Others: The mean rating for the "Others" category is 3.1389, with a standard deviation of 0.66518. This suggests that, on average, the "Others" category received slightly lower ratings compared to the other groups. The standard deviation indicates a higher variability in the ratings among respondents for this group.

The demographic information such as age, gender and educational level of the participants are discussed below.

4.2.1 Survey responses and demographics of respondents

The characteristics of the respondents and their survey responses are presented in tabular presentation below. The table shows the distribution profile of the respondents' organization in terms of their type, size, and designation. It should be noted that the Ethiopian heritage Authority is implementing the projects by procuring contractors from the construction market. The consulting activities are implemented by the department of conservation in the client organization as well as by hiring external construction consultants. There are also projects that are implemented by procuring both contractors and consultants from the construction market. Apart from the tripartite parties in the usual construction project participants there are also groups whose contribution in giving information about their project experience concerning EHA conservation projects.

Out of the 46 questionnaires that were distributed, to the respective respondents 36 questionnaires were returned. All of the questionnaires were properly completed and returned but the returning speed was not as it was predicted. The return rate of the questionnaire is found to be 78.3%. The

completed questionnaires were obtained from a variety of sources, including eight from the client, eight from the consultant, and ten from the contractors and ten from others or external groups.

The writer of the questionnaire accepted thirty six responses after some respondents did not return the questionnaires. Two respondents gave a reason that they had little exposure to the conservation of heritage building. Four participants did not provide feedback because of their hectic work schedules, while another four participants were unavailable for contact via telephone or in person during the timeframe specified by the writer for the appointment.

The general characteristics of the respondents are summarized in the table provided.

Table 4.1: ***General characteristics of respondents***

No	Organization type		Number of questionnaires		
		Factor designation	Distributed	Returned	**Percent**
1	Ethiopian Heritage Authority (EHA)	Clients	9	8	88.89
2	Private Consulting firms and consulting staff of EHA	Consultants	9	8	88.89
3	Private Contracting Firms	Contractors	14	10	71.42
4	External	Others	14	10	71.42
	Total		46	36	78.3

The table provides an overview of the number of questionnaires distributed and returned across different organization types and factor designations, giving an indication of the level of participation and response rate among the respondents.

The writer takes the return rate of 78.3% to be as a fair level of participation and engagement from the respondents. While a higher return rate is often desirable as it increases the completeness and representativeness of the data, a return rate of 78.3% is still considered quite well in many research contexts.

4.2.2 Gender distribution

According to the table, the study determined the gender distribution of the respondents, with male respondents comprising the majority at 83.3% and female respondents making up 16.7% of the population.

Table 4.2: ***Gender distribution***

Sex	**Frequency**	**Percent**
Female	7	19.44
Male	29	80.56
Total	**36**	**100**

80.56% of participants being male and 19.44% being female, there is a significant gender imbalance in the sample. The objective of assessing delay factors in projects does not inherently

introduce bias based on the gender distribution of research participants. The gender composition of the participants may not directly impact the identification and analysis of delay factors in projects.

4.2.3 Age Distribution

The requirement of the research was to determine the age range of the respondents who participated in the study. The findings, presented in Table: 4.3 illustrate the distribution of age among the respondents. The data reveals that out of the total of 36 respondents, the 16.67 %, were in the age range of 18-30years, while 44.44% fell within the 31-40 age bracket. 27.78% comprised respondents between the ages of 41-50 years and 8.33% the ages of 51-60 years. The remaining 2.78% comprises respondents above the age of 60.

Table 4.3: ***Age distribution***

Age Interval	Frequency	Percent
18-30yrs	**6**	16.67
31-40yrs	**16**	44.44
41-50yrs	10	27.78
51-60yrs	3	8.33
>60yrs	1	2.78
Total	36	**100**

4.2.4 Academic background

The intent of the study was to determine the educational background of the participants, and the findings are presented in Table 4.4 below. The table displays the frequency and percentage of respondents in each category of academic qualification.

Table4.4: *Educational level of the respondents*.

Education	**Frequency**	Percentage
Secondary	1	2.78
Vocational Training	2	5.56
Diploma	5	13.89
Degree	18	50
Masters and above	10	27.78
Total	36	**100**

According to the table, half of the total respondents held a degree (50%), making it the most dominant academic qualification. Meanwhile, 13.89 % of the respondents held a diploma and 27.78% held a Master's degree. The remaining respondents (8.34%) of the respondents are either vocational or below.

4.2.5 Work experience

The data presented in Table 4.4 illustrates the work experience of the respondents. 19.44%, had 5-10 years of work experience, while the majority of respondents 36.11% had 6-10 years of work experience. 30.56-% had 11-15 years of work experience, 11.11% had 16-20 years of work experience and a smaller percentage of respondents 2.78% had more than twenty years of work experience in the construction and conservation sector. In total, the survey included all respondents.

Table 4.4: ***Work Experience***

Experience	Frequency	Percent
1-5yrs	7	19.44
6-10yrs	13	36.11
11-15yrs	11	30.56
16-20 yrs	4	11.11
>21yrs	1	2.78
Total	36	100

In terms of frequency, the highest number of respondents falls within the 6-10 years of experience category (13 respondents), while the lowest number is in the >21 years of experience category (1 respondent).

The data indicates that a significant portion of the respondents have mid-range experience levels, with fewer respondents at the extremes (1-5 years and >21 years).

4.2.6 Respondents' perception

The study analyzed respondents' perceptions, using simple descriptive analysis to present the results in different subsections that were related to the study's objectives and the questionnaire items. The main objective of the study was to identify and analyze the causes of delays in conservation of heritage building projects, from the perspectives of contractor, consultant, client and external factors. Four Groupings has been made and, the causes of delays were ranked within each group based on their Relative Importance Index (RII). The report provides a brief overview of these factors.

4.2.7 General perception on causes of delays

The factors of delay in conservation projects managed by the Ethiopian Heritage Authority were analyzed by gathering perspectives from all parties involved including external factors. The views of each stakeholder were considered and an overall perspective was derived. The identified causes of delay were ranked using the RII (Relative Importance Index) method, which is presented in the table below.

Table: 4.5 ***Total ranking of delay factors (the mean and ∑W is taken from SPSS Statistics 27.0).***

No	Factors (symbol)	Mean	∑W	RII	Rank
1	Poor communication and coordination of the consultant with contractors and clients.(Vconsq1)	3.14	113	0.63	35
2	Delay during inspection and testing by the consultant (Vconsq2)	3.53	127	0.71	18
3	Absence of consultant's resident staff (Engineers, Conservators, etc.(Vconsq3)	3.53	127	0.71	18
4	Inadequate experience of consultant (Vconsq4)	3.53	127	0.71	18
5	Mistakes in the design documents (e.g. error or omission in specifications, plan, limited surveys of existing building etc.(Vconsq5)	3.39	122	0.68	26
6	Poor contract management (e.g inadequate inspection, poor documentation, inaccurate report, etc.(Vconsq6)	3.81	137	0.76	4
7	Delay in design documents preparation by consultant (Vconsq7)	3.61	130	0.72	13
8	Inaccurate damage investigation (Vconsq8)	3.42	123	0.68	23

No	Factors (symbol)	Mean	∑W	RII	Rank
9	Late site Handover after the project agreement signed off to get access to the site.(Vclientq9)	3.28	118	0.66	30
10	Bureaucracy (multi layered system and process) in client organization that make decision making slow.(Vclientq10)	3.97	143	0.79	2
11	Poor communication among stakeholders (Vclientq11)	3.69	133	0.74	10
12	Delay in payment to the contractors (e.g. Due to forgetful employee, absence of internet, invoice, etc.(Vclientq12)	3.67	132	0.73	11
13	Client financial problem (e.g. insufficient budget, change in regulation, etc.(Vclientq13)	3.89	140	0.78	3
14	Project termination by owner (e.g change in priority, lack of budget, poor performance etc.(Vclientq14)	3.25	117	0.65	32
15	The right to do conservation on the heritage building owned by third party.(VClient15)	3.39	122	0.68	26
16	Late approval of changes (VClient16)	3.56	128	0.71	17
17	Poor qualification of the contractor's technical staff (Vcont17)	4.03	145	0.81	1
18	Lack of contractors' materials on site; (lime, stone, etc (Vcont18)	3.81	137	0.76	4
19	Error during construction stage (e.g. Improper alignment, mixing and compaction, poor material quality, etc.) (Vcont19)	3.42	123	0.68	23
20	Lack of contractor's experience(lacking previous experience of conservation work on building structures) (Vcont20)	3.81	137	0.76	4
21	Inability in financing the project during construction by the contractor(Vcont21)	3.36	121	0.67	28
22	Poor planning and scheduling of work by contractor (Vcont22)	3.72	134	0.74	8
23	Conflicts with sub-contractors (e.g. due to scope changes, inability to make payment on time, etc.) (Vcont23)	3.47	125	0.69	22
24	Poor site management and supervision by contractors (Vcont24)	3.72	134	0.74	8
25	Contractors inefficiency in handling resources (Vcont25)	3.31	119	0.66	30
26	failure in the planned work schedule by the contractor (Vcont26)	3.42	123	0.68	23
27	Rework due to error during construction(Repeat and correct the work that was already completed but did not meet the quality) (Vcont27)	3.33	120	0.67	29
28	Poor project manager skills (Vcont28)	3.61	130	0.72	13

No	Factors (symbol)	Mean	∑W	RII	Rank
29	Employee turnover, due to external factor like personal case, family case, health problem, need of higher pay, retirement etc.) (Vother29)	3.19	115	0.64	34
30	Corruption (threats to get money from conservation work, abuse of power, etc.) (Vother30)	3.06	110	0.61	36
31	Lack of quarry site like lime, stone, selected materials, sand etc. (Vother31)	3.58	129	0.72	15
32	Price escalation (the rise of the cost of an input beyond agreed acceptable limit.) (Vother32)	3.75	135	0.75	7
33	Accidents in construction (injuries, electric shock, burn, chemical exposure, death etc.) (Vother33)	2.47	89	0.49	39
34	Labor strikes (General)like economic strike, political strike etc) (Vother34)	2.53	91	0.51	38
35	Bad Weather conditions (rain causing flooding, wind causing material and equipment displacement, excessive heat causing sunburn to workers, snow causing safety hazard to workers etc.) (Vother35)	3	108	0.6	37
36	Political instability (like violence, ethnic conflict etc.) (Vother36)	3.67	132	0.73	11
37	Interference of local authorities (for example regional Government to provide or withdraw their financial share, grant or refuse to access quarry sites ,provision of security etc.) (Vother37)	3.25	117	0.65	32
38	Bureaucracy in procurement methods employed (Vother38)	3.58	129	0.72	15
39	Natural disasters like thunder, disease, earthquakes etc. (Vother39)	2.06	74	0.41	40
40	Lack of political commitment from Government (local/regional) (e.g. failure to act in favor of conserving heritage properties, slow decision making in matter of challenges in conservation work etc.) (Vother40)	3.53	127	0.71	18

Table: 4.6 Top ten general ranking of delay factors

ITEM No	Factors	Mean	∑W	RII
17	Poor qualification of the contractor's technical staff;	4.03	145	0.81
10	Bureaucracy (multi layered system and process) in client organization that make decision making slow.	3.97	143	0.79
13	Client financial problem (e.g. insufficient budget, change in regulation, etc.)	3.89	140	0.78
6	Poor contract management (e.g inadequate inspection, poor documentation, inaccurate report, etc.)	3.81	137	0.76
18	Lack of contractors' materials on site; (lime, stone, etc	3.81	137	0.76
20	Lack of contractor's experience(lacking previous experience of conservation work on building structures)	3.81	137	0.76
32	Price escalation (the rise of the cost of an input beyond agreed acceptable limit.)	3.75	135	0.75
24	Poor site management and supervision by contractors	3.72	134	0.74
22	Poor planning and scheduling of work by contractor	3.72	134	0.74
11	Poor communication among stakeholders	3.69	133	0.74

In order to categorize the factors that were perceived by all parties, a summary was created. The results showed that clients, consultants, and contractors and others as a group agreed that the most influential factor causing delays was the poor qualification of the contractor's technical staff. The second most important causes of was the bureaucracy (multi layered system and process) in client organization that make decision making slow, followed by Client financial problem and consultant's poor contract management. Lack of material on site and lack of contractors' experience influence delay significantly.

From table of top ten causes delay it is observed that clients contribute to delay nearly 30% cases, while contractors' share of the causes of delays, above half (50%).Consultants and external factors affect delay in a smaller proportion yet almost equally.

4.2.8 Causes delay from each category perspectives

From BM SPSS Statistics 27.0 and excel computation the following Tabular ranking is performed.

Table: 4.7 ***Consultants ranking for causes of delay based on Importance index***

No	Factors	Respondent	Mean consultant	∑W	RII	Rank
1	Vconsq1	Consultant	2.88	23	0.46	35
2	Vconsq2	Consultant	3.38	27	0.54	25
3	Vconsq3	Consultant	3.13	25	0.5	31
4	Vconsq4	Consultant	2.38	19	0.38	39
5	Vconsq5	Consultant	2.5	20	0.4	37
6	Vconsq6	Consultant	3.5	28	0.56	19
7	Vconsq7	Consultant	3.38	27	0.54	25
8	Vconsq8	Consultant	3.38	27	0.54	25
9	Vclientq9	Consultant	2.88	23	0.46	35
10	Vclientq10	Consultant	4	32	0.64	5
11	Vclientq11	Consultant	3.5	28	0.56	19
12	Vclientq12	Consultant	3.88	31	0.62	8
13	Vclientq13	Consultant	3.75	30	0.6	9
14	Vclientq14	Consultant	3.5	28	0.56	19
15	VClient15	Consultant	3.13	25	0.5	31
16	VClient16	Consultant	3.75	30	0.6	9
17	Vcont17	Consultant	4	32	0.64	5
18	Vcont18	Consultant	3.63	29	0.58	12
19	Vcont19	Consultant	3	24	0.48	34
20	Vcont20	Consultant	3.63	29	0.58	12
21	Vcont21	Consultant	3.25	26	0.52	30
22	Vcont22	Consultant	4.25	34	0.68	2
23	Vcont23	Consultant	4.5	36	0.72	1
24	Vcont24	Consultant	4.13	33	0.66	4
25	Vcont25	Consultant	3.38	27	0.54	25
26	Vcont26	Consultant	3.63	29	0.58	12
27	Vcont27	Consultant	3.5	28	0.56	19
28	Vcont28	Consultant	4.25	34	0.68	2
29	Vother29	Consultant	3.5	28	0.56	19
30	Vother30	Consultant	2.88	23	0.46	35
31	Vother31	Consultant	3.38	27	0.54	25
32	Vother32	Consultant	3.63	29	0.58	12

33	Vother33	Consultant	3.13	25	0.5	31
34	Vother34	Consultant	2.38	19	0.38	39
No	**Factors**	**Respondent**	**Mean consultant**	**∑W**	**RII**	**Rank**
35	Vother35	Consultant	4	32	0.64	5
36	Vother36	Consultant	3.5	28	0.56	19
37	Vother37	Consultant	3.75	30	0.6	9
38	Vother38	Consultant	3.63	29	0.58	12
39	Vother39	Consultant	2.5	20	0.4	37
40	Vother40	Consultant	3.63	29	0.58	12

Table: 4.8 ***Clients ranking for causes delay***

No	Factors	Respondent	Mean client	∑W	RII	Rank
1	Vconsq1	Client	2.75	22	0.55	37
2	Vconsq2	Client	3.75	30	0.75	16
3	Vconsq3	Client	3.75	30	0.75	16
4	Vconsq4	Client	3.75	30	0.75	16
5	Vconsq5	Client	3.38	27	0.68	28
6	Vconsq6	Client	3.88	31	0.78	9
7	Vconsq7	Client	3.75	30	0.75	16
8	Vconsq8	Client	4	32	0.8	6
9	Vclientq9	Client	3.63	29	0.73	20
10	Vclientq10	Client	4	32	0.8	6
11	Vclientq11	Client	4.13	33	0.83	1
12	Vclientq12	Client	3.88	31	0.78	9
13	Vclientq13	Client	4.13	33	0.83	1
14	Vclientq14	Client	2.75	22	0.55	37
15	VClient15	Client	3.13	25	0.63	33
16	VClient16	Client	3.5	28	0.7	23
17	Vcont17	Client	3.5	28	0.7	23
18	Vcont18	Client	3.88	31	0.78	9
19	Vcont19	Client	3.88	31	0.78	9
20	Vcont20	Client	4.13	33	0.83	1
21	Vcont21	Client	3.88	31	0.78	9
22	Vcont22	Client	3.88	31	0.78	9
23	Vcont23	Client	3.13	25	0.63	33
24	Vcont24	Client	3.5	28	0.7	23
25	Vcont25	Client	3.38	27	0.68	28

26	Vcont26	Client	3.5	28	0.7	23
27	Vcont27	Client	3.25	26	0.65	30
No	**Factors**		**Mean consultant**	**∑W**	**RII**	**Rank**
28	Vcont28	Client	3.63	29	0.73	20
29	Vother29	Client	3.25	26	0.65	30
30	Vother30	Client	3.25	26	0.65	30
31	Vother31	Client	4	32	0.8	6
32	Vother32	Client	4.13	33	0.83	1
33	Vother33	Client	2.25	18	0.45	39
34	Vother34	Client	3	24	0.6	36
35	Vother35	Client	3.13	25	0.63	33
36	Vother36	Client	4.13	33	0.83	1
37	Vother37	Client	3.5	28	0.7	23
38	Vother38	Client	3.88	31	0.78	9
39	Vother39	Client	1.88	15	0.38	40
40	Vother40	Client	3.63	29	0.73	20

Table: 4.9 ***Contractors ranking for causes delay***

No	Factors	Respondent	Mean contractor	∑W	RII	Rank
1	Vconsq1	Contractor	3.88	31	0.62	31
2	Vconsq2	Contractor	3.4	34	0.68	23
3	Vconsq3	Contractor	3.7	37	0.74	13
4	Vconsq4	Contractor	4	40	0.8	2
5	Vconsq5	Contractor	3.8	38	0.76	9
6	Vconsq6	Contractor	3.8	38	0.76	9
7	Vconsq7	Contractor	3.7	37	0.74	13
8	Vconsq8	Contractor	2.9	29	0.58	36
9	Vclientq9	Contractor	3.1	31	0.62	31
10	Vclientq10	Contractor	3.9	39	0.78	7
11	Vclientq11	Contractor	3.3	33	0.66	26
12	Vclientq12	Contractor	4	40	0.8	2
13	Vclientq13	Contractor	4	40	0.8	2
14	Vclientq14	Contractor	3.8	38	0.76	9
15	VClient15	Contractor	4	40	0.8	2
16	VClient16	Contractor	4	40	0.8	2
17	Vcont17	Contractor	4.2	42	0.84	1

No	Factors	Respondant	Mean contractor	∑W	RII	Rank
18	Vcont18	Contractor	3.7	37	0.74	13
19	Vcont19	Contractor	3.3	33	0.66	26
20	Vcont20	Contractor	3.5	35	0.7	18
21	Vcont21	Contractor	3.1	31	0.62	31
22	Vcont22	Contractor	3.5	35	0.7	18
23	Vcont23	Contractor	3.4	34	0.68	23
24	Vcont24	Contractor	3.8	38	0.76	9
25	Vcont25	Contractor	3.5	35	0.7	18
26	Vcont26	Contractor	3.6	36	0.72	17
27	Vcont27	Contractor	3.3	33	0.66	26
28	Vcont28	Contractor	3.5	35	0.7	18
29	Vother29	Contractor	3.2	32	0.64	30
30	Vother30	Contractor	3	30	0.6	34
31	Vother31	Contractor	3.4	34	0.68	23
32	Vother32	Contractor	3.9	39	0.78	7
33	Vother33	Contractor	2.2	22	0.44	39
34	Vother34	Contractor	2.4	24	0.48	38
35	Vother35	Contractor	2.9	29	0.58	36
36	Vother36	Contractor	3.5	35	0.7	18
37	Vother37	Contractor	3	30	0.6	34
38	Vother38	Contractor	3.3	33	0.66	26
39	Vother39	Contractor	1.8	18	0.36	40
40	Vother40	Contractor	3.7	37	0.74	13

Table: 4.10 External ranking for causes delay

No	Factors	Respondent	Mean others	∑W	RII	Rank
1	Vconsq1	External	3.14	113	0.63	35
2	Vconsq2	External	3.53	127	0.71	18
3	Vconsq3	External	3.53	127	0.71	18
4	Vconsq4	External	3.53	127	0.71	18
5	Vconsq5	External	3.39	122	0.68	26
6	Vconsq6	External	3.81	137	0.76	4
7	Vconsq7	External	3.61	130	0.72	13
8	Vconsq8	External	3.42	123	0.68	23

No	Factors	Respondent	Mean others	∑W	RII	Rank
9	Vclientq9	External	3.28	118	0.66	31
10	Vclientq10	External	3.97	143	0.79	2
11	Vclientq11	External	3.69	133	0.74	10
12	Vclientq12	External	3.67	132	0.73	11
13	Vclientq13	External	3.89	140	0.78	3
14	Vclientq14	External	3.25	117	0.65	32
15	VClient15	External	3.39	122	0.68	26
16	VClient16	External	3.56	128	0.71	17
17	Vcont17	External	4.03	145	0.81	1
18	Vcont18	External	3.81	137	0.76	4
19	Vcont19	External	3.42	123	0.68	23
20	Vcont20	External	3.81	137	0.76	4
21	Vcont21	External	3.36	121	0.67	28
22	Vcont22	External	3.72	134	0.74	8
23	Vcont23	External	3.47	125	0.69	22
24	Vcont24	External	3.72	134	0.74	8
25	Vcont25	External	3.31	119	0.66	30
26	Vcont26	External	3.42	123	0.68	23
27	Vcont27	External	3.33	120	0.67	29
28	Vcont28	External	3.61	130	0.72	13
29	Vother29	External	3.19	115	0.64	34
30	Vother30	External	3.06	110	0.61	36
31	Vother31	External	3.58	129	0.72	15
32	Vother32	External	3.75	135	0.75	7
33	Vother33	External	2.47	89	0.49	39
34	Vother34	External	2.53	91	0.51	38
35	Vother35	External	3	108	0.6	37
36	Vother36	External	3.67	132	0.73	11
37	Vother37	External	3.25	117	0.65	32
38	Vother38	External	3.58	129	0.72	15
39	Vother39	External	2.06	74	0.41	40
40	Vother40	External	3.53	127	0.71	18

4.2.8.1 Consultants' perspective

Table: 4.10 Top ten rankings for causes delay.

Delay Factor	Mean	sum	RII	Rank
Conflicts with sub-contractors (e.g. due to scope changes, inability to make payment on time, etc.)	4.5	36	0.72	1
Poor planning and scheduling of work by contractor	4.25	34	0.68	2
Poor project manager skills	4.25	34	0.68	2
Poor site management and supervision by contractors	4.13	33	0.66	4
Bureaucracy (multi layered system and process) in client organization that make decision making slow.	4	32	0.64	5
Poor qualification of the contractor's technical staff;	4	32	0.64	5
Bad Weather conditions (rain causing flooding, wind causing material and equipment displacement, excessive heat causing sunburn to workers, snow causing safety hazard to workers etc.)	4	32	0.64	5
Delay in payment to the contractors (e.g. Due to forgetful employee, absence of internet, invoice, etc.)	3.88	31	0.62	8
Interference of local authorities (for example regional Government to provide or withdraw their financial share, grant or refuse to access quarry sites ,provision of security etc.)	3.75	30	0.6	9
Late approval of changes	3.13	25	0.5	9

The consultant's perception is that the top five causes delay in the conservation of heritage building project are dominantly related to the contractor and client factors, and these are conflicts with sub-contractors, poor planning and scheduling of work by contractor, Poor project manager skills. And Poor site management and supervision by contractors.

4.2.8.2 Clients' perspective

Table: 4.11 ***Top ten rankings for causes delay in clients' perspective***

Delay Factor	Mean	sum	RII	Rank
Price escalation (the rise of the cost of an input beyond agreed acceptable limit.)	4.13	33	0.83	1
Lack of contractor's experience(lacking previous experience of conservation work on building structures)	4.13	33	0.83	1
Client financial problem (e.g. insufficient budget, change in regulation, etc.)	4.13	33	0.83	1
Poor communication among stakeholders (e.g Regional cultural and tourism bureaus, local communities, UNESCO, etc.)	4.13	33	0.83	1
Political instability (like violence, ethnic conflict etc.)	4.13	33	0.83	1
Lack of quarry site like lime, stone, selected materials, sand etc.	4.00	32	0.80	6
Bureaucracy (multi layered system and process) in client organization that make decision making slow.	4.00	32	0.80	6
Inaccurate damage investigation	4.00	32	0.80	6
Bureaucracy in procurement methods employed	3.88	31	0.78	6
Poor contract management (e.g inadequate inspection, poor documentation, inaccurate report, etc.)	3.88	31	0.78	9

The survey findings indicate that the primary causes delays in conservation projects, as identified by the client, is Price escalation. The second most significant factor contributing to delays is Lack of contractor's experience (Lacking previous experience of conservation work especially on building structures, followed by Client financial problem. Poor communication among stakeholders and Lack of quarry site were identified as the fourth and fifth most common causes of delays, respectively.

4.2.8.3 Contractors' perspective

Table: 4.12 ***Top ten rankings for causes delay in contractors' perspective.***

Delay Factor	Mean	RII	Rank
Poor qualification of the contractor's technical staff;	4.20	0.84	1
Late approval of changes	4.00	0.80	2
Inadequate experience of consultant;	4.00	0.80	2
Delay in payment to the contractors (e.g. Due to forgetful employee, absence of internet, invoice, etc.)	4.00	0.80	2
Client financial problem (e.g. insufficient budget, change in regulation, etc.)	4.00	0.80	2
Bureaucracy (multi layered system and process) in client organization that make decision making slow.	3.90	0.78	7
Poor site management and supervision by contractors	3.80	0.76	9
Project termination by owner (e.g change in priority, lack of budget, poor performance etc.	3.80	0.76	9
Poor contract management (e.g inadequate inspection, poor documentation, inaccurate report, etc.)	3.80	0.76	9
Mistakes in the design documents (e.g. error or omission in specifications, plan, limited surveys of existing building etc.	3.80	0.76	9

The survey findings indicate that the primary cause of delays in conservation projects, as identified by the contractors, Poor qualification of the contractor's technical staff, Late approval of changes, Inadequate experience of consultant, Delay in payment to the contractors, and Client financial problem.

4.2.8..4 Others' perspective

Table: 4.13 ***Top ten rankings for causes delay in others' perspective.***

Delay Factor	Mean	RII	Rank
Poor qualification of the contractor's technical staff;	3.8	0.76	1
Poor contract management (e.g inadequate inspection, poor documentation, inaccurate report, etc.)	3.5	0.70	2
Bureaucracy (multi layered system and process) in client organization that make decision making slow.	3.5	0.70	2
Lack of contractors' materials on site; (lime, stone, etc	3.5	0.70	2
Lack of contractor's experience(lacking previous experience of conservation work on building structures)	3.5	0.70	2
Poor communication among stakeholders (e.g Regional cultural and tourism bureaus, local communities, etc.)	3.4	0.68	6
Inadequate experience of consultant;	3.4	0.68	6
Client financial problem (e.g. insufficient budget, change in regulation, etc.)	3.3	0.66	8
Poor site management and supervision by contractors	3.2	0.64	9
Delay in design documents preparation by consultant	3.2	0.64	9

According to the information presented in Table 4.13, Poor qualification of the contractor's technical staff, identified by external categories as the most significant factors contributing to delays. The second and third most important factors were identified as Poor contract management and Lack of contractors' materials on site, followed by Lack of contractor's experience.

4.2.9 Discussion based on relative importance factor

This section focuses on the relative importance index of individual variables within each category. The factors are color-coded and compared based on their relative rank in the comparison table.

By assigning colors to the factors, the researchers visually differentiate and highlight their respective ranks within the comparison table. This color-coded representation allows for easier identification and understanding of the relative importance of each factor. Factors with higher

index values are typically assigned higher ranks (1 for maximum), while those with lower index values are assigned lower ranks (I0 is for the lowest).

The color-coded approach helps to visually emphasize the differences in the ranks of the factors. Individual factors are highlighted in a distinct color to locate their appearance in the categories.

By employing this color-coded system, the researchers compare and assess the relative importance of factors across different categories. This visual representation facilitates the identification of factors that hold greater significance within their respective categories and aids in the overall interpretation of the research findings.

The relative importance index was employed to pinpoint the top ten factors responsible for delays in conservation projects. .It is also crucial to examine how each group perceives the causes of delay in order to understand their viewpoints.

Table 4.14 color coded responses

Color	Category	Factor	Rank
	Consultant	Conflicts with sub-contractors	**1**
		Poor planning and scheduling of work by contractor	**2**
		Poor project manager skills	**3**
		Poor site management and supervision by contractors	**4**
		Bureaucracy in client organization that make decision making slow.	**5**
		Poor qualification of the contractor's technical staff;	**6**
		Bad Weather conditions	**7**
		Delay in payment to the contractors	**8**
		Interference of local authorities	**9**
		Late approval of changes	**10**

Color	Category	Factor	Rank
	Client	Price escalation	**1**
		Lack of contractor's experience	**2**
		Client financial problem (e.g. insufficient budget, change in regulation, etc.)	**3**
		Poor communication among stakeholders	**4**
		Political instability (like violence, ethnic conflict etc.)	**5**
		Lack of quarry site like lime, stone, selected materials, sand etc.	**6**
		Bureaucracy in client organization that make decision making slow.	**7**
		Inaccurate damage investigation	**8**
		Bureaucracy in procurement methods employed	**9**
		Poor contract management (e.g inadequate inspection, poor documentation, etc.)	**10**

Color	Category	Factor	Rank
	Contractor	Poor qualification of the contractor's technical staff;	**1**
		Late approval of changes	**2**
		Inadequate experience of consultant;	**3**
		Delay in payment to the contractors (e.g. Due to forgetful employee, absence of internet, invoice, etc.)	**4**
		Client financial problem (e.g. insufficient budget, change in regulation, etc.)	**5**
		Bureaucracy (multi layered system and process) in client organization that make decision making slow.	**6**
		Poor site management and supervision by contractors	**7**
		Project termination by owner	**8**
		Poor contract management (e.g inadequate inspection, poor documentation, inaccurate report, etc.)	**9**
		Mistakes in the design documents (e.g. error or omission in specifications, plan, limited surveys of existing building etc.	**10**

Color	Category	Factor	Rank
	Other	Poor qualification of the contractor's technical staff;	**1**
		Poor contract management (e.g inadequate inspection, poor documentation, inaccurate report, etc.)	**2**
		Bureaucracy (multi layered system and process) in client organization that make decision making slow.	**3**
		Lack of contractors' materials on site; (lime, stone, etc	**4**
		Lack of contractor's experience(lacking previous experience of conservation work on building structures)	**5**
		Poor communication among stakeholders	**6**
		Inadequate experience of consultant;	**7**
		Client financial problem (e.g. insufficient budget, change in regulation, etc.)	**8**
		Poor site management and supervision by contractors	**9**
		Delay in design documents preparation by consultant	**10**

Color	Category	Factor	Rank
	Overall	Poor qualification of the contractor's technical staff;	**1**
		Bureaucracy (multi layered system and process) in client organization that make decision making slow.	**2**
		Client financial problem (e.g. insufficient budget, change in regulation, etc.)	**3**
		Poor contract management (e.g inadequate inspection, poor documentation, inaccurate report, etc.)	**4**
		Lack of contractors' materials on site; (lime, stone, etc	**5**
		Lack of contractor's experience(lacking previous experience of conservation work on building structures)	**6**
		Price escalation	**7**
		Poor site management and supervision by contractors	**8**
		Poor planning and scheduling of work by contractor	**9**
		Poor communication among stakeholders (e.g Regional cultural and tourism bureaus, local communities, UNESCO, etc.)	**10**

When causes of delay perceived by each group were compared and color coded, it shows that the factor "Bureaucracy in client organization that makes decision-making slow." appears in the Consultant, Client, Contractor, and Other categories. It implies that bureaucratic procedures and complex decision-making processes within client organizations are identified as a common hindrance to timely project implementation. The presence of bureaucracy often leads to delays in obtaining necessary approvals, navigating complex administrative procedures, and obtaining critical information for project advancement. By identifying this factor as a common hindrance, it underscores the need for concerted efforts to streamline and simplify bureaucratic procedures within client organizations. It emphasizes the importance of promoting efficient decision-making processes that allow for quicker responses, prompt approvals, and smoother communication channels.

Upon analyzing the table with color-coded factors, it becomes evident that certain factors are present across multiple groups, indicating their importance across different stakeholder groups. For instance, the factor "Poor qualification of the contractor's technical staff" is mentioned in the Consultant, Contractor, and Other categories. This consistency suggests that the qualifications of the contractor's technical staff are consistently recognized as a crucial factor contributing to delays in implementation of the project in question. Additionally, the recurrent presence of this factor in multiple categories signifies a shared understanding among stakeholders that the qualifications and expertise of the contractor's technical staff directly influence the project's progress and timely completion. Inadequate qualifications can result in poor workmanship, errors, and rework, leading to delays in project milestones and overall project timeline. other stakeholders, such as suppliers or regulatory bodies, also perceive the significance of competent technical staff in maintaining project

momentum. It is in consistent with the authors Long Duy et al. (2004) and Arditi et al. (2017), that they explicitly mention "Poor qualification of the contractor's technical staff" as a cause for project delay factor.

Likewise, factors such as "poor contract management,", "poor site management and supervision by contractors" as well as "lack of contractor's experience" are also mentioned in multiple categories, highlighting their substantial influence on project delays of the project in question across different group perspectives. Poor contract management can lead to disputes and subsequent delays. Inadequate experience can result in mistakes, inefficiencies, and rework, further extending project timelines. Contractor experience is also significant as inexperienced contractors may encounter challenges and make costly mistakes that hinder timely project completion. Generally it is in consistent with Assaf al.et.al (2006) the authors discuss various causes of delay in large construction projects. One of the causes highlighted in the study is poor contract management. Additionally they stressed poor site management and supervision by contractors as a cause for project delay factor

Consultants blame contractors for delay contribution in such a way that they are in conflict with their partner (the sub-contractor), and highlighting poor planning, scheduling, and project management on the contractors' part. The authors who discusses conflict with subcontractors as a cause for project delays is Battaineh, H. T.al.et.al (2002) In this study, the authors examine the causes of construction delays in projects executed under traditional contract arrangements. They discuss the impact of conflicts with subcontractors as one of the factors contributing to delays in construction projects.

The client organization, EHA, acknowledged that the main reason for project delays was the increase in prices. The overall findings of this study also supported that price escalation has a significant impact on the delays experienced in heritage projects.

The client organization, EHA, faces the difficulty of finding contractors who possess previous experience in building conservation. External groups also share the idea that absence of experienced contractor is one of the top five factors contributing to project delays. This difficulty suggests that there is a shortage of contractors who possess the necessary expertise and skills specific to heritage conservation projects. The recognition of this factor by external groups further emphasizes its importance in the context of heritage building conservation projects. The difficulty in finding experienced contractors can have several implications for project execution. Firstly, it may result in delays during the contractor selection process identification of potential candidates. This delay in the initial stages can subsequently lengthen the overall project timeline. Moreover, the lack of experienced contractors can lead to cause potential risk like poor quality, in efficient resource management eventually fails to adhere to project schedules.

Contractors recognize that the inadequate qualifications of their staff members are a key factor contributing to project delays, particularly due to their deficiencies in site management and supervision. Furthermore, previous records of EHA reveal that the market faces a scarcity of experienced architect conservators, further exacerbating the challenges faced in the conservation endeavor.

Contractors blame consultants and clients to the project delay factors. They argue that clients are late in approving changes, and they delay payment to the contractors indicating financial problem. Additionally contractors point out that client organizations are burdened with bureaucratic processes that hinders timely decision. Furthermore, consultants are criticized by having inadequate experience and their work documents are full of error.

External groups attribute the responsibility of project delays to the inadequate qualifications of contractors' staff members, specifically highlighting their lack of experience in conservation work on building structures. This deficiency leads to poor site management and supervision, which further contributes to the delays experienced in projects.

External groups attribute the responsibility to consultants for their inadequate contract management skills and insufficient experience, which led to a delay in the preparation of design documents by the consultant.

CHAPTER FIVE

5 CONCLUSIONS AND RECOMMENDATION

5.1 Introduction

In this chapter, a recap of the research's findings, conclusions, and recommendations are presented. Additionally, there are suggestions for potential future studies related to the research topic

5.2 Conclusion

Cultural heritage in Ethiopia have great importance in terms of historical, economical, educational and community aspects. The preservation and promotion of this heritage are vital for Ethiopia's identity, tourism sector, sustainable development, and the enhancement of global cultural diversity.

The tourism industry is crucial for the global economy as it contributes to economic growth, job creation, and foreign exchange earnings in many countries. It also has a multiplier effect benefiting sectors like retail, construction, and agriculture. Additionally, tourism can help preserve cultural heritage, protect natural resources, and foster international understanding and cooperation. Completing tourism-related projects, including heritage conservation, in a timely manner is essential to reap associated benefits promptly.

Delays and budget overruns have been chronic issues in various projects, including conservation projects, in Ethiopia. This research aimed to identify the major factors causing delays in conservation projects at the Ethiopian Heritage Authority. A questionnaire survey was conducted to gather respondents' perceptions on the factors affecting delays. The collected data was analyzed,

and the ten most important delay factors were identified from each group's (client, consultants, contractors, and external) perspective

Based on the perceived causes of delay within each group, the following conclusions were drawn:

General Conclusion

- Bureaucratic procedures and complex decision-making processes within client organizations are identified as a common hindrance to timely project implementation.

Conclusion from consultants

- Contractors' conflict with sub-contractors is one of the most important delays causing factor for conservation of heritage building projects.
- Poor planning and scheduling of work by the contractor is one of the cause delay of conservation of heritage building project.

Conclusion from clients

- Price escalation is one of the most delay- causing factors in the conservation of heritage building project.
- Lack of contractor's experience is one of the causes of delay in the conservation of heritage building project.

Conclusion from contractors

- Poor qualification of the contractor's technical staff is one of the most delay causing factors in conservation of heritage building projects.

- Late approval of changes by the consultant is one of the cause delays of conservation of heritage building project.

Conclusion from others

- Poor qualification of the contractor's technical staff is one of the most delays causing factor for conservation of heritage building project.
- Poor contract management by the consultant is one of the causes of delay of conservation of heritage building projects.

5.3 Recommendations

General

A general recommendation to tackle delay emanating from bureaucracy is as follows:

- The client organization should conduct an internal review to identify bureaucratic bottlenecks and inefficiencies. This evaluation can pinpoint areas for improvement, simplifying decision-making and reducing delays. Delegating and empowering individuals or teams can speed up the decision-making process. Clear communication lines among directorates should be established to ensure smooth information flows and minimize delays due to miscommunication. Training programs can help employees navigate bureaucratic processes and find innovative solutions. Encouraging a culture of efficiency, innovation, and continuous improvement can motivate employees to eliminate bureaucratic obstacles.

Implementing standardized processes, templates, and documentation can reduce bureaucratic time spent. paperwork and ensure consistency in decision-making.

Recommendation for consultants

- Consultants should improve project management skills within the organization to effectively observe and supervise conservation of heritage building projects and assign experienced experts who can lead and coordinate project activities proficiently, guaranteeing that all tasks are appropriately planned, monitored, and executed.
- Consultants should train the client organization about the importance of timely change approvals and the potential impact of delays. By creating awareness and fostering understanding, consultants can help clients prioritize and speed up the change approval process.

Recommendation for clients

- Clients should conduct thorough financial assessments before project initiation and establish clear payment terms and schedules. Regularly monitor the client's financial status throughout the project and promptly address any issues to mitigate potential delays.
- Clients must know that when a change is requested by the consultants for approval that it is always accompanied by financial implications if they approve late. The decision making process must be clear and responsible expertise must be assigned.
- Clients should improve the selection criteria and emphasize the importance of the experience and qualifications in order that the selected contractors are having a proven track

record of successfully delivering projects and ensuring their technical staff possesses the necessary qualifications and expertise.

- It is suggested that conducting intense evaluation of potential contractors before awarding the project is important. Asking detailed information about their previous experience, including similar projects they have successfully completed, assessing their track record, expertise, and capabilities can ensure they have the necessary qualifications to deliver the project effectively.

Recommendation for contractors

- Contractors have to be sure to establish clear communication with subcontractors from the beginning of the project. This includes communicating project expectations, deliverables, timelines, and quality standards. It is important that everyone involved understands their roles, responsibilities, and project objectives**.** Make sure to establish a formal process for resolving conflicts with sub-contractors. This can include setting up dispute resolution mechanisms, such as mediation or arbitration, to address conflicts in a fair and objective manner. Clearly communicate these procedures to all parties involved to ensure a consistent and timely resolution of conflicts.
- Enhance planning and scheduling practices by employing experienced personnel, using project management tools, and regularly reviewing and updating schedules..
- It is essential for contractors to proactively engage in collaboration with both clients and consultants to foster a clear understanding of project requirements and ensure that their technical staff possesses the necessary qualifications to meet those requirements. By

establishing open lines of communication and feedback loops, contractors can create an environment where information flows freely, enabling all parties involved to identify any potential gaps in qualifications early on and take proactive measures to address them.

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Recommendation for future study

- This study focuses on the recognition and ranking factors that cause delays in the implementation of conservation of building structures at Ethiopian Heritage Authority, Therefore, it is suggested to conduct a future study examining the effect of these factors on project delay using regression analysis.

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Appendix A

Research questionnaire

Dear sir

My name is Getachew Tekalign Ali and I am a student undertaking a Master of Arts Degree in Project Management at AAU, School of Commerce. I am conducting a study on the factors affecting delays in conservation of heritage building projects at EHA, (Ethiopian Heritage Authority). I am inviting you to participate in this research study by completing the attached questionnaire. If you choose to participate in this research, please answer all questions as honestly as possible. In order to ensure that all the information will remain confidential, you do not have to include your name. The data will be used purely for academic purposes only and it will be confidentially reserved.

Part I- Respondent Background

1. Gender: Male ( ) Female ( )
2. Age: 18-30yrs ( ) 31-40yrs ( ) 41-50yrs ( ) 51-60yrs ( ) Over 60yrs ( )
3. Level of education: Secondary ( ) Vocational Training ( ) Diploma ( ) Degree ( ) Masters ( )
4. Which of the stakeholder are you in? (Please choose one)

Consultant ( ) Client ( ) Contractor ( ) Other ( )

5. For how long have you been worked in Conservation/Construction /Management field? (In Years)

1-5 ( ) 6-10 ( ) 11-15 ( ) 16-20 ( ) 21 above ( )

Part II Factors affecting Delay in Heritage building Conservation projects

6. Please tick (√) the extent to which you believe that the following **consultant related** factors

affecting delays of Heritage building Conservation projects at EHA. Using the following scale:

1 very low; 2 Low; 3 Average; 4 High and 5 very high.

No	Delay related to consultant	1	2	3	4	5
1	Poor communication and coordination of the consultant with contractors and clients.					
2	Delay during inspection and testing by the consultant					
3	Lack of consultant's resident staff (Engineers, Conservators, etc.)					
4	Inadequate experience of consultant.					
5	Mistakes in the design documents (e.g. error or omission in specifications, plan, limited surveys of existing building etc.					
6	Poor contract management (e.g inadequate inspection, poor documentation, inaccurate report, etc.).					
7	Delay in design documents preparation by consultant.					
8	Inaccurate damage investigation					

7. Please tick (√) the extent to which you believe that the following **Client** related factors that can contribute to delays of Heritage building Conservation projects at EHA. Using the following scale:

1 very low; 2 Low; 3 Average; 4 High and 5 very high.

No	Delay related to Client	1	2	3	4	5
9	Late site Handover after the project agreement signed off to get access to the site.					
10	Bureaucracy (multi layered system and process) in client organization that make decision making slow.					
11	Poor communication among stakeholders (e.g Regional cultural and tourism bureaus, local communities, UNESCO, etc.)					
12	Delay in payment to the contractors (e.g. Due to forgetful employee, absence of internet, invoice, etc.)					
13	Client financial problem (e.g. insufficient budget, change in regulation, etc.)					
14	Project termination by owner (e.g change in priority, lack of budget, poor performance etc.					
15	The right to do conservation on the heritage building owned by third party.					
16	Late approval of changes					

8. Please tick (√) the extent to which you believe that the following **Contractor** related factors that affect delays of Heritage building Conservation projects at EHA. Using the following scale: 1 very low; 2 Low; 3 Average; 4 High and 5 very high.

No	Delay related to Contractor	1	2	3	4	5
17	Poor qualification of the contractor's technical staff;					
18	Lack of contractors' materials on site; (lime, stone, etc.)					
19	Error during construction stage (e.g. Improper alignment, mixing and compaction, poor material quality, etc.)					
20	Lack of contractor's experience(lacking previous experience of conservation work on building structures)					
21	Inability in financing the project during construction by the contractor.					
22	Poor planning and scheduling of work by contractor					
23	Conflicts with sub-contractors (e.g. due to scope changes, inability to make payment on time, etc.)					
24	Poor site management and supervision by contractors					
25	Contractors inefficiency in handling resources					
26	failure in the planned work schedule by the contractor					
27	Rework due to error during construction(Repeat and correct the work that was already completed but did not meet the quality)					
28	Poor project manager skills					

9 Please tick (√) the extent to which you believe that the following external factors that can affect f delays of Heritage building Conservation projects at EHA. Using the following scale: 1 very low; 2 Low; 3 Average; 4 High and 5 very high.

No	Delay related to External Factor	1	2	3	4	5
29	Employee turnover, due to external factor like personal case, family case, health problem, need of higher pay, retirement etc.)					
30	Corruption (threats to get money from conservation work, abuse of power, etc.)					
31	Lack of quarry site like lime, stone, selected materials, sand etc.					
32	Price escalation (the rise of the cost of an input beyond agreed acceptable limit.)					
33	Accidents in construction (injuries, electric shock, burn, chemical exposure, death etc.)					
34	Labor strikes (General)like economic strike, political strike etc)					
35	Bad Weather conditions (rain causing flooding, wind causing material and equipment displacement, excessive heat causing sunburn to workers, snow causing safety hazard to workers etc.)					
36	Political instability (like violence, ethnic conflict etc.)					
37	Interference of local authorities (for example regional Government to provide or withdraw their financial share, grant or refuse to access quarry sites ,provision of security etc.)					
38	Bureaucracy in procurement methods employed					
39	Natural disasters like thunder, disease, earthquakes etc.					
40	Lack of political commitment from Government (local/regional) (e.g. failure to act in favor of conserving heritage properties, slow decision making in matter of challenges in conservation work etc.)					

If you have comments regarding the factors affecting delay, please specify here:

_____

_____

_____

Thank you very much for your contribution to this study

Appendix B

Table for descriptive statistics

Descriptive Statistics

	N	Mean	Std. Deviation
Mean consultant	36	3.4931	0.60132
mean client	36	3.5868	0.61805
Mean contractors	36	3.2477	0.50611
Mean others	36	3.1389	0.66518
Valid N	36		

Appendix C

Raw data for the consultant related questions

Filled by externals
Filled by contractors
Filled by consultants
Filled by clients

Respondar	Gender	Age	Education	category	Experience	Vconsq1	Vconsq2	Vconsq3	Vconsq4	Vconsq5	Vconsq6	Vconsq7	Vconsq8
1	1	4	2	3	5	3	4	4	4	3	4	2	2
2	1	5	3	3	3	4	4	4	5	4	3	4	3
3	1	3	4	3	3	2	3	4	4	5	3	5	4
4	1	4	3	3	2	5	4	4	4	3	3	4	5
5	1	2	4	3	2	2	3	4	4	4	5	3	2
6	1	1	5	3	2	4	3	3	4	4	4	5	4
7	1	2	2	3	3	2	4	4	4	4	3	4	2
8	1	3	4	3	3	3	3	4	4	3	5	4	2
9	1	2	4	2	2	3	4	4	5	2	4	4	3
10	0	1	4	2	2	2	5	5	3	3	3	3	5
11	1	3	5	2	3	4	4	4	4	4	4	3	4
12	0	2	5	2	1	3	3	4	3	4	4	4	5
13	0	1	4	2	1	3	3	2	3	3	4	4	5
14	1	1	1	2	2	3	4	5	5	4	4	5	3
15	1	2	5	2	1	3	4	3	3	4	4	3	3
16	0	2	4	2	2	1	3	3	4	3	4	4	4
17	1	2	4	1	2	2	1	1	1	1	4	2	1
18	1	2	5	1	2	2	3	3	2	3	3	3	4
19	1	1	4	1	1	3	3	3	2	1	3	3	3
20	1	3	5	1	3	5	5	5	3	4	5	5	5
21	0	3	4	1	2	2	5	3	3	3	3	5	4
22	0	2	4	1	1	2	4	4	3	3	3	3	4
23	1	3	2	1	4	3	2	2	2	2	3	2	2
24	1	4	4	1	4	4	4	4	3	3	4	4	4
25	1	2	4	3	2	4	3	4	4	5	4	4	3
26	1	2	3	3	2	2	3	2	3	3	4	2	2
27	1	3	4	4	3	3	4	3	4	3	3	2	3
28	1	3	4	4	3	5	4	4	3	3	3	4	3
29	1	1	4	4	1	3	2	3	5	5	4	4	3
30	1	3	3	4	4	3	3	4	4	3	2	4	4
31	1	2	5	4	2	5	4	4	4	5	5	4	4
32	1	2	5	4	3	3	5	3	5	4	5	4	5
33	1	2	4	4	1	3	3	2	2	3	3	3	3
34	1	3	5	4	4	3	4	4	3	3	5	4	4
35	1	2	4	4	3	5	4	4	5	5	5	3	3
36	0	2	3	4	3	4	3	4	3	3	5	4	3

Raw data for the client related questions

Filled by externals
Filled by contractors
Filled by consultants
Filled by clients

Respondar	Gender	Age	Education	category	Experience	Vclientq9	Vclientq10	Vclientq11	Vclientq12	Vclientq13	Vclientq14	VClient15	VClient16
1	1	4	2	3	5	5	5	3	5	4	3	5	5
2	1	5	3	3	3	3	4	3	4	3	4	3	4
3	1	3	4	3	3	3	4	3	5	3	3	3	4
4	1	4	3	3	2	4	3	3	4	4	4	4	4
5	1	2	4	3	2	2	4	4	4	4	3	5	4
6	1	1	5	3	2	2	4	4	3	5	4	5	5
7	1	2	2	3	3	3	4	3	3	4	4	4	3
8	1	3	4	3	3	2	3	3	4	5	4	5	5
9	1	2	4	2	2	2	2	3	3	3	1	2	1
10	0	1	4	2	2	5	5	4	5	5	3	3	5
11	1	3	5	2	3	4	4	5	4	4	2	3	3
12	0	2	5	2	1	4	5	5	4	5	3	3	4
13	0	1	4	2	1	2	5	4	3	3	2	3	3
14	1	1	1	2	2	3	3	4	3	5	3	5	5
15	1	2	5	2	1	4	4	4	4	4	4	4	4
16	0	2	4	2	2	5	4	4	5	4	4	2	3
17	1	2	4	1	2	1	3	3	3	3	2	1	2
18	1	2	5	1	2	4	4	3	4	4	4	3	4
19	1	1	4	1	1	2	4	3	4	4	3	3	3
20	1	3	5	1	3	5	5	5	5	5	5	5	5
21	0	3	4	1	2	5	4	5	4	4	5	3	5
22	0	2	4	1	1	2	4	3	4	3	4	3	3
23	1	3	2	1	4	2	4	3	3	3	3	2	4
24	1	4	4	1	4	2	4	3	4	4	2	5	4
25	1	2	4	3	2	3	4	3	4	5	5	3	3
26	1	2	3	3	2	4	4	4	4	3	4	3	3
27	1	3	4	4	3	3	4	3	3	4	2	3	3
28	1	3	4	4	3	2	4	4	4	5	4	2	4
29	1	1	4	4	1	4	5	5	3	3	3	3	2
30	1	3	3	4	4	3	3	3	2	4	3	3	3
31	1	2	5	4	2	5	5	5	4	4	2	3	3
32	1	2	5	4	3	4	5	4	3	4	3	4	3
33	1	2	4	4	1	3	3	3	1	1	1	4	1
34	1	3	5	4	4	4	4	4	4	4	3	3	3
35	1	2	4	4	3	3	4	5	4	5	5	4	5
36	0	2	3	4	3	4	3	3	2	3	3	3	3

Raw data for the contractor related questions

Respondar	Gender	Age	Education	category	Experience	Vcont17	Vcont18	Vcont19	Vcont20	Vcont21	Vcont22	Vcont23	Vcont24	Vcont25	Vcont26	Vcont27	Vcont28
1	1	4	2	3	5	5	4	3	3	3	5	4	3	5	4	4	5
2	1	5	3	3	3	4	3	3	2	3	2	4	2	2	3	2	2
3	1	3	4	3	3	3	2	2	4	4	4	4	3	3	3	2	4
4	1	4	3	3	2	5	4	4	3	3	5	4	5	2	4	4	5
5	1	2	4	3	2	3	4	4	5	3	2	3	4	4	4	5	4
6	1	1	5	3	2	5	4	5	5	3	4	4	4	5	4	3	3
7	1	2	2	3	3	4	3	4	3	3	3	2	4	2	4	4	2
8	1	3	4	3	3	5	4	2	2	3	2	3	4	4	4	3	2
9	1	2	4	2	2	3	5	4	4	3	3	2	3	4	3	4	2
10	0	1	4	2	2	4	4	4	5	4	4	3	3	3	3	3	4
11	1	3	5	2	3	2	4	3	2	5	5	3	4	4	5	4	5
12	0	2	5	2	1	4	3	3	4	4	4	3	4	3	3	2	3
13	0	1	4	2	1	3	4	5	5	4	4	3	3	3	3	3	4
14	1	1	1	2	2	5	3	4	5	3	3	3	4	3	4	4	3
15	1	2	5	2	1	4	4	4	4	3	4	4	4	4	3	3	4
16	0	2	4	2	2	3	4	4	4	5	4	4	3	3	4	3	4
17	1	2	4	1	2	3	2	2	2	3	3	4	3	2	2	2	3
18	1	2	5	1	2	5	5	3	4	3	5	5	5	3	5	4	5
19	1	1	4	1	1	4	4	3	3	3	4	3	4	3	3	3	3
20	1	3	5	1	3	5	5	5	5	5	5	5	4	5	5	4	5
21	0	3	4	1	2	5	5	3	5	3	5	5	4	3	5	3	5
22	0	2	4	1	1	4	2	3	4	3	5	5	4	3	3	4	5
23	1	3	2	1	4	3	2	2	2	3	3	5	4	4	2	4	4
24	1	4	4	1	4	3	4	3	4	3	4	4	5	4	4	4	4
25	1	2	4	3	2	5	5	4	4	3	4	2	4	4	3	3	4
26	1	2	3	3	2	3	4	2	4	3	4	4	5	4	3	3	4
27	1	3	4	4	3	5	5	4	4	3	3	2	3	2	3	3	3
28	1	3	4	4	3	4	4	3	3	3	4	4	4	3	2	3	3
29	1	1	4	4	1	4	4	4	4	4	3	3	3	3	2	3	2
30	1	3	3	4	4	4	4	3	5	3	4	3	3	3	2	3	3
31	1	2	5	4	2	5	5	4	5	4	4	3	3	3	3	3	5
32	1	2	5	4	3	5	4	4	5	4	3	3	5	4	5	5	5
33	1	2	4	4	1	3	3	3	3	2	3	1	1	1	1	3	1
34	1	3	5	4	4	4	3	3	3	3	3	4	4	3	4	3	3
35	1	2	4	4	3	5	4	4	5	4	4	3	5	5	4	4	5
36	0	2	3	4	3	4	4	3	3	3	3	4	4	3	4	3	2

Raw data for the external related questions

	Filled by externals		Filled by consultants
	Filled by contractors		Filled by clients

Respondar	Gender	Age	Education	category	Experience	Vother29	Vother30	Vother31	Vother32	Vother33	Vother34	Vother35	Vother36	Vother37	Vother38	Vother39	Vother40
1	1	4	2	3	5	3	4	5	5	3	5	4	5	5	4	2	3
2	1	5	3	3	3	3	3	2	4	1	2	3	3	2	3	1	4
3	1	3	4	3	3	3	2	3	4	2	2	4	3	3	4	2	4
4	1	4	3	3	2	4	4	3	4	3	4	4	5	4	5	4	4
5	1	2	4	3	2	5	5	3	5	3	3	5	5	4	4	3	4
6	1	1	5	3	2	2	2	4	3	1	1	2	2	2	2	1	4
7	1	2	2	3	3	5	3	4	3	4	2	2	4	3	2	1	4
8	1	3	4	3	3	2	2	2	3	2	1	2	2	2	2	1	4
9	1	2	4	2	2	5	2	5	4	2	2	3	3	3	2	1	3
10	0	1	4	2	2	3	3	5	5	3	4	5	4	4	5	2	5
11	1	3	5	2	3	5	1	3	5	2	1	3	5	4	5	3	5
12	0	2	5	2	1	3	5	5	5	2	4	1	5	2	4	1	5
13	0	1	4	2	1	2	2	4	5	1	4	4	4	5	4	3	4
14	1	1	1	2	2	2	5	4	3	2	3	4	5	4	5	1	3
15	1	2	5	2	1	4	3	4	4	3	4	4	5	4	4	2	3
16	0	2	4	2	2	2	5	2	2	3	2	1	2	2	2	2	1
17	1	2	4	1	2	1	2	3	4	1	2	3	3	4	2	1	3
18	1	2	5	1	2	4	3	3	4	3	2	4	4	4	5	2	4
19	1	1	4	1	1	3	3	3	3	2	2	3	3	4	4	3	3
20	1	3	5	1	3	5	4	5	5	5	4	5	5	5	5	5	5
21	0	3	4	1	2	5	3	5	3	5	2	5	4	5	5	3	4
22	0	2	4	1	1	4	3	2	3	3	2	3	3	4	4	2	4
23	1	3	2	1	4	4	3	3	3	3	3	4	3	2	2	2	3
24	1	4	4	1	4	2	2	3	4	3	2	5	3	2	2	2	3
25	1	2	4	3	2	2	2	4	4	1	2	1	3	2	4	1	3
26	1	2	3	3	2	3	3	4	4	2	2	2	3	3	3	2	3
27	1	3	4	4	3	3	2	5	4	4	2	3	5	4	4	4	2
28	1	3	4	4	3	3	4	4	3	3	3	3	5	3	3	4	5
29	1	1	4	4	1	2	3	2	5	4	4	1	2	2	3	1	3
30	1	3	3	4	4	4	3	4	4	1	2	3	4	4	4	1	3
31	1	2	5	4	2	4	3	5	3	2	2	2	5	2	5	2	3
32	1	2	5	4	3	3	4	4	4	2	3	2	3	3	4	1	3
33	1	2	4	4	1	2	1	2	1	1	1	1	3	1	3	1	3
34	1	3	5	4	4	3	3	3	4	3	2	2	3	3	4	3	3
35	1	2	4	4	3	3	5	4	4	1	3	3	3	4	3	1	4
36	0	2	3	4	3	2	3	3	2	3	2	2	3	3	3	3	3