



COLLEGE OF BUSINESS AND ECONOMICS

DEPARTMENT OF MANAGEMENT

MASTER OF BUSINESS ADMINISTRATION (MBA)

INVESTIGATING KEY FACTORS THAT DETERMINE CONSTRUCTION
PROJECT SUCCESS: EVIDENCE FROM OROMIA CONSTRUCTION
CORPORATION (OCC)

By: Temam Mame Wello

ID No.: GSE/5212/16

ADVISOR: Amare Abawa (PhD)

A thesis submitted to the Department of Management of the Addis Ababa
University in partial fulfillment of the requirements for the award of Master of
Arts Degree in Business Administration (MBA)

June, 2026

Addis Ababa, Ethiopia

COLLEGE OF BUSINESS AND ECONOMICS

DEPARTMENT OF MANAGEMENT

MASTER OF BUSINESS ADMINISTRATION (MBA)

INVESTIGATING KEY FACTORS THAT DETERMINE CONSTRUCTION
PROJECT SUCCESS: EVIDENCE FROM OROMIA CONSTRUCTION
CORPORATION (OCC)

SUBMITTED BY: TEMAM MAME WELLO

APPROVED BY THE BOARD OF EXAMINERS

ADVISOR

Name: Dr. AMARE ABAWA Signature:  Date: _____

INTERNAL EXAMINER

Name: Dr. Habtamu Endris Signature:  Date: _____

EXTERNAL EXAMINER

Name: Dr. Biru D. Signature:  Date: _____

STATEMENT OF CERTIFICATION

This is to certify that Temam Mame has conducted a thesis on title entitled ‘‘Investigating Key Factors that Determine Construction Project Success: Evidence from Oromia Construction Corporation (OCC) under my supervision. This work is original and acceptable for the submission in partial fulfillment of the requirements for graduation of degree of Masters in Business Administration (MBA).

Amare Abawa (PhD)

Signature: _____

Date: _____

Declarations

I, Temam Mame Wello, declare that this thesis entitled ‘‘Investigating Key Factors that Determine Construction Project Success: Evidence from Oromia Construction Corporation (OCC)’’ is my own original work. This thesis has not been presented by any other person for an award of a master’s degree in this or any other university. All sources of materials used for this thesis have been duly acknowledged.

Name: **Temam Mame Wello**

Signature: _____

Place: Addis Ababa University

College of Business and Economics

Department of Management

Business Administration Program (MBA)

Date June, 2026

Addis Ababa, Ethiopia

ACKNOWLEDGEMENTS

All praises be to Allah, the Lord of the World, in the first place for helping me finalize the journey of my MBA degree at Addis Ababa University. I would like also to thank my advisor Dr. Amare Abawa for his commitment in advising and assisting me throughout the work of this thesis from the very beginning to the end tirelessly. My special thanks would go to Oromia Construction Corporation (OCC) particularly the Strategic planning and Business Development Directorate for their support to get all necessary data as per my request and making everything easily accessible.

I would like to express my special thanks to all selected respondents from project managers as representing contractor, resident engineers from consultants, and counter-part engineers from clients, for their willingness and interest they show to fill the questionnaire with due attention.

Finally, my heartfelt and gratitude should go to my beloved family and friends who assist me with everything expected of them. I would specially thank my wife Genet Mohammed and my kids: Hawinet Temam, Fita Temam, Asli Temam, and Jalene Temam for their generous encouragement and tolerance throughout the journey of my study.

Temam Mame

June, 2026

TABLE OF CONTENTS

<i>ACKNOWLEDGEMENTS</i>	i
Table of Contents.....	ii
Lists of Tables.....	vi
Lists of Figures.....	viii
ACRONYMS	ix
<i>ABSTRACT</i>	x
CHAPTER ONE	1
1 Introduction.....	1
1.1 Background of the Study	1
1.2 Statement of the Problem.....	2
1.3 Research Questions	4
1.4. Objectives of the Study.....	4
1.4.1 General Objective:	4
1.4.2 Specific Objectives	4
1.5 Scope of the Study	5
1.6. Definitions of Operational Terms	5
1.6. Significance of the Study	6
1.7 Organization of the Study	7
CHAPTER TWO.	8
LITERATURE REVIEW	8
2.1 Introduction.....	8
2.2 Theoretical Framework.....	8
2.2.1 Project Management	8
2.2.2 Knowledge Areas for Project Management.....	6
2.2.3 Construction Project Management.....	9
2.2.4 Project management Success	10
2.2.5 Project Success Criteria	11
2.2.6 Project Success Factors.....	11

2.2.6.1 Project Success Factors Related to Contractors.....	13
2.2.6.2 Project Success Factors Related to Clients.....	15
2.2.6.3 Project Success Factors Related to Consultants.....	16
2.2.6.4 Project Success Factors Related to External Environment	17
2.2.7 The Stakeholder Theory.....	18
2.3 Empirical Studies	19
2.4 Research Gaps	22
2.5 Conceptual Framework.....	25
CHAPTER THREE	27
RESEARCH METHODOLOGY.....	27
3.1 Introduction.....	27
3.2 Research Approach	27
3.3 Research Design.....	27
3.4 Research population and Sampling.....	29
3.4.1 Target Population.....	29
3.4.2 Sampling technique, Sample Size and Sampling Procedure	30
3.5 Types and Sources of Data	32
3.6 Data Collection Tools	32
3.8 Validity	35
3.8.1 Content Validity	35
3.8.2 Construct Validity	35
3.9 Reliability.....	36
3.10 Ethical considerations	37
CHAPTER FOUR.....	39
DATA PRESENTATION, ANALYSIS, AND INTERPRETATION.....	39
4.1 INTRODUCTION	39
4.2 The response Rate	40
4.3 Preliminary Data Analysis	40
4.3.1 Checking for Missing Data	40
4.3.2 Checking for Outliers.....	41
4.4 Background Information of the respondents.....	42

4.5	Descriptive Statistics for Construction Project Success Factors.....	44
4.5.1	Contractor Related Factors	44
4.5.2	Client Related Factors.....	48
4.5.3	Consultant Related Factors	50
4.5.4	External Related Factors	52
4.6	Descriptive Statistics for Construction Project Success Criteria	54
4.6.1	Analysis and Interpretation of Time Related Project Success Criteria.....	55
4.6.2	Analysis and Interpretation of Cost Related Project Success Criteria.....	64
4.6.3	Quality Related Success Criteria	73
4.6.4	Client Satisfaction Related Construction Project Success Criteria.....	75
4.7	Analysis of RII to rank factors that determine construction project success	77
4.7.1	Contractor Related Factors	77
4.7.2	Client Related Factors.....	79
4.7.3	Consultant Related Factors	79
4.7.4	External Environment Related Factors	80
4.8	Analysis of RII to rank factors that measure construction project success.....	81
4.8.1	Time Related Factors	81
4.8.2	Cost Related Factors	82
4.8.3	Quality Related Factors	83
4.8.4	Client Satisfaction Related Factors.....	83
4.9	Overall Rankings success factors and success criteria	84
4.9.1	Overall Ranking of success factors by Category	84
4.9.2	Overall Ranking of success criteria by category.....	85
4.10	Correlation Analysis to evaluate the relationship among factors.....	85
4.11	Regression analysis for factors that determine the Project success	88
4.11.1	Test for Multiple Linear Regression Model Assumption	88
4.11.2	Multiple Regression Analysis of Factors that determine project success	92
4.11.3	Categorical Regression Analysis.....	94
4.11.4	Comparison with the Existing Literature	96
4.11.5	The theoretical implication of results of regression analysis	97
4.11.6	The Practical implication of results of regression analysis for OCC	98
4.12	Hypothesis Testing.....	98

Chapter Five.....	100
Summary of Major Findings, Conclusion, and Recommendations	100
5.1 Introduction.....	100
5.2 Summary of Major Findings.....	100
5.3 Conclusion	105
5.4 Recommendations.....	107
5.5 Limitation and Areas for Further Research.....	108
REFERENCES.....	109
APPENDIX.....	114

LISTS OF TABLES

Table 3.1 Allocation to strata (proportional allocation)	31
Table 3.2 indicates Planned respondent counts by sector and role	32.
Table 3.3 Assignment of values for the Likert scale in the questionnaire.....	36.
Table 3.4 Case Processing Summary showing Validity	36
Table 3.5 Reliability Test	36
Table 4.1. The Response Rate	39
Table 4.2 Case Processing Summary	40
Table 4.3 shows the standardized value (z-score) of the variables.	40
Table 4.4 Background Information of the respondents	41
Table 4.5. Contractor Related Factors	44
Table 4.6 Client Related Factors	47
Table 4.7 Consultant Related Factors	50
Table 4.8 External Related Factors	52
Table 4.9 Time Related Construction Project Success Criteria	55
Table 4.10. Time performance of Building Construction Sector	57
Table 4.11. Time performance of Water Supply Construction Projects	58
Table 4.12. Time Performance of Irrigation Construction projects	59
Table 4.13. Time performance of Drilling Construction Projects	61
Table 4.14. Time performance of Transport and Infrastructure Construction Projects	62.
Table 4. 15 Summary of Construction Project Time Performance by Project Types	63
Table 4.16. Cost Related Construction Project Success Criteria from respondents	64
Table 4.17 Cost performance of Building Construction Sector	66.
Table 4.18 Cost of performance of Water Construction Sector	67

Table 4.19 Cost performance of Irrigation Construction Sector	68.
Table 4.20 Cost performance of Drilling Construction Sector	70.
Table 4.21 Cost performance of Transport and Infrastructure Construction Projects	71
Table 4. 22 Summary of Construction Project Cost Performance by Project Types	72
Table 4.23. Quality Related Construction Project Success Criteria	73
Table 4.24. Client Satisfaction Related Construction Project Success Criteria	75
Table 4.25 Ranking of Factors Related to Contractors	77.
Table 4.26 Ranking of Clients Related Factors	78
Table 4.27 Ranking of Consultants Related Factors	79
Table 4.28 Ranking of External Environment Related Factors	79
Table 4.29 Ranking of Time Related Factors	80
Table 4.30 Ranking of Cost Related Factors	81
Table 4.31 Ranking of Quality Related Factors	82
Table 4.32 Ranking of Client Satisfaction Related Factors	82
Table 4.33 Overall Ranking of success factors by Category	83.
Table 4.34 Overall Ranking of success criteria by category	84.
Table 4.35 depicted the Pearson Correlations	87
Table 4.36 Tests of Normality	88
Table 4.37. Multicollinearity Test	90
Table 4. 38 Model Summary	92
Table 4.39 ANOVA Analysis	93
Table 4.40 Regression Coefficients	94
Table 4.41 Hypothesis Testing for categorical success factors	97

LISTS OF FIGURES

Figure 2.1 Conceptual Framework.....	26
Figure 4.1 Histogram	88
Figure 4. 2. Linearity.....	..89
Figure 4.3 Homoscedasticity Test	91

ACRONYMS

OCC- Oromia Construction Corporation

GDP- Gross Domestic Product

PMI- Project Management Institute

PBOK- Project Body of Knowledge

CSFs -Critical Success Factors

KPI- Key Performance Indicator

RII-Relative Importance Index

ANOVA- Analysis of Variance

VIF- Variance Inflation Factor

ABSTRACT

Projects are widely regarded as successful if they are completed on time, within planned budget, to the specified quality standards, and to the satisfaction of clients. Practically, however, this concept is rarely accomplished particularly in public sector construction projects like (OCC) due to failures in investigating and implementing determinants of their success. The main objective of this study was to investigate key factors that determine construction project success at OCC. Potential success factors were explored from literature review and grouped into different categories. Primary data were used in the analysis from sampled respondents including contractor, clients, consultants, and other experienced professionals. Secondary data related to project time and cost performances were also incorporated to measure how efficiently the corporation has been performing in terms of time and cost across the sampled projects from building, water, irrigation, drilling, and road projects. Descriptive statistics, SPSS, correlation, and regression analysis were employed for data analysis and interpretation. The RII was also used to rank the key determinants of construction project success at OCC. The regression analysis results showed that all success factors have been found statistically significant. The contractor related factors have been found to be the key determinant of construction project success followed by consultant, external, and client related factors. Using RII contractor related have been ranked as the most overall determinant of construction project success whereas client consultant, and external related factors have ranked from second to fourth next to the most determinants of construction project success. Four indicators (time, cost, quality, and client satisfaction) were identified as success criteria to measure the corporation's performance. It was confirmed that quality has been the most and best performing measurement followed by client satisfaction whereas the rank of time and cost related criteria has been significantly lower. The study found that actual completion time and costs exceeded planned time and costs persistently confirming that cost and time overruns have been systematic and critical challenges across most of the sampled construction projects A set of recommendations have been proposed for gaps that should be bridged by OCC. The study suggests limitations and several areas for further investigation by subsequent studies.

Keywords: Investigating, Determinants, Construction Project, Success factors, Success Criteria, contractors, clients, consultants, external factors, Time, Cost, Quality, Client Satisfaction

CHAPTER ONE

Introduction

1.1 Background of the Study

Despite its recognition as a catalyst for economic development, the construction sector has become complicated due to the fact that it involves multiple stakeholders that constitute contractors, clients, consultants, engineers, architects, and quantity surveyors. (Alafeef, 2025) More over, the global rising of uncertainties in technology, budgeting, and development processes have made the construction industry increasingly dynamic.(Babu,2025). This dynamic environment introduces significant uncertainty, making it crucial to figure out and manage Critical Success Factors (CSFs). These factors are the key determinants that affect whether a project becomes successful or not. According to Yerosan, et.al (2021), although the construction industry faces challenges worldwide, those encountered in developing countries differ significantly from those in developed nations. Their studies have indicated that these challenges are compounded by broader socio-economic pressures, persistent resource shortages, institutional weaknesses, and limited capacity to address critical issues. Furthermore, modern construction projects often become significant challenges for clients, largely due to increasing design complexity and the involvement of multiple stakeholders. Project failure not only influences clients but also other key participants such as contractors, consultants, and other stakeholders and the public at large (Albtoush et.al, 2022). Studies have also emphasized that the success or failure of a project is influenced not only by internal organizational capacity but also by external environmental and regulatory factors. Research conducted at both international and local levels has indicated that construction project success, as investigated by Göküz and Akiner (2025) is affected by various factors, such as characteristics of the project, management approaches, team expertise, financial capacity or strength, procurement methods, and broader economic and political environments. Essentially, these factors differ based on context, reflecting that project success cannot be defined using a universal framework.

In context to Ethiopia, according to the study conducted by Abdurezak et.al (2019) despite the government's allocation of huge amount of capital budget to the sector, almost 60% construction projects have been unsuccessful. This shows persistent inefficiencies, even in the presence of substantial government investment in the development of infrastructure. According to them the major issues influencing the construction project include delays in policy implementation, corruption, low

capacity of contractors and consultants, weak collaboration with stakeholders, and the absence of effective benchmarking systems. In Oromia regional state, the government has made large-scale investments in infrastructure development. One of the key public entities driving this effort is Oromia Construction Corporation (OCC). Established in June 2020 by Regulation No. 213/2020, OCC is the result of a merger among four former public enterprises namely Oromia Water Works Construction Enterprise, Oromia Roads Construction Enterprise, Oromia Construction Works Enterprise and Oromia Drilling Enterprise and is equipped with a significant capital base, experienced personnel, and an extensive fleet of construction equipment. However, practically, majority of OCC's construction projects have been facing significant implementation and stakeholder coordination challenges. In terms of time performance, most projects usually go beyond their originally planned timeframe and resulted in time overruns. Project delays lead to client dissatisfaction as well. In terms of cost or budget several projects exceeded initially planned budget and result in cost overruns. Coordination and communication among stakeholders also have been inadequate. These challenges continue to be observed across all types of sectors of construction projects as a corporation. This underscores the urgent need to investigate and examine the determinants of construction project success in context to OCC with special emphasis on the roles of contractors, clients, consultants, and external related determinants.

Therefore, investigating determinants of construction project success is the main objective of this study specific to OCC's unique operational context.

1.2 Statement of the Problem

A construction project is largely regarded as successful when it is completed within the planned timeframe, budget, quality standards, and satisfies stakeholder expectations. However, achieving these criteria in practice is challenging, especially in public sector construction projects where multiple stakeholders, regulatory changes, and financial constraints are involved (Werku et.al, 2018). The term Critical Success Factors (CSFs) has emerged as a key concept in project management. Malikov, (2023) defines CSFs as those factors that significantly affect the likelihood of project success when adequately addressed. These factors vary depending on project size, complexity, environmental conditions, and stakeholder expectations (Pirotti, 2020). However, most construction projects go beyond their contractual duration by significant margins, and only very few meet their desired objectives in terms of time, cost, and quality. As found by Abdulkarim et al. (2023) the causes

of project failure are multifaceted, comprising multiple stakeholders such as contractors, clients, consultants, and external environmental conditions. According to a study conducted by Abdulrazak et.al (2019), in Ethiopia, majority (91.75%) of construction projects have indicated substantial delays, while only few (8.25%) of them were completed within the originally planned schedule. Evidence from unsuccessful construction projects usually shows that critical success factors are either overlooked or inadequately managed. These highlight broader shortcomings in project planning, monitoring, and evaluation processes.

OCC, struggles to deliver large-scale construction projects successfully within planned schedules, it has been encountering similar multifaceted challenges like other public enterprises. Even though earlier studies have provided valuable insights in identifying determinants of project success several gaps have been identified from the extensive review of related literatures. In the first place, previously, no study has been conducted on investigation of determinants of construction project success in context to OCC. This absence of empirical evidence would create a room for this study to further investigate the potential determinants of project success in context to the corporation under study through extensive literature review. Secondly, there has been no consensus on the definition of the most critical success factors, and context-specific investigations remain insufficient (Frefer AA, 2018). The lack of universally accepted definitions and performance standards has long hindered consistent evaluation of construction project success (Kerzner, 2013). Furthermore, in measuring project performance various studies have been limited to only time, cost, and quality while others propose different sets of criteria for defining success (Albtoush et.al, 2022,). Accordingly, in this study client satisfaction has been incorporated and adopted as the fourth success criteria to measure project performance. In terms of coverage and focus previous studies though have attempted to identify project success factors, they solely focus on, a single sector usually building construction and fail to incorporate other sectors. To bridge that gap this study has incorporated other four construction sectors in addition to building construction sector. Moreover, methodologically most studies have used only descriptive statistics by overlooking other analytical tools such as inferential statistics, correlation, and multiple linear regression analysis which have been included as analysis tools in this study to make the analysis more sound, comprehensive, and strong.

Accordingly, the identified theoretical, empirical, conceptual, methodological, and practical gaps require a deeper context specific investigation. Therefore, this research has aimed to investigate and analyze the determinants of construction projects success within the OCC.

1.3 Research Questions

The fundamental challenge for any construction company is to successfully complete the project within the planned timeframe, budget, scope, and quality standards, ensuring client satisfaction by meeting the initial commitments.

Accordingly, in this study, here have been the basic questions to be addressed.

- What is the effect of factors related to contractors on the success of construction projects?
- What is the effect of factors related to clients on the success of construction projects?
- What is the effect of factors related to consultants on the success of construction projects?
- What is the effect of factors related to external environments on the success of construction projects?
- What is the level of influence of those factors related to contractors, clients, consultants, and external factors in determining the success of construction projects?

1.4. Objectives of the Study

1.4.1 General Objective:

The aim of the study was to investigate key factors that determine construction projects success in context with Oromia Construction Corporation, with particular emphasis on the roles of contractors, clients, consultants, and external environment factors, and to rank the level of influence of those factors, thereby suggesting actionable recommendations aimed at enhancing the efficiency and effectiveness of construction projects by addressing the key success factors identified in the study.

1.4.2 Specific Objectives

The specific objectives of the study were the following.

1. To examine the impact of contractor-related factors on the success of construction projects in context to Oromia Construction Corporation.
2. To analyze the effect of client-related aspects on the success of construction projects.
3. To evaluate the effect of consultant-related factors on overall construction project success.
4. To determine the influence of external conditions on the execution and success of construction projects.

5. To develop actionable recommendations aimed at enhancing the efficiency and effectiveness of construction projects by addressing the critical success factors identified in the study.

1.5 Scope of the Study

The scope of the study was confined to construction projects carried out by Oromia Construction Corporation which have been on going as of the last five years. It covered a range of construction project types based on the sample that was drawn from each sector, including buildings, water supply, irrigation, drilling, transport and infrastructure construction projects located in various parts of the country. The analysis was specifically focusing on four categories of success factors which have been related to contractors, clients, consultants, and external environmental (political, economic, social and technological) influences.

1.6 Definitions of Operational Terms

The definitions of operational terms that have been used technically in this study are listed out and defined as follows:

Project: - It can therefore be defined as a temporary and unique set of coordinated activities undertaken to achieve specific objectives within predetermined time, cost, quality, and resource constraints (PMI, 2021; Kerzner, 2022).

Project Management: - as defined by the Project Management Institute (PMBOK, 2017) is the application of knowledge, skills, tools, and techniques to project activities to meet project requirements.

Construction Project: A construction project is a temporary endeavor undertaken to create, renovate, or maintain a physical facility such as a building, road, bridge, dam, or other infrastructure within specified constraints of time, cost, quality, and scope. Construction projects involve the coordinated efforts of multiple stakeholders, including clients, consultants, contractors, and regulatory bodies (Project Management Institute, 2021)

Project Success Criteria: Project success criteria are the standards or measures used to evaluate whether a project has achieved its objectives. Traditionally, success has been assessed based on the "iron triangle" of time, cost, and quality, although contemporary approaches also include stakeholder

satisfaction, achievement of strategic objectives, safety, and sustainability (Albert Chan, A. P. C., Scott, D., & Lam, E. W. M. (2002).

Investigation is the systematic process of gathering, examining, and interpreting information to answer research questions and generate evidence-based conclusions (Creswell & Creswell, 2018).

Project success is the achievement of project objectives and the realization of the benefits expected by stakeholders" (Shenhar et al., 2001).

Project Success Factors- are the elements, conditions, or circumstances that contribute to the successful completion of a project. They represent the inputs and influences that increase the likelihood of achieving project success criteria. Examples include effective leadership, adequate funding, stakeholder involvement, competent project teams, and efficient communication. (Pinto Jeffrey K. & Dennis P. Slevin (1987).

Critical Success Factors: Malikov, (2023) defines CSFs as those factors that significantly affect the likelihood of project success when adequately addressed. They are the limited number of areas in which satisfactory performance is essential for an organization or project to achieve its mission and objectives. In construction projects, CSFs are the key factors that have the greatest influence on project success and therefore require special management attention (Albert Chan, A. P. C., Scott, D., & Chan, A. P. L. (2004).

Determinants of project success are the critical organizational, managerial, technical, and environmental factors that contribute to achieving project objectives and desired outcomes (Albert Chan, Scott, D., & Chan, A. P. L. (2004).

1.7. Significance of the Study

The research is expected to offer practical insights for leaders and project managers within Oromia Construction Corporation by identifying priority areas for strategic improvement. Moreover, the findings would enrich the existing body of knowledge on factors influencing project success in Ethiopia's construction industry. The study also would serve as a useful reference for policymakers, contractors, and consultants, suggesting key areas that need both policy adjustments and operational improvements.

1.8 Organization of the Study

The research thesis was organized into five chapters. The first chapter covered the introduction that constitutes the background of the study, statement of the problem, research questions, objective of the study, scope of the study, and significance of the study. Reviews of conceptual, empirical, and related theoretical literature were explained in the second chapter. The methodology was explained in chapter three. The data presentation, analysis, and interpretation of the results were covered in chapter four. The fifth chapter constituted the summary of major findings, conclusion, recommendation, and areas for further subsequent studies.

CHAPTER TWO.

LITERATURE REVIEW

2.1 Introduction

In this chapter, literature related to factors that determine construction project success were reviewed using different journal articles, books, and research papers.

The section was categorized into four sub-titles that constitute the theoretical framework, empirical review, and research gaps and conceptual framework.

2.2 Theoretical Framework

This section has been framed to cover theoretical issues related to project management, construction project management, project management success, Project Management Body of Knowledge (PMBOK), theory of stakeholder communication, project success criteria, and project success factors.

2.2.1 Project Management

All of mankind's significant achievements from constructing the pyramids to finding a cure for polio to landing a man on the moon started as a project (Larson and Gray, 2018, p. 3). Project management is a relatively new academic field, particularly when compared to more established disciplines like economics and strategic management. Recognizing the need for standardized practices, the Project Management Institute (PMI) released the first edition of *A Guide to the Project Management Body of Knowledge* (PMBOK® Guide) in 1996. This guide adopted a systems approach to outline the essential methods and processes required to achieve project objectives within specified timeframes, budgets, and quality standards (Ahmed, 2017, pp. 1-31). Project Management Institute (PMI) defines project management as the application of knowledge, skills, tools and techniques to project activities to achieve project requirements. It is accomplished through the application and integration of the project management processes of initiating, planning, executing, monitoring and controlling, and closing (PMI, 2017, p. 716). Project management has a well-established history. It continues to evolve as a distinct discipline, gradually developing its own theoretical framework (L. Bannerman, 2014, pp. 1-13)

It has become a crucial topic in today's discussions, as organizations often face challenges when introducing new business processes, products, services, or other initiatives. When we look at how organizations implement changes, it typically involves assembling a team with specific skills to carry out the task. The integration and oversight of these activities to achieve the desired outcome is the essence of project management (PMI,2021). Project management is gaining growing attention today, as organizations frequently face challenges when introducing new business processes, products, services, or other initiatives. Typically, when organizations undertake such changes, they form teams with specific skills to carry out the work. The coordination and oversight of these efforts are at the heart of what project management entails (Paul L. Bannerman, 2014),

Project management should be seen as a combination of strategies, concepts, and tools designed to help organizations carry out their projects efficiently. Yet, it's essential to understand that relying on these structured methods alone does not necessarily lead to successful project outcomes ((Richardson and Jackson, 2019). It has historically served as the foundation of organizational strategy, but its fundamental principles are expected to come under threat in the coming decade. With the rapid acceleration of technological innovation, increasing social demands, and mounting global uncertainty, project managers will be required to navigate an environment that is evolving quickly and becoming more complex ((Manambedu, 2025, p. 140).

2.2.2 Knowledge Areas for Project Management

The Project Management Body of Knowledge, (2017) outlines ten key knowledge areas that project managers must understand to be recognized as professionals. These include: Project Integration Management, Project Scope Management, Project Time Management, Project Cost Management, Project Quality Management, Project Human Resource Management, Project Communications Management Project Risk Management, Project Procurement Management Project Stakeholder Management ((PMBOK® Guide, 2017)..

2.2.3 Construction Project Management

The construction industry is highly dynamic, largely due to growing uncertainties in areas such as technology, budgeting, and development processes. Today's construction projects are increasingly complex and challenging, placing project teams under significant pressure as they navigate constant changes. As construction is a vital component of a nation's infrastructure and economic development,

it is essential to implement project management practices to ensure that projects meet their intended goals. A review of recent literature reveals that construction projects often suffer from significant cost overruns, schedule delays, and quality issues. Delays refer to the extension of project timelines beyond the agreed contract date or expected delivery time. Such delays can lead to financial losses and negatively impact stakeholders involved in the project. Consequences may include extended timelines, increased costs, disputes, legal conflicts, arbitration, and in extreme cases, project abandonment (Babu N. J., 2015, p. 17)

The construction industry plays a pivotal role in the national economies of most countries, making the successful completion of projects a primary objective for all stakeholders engaged. However, modern construction projects often encounter significant challenges for both clients and contractors, largely due to increasing design complexity and the involvement of multiple stakeholders. Project failure not only impacts clients but also influences other key participants including contractors, consultants, and clients as well as the wider public. (Albtoush et.al, 2022).

Construction projects possess distinct characteristics that set them apart from other types of projects. One key feature is their uniqueness no two construction projects are exactly alike, as each is affected by a specific set of conditions and thus requires tailored management practices Another defining trait is their complexity. These projects progress through multiple phases, each involving various disciplines and organizations. The diversity of activities and stakeholders from initial planning through to completion contributes to the overall complexity of construction project management (Malikov A. 2023, p. 24).

2.2.4 Project management Success

As clearly has noted by Venczel et.al, (2021), in today's industrialized world, 'success' has become a central focus, particularly in the field of project management. They added that every project professional holds a personal view on what defines success and the various factors that influence it. It has been further elaborated that while project success and project management success often overlap, they are distinct concepts. These researchers briefly have articulated that project management involves planning, organizing, monitoring, and controlling all aspects of a project, aiming to achieve objectives safely, and within the agreed time, budget, and quality standards. On the other hand, the 'iron triangle': focused on time, cost, and scope was the first model used to assess project management success, though it was later recognized as only one part of broader project success. According to them, a project

might still achieve its long-term strategic goals even with weak project management, and the reverse can also be true. The researchers suggest that expanding beyond the 'iron triangle' reveals a broader view, emphasizing that project managers are also accountable for integration, resource allocation, scope, communication, and risk management, all while meeting time, budget, and performance expectations.

2.2.5 Project Success Criteria

As well articulated by Pinto et al. (2022) project success plays a vital role in economic development by meeting the three primary success criteria: time, cost, and quality. These elements, commonly known as the 'iron triangle,' have long been used by researchers as key indicators of project performance. Moreover, they added that initially, these criteria were often treated as fixed, despite the growing complexity of projects. These researchers noted that over time, however, as our understanding of projects and the various factors influencing their outcomes has matured, it has become clear that success metrics must also evolve. According to them this has led to a broader, more dynamic view of success, one that considers multiple perspectives and contextual variables such as who is evaluating the project, when the evaluation occurs, what criteria are used, and the nature and setting of the project itself. Today, project success can be measured through diverse outcomes, including the benefits delivered, commercial impact, stakeholder satisfaction, sustainability, and resource efficiency. This evolving concept reflects the advancement of project management theory and its application in the modern world (Pinto et al., 2022).

The lack of universally accepted definitions and performance standards has long hindered consistent evaluation of construction project success (Kerzner, 2013). These benchmarks often referred to as success criteria are essential tools for measuring project outcomes (Lim & Mohamed, 1999; Mladenovic et al., 2013). Success criteria help project managers assess how well a project meets its objectives (Chan et al., 2002), although the specific criteria vary between studies. Some are clearly measurable, while others are based on subjective or psychosocial factors (Bryde, 2005). Various studies propose different sets of criteria for defining success (Albtoush, 2022, p. 1088).

2.2.6 Project Success Factors

According to Albtoush et.al, (2022, project success is commonly defined as the achievement of established objectives, typically measured by time, cost, and performance. These researchers have

defined them further that the definitions vary across studies because most are specific to particular contexts, with their application and influence typically confined to the countries and environments in which the research was conducted. Additionally, some researchers have pointed out that there is insufficient effort to adapt these findings to local settings, where organizational structures, cultures, and maturity levels differ (Albtoush et.al, 2022, p. 1088)

Given the increasing number of stakeholders involved in modern projects, the definition of success has evolved significantly (Chan et al.,2002). Project success now incorporates a broader set of expectations and aims to guide participants toward achieving the best possible outcomes (Chan & Chan, 2004). However, success remains a complex and often subjective concept, extending beyond the traditional scope of project management. Project success factors, which are the elements of a project which, when influenced, increase the likelihood of success; these are the independent variables that make success more likely where as project success criteria, which are the measures used to judge on the success or failure of a project; these are the dependent variables that measure success. ((Ralf Müller, Kam Jugdev, 2025, pp. 757-775). Despite ongoing efforts in both developed and developing nations to ensure successful project delivery, many projects continue to encounter significant obstacles. As a result, numerous studies aim to explore these challenges, which vary across countries due to differing economic, political, and social conditions. Identifying success factors specific to the local context is crucial for developing effective strategies. One common issue, particularly in public sector projects, is the failure to define critical success factors (CSFs) across project phases and to measure success in terms of both efficiency and effectiveness (Albtoush et al., 2021).

The study aims to address the existing gap by reassessing the critical success factors for construction projects in Jordan, offering an updated perspective on the local industry's current state through analysis of data collected from final reports of various projects. It will also include a discussion on the distinct characteristics and compare the findings with research from other developing countries. By identifying these factors, project managers can create strategies to enhance the performance of both current and future construction projects in the region. Additionally, decision-makers can leverage the results to better allocate resources and improve overall project outcomes (Albtoush, 2022, p. 1088)."

After reviewing several of these studies, it becomes clear that numerous factors are identified, often with varying degrees of importance assigned to them. Moreover, definitions of success and failure

differ widely among the studies. This complexity makes it nearly impossible to reach a definitive conclusion on the topic (Richardson and Jackson, 2019).

A review of the literature indicates that construction project success is multifaceted and significantly affected by the interactions among key stakeholders, namely contractors, clients, and consultants. While each stakeholder group possesses distinct roles and areas of expertise, the effectiveness of their collaboration and alignment is critical to achieving favorable project outcomes. Maryam et al. (2023) further emphasize that project performance is contingent upon various factors, including project complexity, contextual conditions, type, scale, geographic location, and the degree of stakeholder engagement. The success of construction projects at Oromia Construction Corporation is significantly influenced by factors related to contractors, clients, consultants, and external environmental and economic conditions.

2.2.6.1 Project Success Factors Related to Contractors

Several studies have indicated that contractor-related factors play a crucial role in determining the success of construction projects within a country's specific context.

Butković (2021) proposed a new framework for ranking critical success factors (CSFs) in international construction projects. The study identified a wide range of success factors, including effective project planning and control, IT support for project management, proper project selection, efficient project management practices, and the competencies of the project manager, such as experience, decision-making ability, leadership, adaptability, and communication skills. Additional factors included the commitment and problem-solving abilities of project team members, support from top management, organizational flexibility, comprehensive contract documentation, quality control, effective monitoring, clearly defined goals, strong financial capacity, and relevant company experience and references in the target market. The study's findings highlighted that among contractor-related factors, the most critical were effective organization and planning, along with top management support, due to the essential backing required throughout all phases of international operations. Furthermore, the research emphasized that the most vital CSFs for international project success are the project manager's organizing and coordinating skills, competence, communication abilities, experience, education level, political connections, decision-making skills, leadership, and motivational capabilities.

Borges et al. (2024), in their study on project success and critical success factors in construction projects from a multicultural team perspective, based on a case study in Guyana, identified several key determinants of project success. These included the project manager's competence and skills, strong interpersonal relationships within the project team, effective allocation of human resources, the use of sound project management techniques, and early, accurate definition of project goals and objectives. Other important factors were robust quality control and assurance systems, strict adherence to health and safety protocols, trustful and communicative stakeholder relationships, comprehensive planning, scheduling and control, top management support, contractor competence and experience in the local market, and a fair and transparent procurement process, including bid submission timelines and compliance with anti-corruption standards.

On the other hand, Abdullah (2025), in his assessment of critical success factors highlighted the five most critical success factors, ranked using the Relative Importance Index (RII) and Likert's Scale: implementation of an effective strategic planning process, compliance with anti-corruption regulations, efficient resource allocation, the project manager's expertise and experience, and the development and enforcement of essential project policies.

Tamgadge D. and Shinde (2018), in their study analyzing critical success factors for construction projects in the Indian context, identified a range of key elements that contribute to project success. These factors include strong leadership, effective project-related decision-making, workplace safety, high-quality work, clear communication and coordination with clients and contractors, proper supervision, control over subcontractors, a skilled and capable project team, efficient site management, on-time project completion, a clearly defined scope, consistent project monitoring, successful execution, and support from top management. Additionally, they emphasized the importance of fast information flow, cost control, structured project organization, the contractor's type and experience, and a solid understanding of construction project management as vital to achieving successful outcomes.

Gunduz and Ahmed (2018), in their study analyzing success factors in the construction industry in the Middle East Region, identified several key contributors to project success. These include effective procurement and tendering processes, strong communication among stakeholders, top management support, thorough risk assessment, a clearly defined project mission, proper personnel selection and training, effective project briefings, and team motivation. Based on the Relative Importance Index, the

study further highlighted that a company's technical capabilities, clear scope and work definition, robust control systems, efficient site management, and the project manager's competence and commitment were ranked as the top five critical success factors. The researchers recommended that management teams prioritize these areas to enhance project success.

Maryam et al. (2023), in their study on key success factors and their impact on construction project performance in Qatar, identified a wide range of elements that influence project success. These include effective communication with stakeholders and team members, strong leadership abilities, persuasion and negotiation skills, the capability to influence and motivate the project team, and the ability to guide and make informed decisions. Additional factors found to be critical were project management experience, top management support, adequate resources for project execution, and active involvement in resource allocation to accommodate project changes and support progress. Similarly, Mamaru (2016), in his investigation of key success factors for building construction projects in Bole Sub-city, highlighted contractor-related factors such as the executive experience of the project contractor team, mechanisms for evaluating and confirming subcontractor competence, risk identification and management strategies, and efficient resource utilization to enhance equipment effectiveness as major determinants of project success. In a related study, Tilahun (2020) assessed factors affecting the effective performance of construction projects at the Ethiopian Construction Works Corporation (ECWC). The study found that a clear understanding of project goals, customer involvement, safety and health management, strong top management support, project planning and scheduling, resource management, regular monitoring, evaluation and feedback, communication management, project manager competence, and team management all play crucial roles in ensuring the success and positive delivery of public construction Projects.

H1: Factors related to contractors have a significant impact on the success of construction projects.

2.2.6.2 Project Success Factors Related to Clients

According to Chan et.al (2004), a study conducted on construction success factors which includes client's experience and ability, client's confidence in construction team client's knowledge of construction project organization, nature of client (privately funded vs. publicly funded), influence of client/ client's representative, client's clear and precise definition of project scope and objectives, size of client organization, client's emphasis on low construction cost, client's emphasis on high quality of

construction, client contribution to the project, client's ability to brief, client's construction sophistication, client's ability to make decision client's ability to define roles, client/s risk aversion, client project management., client's contribution to design, and client's contribution to construction, have been identified as a significant factor. The study further stated that these factors deal with client characteristics, client type and experience, knowledge of construction project organization, project financing, well-defined scope, owner's risk aversion, client project management.

Butković (2021) in his research done on a new framework for ranking critical success factors for international construction projects identified factors that related to clients as project size and value constructability/complexity, accurate initial cost estimates dispute resolution process, adequate funding throughout the project life cycle from the client side

As the study conducted by Abteen and Mohammad (2017), to identify and evaluate construction projects' critical success factors employing Fuzzy-TOPSIS approach, factors such as Client consultation and support, allocating appropriate funding accurate and reliable estimates of project costs prediction of project risks and the urgency of completing the project

Other authors, Mamaru (2016), Tsiga et.al (2016),Tewodros(2023), Tilahun(2020) ,Ramlee N et.al (2023), Tuyizere and Samuel(2025), Borges et.al (2024), Yiftaalem (2024), Abteen and Mohammad (2017), Gunduz and Ahmed (2018),Dr Mohammed and Shamim (2022), Samiullah et.al (2023), and Abdullah (2025) identified factors that constitute project characteristics and size, adequate budget or funding throughout the project from client side, accurate initial cost estimates, client's experience in construction project organization and management, change orders, and acceptance of the project by the client as factors related to clients in contributing to the success of construction projects.

H2: Client-related factors significantly influence the successful execution of projects.

2.2.6. 3 Project Success Factors Related to Consultants

The role of consultants is pivotal in determining the success of construction projects. Numerous studies have identified consultant-related factors that significantly influence project outcomes. Key factors include consultant commitment to ensuring construction work, effective technical reviews, timely completion of design before construction commencement, support and competence of project consultants, design accuracy, constructability and complexity considerations, adequate design details and

specifications, and the skills and capabilities of designers and consultants. These factors have been found to significantly impact the performance of construction projects.

Gunduz et al. (2018) emphasized the importance of consultant commitment and effective technical reviews in achieving project success. Their study highlighted that early and active involvement of consultants contributes to better project outcomes. Similarly, Hayat (2023) identified that the timely completion of design before construction start is crucial, as delays in design can lead to project overruns.

Tewodros (2023) and Yiftaalem (2024) focused on the support and competence of project consultants, noting that experienced consultants can navigate complex project requirements more effectively. Their findings suggest that consultant expertise directly correlates with improved project performance.

In the context of design accuracy and constructability, Bamgbose et al. (2024) found that detailed and precise design specifications reduce ambiguities during construction, thereby minimizing delays and cost overruns. They argue that the complexity of a project necessitates a higher level of detail in design documentation to ensure clarity and feasibility.

Furthermore, Gokuz and Akıner (2025) highlighted the significance of the skills and capabilities of designers and consultants. Their research indicates that continuous professional development and training for consultants lead to better decision-making and adaptability in dynamic project environments.

Collectively, these studies underscore the multifaceted role of consultants in construction projects. The identified factors ranging from commitment and technical proficiency to detailed design and adaptability are integral to enhancing project performance and achieving successful outcomes.

H3: Consultant related factors play a significant role in determining the success of construction projects.

2.2.6.4 Project Success Factors Related to External Environment

Several studies have identified key external environmental factors that significantly influence the success of construction projects. The success of construction projects is significantly influenced by a myriad of external environmental factors. Extensive research has identified several key elements that impact project performance, encompassing economic, political, social, technological, and environmental dimensions.

According to Mamaru (2016), Ramlee et al. (2016), Samiullah et al. (2018), Tamgadge and Shinde (2018), Biniyam (2021), Malikov (2023), Ramlee et al. (2023), Borges et al. (2024), Tewodros (2023), Hayat (2023), Abdullah (2025), Lana (2021), Wondirad (2023), Alboush et al. (2022), Kidanemariam and Melkamu (2021), Thaddeo et al. (2025), Ottaviani et al., and Gmduz et al. (2018), these factors include the business and work environment, adoption of up-to-date construction technologies and digital systems, commitment of all stakeholders, formal dispute and conflict resolution mechanisms, site climatic conditions, currency stability and overall economic stability, effective health and occupational safety protocols, political stability, social and cultural alignment (including community engagement and support), regulatory and legal frameworks, environmental impact management by the project management team, government commitment and leadership, and unforeseen site or project conditions. Collectively, these studies indicate that external environmental factors exert a significant influence on the performance and overall success of construction projects.

H4: Factors related to external environment significantly affect project success.

2.2.7 The Stakeholder Theory

This study examined how contractor, client, consultant, and external related factors determine the success of construction projects. The stakeholder theory gives a strong theoretical foundation due to the fact that these categories represent the key stakeholders whose actions, interests' communication, and collaboration affect project outcomes.

Stakeholder Theory, introduced by Freeman (1984), proposes that the success of a project or organization depends on how well the interests and relationships of all relevant stakeholders are managed. The theory recognizes that projects do not operate in isolation; rather, they involve various stakeholders whose expectations, decisions, and actions can significantly influence project outcomes. In construction projects, these stakeholders commonly include clients, contractors, consultants, government agencies, suppliers, financiers, and local communities. Freeman (1984) argues that project success is more likely when project managers effectively engage stakeholders, address their interests, and encourage cooperation among them.

The theory is highly applicable to construction projects because successful project delivery requires the active participation and coordination of multiple stakeholder groups. Contractors are responsible for executing project activities and managing resources, clients provide financial support and strategic

direction, consultants contribute technical expertise and professional guidance, while external stakeholders such as regulatory bodies, suppliers, and communities shape the environment in which projects are implemented. Research has shown that stakeholder commitment, effective communication, and strong collaboration play an important role in improving project performance and increasing the likelihood of project success (Oppong et al., 2017).

In this study, Stakeholder Theory serves as the foundation for examining the effect of contractor-related, client-related, consultant-related, and external-related factors on construction project success at OCC. The theory suggests that project success is largely determined by how effectively these stakeholder groups fulfill their responsibilities and work together toward common project goals. Consequently, the theory provides a useful framework for explaining how the identified determinants contribute to achieving project success in terms of cost, time, quality, and stakeholder satisfaction

2.3 Empirical Studies

Several researchers have conducted their study on the major factors that determine the success of construction projects in different contexts. Some of these will be selected randomly as evidence and summarized accordingly based on the research objectives, related articles and journals to the title under study will be discussed as part of literature review.

Samiullah et al. (2018), investigated the critical success factors (CSFs) influencing highway construction projects in Pakistan, aiming to identify and rank the most significant determinants of project success. Through an extensive literature review, the study compiled a comprehensive list of CSFs, including experienced project management and design teams, effective site management, stakeholder commitment, thorough project planning, robust communication and coordination, adequate funding and resources, quality control systems, safety management, competitive procurement, and utilization of advanced and environmentally friendly technologies. A structured questionnaire reflecting these factors was distributed to construction professionals engaged in highway projects, yielding 130 valid responses from 250 distributed surveys. Statistical analysis using SPSS software facilitated the ranking of CSFs by mean importance scores. The results identified the top five critical factors as experienced project management, effective site management, stakeholder commitment, experienced design teams, and proper project

planning. The study's findings offer valuable insights for construction practitioners seeking to enhance project performance through targeted management of key success factors.

Murat and Mohammed, (2020) examined critical success factors (CSFs) for sustainable construction project management, emphasizing the perspectives of diverse project stakeholders. Through a comprehensive literature review, the authors identified 40 success factors grouped into seven categories: project-related factors, business and work environment factors, client-related factors, project management factors, design team factors, contractor-related factors, and project manager factors. A survey incorporating these factors was distributed to construction experts, and analyzed using the (RII) and AHP. Despite variations in stakeholder priorities, key determinants emerged around project financial issues, managerial effectiveness, and regulatory approvals. The study's findings offer practical guidance for resource allocation and project success evaluation within the construction industry.

Albtoush et.al (2022), conducted an empirical investigation study on critical success factors of construction projects in Jordan. The objective of the study was to determine the factors that determine the success of construction projects, on the basis of realistic project data. To achieve this goal, data were collected and analyzed from the final reports of a number of projects that had been implemented in 15 years. The result indicated that the most significant and essential factors for the success of the construction project are: quality-related factors which constitute no change in material price (no economic risk), Conformance to codes and standards, no defects in the project, climatic condition at site), cost-related factors (financial stability and adequate funding ,accurate bill of quantities ,accuracy of the preliminary cost estimate) ,time related factors (project completion date accuracy of the preliminary time estimate , change orders), contract-related factors(the value of the bid bond , no disputes in project) and external related factors. Results help project stakeholders improve construction project performance by identifying factors that have affected project success.

This allows them to take appropriate measures for every worker to ensure the success of their projects. In addition, this study contributes to the current body of knowledge by being one of the few studies that analyze project data to identify critical success factors for construction projects in developing countries.

Chan et.al (2004), conducted the study on Factors Affecting the Success of a Construction Project. The aim of this paper was to develop a conceptual framework on critical success factors ~CSFs. Seven major journals in the construction field are chosen to review the previous works on project success. Five major

groups of independent variables, namely project-related factors, project procedures (procurement and tendering methods), project management actions, human related factors, and external environment are identified as crucial to project success. Further study on the key performance indicators ~KPIs! is needed to identify the causal relationships between CSFs and KPIs. The causal relationships, once identified, will be a useful piece of information to implement a project successfully.

Mamaru D. (2016) conducted a study on the key success factors in building construction projects, using Bole Sub-City in Addis Ababa as a case study. The research aimed to identify and rank the major factors contributing to the success of such projects. Relevant literature was reviewed, and data on success factors were gathered through questionnaires, desk reviews, and interviews. Data collection continued until the end of December 2015, drawing information primarily from clients, contractors, consultants, and other stakeholders in Bole Sub-City's building projects.

Based on the analysis using the RII, the most significant success factors were identified as: the project manager's leadership skills, clearly defined project objectives, adequate funding, effective decision-making, and robust project monitoring. The study concluded that, for successful project delivery, contractors should appoint experienced project managers with strong leadership and decision-making abilities. Likewise, clients should ensure sufficient funding is secured before project commencement and that project objectives are clearly communicated to all parties involved.

Samuel. (2020) examined factors influencing the performance of public construction projects, using Addis Ababa's Road and condominium projects as case studies. The research aimed to evaluate project performance across three core dimensions schedule, cost, and quality explore their interrelationships, and identify critical factors contributing to performance gaps. A comprehensive literature review identified 36 potential factors, grouped into four categories: contractor-, client-, consultant-, and external environment-related .Contractor-related factors included ineffective planning and scheduling, overreliance on inexperienced engineers, poor material handling, labor shortages, delayed mobilization, inadequate site management and supervision, financial difficulties, weak staff administration relationships, conflicts with other parties, improper construction methods, and insufficient subcontractor control. Client-related factors encompassed delayed payments, late site handover, unrealistic requirements, excessive interference, reliance on low-price bidding, delays in supplying agreed materials, slow approvals of shop drawings and samples, sluggish decision-making, work suspensions, poor communication, and scope changes during construction. Consultant-related factors involved

inadequate experience, delayed design approvals, slow inspections, weak quality assurance, design errors and omissions, insufficient pre-design data collection, unclear drawings, misinterpretation of requirements, delays in producing design documents, and slow approval of major scope changes. External factors included price escalation of materials, permit delays, lack of site utilities, adverse weather, subsurface condition issues, delays in final inspections, and differing ground conditions.

The findings indicated mean schedule, cost, and quality variances of 117.84%, 32.37%, and 17.95%, respectively, with ranges from 11.11% to 300% (schedule), 16.37% to 127.27% (cost), and 2% to 50% (quality). Significant differences across project types were found at 0.1% (schedule and cost) and 5% (quality) significance levels. Regression results showed schedule variance had a significant positive effect on cost variance ($p < 0.001$), quality variance had a significant positive effect on schedule variance ($p < 0.001$), and quality variance indirectly affected cost variance through schedule variance.

2.4 Research Gaps

The study of project success and its associated critical success factors (CSFs) is widely regarded as a means to enhance project effectiveness. However, the concept of project success remains ambiguously defined among construction professionals. While numerous researchers have attempted to identify CSFs in construction, proposing various influencing variables, some of which recur across multiple studies, no consensus has been reached on a definitive set (Babu, Factors affecting the success of Construction Projects, 2015, pp. 17-26). This lack of clarity highlights a conceptual gap, suggesting that the definition and prioritization of CSFs should be framed within the specific context and perspective of each country.

Biniyam B. (2021) examined critical success factors (CSFs) in selected building construction projects in Hawassa, aiming to identify the key determinants of project success. The study focused on time, cost, quality, and project manager competency, derived from the broad application of project management principles and prevailing professional consensus. According to him, twenty-five projects were analyzed using a descriptive research design, drawing on both primary and secondary data. A structured questionnaire was distributed to 75 participants, with 55 valid responses, and the results were analyzed using SPSS 24 with descriptive statistics. His research, findings indicated high mean score values for all identified CSFs, with project manager competency ranking highest, followed by time, cost, and quality factors. The study concludes that enhancing project manager competency is critical for addressing time, cost, and quality challenges, thereby improving the likelihood of successful project delivery.

Tewodros B. (2018) investigated the factors influencing the success of condominium construction projects, focusing on the Bole Arabsa and Bole Bulbula sites. The study aimed to identify critical success factors (CSFs) in these projects and to assess project stakeholders' understanding of the Project Management Body of Knowledge (PMBOK) areas. The research contributes to knowledge development by providing insights into success factors and serving as a reference for future studies. A descriptive research design was employed, utilizing both primary and secondary data collected through questionnaires and literature review. The target population consisted exclusively of skilled personnel from governmental and private institutions, with the entire population serving as the sample due to its small size. Data analysis was conducted using frequency percentages and the Relative Importance Index (RII). The findings identified 18 general CSFs, with the top five based on average rankings from both sites namely clear project goals, adequate budget, detailed planning, project manager capability, and project team commitment. The study also suggested variations in the ranking of success factors between the two sites, reflecting context-specific differences in perceptions of project success determinants.

Hayat (2023) examined the determinants of success in the Federal Housing Corporation's Gerji apartment construction project. The study aimed to identify key factors influencing project success, using a structured questionnaire administered to 78 professionals, including clients, contractors, consultants, subcontractors, and engineers directly involved in the project. Data analysis employed frequency, percentage, mean score, standard deviation, and the Relative Importance Index (RII) for ranking. The research identified eleven success criteria and twenty-four critical factors. Among the most significant criteria were timely or early completion, adherence to budget, scope fulfillment, and meeting technical quality specifications. Key success factors included project manager and team competence, accurate scheduling and financial planning, timely and comprehensive control mechanisms, and the adoption of construction technologies. The study recommends rigorous project manager selection, precise scheduling using project management tools prior to execution, proactive monitoring of scope, quality, and timelines, and integration of advanced technologies to reduce cost and duration. Additionally, fostering team commitment through clear roles, incentive systems, and conflict management is emphasized. These findings provide valuable guidance for improving planning and decision-making in future construction projects.

How ever, several gaps have emerged from the reviewed studies on critical success factors (CSFs) in construction projects, highlighting opportunities for further research. These gaps have been articulated in the subsequent paragraphs below.

Accordingly, Biniyam (2021) focused primarily on time, cost, quality, and project manager competency within building projects in Hawassa, employing a descriptive design with a relatively small sample size (n=55). However, the study reveals conceptual gaps that the researcher understands the traditional project success criteria (time, cost and quality as critical project success and fails to differentiate their difference conceptually. The study's scope was also limited to a narrow set of CSFs, potentially overlooking other influential factors such as client engagement, consultant roles, and external environmental conditions. Additionally, the reliance on descriptive statistics limits deeper inferential analysis to explore causal relationships among variables where correlation and multiple regression analysis could have been employed.

Tewodros (2018) examined CSFs at two condominium sites, incorporating assessment of stakeholders' understanding of PMBOK knowledge areas. While the study identified important context-specific variations in factor rankings, its small and homogeneous sample drawn exclusively from skilled personnel within government and private institutions may minimize generalizability of the findings to a comprehensive project environment. Moreover, the study's cross-sectional design and use of frequency and relative importance scores limit the analysis of dynamic interactions between CSFs and project outcomes over time.

Hayat (2023) expanded the scope by identifying a comprehensive set of eleven success criteria and twenty-four factors for a Federal Housing Corporation project, utilizing multiple statistical measures including mean, standard deviation, and RII. Besides, the study's focus on a single project case limits the external validity of findings. Moreover, while the study emphasized the importance of project manager selection and technological adoption, it did not sufficiently address the influence of organizational culture, stakeholder communication, or risk management practices on project success.

Collectively, these studies have focused on a single sector only, building construction projects by overlooking other construction sectors such as water, irrigation, water well drilling, infrastructure projects like roads, integrated bus terminals and stations where it should have been incorporated for the fact that success in construction projects may vary across various sectors.

Even though the studies contribute valuable insights into construction project success factors yet they show gaps related to conceptual, limited sample sizes, contextual specificity, and methodological constraints.

Further studies would benefit from larger, more diverse samples, longitudinal designs to capture project dynamics, and multivariate analytical approaches to examine causal relationships among a broader range of CSFs, including organizational, environmental, and stakeholder-related factors. Such investigations could improve the robustness and applicability of Key Success Factors (KSFs) frameworks across varied construction project contexts.

Thus, the reviewed studies on critical success factors (CSFs) in Ethiopian construction projects provide valuable insights but reveal notable limitations, including narrow conceptual scopes, limited sample sizes, sectoral focus predominantly on building construction, and methodological constraints such as reliance on descriptive statistics and cross-sectional designs. These gaps reveal the need for more comprehensive and contextually grounded research encompassing various public construction sectors and employing robust analytical methods.

Therefore, this study investigated the key factors determining construction project success within Oromia Construction Corporation (OCC), aiming to fill existing empirical and conceptual gaps by examining a broader set of determinants, related to contractors, clients, consultants, and external environment factors using a systematic, context-specific approach.

This research thus contributes to the advancement of a more nuanced and generalizable understanding of CSFs in Ethiopia's evolving construction industry.

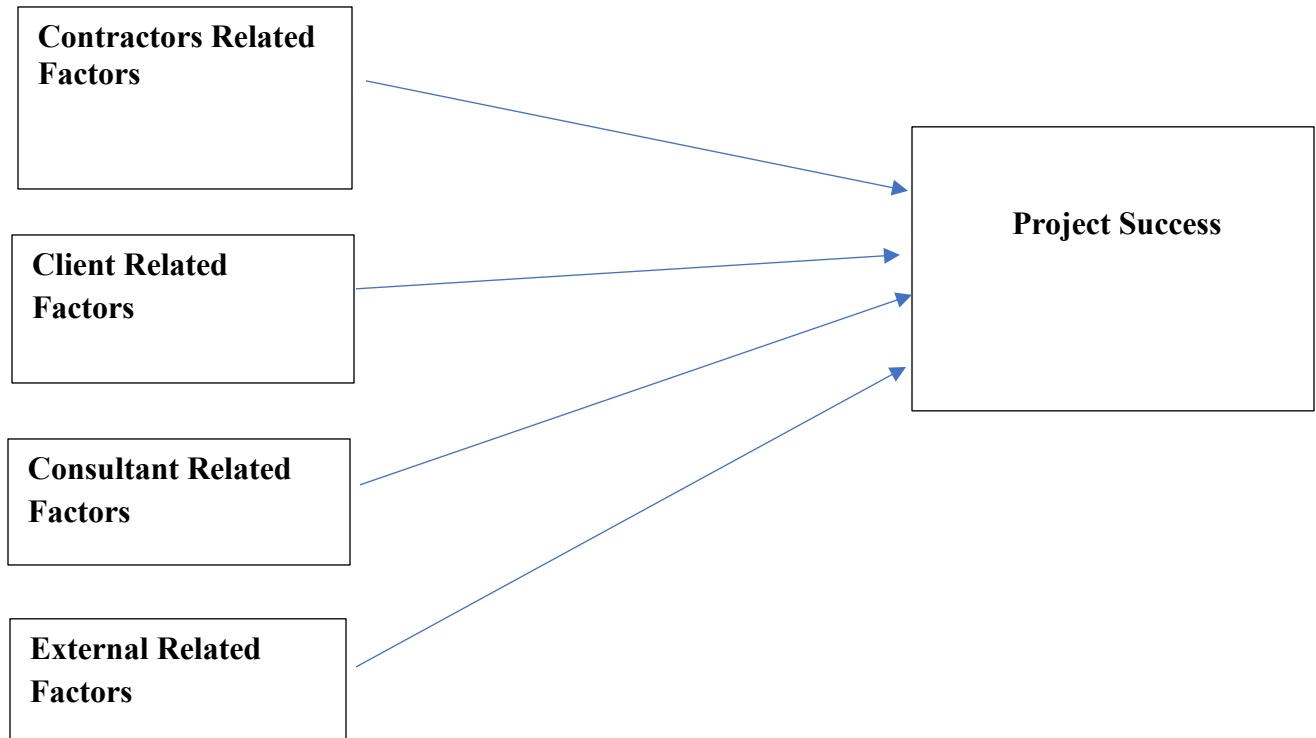
2.5 Conceptual Framework

Based on an extensive review of the relevant literature, the researcher has developed a conceptual framework illustrating the relationships between the dependent variable that was construction project success, and key independent variables namely contractors, clients, consultants, and the external environment related factors, all of which have been identified as key factors that determine the success of construction projects. The proposed framework is subsequently presented in a diagrammatic form as follows:

Conceptual Framework

INDEPENDENT VARIABLES

DEPENDENT VARIABLE



Source: Researcher Own

Figure 2.1 Conceptual Framework

CHAPTER THREE

RESEARCH METHODOLOGY

3.1 Introduction

This chapter outlined the key components of the research methodology adopted for the study. It encompassed a detailed discussion of the research approach, research design, target population, sampling techniques, data collection methods, research instruments, procedures for data analysis and presentation, as well as considerations of validity and reliability. Furthermore, the chapter addressed the ethical principles observed throughout the research process.

3.2 Research Approach

Within the framework of research methodologies, which were generally categorized into quantitative, qualitative, and mixed approaches, the study adopted a mixed-methods research design. Mixed-methods research involve the integration of quantitative and qualitative techniques within a single study to provide a more comprehensive understanding of the research problem. Scholars contend that these two methodological paradigms are complementary rather than competitive, with each addressing the limitations of the other (Blackwell, 2023, p. 7). In alignment with this approach, quantitative methods were applied to analyze data collected through closed-ended questions and structured questionnaires, while qualitative methods were utilized for different document analysis and explanation about those documents related to project success (Blackwell, 2023, p. 7).

3.3 Research Design

A research design serves as the overarching framework or plan that guides the process of data collection and analysis. It functions as a blueprint that outlines the procedures for gathering, measuring, and analyzing data, thereby ensuring methodological coherence throughout the study. Essentially, it acts as a strategic map developed to direct the research process from inception to completion (Probhat Pandey and Meenu Mishra Pandey, 2015, p. 18)

The main objective of the study was to investigate the key factors that determine the success of construction projects, with empirical evidence drawn from the Oromia Construction Corporation (OCC) based in Addis Ababa, Ethiopia.

The study adopted a combination of exploratory, descriptive, and explanatory research designs to thoroughly examine the elements that influence construction project success at OCC. Combining these approaches allowed the research to move systematically from identifying the problem to testing relationships among variables, thereby enhancing the credibility and depth of the study's results.

Because there is limited existing research on the specific factors affecting construction project success within OCC, the study began with an exploratory design. This type of design is appropriate when the issue is not well understood and when the researcher aims to gain initial insight into a relatively unexplored topic (Creswell & Creswell, 2018; Stebbins, 2001). The exploratory stage helped uncover possible influencing factors, generate early ideas, and sharpen the research questions for the subsequent phases. This phase was deliberately broad and adaptable, drawing on qualitative techniques such as examination of internal project documents. These activities offered contextual knowledge and allowed the researcher to detect emerging patterns related to project performance at OCC. The information gathered at this stage was then used to shape the structured data collection tools applied later in the research.

After completing the exploratory stage, a descriptive research design was applied to capture and quantify the characteristics of the identified factors across both active and completed OCC construction projects. Through the descriptive approach, the study was able to outline the frequency, distribution, and perceived significance of the factors that influence the construction project success. Quantitative method especially structured questionnaires were used to gather data from project managers, contractors, clients and consultants. As a result, the descriptive phase produced a detailed empirical overview of the determinants shaping construction project outcomes within the corporation.

To further clarify the mechanisms through which various factors affect construction project success, the study also adopted an explanatory research design. It is centered on investigating causal relationships and testing hypotheses about how variables interact (Cook & Campbell, 2002 Neuman, 2014).

During this stage, statistical tools such as correlation and multiple regression analysis were used to assess the strength and significance of the relationships and effects among the identified variables. This design allows the study not only to describe the relevant factors but also to determine their causal impact on project success at OCC, providing practical and evidence-based guidance for improving future project performance.

In summary, an exploratory research design was employed to investigate and map the broad range of success-determining factors through an extensive review of related literature. Accordingly at its very start 60 potential success factors were identified from review of related literature using google scholar. The researcher condensed them to 53 factors considering the manageability of their size. Moreover, the factors yet required to be condensed further. from 53 to 22. Two indicators (one from consultant and one from external related factors) were deleted while checking reliability of data due to low corrected item-total correlation which consequently improved Cronbach's Alpha value. Finally, 20 indicators being grouped into four categories were retained for further data analysis and interpretation. The phase allowed the study to generate a comprehensive set of potential variables relevant to contractors, clients, consultants, and the external environment. Then, a descriptive research design was used to describe and summarize the characteristics of these identified variables based on empirical data collected through a structured questionnaire. This design would enable the study to determine the extent to which each factor is perceived to influence project success. Finally, an explanatory research design was applied to examine the relationships among the variables and to reduce them to a manageable set through regression analysis. This approach would help explain the underlying structure of the determinants and their contribution to overall project success.

Together, these three research designs would provide a systematic and rigorous framework for investigating, describing, and explaining the key factors influencing construction project success. Accordingly, data collected from the selected sample was analyzed using descriptive statistical techniques and multiple regression analysis at this stage, the analysis was conducted with the help of SPSS software, utilizing tools such as frequency distributions, percentages, cross-tabulations, and graphical representations to provide an overview of the dataset, summarize the findings, and facilitate interpretation. The questionnaire was systematically developed, coded, and subsequently analyzed to ensure accuracy and consistency in the results.

3.4 Research population and Sampling

3.4.1 Target Population

The study's target population was project managers from contractors, resident engineers from consultants and counter-part engineers from clients who have been actively working on the sampled construction of building, water, irrigation drilling and transport and infrastructure of construction projects of OCC at different parts of the country including in Addis Ababa. The study selected five

sectors including the building, water, irrigation, drilling and transport and infrastructure due to their being the major public construction projects that OCC works on.

The Oromia Construction Corporation manages a total of 135 projects across various sectors, comprising 51 building construction, 18 water supply construction, 17 irrigation construction, 42 drilling, and 7 transport and infrastructure construction projects distributed across the country. Employing a stratified sampling approach, 38 building, 14 water supply, 13 irrigations, 31 drilling, and 5 transport and infrastructure projects were selected, proportionate to their representation in the population. From each sampled project, the project manager, resident engineer, and counterpart engineer were identified as respondents using purposive sampling. This technique is appropriate when the study requires the deliberate selection of participants who meet specific criteria relevant to the research objectives. It was intended that these selected sample respondents have been highly professionals (engineers) who have been actively participating in the execution of the projects and involve.

As Pandey and Pandey (2015) note, purposive sampling allows the selection of units known to be representative or capable of producing well-matched groups, thereby ensuring control over key study variables. In total, the study included 101 sampled construction projects, with the detailed sectoral project lists provided in the annex.

Target population and strata

The target population comprises $N = 135$ projects delivered by the Oromia Construction Corporation (OCC). Projects are stratified by sector to control for between-sector heterogeneity:

- Building construction: $N_1 = 51$
- Water supply construction: $N_2 = 18$
- Irrigation construction: $N_3 = 17$
- Drilling construction: $N_4 = 42$
- Transport & infrastructure construction: $N_5 = 7$

3.4.2 Sampling technique, Sample Size and Sampling Procedure

Sample size determination

Given the finite population and the study's objective to estimate proportions/means with conventional precision, the overall sample size is determined using Yamane's (1967) finite-population formula at 95% confidence and 5% margin of error ($e = 0.05$):

$$n = N/1 + Ne^2 = 135/1 + 135(0.05)^2 = 100.9 \approx 101$$

(Equivalently, Cochran's formula with finite population correction yields 101 under $z=1.96$, $p=0.5$, $e=0.05$)

Table 3.1 Allocation to strata (proportional allocation)

No.	Sector	Population	Share	Sample
1.	Building Construction	51	37.78 %	38
2.	Water Supply Construction	18	13.33 %	14
3.	Irrigation Construction	17	12.59 %	13
4.	Drilling Construction	42	31.11 %	31
5	Transport and Infrastructure	7	5.19%	5
	Total	135	100 %	101

Source: Researcher Own computation

Mapping projects to respondent roles

Because data were gathered per project from three core informant roles project manager (PM), resident engineer (RE), and counterpart/client engineer (CE) the planned respondent counts equal **to** the sampled project within each stratum for each role (one Project Manager, one Resident Engineer, one Counter-part Engineer (Clients) per sampled project). Thus, each sampled project contributed up to three core respondents.

Table 3.2 indicates Planned respondent counts by sector and role

No.	Sector	Project Manager	Resident Engineer	Counter-part Engineer	Total
1.	Building Construction	38	38	38	114
2.	Water Supply Construction	14	14	14	42
3.	Irrigation Construction	13	13	13	39
4.	Drilling Construction	31	31	31	93
5,	Transport and Infrastructure	5	5	5	15
	Total	101	101	101	303

Source: Researcher Own Computation:

Planned core sample size: 101 PMs + 101 REs + 101 CEs = **303** respondents (subject to availability at each construction project).

3.5 Types and Sources of Data

The study employed both primary and secondary data sources to achieve its research objectives. Primary data was collected through structured questionnaires administered to purposively selected respondents, including contractors (project managers), consultants (resident engineers), and clients (counterpart engineers). The primary data served to directly address the specific objectives of the study. Secondary data were obtained from a range of sources, including peer-reviewed journal articles, books, published reports, online resources, as well as manuals and reports (ERP systems) from the OCC head office and project sites. The study incorporated both quantitative and qualitative data, enabling a comprehensive analysis of the research problem.

3.6 Data Collection Tools

Drawing on both theoretical and empirical evidence from the literature, a structured questionnaires were utilized to collect data from the selected sample, comprising project managers, resident engineers, and counterpart engineers. Prior to administering the questionnaire to the main sample, a pilot test was conducted with a small group of non-sampled respondents. Feedback obtained from that pre-testing phase was used to refine and revise the questionnaire, thereby enhancing its clarity, reliability, and overall quality.

Key Factors that determine the success of Construction Projects

Factors that determine the success of construction projects under the study were grouped as: those related to contractors, clients, consultants and external factors as it had been reviewed from different literatures of previous studies. Accordingly:

Factors related to Contractors: refer to aspects directly associated with the roles, responsibilities, and performance of contractors, which play a critical role in determining the overall success of construction projects. These factors exert a significant influence on project performance, particularly in the context of the projects under investigation. A comprehensive review of the literature led to the identification of 23 key determinants drawn from previous research, including the works of Mamaru (2016), T. B. Venczel et al. (2021), Lan (2021), Borges et al. (2024), Bamgbose et al. (2024), Abdullah

(2025), Tsiga et al. (2016), Maryam et al. (2023), Akiner and Gokuz (2025), Gunduz et al. (2018), Pirotti (2020), Wondirad (2023), Tamgadge and Shinde (2018), Samiullah et al. (2018), Tilahun (2020), Dr. Mohammed and Shamim (2022), Tewodros (2023), Mohammed et al. (2025), Gunduz (2020), Hayat (2023), Abebe (2019), Abteen and Mohammad (2017), Feyissa et al. (2022), Thaddeo et al. (2025), Ramlee N. et al. (2023), Kidanemariam et al. (2021), and Tuyizere and Samuel (2025). To assess the prevalence and significance of these factors in the specific projects under study, respondents were asked to rate each determinant using a five-point Likert scale. ranging from 1 – “Strongly disagree” to “5 – Strongly Agree.” That approach ensured a standardized quantitative assessment of contractor-related factors, facilitating statistical analysis and enabling comparison across different stakeholder groups.

Factors Related to Consultants: pertain to the roles, responsibilities, and professional obligations of consultants, which are integral to the successful delivery of construction projects. These factors are anticipated to exert a positive influence on project outcomes, particularly in enhancing quality, ensuring adherence to technical specifications, and promoting overall project efficiency. A review of relevant literature identified seven key consultant-related factors, as reported by Lana (2021), Kidanemariam and Melkamu (2021), Yiftaalem (2024), Gokuz and Akiner (2025), Tewodros (2023), Hayat (2023), Bamgbose et al. (2024), and B. Borges et al. (2024). These factors were incorporated into the structured questionnaire to assess their frequency and impact within the projects under study. Respondents were asked to evaluate each factor using a five-point Likert scale, ranging from “1 – Strongly disagree” to “5 – Strongly Agree,” based on their experience and observations. That standardized measurement approach would facilitate reliable quantitative analysis and enable consistent comparison across different project contexts.

Factors Related to Clients: refer to the roles, responsibilities, and decision-making functions of clients, which are pivotal to the successful delivery of construction projects. These factors can significantly influence project performance, particularly in areas such as timely decision-making, resource provision, and effective coordination with contractors and consultants. A review of the literature identified nine key client-related factors, as reported in studies by Mamaru (2016), Tsiga et al. (2016), Lana (2021), Abteen and Mohammad (2017), Tewodros (2023), Tilahun (2020), Ramlee N. et al. (2023), Tuyizere and Samuel (2025), B. Borges et al. (2024), Yiftaalem (2024), Gunduz et al. (2018), Dr. Mohammed and Shamim (2022), Samiullah et al. (2023), Abdullah (2025), and Albtoush et al. (2022). These factors were incorporated into the structured questionnaire to measure their

occurrence and influence within the projects under study. Respondents were asked to rate each factor using a five-point Likert scale, ranging from “1 – Strongly disagree” to “5 – Strongly Agree,” as indicated in the distributed survey instrument. The approach would ensure consistency in data collection and enable a robust quantitative analysis of client-related contributions to project outcomes.

External Factors: refer to influences arising from the external environment that can significantly affect the success of construction projects. Such factors often lie beyond the direct control of project stakeholders but can have substantial implications for project timelines, costs, quality, and overall performance. Based on an extensive review of relevant literature, 14 key external factors were identified from the works of Mamaru (2016), Ramlee et al. (2016), Samiullah et al. (2018), Tamgadge and Shinde (2018), Biniyam (2021), Malikov (2023), Ramlee N. et al. (2023), B. Borges et al. (2024), Tewodros (2023), Hayat (2023), Abdullah (2025), Lana (2021), Wondirad (2023), Albtoush et al. (2022), Kidanemariam and Melkamu (2021), Thaddeo et al. (2025), Ottaviani et al., and Gunduz et al. (2018).

These factors had been incorporated into the structured questionnaire to assess their frequency and impact within the context of the projects under study. Respondents were requested to rate the occurrence of each external factor in the specific project they were involved in, using a five-point Likert scale ranging from “from 1 – Strongly disagree” to “5 – Strongly Agree.”. That standardized measurement would enable consistent data collection and facilitate robust quantitative analysis of the external environment’s influence on project success.

3.7 Methods of Data Analysis

For the purposes of this study, quantitative data analysis techniques were employed, incorporating a combined methods incorporating exploratory, descriptive, and explanatory approaches and inferential statistical methods. Descriptive statistics, including frequency, mean, and standard deviation, were used to summarize and describe the collected data. To evaluate the perceptions of contractor, clients, consultants, and other stakeholders regarding the relative importance of the identified factors determining construction project success, the Relative Importance Index (RII) was employed. It was used to rank the level of influence of those factors. It would be computed as:

$$RII = \frac{\sum W}{A \times N}$$
 where W = weight given to each factor by the respondents and ranges from 1 to 5; A = the highest weight = 5; and N = the total number of respondents.

The RII values ranged between $0 < RII \leq 1$. The highest value of RII revealed the higher relative importance of the construction project success factor and would be the major one compared to other success factors. It was used to rank the relative importance of different construction project success factors index as perceived by the group of respondents namely contractors, clients, consultants, and other project stakeholders.

The rankings would help one to list the factors in the order of their importance in determining project success as practical evidence from OCC. The numbers assigned to the agreement scale of the respondents did not necessarily show that the intervals among the scales were equal nor did they show absolute quantities. They were representative for further analysis under study. Questionnaire responses were analyzed using a combined method incorporating exploratory, descriptive, and explanatory methods, and the Statistical Package for the Social Sciences (SPSS) Version 27 was utilized to calculate percentage frequencies, means, standard deviations.

The RII was then applied to rank the identified success factors, facilitating cross-comparison and verification of their relative importance in influencing project outcomes. The multiple regression analysis was also used to examine the effects of both categorical independent variables and individual items on the dependent variable (construction project success) by comparing their standardized coefficients of beta. Before the regression analysis was conducted different assumption and hypothesis testing had been statistically checked.

Table 3.3 Assignment of values for the Likert scale in the questionnaire

Scale	1	2	3	4	5
Level of agreement	Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree

3.8 Validity

According to Probhat Pandey and Meenu Mishra Pandey (2015), a measuring instrument is considered valid when it accurately measures what it is intended to measure. Validity, therefore, refers to the extent to which a research instrument measures what it is designed to measure and whether it adequately addresses the research objectives. In essence, it reflects the accuracy of the measurement and the degree to which the findings genuinely represent what they appear to address (Saunders et al., 2019).

3.8.1 Content Validity

Content validity measures whether each item of the questionnaire adequately cover all the aspects of the constructs being measured. Accordingly, in this study content validity has been confirmed through an extensive related literature review on the determinants of construction project success. The items of questionnaire have been adapted from previously conducted studies and subsequently reviewed by subject matter engineers and academic professionals to evaluate their validity, relevance, clarity, and sufficiency. Moreover, a pilot test has been conducted before going into the actual survey whereby the feedback obtained has been used to refine the items of the questionnaire and improve their comprehensiveness.

3.8.2 Construct Validity

Construct validity evaluates whether the questionnaire actually measures the theoretical constructs it is intended to measure. According to this study, construct validity has been checked using Exploratory Factor Analysis (EFA). The results of KMO(Kaiser-Meyer-Olkin) measures of sampling adequacy have been found to have exceeded the acceptable threshold of 0.05. The Bartlett's Test of Sphericity has been found statistically significant at ($p < 0.05$) showing the suitability of the data for factor analysis. The extract factors corresponded closely with the theoretical constructs of contractor, client, consultant, and external related factors thereby confirming construct validity. Additionally using SPSS, Case Processing Summary has been done. It was summarized as shown in table 3.4 below.

Table 3.4 Case Processing Summary showing Validity

Case Processing Summary			
		N	%
Cases	Valid	281	100
	Excluded	0	.0
	Total	281	100

Source: Own Survey 2026

3.9 Reliability

Probhat Pandey and Meenu Mishra Pandey (2015) define reliability as the consistency of measurement across repeated observations. For example, if a respondent provides a particular answer to an item, the same response should be given if the item is presented again under similar conditions. If the response changes, the measurement loses its consistency. Therefore, questionnaire items were carefully

designed to ensure stable and reliable responses. Similarly, Eagle and Schutt (2014) describe reliability as the extent to which a research instrument consistently measures the intended variable. In this study, the reliability of the measurement instrument was checked using Cronbach's alpha coefficient. Accordingly, as indicated in table 3.5 below, the result of the coefficient of the Cronbach's Alpha was found to be greater than 0.7 thereby meeting the required tests.

Table 3.5 Reliability Test

S. N	Category Description	No of items	Cronbach's Alpha
A	Construction Project Success Factors		
1	Contractor Related Factors	7	0.728
2	Client Related Factors	5	0.732
3	Consultant Related Factors	4	0.725
4	External Environment Related Factors	4	0.728
	Construction Project Success Criteria		
B	Time Related	4	0.723
	Cost Related	4	0.728
	Quality Related	5	0.730
	Client Satisfaction Related	4	0.725
	Overall Items	37	0.732

Source: Own Survey 2026

3.10 Ethical considerations

Research in the social sciences inherently involves ethical considerations. As noted by Saunders et al. (2019), researchers who collect, analyze, and report data may encounter various ethical challenges. To mitigate potential ethical issues, data collected for this study were used only after obtaining formal ethical clearance from the Addis Ababa University Research, Publication, and Graduate Studies Office. Informed consent was secured from the participating organizations prior to data collection, and the purpose of the study was clearly communicated as entirely academic. Participation in the survey had been voluntary, and all information provided by respondents and organizations was treated with strict confidentiality. Data were anonymized to ensure that responses were not be traced back to

individual participants or companies. Furthermore, all collected information would be used solely for the purposes of this research and analyzed exclusively to address the study objectives.

CHAPTER FOUR

DATA PRESENTATION, ANALYSIS, AND INTERPRETATION

4.1 INTRODUCTION

The chapter discussed with presentation, analysis, and interpretation of data collected from the respondents. To investigate key factors that determine the success of construction projects, evidenced from Oromia Construction Corporation (OCC), data were collected from both primary and secondary sources. To obtain primary data questionnaires were designed and distributed to highly experienced professionals who had been practically involved in the sampled construction projects. The respondents were from contractor (Project Managers of OCC), Resident Engineers (Consultants), and Counter-part engineers (Clients) from among all 101 sampled projects under taken by OCC. Three (3) respondents were selected from each 101 projects which totaled 303 professionals (engineers). Out of 303 distributed questionnaires, having done data checking and cleaning 281 were retained and made ready for further data presentation, analysis, and interpretation. Accordingly, response rate would be 92.7%. while the non response rate was 7.3 %.

The analysis was conducted using SPSS Version 27 software. Cronbach's Alpha was used to test reliability of data. Moreover, descriptive statistics, RII, Pearson Coefficient Correlation, and multiple regression analysis were used to investigate key factors that determine the success of construction projects in context with OCC. In the analysis and discussion, it was attempted to align the results of the analysis and interpretations with the objective of the study, basic research questions and previous studies reviewed in the chapter two review of literature. Furthermore, the chapter covered the background information or the demographic characteristics of the respondents, the construction project success factors and success criteria explored and survey of 281 questionnaires from contractors, clients, consultants, and other professionals. Besides the primary data obtained from questionnaires, to make the study academically comprehensive, sound and strong, secondary data were gathered from OCC published and unpublished reports, OCC annually published magazines, OCC web sites, and the corporation's ERP digital systems reports were also presented, analyzed, discussed, and interpreted accordingly. Finally, the theoretical and practical implications of the results contribution to the project management were further interpreted and synthesized. The hypothesis initially developed for each of the four categories of success factors were tested to evaluate their influence on construction project success.

4.2 The response Rate

Out of the 303 questionnaires distributed, 281 were returned and retained for further data analysis and interpretation. The distribution of the returned questionnaires in terms of the types of projects and responsibility of the respondents was summarized in the table 4.1 below.

Table 4.1. The Response Rate

S. N	Project Types	Project Managers	Resident Engineers	Clients	Others	Total
1.	Building Construction	32	36	38	4	110
2.	Water Construction	18	9	7	2	36
3.	Irrigation Construction	16	11	8	0	35
4.	Drilling Construction	24	31	32	2	89
5	Transport and Infrastructure	2	3	5	1	11
	Total	92	90	90	9	281

Source; Researcher's Own Survey 2026

The above table 4.1, indicated that out of the returned 281 questionnaires, 110 (39%), 36 (13%), 35 (12%), 89 (32%), and 11 (4%) were from building, water, irrigation, drilling, and transport and infrastructure sectors respectively. In terms of their profession or occupational level, 92, 90, 90, and 9 respondents were from project managers, resident engineers, clients, and other professionals working as supportive staff across the sampled construction projects respectively.

4.3 Preliminary Data Analysis

Under this sub-section analysis of preliminary data including missing data and checking outliers in the data set have been checked using SPSS as a prerequisite before going into further regression analysis and interpretation.

4.3.1 Checking for Missing Data

To check whether there was a missing data that were imported from excel to SPSS, case wise missing data was checked by running descriptive statistics, frequency table in SPSS. The result indicated that there was no missing data as shown in the table 4.2 below.

Table 4.2 Case Processing Summary

	Cases					
	Valid		Missing		Total	
	N	Percent	N	Percent	N	Percent
Project Success	281	100	0	0	281	100

Source: Researcher's Own Survey 2026

4.3.2 Checking for Outliers

The presence of outliers was checked by using standardized value (z-score) of the variables. As a rule of thumb, if the z score is greater than or less than ± 3.29 , it indicates the presence of outliers in the data set. Accordingly, results showed that the minimum values of the z score ranged from negative -- 0.78279 to negative -3.19679 and the maximum values ranged between positive 1.04552 and positive 3.26701. Thus, no outlier was found in the data set.

Table 4.3 shows the standardized value (z-score) of the variables.

No.	Factors	Min	Max	No	Factors	Min	Max
1	Zcontr related1	-2.16863	2.16093	21	ZTime related1	-0.94361	3.19944
2	Zcontr related2	-3.08612	2.18561	22	ZTime related2	-1.41946	2.62312
3	Zcontr related3	-1.78028	2.67637	23	ZTime related3	-1.22195	2.63611
4	Zcontr related4	-0.78279	1.27294	24	ZTime related4	-1.48106	3.15601
5	Zcontr related5	-1.93154	2.73738	25	ZCost related1	-1.02450	2.07103
6	Zcontr related6	-1.974	2.28468	26	ZCost related2	-1.50330	1.92179
7	Zcontr related7	-1.89703	2.72492	27	ZCost related3	-1.53626	3.01982
8	Zclient related1	-2.46463	2.2307	28	ZCost related4	-1.25179	1.71659
9.	Zclient related2	-2.75609	1.05899	29	ZQuality related1	-2.79840	2.25852
10	Zclient related3	-2.49548	1.42931	30	ZQuality related2	-3.19679	2.08731
11	Zclient related4	-2.31235	1.80664	31	ZQuality related3	-2.552	1.75498
12	Zclient related5	-0.95306	1.04552	32	ZQuality related4	-2.935	1.95232
13	Zconsu related2	-1.76309	2.67027	33	ZQuality related5	-2.33836	1.53821
14	Zconsu related3	-1.76693	2.26153	34	Zsatisfaction1	-2.43923	2.18420
15	Zconsu related4	-1.99172	2.89625	35	Zsatisfaction2	-2.57092	2.21338
16	Zconsu related5	-2.59535	1.78479	36	Zsatisfaction3	-1.5235	2.25388
17	Zextnal related1	-1.64886	1.47471	37	Zsatisfaction4	-2.10088	2.27206
18	Zextnal related2	-1.87129	2.9199				
19	Zextnal related3	-1.91904	2.05578				
20	Zextnal related5	-1.06332	3.26701				

Source: Own Survey 2026

4.4 Background Information of the respondents

The background information of the respondents that constituted gender, age, marital status, level of education, experience, areas of experience, and occupational level were analyzed and interpreted.

Table 4.4 Background Information of the respondents

S. N	Variables	Category	Freq	Percent
1.	Gender	Male	210	75
		Female	71	25
		Total	281	100
2	Age	22 -30	45	16
		31_40	118	42
		41-49	69	25
		50 and above	49	17
		Total	281	100
3	Marital Status	Single	42	15
		Married	235	84
		Divorced	2	1
		Widow	2	1
		Total	281	100
4	Level of education	Certificate	0	0
		Diploma	3	1
		BA/BSC	114	41
		MA/MSC/MBA	164	58
		Total	281	100
5.	Work Experience	Less than 5 years	22	8
		6—10 years	64	23
		11—15 years	85	30
		Above 15 years	110	39
		Total	281	100
6	Area of experience	Building Construction	110	39
		Water Construction	36	13
		Irrigation Construction	35	12
		Drilling Construction	89	32
		Transport and Infrastructure	11	4
		Total	281	100
7	Occupational level	Project Manager	92	33
		Resident Engineer	90	32
		Counter-part Engineer	90	32
		Others	9	3
		Total	281	100

Source; Researcher's Own Survey ,2026

As could be understood from table 4.4 incorporating all demographic characteristics of the respondents, out of 281 respondents 210(75%) were male and the remaining 71 (25%) were female. This indicates that the number of professional males is greater than that of females who have been engaged in the construction projects undertaken by OCC. With regard to the age of the respondents, 45(16%) their age ranged between 22-30. Moreover 148 (42%) respondents were in the category of 31 to 40 where the majority respondents belonged to. The age of 69 (25%) of respondents was categorized in the range of 41 to 49. Finally, respondents whose age was 50 and above were 49 (17%). These indicated that majority of the professionals ranged between 31to 40 years of age were matured and seemingly contributing to the success of project. Concerning the marital status of the respondents the table 4.4 showed that 235 (84%) were married and 42 (15%) were single while the remaining ones (divorced and widow) were 2(1%) each.

With regard to the level of education of respondents, majority of them 164 (58%) have an MA/MS/MBA degree followed by 114(41%) BA/BSC degree. The number of respondents who hold certificate and diploma was almost none (below1%). This indicates that the work of construction projects at OCC is under taken by highly skilled professionals. In connection with this, 110(39%) of them had above 15 years of working experience which was followed by 85(30%) of the respondents who had a working experience of 11 to 15 years in the construction projects. Furthermore, 64(23%) of them posses 6 to 10 years of working experience. The remaining 22(8%) had a working experience of less than five years. This shows that the construction projects have been performed by experienced professionals. Looking into the areas of the experiences of the respondents in sectors, 110(39%),36(13%), 35 (12%),89 (32%), and 11(4%) of the respondents were from building, water, irrigation, drilling, and transport and infrastructure construction sectors respectively. It suggests that the proportion was made based on the number of samples taken from each sector as clearly discussed in the methodology chapter. Accordingly, it reveals that the corporation (OCC) owns more of building construction projects followed by drilling, water, irrigation, and infrastructure and transport(roads) construction projects respectively.

Similarly, regarding with the occupational level of the respondents, 92 (33%) ,90(32%),90(32), and 9(3%) were project managers, resident engineers and clients respectively. The remaining 9(3%) other professionals from supportive staff working at head office and project site were also incorporated

4.5 Descriptive Statistics for Construction Project Success Factors

Descriptive statistics, including frequency, mean, and standard deviation, were used to summarize and describe the collected data. To evaluate the perceptions of project managers, resident engineers, and counterpart engineers regarding the relative importance of the identified factors influencing construction project success, which were grouped into four categories namely contractor, client, consultant, and external related factors have been covered.

The investigated factors were finally ranked to come up with key determinants of construction project success both at categorical and item level using the Relative Importance Index (RII).

4.5.1 Contractor Related Factors

The first specific objective of this study was to examine how contractor-related factors would influence the success of construction projects in context to Oromia Construction Corporation

In the table 4.5 below the listed factors related to contractors were identified from a review of the literature as potential determinants of construction project success.

Based on their professional experience, respondents were requested to fill the questionnaire by indicating the extent to which they believe each contractor related factor influences the success of construction projects undertaken by OCC.

The five point Likert scale that ranged from strongly disagree (1) to strongly agree (5) was used. The responses of respondents were summarized in the table below by taking the grand average of mean and standardization to further analyze the results. To this effect, to examine to what extent the seven listed items under this category individually and as a category would influence the success of construction projects, the average mean and standard deviation were used

Table 4.5 showed that the grand average mean and standard deviation for contractor related factors were 3.01 and 0.79 respectively.

Table 4.5. Contractor Related Factors

S. N	Statements	Mean	Stand. Dev
1	The contractor implements effective project management practices and leadership.	3.00	0.92
2	Top management provides adequate support and demonstrates good leadership.	3.34	0.76
3	Procurement and tendering processes are conducted effectively	2.60	0.90
4	The contractor carries out regular project monitoring, evaluation, and follow-up.	3.38	0.49
5	The contractor has strong financial capacity and ensures timely cash availability.	2.65	0.86
6	Construction materials and equipment (Resources) are available.	2.85	0.94
7	The contractor performs extensive project planning, scheduling, and control activities.	3.23	0.65
	Grand and Stand. Deviation	3.01	0.79

Source: Own Survey ,2026

Contractor implementation of effective project management and leadership practices

As depicted in the table 4.5 above the statement scored a mean value of 3.01 with a corresponding standard deviation of 0.92. The result showed that the average of the respondents showed agreement on the contractor's implementation of effective project management and leadership practices. The result indicates a significant number of respondents showed agreement. Despite the strengths in the contractor implementation of effective project management and leadership practices, yet the results suggest that there have been gaps or rooms for improvement. Studies have shown evidence that effective project management and leadership practices have been found to be one of the key determinants of construction projects success PMI (201) and Kerzner (2018).

Top management support and leadership

The statement scored a mean value of 3.34 with a corresponding standard deviation of .0.76. More than the average of the respondents showed agreement. These results suggest that leadership involvement in supporting the project has been implemented across the sampled construction projects. The results further reveal the previous studies which have indicated that strong leadership and active

managerial support significantly contribute to improved project performance and effective coordination among stakeholders (Chepchieng & Siringi, 2019).

Procurement and Tendering Processes

With regard to procurement and tendering processes the response showed that a mean score 2.6 with standard deviation of 0.9 were recorded. The mean value of 2.6 which was below the grand mean value (3.01) reveals that majority of the respondents showed disagreement to the statement under discussion. These results suggest that there have been challenges about the transparency and efficiency of procurement processes resulting in delays, cost overruns and customer dissatisfaction. In this regard researches have indicated that ineffective procurement and tendering systems negatively influence the performance and overall success of construction projects ((Srimal et.al, 2018)

Project monitoring, evaluation, and follow-up

The indicator had the highest mean score of 3.38 with standard deviation of 0. 49. The response indicated higher mean than the total grand mean and less deviated from the grand standard deviation set as a category. The higher average shown here reveals that the corporation performs well in practicing regular project monitoring, evaluation, and follow-up though it still needs continuous improvement.

Contractor's strong financing capacity or on time cash availability

Here the indicator evaluated whether the contractor has strong financial capacity and ensures timely cash availability. It had a mean value of 2.65 with its respective standard deviation of 0.86. This shows that it scored the least score among all the actors related to contractors. A significant number of respondents have shown disagreement that reflecting serious bottleneck to the corporation's financial stability. Contrary to these results earlier studies have evidenced that financial capacity is a life blood and critical success factor for the reason that inadequate cashflow would usually result in project delays, poor quality work, and incomplete projects ((Isaiah Gichohi Mwangi and Dr. Johnbosco Mutuku Kisimbi, 2020).

Availability of Materials and Equipment

The indicator examined whether construction materials and equipment (resources) are available. It had a mean value of 2.85 and standard deviation of 0.94 resulting in a moderate level of agreement with some variance in responses. The indicator scored mean value which was less than the grand mean

value (3.01) suggested that the availability of resources and equipment have been inconsistent across the sampled projects. These inadequacy and inconsistency of resource and equipment availability might undermine the success of construction projects, potentially, influencing project timelines, efficiency, and overall OCC's project performance. Thus, enhancing the corporation's capacity to ensure sustainable provision and management of materials and equipment is essential in improving construction project success. Previous studies have revealed that shortage of resources could interrupt the schedule of the construction projects and reduce productivity of the project deliverables (Ramgy et.al, 2024)

Performing extensive project planning, scheduling, and controlling activities

The predictor evaluated whether the contractor performs extensive project planning, scheduling, and control activities. It recorded a mean score of 3.23 and standard deviation 0.65, resulting in a moderate level of agreement. The results demonstrated more than the average of the respondents have shown agreement to the statement despite the existence of some of the inconsistencies across different construction projects undertaken by OCC. The improvements in performing extensive project planning, scheduling, and controlling activities would play a significant role in enhancing the success of construction projects. Studies have shown that effective project planning, scheduling, and controlling activities are fundamentally crucial to accomplish project objective within scheduled time and budget constraints (PMI,2017).

In summary, based on the responses given regular project monitoring, evaluation, and follow-up, top management support/good leadership extensive project planning, scheduling, and control activities, effective project management practices and leadership, and material and equipment (resources) availability were the five variables relatively agreed up on by the respondents among all the items that constitute factors related to contractor. The remaining two ones namely, effective procurement process and tendering methods, and contractor's strong financing capacity (on time cash availability) were the variables where most respondents showed disagreement. These results suggest that the corporation would further improve the first four elements whose mean values were greater than or equal to the grand mean because they positively influence the success of construction projects. On the contrary the results also suggest that the three indicators whose mean values were less than the grand total average value, requires leadership commitment to improve them for the fact that they would have negative impact on the company's performance.

4.5.2 Client Related Factors

The second specific objective of this study was to analyze the contribution of client-related aspects to the success of construction projects. To analyze the effect of client related factors on the construction projects five items have been identified under the category. Respondents were asked to indicate their level of agreement on each five-indicators listed under this category depending on their professional experience they have had in construction projects. Accordingly, table 4.6 below showed the summary of grand mean and standard deviation of each item under the category of client related factors. The grand mean and standard deviation for the client related factors were 2.98 and 0.77 respectively.

Table 4.6 Client Related Factors

S. N	Statements	Mean	Stand Dev.
1	The project size and characteristics are appropriate and manageable for successful delivery.	3.10	0.85
2	The client provides adequate funding throughout the project.	3.17	0.79
3	The urgency of project completion is clearly communicated and reasonable.	2.91	0.76
4	The client has sufficient experience in construction project organization and management.	3.25	0.97
5	Change orders from the client are minimized and well-managed.	2.48	0.50
	Grand Mean &St, Dev.	2.98	0.77

Source. Researcher's Own Survey,2026

Project size and characteristics

This indicator examined whether the project size and characteristics have been appropriate and manageable for successful delivery. It had a mean value of 3.10 and standard deviation of 0.85 resulting in a moderate level of agreement with some variance in responses. The results indicate that majority of the responses demonstrated agreement that project size and characteristics have been appropriate and manageable for successful delivery. Other respondents who indicated disagreement or remained neutral in responding to the statement suggest that project complexity sometimes exceeds the capacity of the available management. That could influence scheduling, cost control, and coordination of stakeholders across the projects. These results further suggest that properly undefined project size and scope or overly complex projects could adversely double the risk of delays and cost

overruns. Therefore, clients should define project size and characteristics properly to its manageable size for successful delivery.

Provision of adequate funds through out the project lifecycle

This predictor evaluated whether the client has provided adequate funding throughout the project lifecycle. It scored a mean score of 3.17 and standard deviation 0.79, resulting in a moderate level of agreement. The results demonstrate more than the average of the respondents have shown agreement that the client has provided adequate funds through out the project life cycle despite some respondents showing disagreement or being neutral reflecting inconsistencies across different construction projects. The results suggest that though clients moderately provide funds for the execution of the projects, sometimes clients' failure to provide the funds and reluctance to release timely payment would have impact on contractor's financial strength. The client's delay in the provision of the fund negatively influences the performance (success) of the project.

In construction project management such as OCC, the availability of funds has widely been considered as a key success factor. The results highlight that adequate fund provision from the clients positively influence project success and vice versa. Previous studies, emphasized that client provision of adequate funds from the client is a key success factor determining the success of construction projects (Alafeef,2025)

Urgency of project completion

The indicator examined whether the urgency of project completion has been clearly communicated and reasonable. It recorded a mean score of 2.91 and standard deviation 0.76 which were somehow below the grand mean and standard deviation, resulting in a moderate level of agreement. However, responses from other respondents who expressed disagreement or remained neutral, indicated unclear or unrealistic deadlines which led to schedule pressure, reduced quality, and poor coordination among various project stakeholders across the construction projects.

Client Experience in Project Management

The indicator evaluated whether the client has had sufficient experience in construction project organization and management. A mean score of 3.25 with its respective standard deviation of 0.97 which was greater than the grand mean and standard deviation as a category were recorded. These results suggest that clients have had moderate experience in construction project and management. The finding supports the previous studies that have revealed that clients who have sufficient

experience are capable of defining project requirements, facilitate decision making, and integrate stakeholders effectively((Chan and Scott, 2004). On the contrary, however, when clients lack prior experience in construction project management and fail to facilitate decision-making processes, it would result in delays which adversely influence the success of construction projects.

Management of Client's Change orders

The indicator examined whether change orders from the client are minimized and well-managed. The result indicates that a mean value of 2.48 and standard deviation of 0.50 which were below the grand average mean and standard deviation as a category. Under this indicator, most respondents showed disagreement. The study investigated a critical issue where most respondents replied that there have been frequent change orders from the client and those change orders have been poorly managed. The results further suggest that frequent changes from client and poorly managed client-driven changes have become major challenges that negatively impact project outcomes. The finding has been consistent with the previous research that frequent change orders from clients during execution of the project usually results in high costs, delays in schedule, and conflict among project stakeholders (Ramadhan, 2025) Therefore, effective change management would be a pivotal to ensure that construction project goals are accomplished without significant disruptions.

4.5.3 Consultant Related Factors

Consultant related factors have been one of the categorized indicators that constituted the four categories identified in this study to investigate key factors that determine construction project success.

Under this category initially five indicators were identified. However, one indicator was deleted while checking reliability of data due to low corrected item-total correlation which consequently improved Cronbach's Alpha value. The remaining four indicators were retained and made ready for further analysis. Thus, table 4.7 indicated these four items that constituted the category of consultant related factors with their respective level of agreement, percentage, mean and standard deviation.

In line with this category, the third specific objective of this study was to evaluate the effect of consultant-related factors on overall construction project success. To evaluate the effect of consultant related factors on the construction projects, four indicators have been investigated under the category. Respondents were asked to indicate their level of agreement on each four statements listed under this category based on their professional experience they have had in the construction projects.

Accordingly, table 4.7 below showed the summary of frequency distribution in percentage, grand mean and standard deviation of each item under the category of consultant related factors. The grand mean and standard deviation for the consultant related factors were 2.84 and 0.91 respectively. The results of each item were discussed and interpreted in the subsequent paragraphs below.

Table 4.7 Consultant Related Factors

S.N	Statements	Mean	Stand. Dev.
1.	The project design was completed before the start of construction.	2.59	0.90
2.	The project consultant provides adequate support and demonstrates sufficient competence.	2.75	0.99
3.	The design offers sufficient detail and specifications to ensure constructability and manage project complexity.	2.63	0.82
4.	Designers and consultants possess the necessary skills and capabilities.	3.37	0.91
	Grand Mean and Standard Deviation.	2.84	0.91

Source: Own Survey ,2026

Completion of project design before the start of construction

The statement evaluated whether the project design has been completed before the start of construction. Overall, the mean value 2.59 with the respective standard deviation of 0.90 which was less than the grand (mean =2.84 and SD=0.91) indicated a negative perception that project designs had been completed before construction begun. Thus, it could be interpreted from these results that across the sampled construction projects some projects start construction before designs have been finalized which led to design modification, rework, delays, cost and time overruns. To this effect, the completion of issues related to design before the start of the construction required due attention. Contrary to these results existing literature has revealed that the completion of project design, drawings and documentation prior to construction is essential for effective execution of the project, as it enhances contractors' understanding of project specifications and reduces uncertainties during the construction process ((Akintoye et.al, 2024).

Consultant's provision of support and competence

The statement examined whether the project consultant has provided adequate support and demonstrated sufficient competence. The results of the analysis indicated mean value (2.75 and the corresponding standard deviation of 0.99 which were found to be relatively less than the grand mean

which was 2.84 on average. Thus, from these results it could be inferred that consultant has been reluctant in providing, adequate support and demonstrating sufficient competence. The results reflect that consultants need to reconsider this issue to provide adequate support required from their side.

Design detail and specifications to measure constructability & manage the complexity of project,

The statement examined whether the design has offered sufficient detail and specifications to ensure constructability and manage project complexity. The result indicated that a mean value of 2.63 and standard deviation of 0.84 which were below the grand average mean and standard deviation as a category. Under this indicator, most respondents showed disagreement. The results further suggested that this indicator has been one of the priority areas that need improvements by consultants to enhance construction project success.

Possession of designers and consultants' necessary skills and capabilities

With possession of designers and consultants' necessary skills and capabilities, its mean value of 3.37 which was far greater than the grand average value of 2.84 as a category of consultant related factors. These results suggest that when designers and consultants have the necessary skills and capabilities in their professionalism, which could contribute a lot in the success of construction projects

4.5.4 External Related Factors

Factors related to external environment have been the fourth category that constituted the four categories identified in this study in investigating key factors that determine the success of construction projects.

Like consultant related factors initially, five items were identified under external environment as potential determinants of project success. However, one item was deleted while checking reliability of data due to low corrected item-total correlation thereby improving Cronbach's Alpha.

The remaining four items were retained and used for further data analysis, discussion, and interpretation. Thus, table 4.8 depicted these four items that constituted the category of external related factors with their respective level of agreement, percentage, mean and standard deviation.

The analysis, discussion, and interpretation of data under the category were done in alignment with the objective of the study. Accordingly, the fourth specific objective of this study was to determine the influence of external conditions on the execution and success of construction projects. To evaluate the effect of consultant related factors on the construction projects, four items have been identified under

the category. Respondents were asked to indicate their level of agreement on each four indicators listed under this category based on their professional experience they had in the construction projects. Hence, table 4.8 showed the summary of frequency distribution in percentage, grand mean and standard deviation of each predictor under the category of external related factors.

The grand mean and standard deviation for this category were 2.39 and 0.87 respectively. The results of each item were analyzed, discussed and interpreted as follows.

Table 4.8 External Related Factors

S. N	Statements	Mean	Stand. Dev.
1.	Up-to-date construction technologies and digital systems are available and used effectively.	2.58	0.96
2.	All stakeholders show strong commitment to the project.	2.56	0.84
3.	A formal dispute and conflict resolution process exists and is effectively applied.	2.45	0.76
4	The country's economic and political environment is stable	1.98	0.92
	Grand Mean and Standard Deviation	2.39	0.87

Source: Own Survey ,2026

Effective utilization of the available up-to-date construction technologies and digital systems

The statement examined whether up-to-date construction technologies and digital systems have been available and used effectively. It scored a mean value of 2.58 with corresponding standard deviation 0.96 which was relatively higher than the grand mean of 2.39 and standard deviation of 0.87. The results showed that effective utilization of the available up-to-date construction technologies and digital systems have been moderate as OCC. Thus, it could be inferred that the corporation has started to some extent, using the existing up-to-date construction technologies and digital systems but has not yet fully utilized effectively. It needs improvement because if construction projects like OCC fails to use the available up-to-date construction technologies and digital systems, it would impact the corporation's competitiveness and the success of construction projects in terms of delivery time, cost, quality and client satisfaction.

Stakeholders' strong commitment to the project.

The statement evaluated whether all stakeholders show strong commitment to the project. In table 4.8, The respective mean value (2.56) and standard deviation 0.84 being found to be greater than the grand total average (mean) of 2.39 as a category. From these results, it could be interpreted that stakeholders

showed moderate commitment to the project. To this end, the results suggest that all stakeholders practically have gaps in showing strong commitment to the project despite the relatively higher value of the average mean compared to that of grand mean scored as category. These gaps unless solved promptly, would negatively impact the success of construction projects of the corporation under study.

Formal dispute and conflict resolution process

The statement analyzed whether a formal dispute and conflict resolution process exists and is effectively applied. Table 4.8 also depicted a corresponding mean value 2.45 which was relatively above the grand mean value (2.39). It could be inferred from this analysis that irrespective of the relatively higher mean value, there have been assignments that OCC should do concerning with dispute and conflict between the corporation and parties of interest, yet it showed that the corporation seemed to have had gaps in implementing a formal dispute and conflict resolution process. Intuitively, it would be possible to predict the negative impact that these issues would have on the success of the project unless properly managed and resolved,

Stability of the country's economic and political environment

The statement evaluated whether the country's economic and political environment has been stable. It scored a mean score 1.98 and standard deviation of 0.92 which were below the grand average mean and standard deviation value as category. It was found to be the least among all indicators that constituted factors related to external environment. The results reflect that the stability of the country's economic and political environment of construction projects undertaken by OCC have been unstable in most parts of Oromia region where most projects have been constructed. These political and economical instability in some parts the region where those sampled projects have been in progress could create delays that led to time and cost overruns. It necessitates the contractor's adaptability to such environment that could be uncontrolled and to have scanned the situation ahead of times.

4.6 Descriptive Statistics for Construction Project Success Criteria

Literatures defined both success and success criteria differently. However, they agreed on the three traditional iron triangle time, cost, and quality to measure the success thereby taken as success criteria. The way project success is defined and measured has been shifted from a simplistic, one-dimensional approach to more comprehensive, multidimensional, and adaptable models (Pinto et al., 2021). Project success is commonly defined as the achievement of established objectives, typically measured by time, cost, and performance. Numerous studies have identified time, cost, and scope as the key success

criteria for construction projects collectively known as the 'triple constraint.' Over the years, this framework, often called the 'iron triangle,' has become a standard benchmark for evaluating project success. Williams, (2016). Success criteria help project managers assess how well a project meets its objectives Chan et al., (2002), although the specific criteria vary among studies. Some are clearly measurable, while others are based on subjective or psychosocial factors (Bryde, 2005). In this study, however, client satisfaction was incorporated as a new blood to time, cost, and quality comprehensively. Accordingly, respondents were requested to what extent these success criteria could measure the performance of construction projects based on their professional experience.

4.6.1 Analysis and Interpretation of Time Related Project Success Criteria

This section analyzed and interpreted time-related success criteria in OCC construction projects, focusing on efficiency in schedule, on-time completion, and compliance with scheduled timeframe. The assessment was based on both primary and secondary data sources to offer a comprehensive understanding of project time performance. Primary data were collected from stakeholder responses, providing perspectives on real-world experiences, perceptions, and challenges related to time management in the execution of construction projects. In the meantime, secondary data were obtained from OCC ERP system reports, which provided factual information on project schedules, progress oversight, delays, and completion results.

By incorporating these data sources, the study sought to evaluate how effectively projects achieve planned time-related targets, determine the key factors influencing adherence to schedules, and figure out deviations between planned and actual completion time. The analysis also would pave a way in identification of trends and patterns in time performance, thereby enabling more precise conclusions and actionable recommendations to improve time management in construction project delivery.

i) Analysis and Interpretation of Time Related Project Success Criteria from respondents

The section presented the analysis and interpretation of factors related to time in measuring the success of construction projects emphasizing on four key indicators to evaluate schedule performance. The indicators were intended to examine whether the project has been completed within initially planned timeframe, major milestones have been met on time, whether the occurrences of delays have been minor and controlled, and the contractor has adhered to the agreed construction program.

The grand mean and standard deviation for this category were 1.99 and 0.78 respectively. The results of each item were analyzed, discussed and interpreted as follows.

Table 4.9 Time Related Construction Project Success Criteria

N. S	Statements	Mean	Stand Dev.
1.	The project was completed within the originally planned schedule.	1.68	0.72
2.	Major project milestones were met on time.	2.05	0.74
3.	Delay occurrences (if any) were minor and controlled.	1.95	0.78
4	The contractor adhered to the agreed construction program.	2.28	0.86
	Grand Mean and Standard Deviation.	1.99	0.78

Own Survey ,2026

Project completion within originally planned schedule

Respondents were asked whether projects under taken by OCC have been completed within the originally planned schedule. The corresponding mean value (1.68) was below the grand mean value recorded as a category. The results indicate that most projects constructed by OCC have not been completed within the initially scheduled time. Further it was investigated that there would be time and cost overruns due to delays occurred in the completion of the projects as per budgeted time. Thus, the results suggest that if projects fail to be completed within originally time frame the consequence can go beyond time and cost overruns to quality problems and client dissatisfaction as well.

Meeting major milestones on time

The statement examined whether major project milestones have been met on time It scored a mean value of 2.05 with standard deviation of 0.74 which seemed somehow, relatively greater than the grand mean and standard deviation as the category of time related success criteria. Despite the relatively higher mean value than grand mean value, the result evidenced that gaps would exist in meeting the construction projects' major milestones on time as per its plan. Thus, failure to meet major milestone on time would result in client dissatisfaction beyond time and cost overruns that negatively affect construction project success.

Contractor's adherence to the agreed construction program.

This statement examined contractor's adherence to the agreement of construction program. A mean score of 2.28 (SD = 0.86) have been recorded Though the corresponding mean value seemed higher compared to mean values of other time related indicators, yet the results reflect the overall poor adherence to construction program. In genera; the aggregate mean score of 1.99 and the corresponding standard deviation of 0.78 showed that time related success criteria have not been successful in most

sampled construction projects of the corporation under study. Delays in construction projects commonly appeared and found to be significant challenge that undermine overall project success.

ii) Analysis and Interpretation of Time Related Project Success Criteria by project type

In this study the importance of the analysis of data collected from secondary data were also taken into account as per each type of project namely building, water, irrigation, drilling, and transport and infrastructure projects to investigate the effect of time related factors in measuring success across the project types.

Building Construction Projects

Table 4.10 below showed the analysis of 38 sampled building construction projects with regard to their scheduled completion time in days, actual completion time (days), deviation from original schedule(days), and percentage of deviation.

Using secondary data from OCC ERP system reports, the data were analyzed and interpreted.to investigate how the completed sampled building construction projects adhered to or deviated from their planned completion time by comparing the initial project time for completion with their corresponding actual time taken to complete those sampled construction projects.

Table 4.10. Building Construction Sector

No.	Project Name	planned Completion Time (days)	Actual Completion Time (days)	Deviation from Original Schedule(days)	Total dev. in %	Remarks (presence or absence of extra days taken)
1	Sire Gudo construction	336	396	60	18	60 extra days
2	Huruta Hospital	375	528	153	41	153 extra days
3	Cafteria of Caffee Oromia	174	174	0	0	No extra days
4	Oromia Road Bureue Renovation	379	379	0	0	No extra days
5	Mata Qoma Hara Health Center	270	270	0	0	No extra days
6	Chiro Hospital Expansion Project	360	1,271	911	253	911 extra days
7	shaggar Comprehensive health post	417	417	0	0	No extra days
8	Lagaxafo G+4 Police	653	653	0	0	No extra days
9	Sululta INSA-PKI Project	196	196	0	0	No extra days
10	Oromia Transport Office	149	537	388	260	260 extra days
11	Ren. for Vice President office	165	360	195	118	195 extra days
12	Jimma ministry of Revenue Office	846	967	121	14	121 extra days
13	Sabata Health Center	460	595	135	29	135 extra days
14	Oromia Police Comision at 6 Kilo	40	40	0	0	No extra days
15	Bishoftu Hospital	831	1,413	582	70	582 extra days
16	Sululta Town Mini Stadium	537	537	0	0	No extra days
17	Dukem Hospital Store Building	269	764	495	184	495 extra days
18	Dukem City Admn Office	540	1,271	731	135	731extra days
19	Dawuro Assembly Hall	360	360	0	0	No extra days
20	OSU 3rd Phase	950	1,450	500	53	500 extra days
21	Oro-Fresh Project (OF)	323	323	0	0	No extra days
22	Construction of B+G+6 at Adama	735	735	0	0	No extra days
23	Construction of B+G+6 at Hawasa	365	720	355	97	355 extra days
24	Kella Jima (Chat Customs)	544	571	27	5	27 extra days
25	Nekemt Industry Park	98	488	390	398	390 extra days
26	Oromia Public Service Bureau	240	240	0	0	No extra days
27	Bordodde Chat Terminal project	182	182	0	0	No extra days
28	Café Cafeteria Fence, guard house,	267	267	0	0	No extra days
29	Seбата City Admn Office Blg	800	1034	234	29	234 extra days
30	Renovation Houses and Fence work	90	90	0	0	No extra days
31	Renovation of G+4 ODDC Office	357	454	97	27	97 extra days
32	Oromia Health Bureau	365	732	367	101	367 extra days
33	Police Commission HQ	1460	2240	780	53	780 extra days
34	Renovation of Prosperity Party	360	720	360	100	360 extra days
35	Chiro Seed Quality Control lab.	182	182	0	0	No extra days
36	Bishan Guracha-G+4 building	365	720	355	97	355 extra days
37	House of Federation Office	181	693	512	283	512 extra days
38	Hariro Hospitala	324	324	0	0	No extra days
	Total	15,545	23,293	7,748	2,365	7,748extra days
	Average	409	613	204	62	204 extra days

Source: Own Computation from OCC Secondary Data

Table 4.10 above indicated that among all the 38 sampled building construction projects, 17 (45%) projects were completed within the originally scheduled completion time and become successful. Zero (0) in the percentage of deviation column of above table shows success. Higher deviation indicated lower success. The remaining projects 21 (55%) were unable to be completed as per initially planned time and found to be unsuccessful. The average planned completion time was 409 days while the actual average time performance was found to be 613 days resulting in time deviation of 204 (62%) extra days. That extra time taken resulted in time overruns and delays thereby negatively influencing the success of construction projects.

Water Supply Construction Projects

Table 4.11 presented the analysis of 14 sampled water projects with regard to their scheduled completion time in days, actual completion time (days), deviation from original scheduled time in (days), and percentage of deviation. Using secondary data from OCC ERP system reports, the data were analyzed and interpreted to investigate how the completed sampled water supply construction projects adhered to or deviated from their planned completion time by comparing the initial project time for completion with their corresponding actual time taken to complete those sampled projects.

Table 4.11. Water Supply Construction Projects

S.N	Project Name	Scheduled Completion Time (days)	Actual Completion Time (days)	Deviation from Original Schedule(days)	% of deviation	Remarks (presence or absence of extra days taken)
39	Eldama Supply& Fix	560	910	350	63	350 extra days
40	Lome Anchebo WSP	435	623	188	43	188 extra days
41	Dodola Town WSP	520	635	115	22	115 extra days
42	Meyu WSP	495	495	0	0	No extra days
43	Aweday WSP	365	365	0	0	No extra days
44	Galchat Multi Village	544	692	148	27	148 extra days
45	Gelchet Transportation	61	61	0	0	No extra days
46	Bedesa EM Works	367	367	0	0	No extra days
47	African leadership WSP	365	365	0	0	No extra days
48	Lalo Kile WSP	1,230	1,230	0	0	No extra days
49	Yayo Town WSP	298	359	61	20	61 extra days
50	Dembi-Dolo WSP	365	365	0	0	No extra days
51	Bordode WSP	542	542	0	0	No extra days
52	Agaro Town WSP	90	90	0	0	No extra days
	Total	6,237	7,099	862	176	862 extra days
	Average	446	507	62	13	62 extra days

Source; Own Computation using OCC Secondary Data

Table 4.11 above showed that out of the 14 sampled water construction projects, 9 (64%) of them were completed within the originally scheduled completion time and found to be successful. Zero (0) in the percentage of deviation shows success. The remaining few 5 (36%) were delayed to be completed as per initially planned time. Projects with extra days indicated their unsuccessfulness. Higher deviation indicated lower success. The average planned completion time was 446 days whereas the actual average time performance was found to be 507 days resulting in time deviation of 62 (13%) extra days. Despite the few projects 5(36%) that revealed delays, water construction sector projects relatively indicated success in their completion compared to other construction projects.

Irrigation Construction Projects

Table 4.12 depicted the analysis of 13 sampled irrigation construction projects with their planned completion time in days, actual completion time (days), percentage in completion success, deviation from original scheduled time in (days), and percentage of deviation. Using secondary data collected from OCC ERP system reports, analysis and interpretation were conducted to investigate how the completed sampled irrigation construction projects adhered to or deviated from their planned completion time by comparing the original project time for completion with their corresponding actual time taken to complete those sampled projects. The extra time taken would result in time overrun and negatively influence project performance.

Table 4.12. Irrigation Construction projects

S. N	Project Name	Scheduled Completion Time (days)	Actual Completion Time (days)	Deviation from Original Schedule(days)	% of Deviation	Remarks (presence or absence of extra days taken)
53	Walinchiti Bofa	968	1,779	811	84	811 extra days
54	Guder Faxo IP	260	351	91	35	91 extra days
31	Shamo Gatore SSIP	260	351	91	35	91 extra days
56	Gololcha Dam	1,095	1,825	730	67	730 extra days
57	Calcal Irrigation	1,095	1,460	365	33	365 extra days
58	Irba Giristu	780	945	165	21	165 extra days
59	Awash Bishole Store	360	360	0	0	No extra days
60	Fantaltee camp	707	707	0	0	No extra days
62	Fedis Midhaga Tola	495	925	430	87	430 extra days
63	Welmel Irrigation	741	1,772	1,031	139	1031 extra days
64	Keta Dibe Dam	301	862	561	185	561 extra days
65	Lome Anchebo SSIP	132	430	298	226	298 extra days
	Total	7,194	11,767	4,573	640	4573 extra days
	Average	553	905	352	49	352 extra days

Source; Own Computation using OCC Secondary Data

Table 4.12 above indicated that among all the 13 sampled irrigation construction projects, only 2(15%) of them were completed within the originally scheduled completion time and investigated as successful. Zero (0) in the percentage of deviation column shows success Higher deviation indicated lower success and vice versa. The remaining majority projects 11 (85%) were unable to be completed as per initially planned time and became unsuccessful. The average planned completion time was 553 days where as the actual average time performance was found to be 905 days resulting in time deviation of 352 (49%) extra days. That extra time taken would result in time overruns and delays thereby negatively influencing the success of construction projects.

Drilling Construction Projects

Table 4.13 below presented the analysis of 31 sampled drilling construction projects with their planned completion time in days, actual time taken for completion in (days), percentage in completion success, deviation from original scheduled time in (days), and percentage of deviation. Using secondary data from OCC ERP system reports, were analyzed and interpreted.to investigate how the completed sampled drilling construction projects adhered to or deviated from their planned completion time by comparing the planned initial project time for completion with their corresponding actual time taken to complete those sampled projects.

As indicated in the table 4.13 out of the 31 sampled drilling construction projects,16 (52%) of them were completed within the originally scheduled completion time and recorded success. Higher deviation indicated lower success. The remaining 15(48%) failed to meet the initially planned completion time and found to be unsuccessful. The average planned completion time was 261 days whereas the actual average time performance was found to be 395 days resulting in time deviation of 134 (72%) extra days. The results reveal that more than 50% of drilling construction projects relatively indicated success in their completion next to water construction projects. However, the extra time taken by 15 (48%) of projects resulting in time overruns and delays would negatively influence the success of construction projects and needed improvements.

Table 4.13. Drilling Construction Projects

S.N	Project Name	Scheduled Completion Time (days)	Actual Completion Time (days)	Deviation in(days)	% of deviation	Remarks (Presence or absence of extra days taken)
66	Mi'o Gasera BH #4=400m	185	185	0	0	No extra days
67	Melka Oda #2	338	817	479	142	479 extra days
68	Bedessa BH	365	365	0	0	No extra days
69	Metu University BH#2	185	185	0	0	No extra days
70	Shipping&LogisticEnterprise	185	215	30	16	30 extra days
71	Addis Ababa City Bus Service	265	265	0	0	No extra days
72	Cheffe 13 Well #1	225	386	161	72	161 extra days
73	Dedu Town BH #2-200	136	136	0	0	No extra days
74	Geda City Park # 7, 500m	180	180	0	0	No extra days
75	Daro Lebu BH #2(350)	136	481	345	254	345 extra days
76	Daro Lebu BH #3(350)	136	481	345	254	345 extra days
77	Stewa Kenisa	100	713	613	613	613 extra days
78	Harjarte BH 3	256	256	0	0	No extra days
79	Ajamba BH	176	499	323	184	323 extra days
80	Gamada (Sub Contract)	1,100	1,464	364	33	364 extra days
81	Cheri BH-400	180	540	360	200	360 extra days
82	Ilu #4	90	90	0	0	No extra days
83	Ejere #8	94	94	0	0	No extra days
84	Walmera #6	94	94	0	0	No extra days
85	Walmera #7	94	94	0	0	No extra days
86	Chaffe 13 BH#2	248	248	0	0	No extra days
87	Rehabilitation of Hajamba BH	180	520	340	189	340 extra days
88	Rehabilitation of Bishoftu	345	345	0	0	No extra days
89	Benna-1	385	420	35	9	35 extra days
90	Bishoftu Town-1	360	360	0	0	No extra days
91	Abomsa	365	696	331	91	331 extra days
92	Waltane (Mud)	263	415	152	58	152 extra days
93	Bantu BH #2 Pumping Test	190	365	175	92	175 extra days
94	Silxee Zone BH-2= 350m	360	360	0	0	No extra days
95	Arsi Nagale Siraro BH #5 -350	497	497	0	0	No extra days
96	Oromia Police Water well	380	475	95	25	95 extra days
	Total	8,093	12,241	4,148	2,232	4148 extra days
	Average	261	395	134	72	134 extra days

Source: Source; Own Computation Using OCC Secondary Data

Transport and Infrastructure Construction Projects

Table 4.14 depicted the analysis of 5 sampled transport and infrastructure construction projects with their planned completion time in days, actual completion time (days), deviation from original

scheduled time in (days), and percentage of deviation. By using secondary data collected from the corporation's ERP system reports, analysis and interpretation were conducted to investigate how the completed sampled transport and infrastructure construction projects adhered to or deviated from their planned completion time by comparing the original project time for completion with their corresponding actual time taken to complete those sampled projects.

Table 4.14. Transport and Infrastructure Construction Projects

S.N	Project Name	Sector	Scheduled Completion Time (days)	Actual Completion Time in (days)	Deviation in days)	% in dev	Remarks (Presence or absence of extra days taken)
97	Ambo Bus Terminal	Transport	534	559	25	5	25 extra days
98	AAWSA	Transport	520	675	155	30	155 extra days
99	Qobbo.D.-Golaqoti	Transport	389	753	364	94	364 extra days
100	Gelan arabsa Kura Jida DB	Transport	365	365	0	0	No extra days
101	Metu Bypass	Transport	415	1,112	697	168	697 extra days
	Total		2,223	3,464	1,241	297	1241 extra days
	Average		445	693	248	59	248 extra days

Source; Own Computation using OCC Secondary Data

The data presented in Table 4.14 above indicated that out of the 5 sampled transport and infrastructure construction projects, only 1(20%) of them were completed within the originally scheduled completion time and found to be success. The remaining majority 4 (80%) of them were unable to be completed as per initially planned time and became unsuccessful. The average planned completion time was 445 days whereas the actual average time performance was found to be 693 days indicating 159% completion success resulting in time deviation of 248 (59%) days. Overall, the average 248 (59%) extra time taken for completion of the project revealed that projects have taken approximately 1.6 times longer than originally scheduled time-frame. That extra time taken would result in time overruns and delays thereby negatively influencing the success of construction projects.

Table 4. 15 Summary of Construction Project Time Performance by Project Types

No.	Sector/Project Type	Number of samples	Successful	Unsuccessful	Success Rank
1.	Water Supply Construction	14	9 (64%)	5(36%)	1
2.	Drilling Construction	31	16 (52%)	15(48%)	2
3	Building Construction	38	17(45%)	21(55%)	3
4.	Transport and Infrastructure	5	1(20%)	4(80%)	4
5	Irrigation Construction	13	2(15%)	11(85%)	5
	Total	101	45 (45%)	56(55%)	

Source; Own Survey 2026

To sum up based on the findings, differences have been observed in terms of time performance among the projects while compared in sectors both within the same individual project and across project types.

Accordingly, successful rate of projects for water construction (64%), Drilling Construction (52%) Building Construction (45%), transport and infrastructure (20%), and irrigation construction (15%). Out of 101 total sampled projects only 45(45%) have become successful whereas the remaining 56(55%) have been found unsuccessful. These results suggest that water construction projects have been ranked as the most time effective or efficient (less deviated) followed by drilling and building construction projects. Transport and infrastructure and irrigation construction projects have been ranked as the least performing in project time performance. The finding further reveals that despite the fact that time measures the success of construction projects in general, the degree or magnitude of the measurement is different depending on the types of the project.

4.6.2 Analysis and Interpretation of Cost Related Project Success Criteria

This section analyzed and interpreted cost-related success criteria in construction projects emphasizing on cost performance, cost effectiveness, and adherence to scheduled financial utilization. The analysis has depended on both primary data gathered from respondents—reflecting their experiences, perceptions, and challenges in cost management and secondary data collected from OCC ERP system reports, which offered objective records of cost estimates, actual expenses, cost variances, and overall financial performance. By integrating these sources, the study examined how well construction projects would realize cost-related targets, investigated key factors influencing cost control, and reflected gaps between planned and actual costs incurred thereby suggesting trends and patterns that enabled more precise conclusions and actionable recommendations to enhance cost management in construction project execution

i) Analysis and Interpretation of Cost Related Project Success Criteria from respondents

The second category that constituted construction project success criteria was cost related success criteria. The analysis gave emphasis on four indicators including adherence to the approved project budget, justification of cost overruns, adequacy of financial control and reporting, and management of scope changes without extra cost were identified under this category. As it was done in time related success criteria, respondents were requested to show their level of agreement to what extent they believe that each indicator listed under this category would measure construction project success on the basis of their engineering and construction project experience. The grand mean and standard deviation for this category were 2.04 and 0.77 respectively. The result of each item was analyzed, discussed and interpreted as follows.

Table 4.16. Cost Related Construction Project Success Criteria from respondents

S. N	Statements	Mean	Stand Dev.
1.	The final project cost was within the approved budget.	1.66	0.65
.2.	Cost overruns were promptly justified and documented.	2.32	0.88
3.	Financial control and reporting have been adequate throughout the project	2.35	0.88
4	Changes in scope have been managed without significant extra cost.	1.84	0.67
	Grand Mean and Standard Deviation	2.04	0.77

Source: Own Survey ,2026

Evaluating whether the Final project cost was within the approved budget

As depicted in table 4.16 above, respondents were asked to show their level of agreement whether the final project cost was within the approved budget. The corresponding (mean value 1.66, SD=0.65) was also found to be below the grand mean value and standard deviation. It could be interpreted from these results that the final project cost was not within the approved budget. This investigation suggested that the corporation failed to complete the projects within the allocated budget. Though further studies would be needed, the very low mean value has indicated that most projects experienced budget overruns that forced both the client and contractor to incur additional costs which in turn influence the competitiveness and profitability of the corporation.

Examining whether Cost overruns were promptly justified and documented

The second indicator examined whether **Cost overruns were promptly justified and documented**. The mean value (2.32) though seemed greater than the grand mean value (2.040) yet it was found to be low because it has been even less than 2.5. Thus, it indicated that the corporation had certain limitations to promptly justify and document cost overruns. Therefore, these results further suggest that financial accountability and transparency to minimize cost overruns had been relatively weak. Failure in documentation could negatively influence financial control and decision making ultimately undermining the corporation's construction projects.

Investigating the adequacy of Financial Control and Reporting

The third indicator checked whether financial control and reporting systems have been adequate throughout the project lifecycle. The respective mean value (2.35) and standard deviation of 0.88 though seemed greater than the grand mean value (2.040) yet it has been found to be low because it is even less than 2.5. The results suggest that financial management and monitoring mechanisms have been insufficient and ineffective. To this end, effective financial reporting is important to maintain budget accountability and financial transparency which would be one of major determinants of project success.

Evaluating management of scope changes without significant additional cost

The fourth indicator evaluated whether scope changes were managed without significant extra cost. The results show the least mean and standard deviation score of 1.84 and 0.67 respectively compared to other indicators that constituted the category. It could be further inferred that scope changes have been poorly managed and significantly led to extra cost at construction projects in practice. Frequent design changes, modification or unclear project requirements of clients, inadequate feasibility studies or design planning of consultants, and contractor's limited flexibility in adapting to design modifications without cost implications could be reasons for poor scope management, although further research would be needed.

ii) Analysis and Interpretation of Cost Related Project Success Criteria by project type

In addition to the analysis of response of respondents from the distributed questionnaire, secondary data have also been analyzed as per each type of sampled project namely building, water, irrigation, drilling, and transport and infrastructure projects. The analysis and interpretation from secondary sources were done accordingly in the up coming paragraphs.

Table 4.17 Building Construction Sector

S.N	Project Name	Contractual Budget (Birr)	Actual Cost to Date (Birr)	Deviation from initial Cost	Dev. %	Remark
1	Sire Gudo construction	37,926,250.85	45,850,298.28	7,924,047.43	21	Unsuccessful
2	Huruta Hospital	37,366,341.12	42,320,528.00	4,954,186.88	13	Unsuccessful
3	Caferia of Caffee Oromia	22,161,469.74	25,911,809.99	3,750,340.25	17	Unsuccessful
4	Oromia Road Bureue Renovation	35,471,086.67	37,157,820.26	1,686,733.59	5	Unsuccessful
5	Mata Qoma Hara Health Center	138,575,905.53	138,575,905.53	0	0	Successful
6	Chiro Hospital Expansion Project	154,771,330.23	165,778,152.44	11,006,822.21	7	Unsuccessful
7	shaggar Comprehensive health post	61,445,514.64	80,018,581.92	18,573,067.28	30	Unsuccessful
8	Lagaxafo G+4 Police	152,319,313.97	152,319,313.97	0	0	Successful
9	Sululta INSA-PKI Project	75,752,213.87	85,515,921.29	9,763,707.42	13	Unsuccessful
10	Renovation of Oromia Transport	62,837,471.85	69,073,626.44	6,236,154.59	10	Unsuccessful
11	Ren. Works for Vice President	9,227,078.41	9,227,078.41	0	0	Successful
12	Ren.of Jimma ministry of Revenue	14,219,199.34	14,219,199.34	0	0	Successful
13	Sabata Health Center	79,295,903.30	86,286,395.25	6,990,491.95	9	Unsuccessful
14	Oromia Police Comision @ 6 kilo	75,650,544.63	141,829,462.14	66,178,917.51	87	Unsuccessful
15	Bishoftu Hospital	328,498,024.26	415,280,980.81	86,782,956.55	26	Unsuccessful
16	Sululta Town Mini Stadium	239,890,084.31	309,302,967.91	69,412,883.60	29	Unsuccessful
17	Dukem Hospital Store Building	334,962.27	334,962.27	0	0	Successful
18	Dukem City Admn Office	269,422,511.60	403,023,112.79	133,600,601.19	50	Unsuccessful
19	Dawuro Assembly Hall	295,557,382.79	348,523,078.15	52,965,695.37	18	Unsuccessful
20	OSU 3rd Phase	266,008,999.53	280,429,042.16	14,420,042.63	5	Unsuccessful
21	Oro-Fresh Project (OF)	72,662,129.98	72,662,129.98	0	0	Successful
22	Construction of B+G+6 @ Adama	346,615,658.01	398,496,260.08	51,880,602.07	15	Unsuccessful
23	Construction of B+G+6 @ Hawasa	425,046,202.88	457959923.4	32,913,720.53	8	Unsuccessful
24	Kella Jima (Chat Customs)	99,944,689.79	142,480,593.77	42,535,903.98	43	Unsuccessful
25	Nekemt Industry Park	2,425,778,629.85	2,425,778,629.85	0	0	Successful
26	Renovation of Public Bureau	25,589,120.04	25,589,120.04	0	0	Successful
27	Bordodde Chat Terminal project	19,683,416.81	22,211,863.34	2,528,446.53	13	Unsuccessful
28	Café Cafeteria Fence, guard house,	30,178,961.24	30,178,961.24	0	0	Successful
29	Sebata City Admn Office Blg	332,843,568.03	510,948,379.64	178,104,811.61	54	Unsuccessful
30	Renovation Houses and Fence work	34,223,487.71	34,223,487.71	0	0	Successful
31	Renovation of G+4 ODDC Office	10,475,254.26	10,475,254.26	0	0	Successful
32	The Renovation of Oromia Health	43,310,939.75	160,377,287.54	117,066,347.79	270	Unsuccessful
33	Police Commission HQ Phase II	376,730,928.27	1,511,302,740.87	1,134,571,812.60	301	Unsuccessful
34	Renovation of Property Party	33,889,500.00	103,240,908.77	69,351,408.77	205	Unsuccessful
35	Chiro Seed Quality Control lab.	57,141,553.82	57,141,553.82	0	0	Successful
36	Bishan Guracha-G+4 building	228,617,016.90	228,617,016.90	0	0	Successful
37	House of Federation Office	57,806,737.00	62,837,471.85	5,030,734.85	9	Unsuccessful
38	Hariro Hospitala	390,079,349.23	390,079,349.23	0	0	Successful
	Total	7,367,348,732.48	9,495,579,169.64	2,128,230,437.18	1,258	Unsuccessful
	Average	193,877,598.22	249,883,662.36	56,006,064.14	33	Unsuccessful

. Source: OCC Secondary Data

Table 4.17 presented the analysis of sampled building projects with their contractual budget (Birr), Actual Cost to complete (Birr), deviation from original cost, and percentage of deviation. Using secondary data from OCC ERP system reports, the data were analyzed and interpreted to examine how the completed of the sampled building construction projects adhere to or deviate from the contractual budget by comparing the initial project cost with their corresponding actual cost incurred to complete those sampled projects.

Building Construction Projects

Table 4.17 above showed that among all the 38 sampled building construction projects, 14 (37%) projects have been completed within the initial contractual cost as per scheduled and found to be successful. Zero deviation from original budget shows success. Higher deviation indicated lower success. The remaining majority projects 24(63%) have been unable to adhere to the original planned budget or cost and regarded as unsuccessful. The average planned budget was 193,877,598.22 whereas their actual average performance became 249,883,662.36 resulting in cost deviation of 56,006,064.14 (33%) ETB additional cost. That extra cost would result in cost overruns thereby negatively influencing the success of construction projects.

Water Supply Construction Projects

Table 4.18 Water Construction Sector

S.N	Project Name	Contractual Budgeted Date (Birr)	Actual Cost to Date (Birr)	Deviation from Initial Cost	Dev %	Remark (Successful or Unsuccessful)
39	Eldama Supply & Fix	83,212,682.82	83,212,682.86	0	0	Successful
40	Lome Anchebo SSIP	94,250,374.63	102,835,543.05	8,585,168.42	9	Unsuccessful
41	Dodola Town WSP	28,075,204.19	36,942,053.61	8,866,849.42	32	Unsuccessful
42	Meyu WSP	383,614,592.13	402,446,189.13	18,831,597.00	5	Unsuccessful
43	Aweday WSP	64,928,154.39	64,928,154.39	0	0	Successful
44	Galchat Multi Village	999,440,670.98	999,440,670.98	0	0	Successful
45	Gelchet Transportation	55,183,258.79	55,183,258.79	0	0	Successful
46	Bedesa EM Works	10,867,206.75	10,867,206.75	0	0	Successful
47	African leadership WS	54,665,321.14	58,359,603.02	3,694,281.88	7	Unsuccessful
48	Lalo Kile WSP	92,261,923.05	140,138,939.19	47,877,016.14	52	Unsuccessful
49	Yayo Town WSP	186,782,122.82	186,782,122.82	0	0	Successful
50	Dembi-Dolo WSP	32,286,484.82	32,286,484.82	0	0	Successful
51	Bordode WSP	141,147,548.12	168,129,668.77	26,982,120.65	19	Unsuccessful
52	Agaro WSP Pipe.	29,988,241.70	29,988,241.70	0	0	Successful
	Total	2,256,703,786.33	2,371,540,819.88	114,837,033.51	124	Unsuccessful
	Average	161,193,127.60	169,395,772.85	8,202,645.25	9	Unsuccessful

Source: OCC Secondary Data

Table 4.18 presented the analysis of sampled water construction projects with their respective contractual budget (Birr), actual cost to complete (Birr), completion Success in percent, deviation from original cost, and percentage of deviation. The data being obtained from OCC ERP system reports, were analyzed and interpreted to evaluate how the completed of the sampled water construction projects adhere to or deviate from the contractual budget by comparing the original cost of these projects with the actual cost to their completion.

Table 4.18 above showed that among all the 14 sampled water construction projects, 8(57%) of them have been completed within the initial contractual cost as per scheduled and found to be successful. Projects with zero deviation from initial cost demonstrates success while higher deviation demonstrates lower success. The remaining 6(43%) of them have been unsuccessful or unable to adhere to the original planned budget or cost. The average planned budget was 161,193,127.60 whereas their actual average performance became 169,395,772.85 resulting in cost deviation of 8,202,645.25 (9%) extra ETB. The results further suggested that those extra costs would result in cost overruns thereby negatively influencing the success of construction projects.

Table 4.19 Irrigation Construction Sector

S.N	Project Name	Contractual Budgeted Date (Birr)	Actual Cost to Date (Birr)	Deviation from Initial Cost	% of Dev.	Remark (Success or Unsuccess)
53	Walinchiti Expansion	1,553,640,610.05	2,690,678,305.28	1,137,037,695.23	73	Unsuccessful
54	Guder Faxy IP	2,354,915,199.96	3,659,062,110.62	1,304,146,910.66	55	Unsuccessful
55	Shamo Gatore SSIP	80,635,442.25	80,635,442.25	0	0	Successful
56	Gololcha Dam	763,157,059.86	1,779,331,139.66	1,016,174,079.80	133	Unsuccessful
57	Calcal Irrigation	1,043,760,323.92	1,250,310,228.63	206,549,904.71	20	Unsuccessful
58	Irba Giristu	42,188,659.27	43,757,149.91	1,568,490.64	4	Unsuccessful
59	Awash Bishole Store	70,252,851.70	81,698,071.60	11,445,219.90	16	Unsuccessful
60	Fantallee camp	12,789,985.83	20,566,232.65	7,776,246.82	61	Unsuccessful
61	Fedis Midhaga Tola	309,604,632.45	331,193,403.93	21,588,771.48	7	Unsuccessful
62	Welmel Irrigation	2,393,049,885.21	3,099,208,647.01	706,158,761.80	30	Unsuccessful
63	Keta Dibe Dam	380,228,800.47	541,732,161.49	161,503,361.02	42	Unsuccessful
64	Lome Anchebo SSIP	108,387,938.16	133,377,403.83	24,989,465.67	23	Unsuccessful
65	Wando SSI	50,875,420.63	57,781,934.73	6,906,514.10	14	Unsuccessful
	Total	9,163,486,809.76	13,769,332,231.59	4,605,845,421.83	478	Unsuccessful
	Average	704,883,600.75	1,059,179,402.43	354,295,801.68	37	Unsuccessful

Source: OCC Secondary Data

Irrigation Construction Projects

The above table 4.19 depicted the analysis of sampled irrigation construction projects with their respective initial contractual budget (Birr), actual Cost to complete (Birr), completion success in percent, deviation amount from original cost, and percentage of deviation. The data obtained from the reports of corporation's ERP systems; analysis and interpretation were made to examine how these of sampled irrigation construction projects adhere to or deviate from the contractual budget by comparing their respective initial scheduled cost with their corresponding actual cost incurred to complete those sampled projects.

Table 4.19 above showed that among all the 13 sampled irrigation construction projects, only 1 (8%) of them was completed within the initial contractual cost as per scheduled and investigated as successful. The remaining majority projects 12(92%) have been unsuccessful because they have been unable to adhere to the original planned budget or cost. The average planned budget has been 704,883,600.75 ETB whereas their actual average performance has become 1,059,179,402.43 resulting in cost deviation of 354,295,801.68 (37%) ETB additional budget. That extra cost incurred would result in cost overruns thereby negatively influencing the success of construction projects

Drilling Construction Sector

The following table 4.20 presented the analysis of sampled drilling construction projects with their corresponding original contractual cost actual Cost to complete, completion success in percent, deviation amount from original cost, and percentage of deviation. The data being obtained from the reports of corporation's ERP systems were analyzed and interpreted to evaluate how cost could measure the success of these sampled drilling construction projects adhered to or deviated from the contractual budget by comparing their respective initial scheduled cost with their corresponding actual cost incurred to complete those sampled projects.

Table 4.20 Drilling Construction Sector

S. N	Project Name	Contractual Budgeted Date (Birr)	Actual Cost to Date (Birr)	Deviation	%	Remark
66	Mi'o Gasera BH #4=400m	10,314,300.00	39,744,091.69	29,429,791.69	285	Unsuccessful
67	Melka Oda #2	10,734,076.00	13,976,634.00	3,242,558.00	30	Unsuccessful
68	Bedessa BH	21,332,250.00	23,262,460.00	1,930,210.00	9	Unsuccessful
69	Metu University Bedele BH#2	10,993,233.20	10,993,233.20	0	0	Successful
70	Shipping & Logistic Enterprise	6,784,007.53	6,784,007.53	0	0	Successful
71	AA City Bus Service Enterprise	3,912,201.00	6,222,375.00	2,310,174.00	59	Unsuccessful
72	Cheffe 13 Well #1	3,912,202.00	5,114,701.00	1,202,499.00	31	Unsuccessful
73	Dedu Town BH #2-200	16,592,545.00	17,362,300.00	769,755.00	5	Unsuccessful
74	Geda City Park # 7, 500m	19,212,068.13	36,800,369.04	17,588,300.91	92	Unsuccessful
75	Daro Lebu BH #2(350)	19,384,568.13	27,245,870.95	7,861,302.82	41	Unsuccessful
76	Daro Lebu BH #3(350)	3,142,720.00	15,150,108.75	12,007,388.75	382	Unsuccessful
77	Stewa Kenisa	20,901,857.98	21,893,412.40	991,554.42	5	Successful
78	Harjarte BH 3	6,044,410.46	6,044,410.46	0	0	Successful
79	Ajambaa BH	34,297,787.00	34,297,787.00	0	0	Successful
80	Gamada (Sub Contract)	2,748,806.00	2,748,806.00	0	0	Successful
81	Cheri BH-400	30,162,533.27	30,162,533.27	0	0	Successful
82	Ilu #4	10,488,977.71	10,488,977.71	0	0	Successful
83	Ejere #8	8,965,037.61	8,965,037.61	0	0	Successful
84	Walmera #6	10,807,714.66	10,807,714.66	0	0	Successful
85	Walmera #7	12,752,641.00	12,752,641.00	0	0	Successful
86	Chaffe 13 BH#2 pumping Test	957,168.00	957,168.00	0	0	Successful
87	Rehabilitation of Hajamba BH	2,769,604.00	2,769,604.00	0	0	Successful
88	Rehabilitation of Bishoftu	1,020,000.00	1,020,000.00	0	0	Successful
89	Benna-1	2,336,100.00	2,545,600.00	209,500.00	9	Unsuccessful
90	Bishoftu Town-1	10,792,500.00	14,484,600.00	3,692,100.00	34	Unsuccessful
91	Abomsa	5,650,110.00	5,729,400.00	79,290.00	1	Unsuccessful
92	Waltane (Mud)	3,648,500.00	4,623,500.00	975,000.00	27	Unsuccessful
93	Bantu BH #2 Pumpint Test	405,000.00	2,045,100.00	1,640,100.00	405	Unsuccessful
94	Silxee Zone BH-2= 350m	31,439,658.87	40,991,177.00	9,551,518.13	30	Unsuccessful
95	Arsi Nagale Siraro BH #5 -350	25,986,356.80	25,986,356.80	0	0	Successful
96	Police Commission Water well	478,000.00	478,000.00	0	0	Successful
	Total	348,966,934.35	442,447,977.07	93,481,042.72	1,445	Unsuccessful
	Average	11,256,997.88	14,272,515.39	3,015,517.51	47	Unsuccessful

Source: OCC ERP Reports

Table 4.20 above showed that among all the 31 sampled drilling construction projects, 15 (48%) have been completed within the initial contractual cost as per scheduled and became successful. The remaining project 16(52%) of them failed to adhere to the original planned budget and found to be unsuccessful. The average planned budget was 11,256,997.88 ETB whereas their actual average cost performance has become 14,272,515.39 resulting in cost deviation of 3,015,517.51 (47%) extra ETB.

The additional cost incurred by the corporation led to cost overruns and negatively impact the success of construction projects.

Transport and Infrastructure Construction

The following table 4.21 depicted the analysis of five sampled transport and infrastructure construction projects with their respective initial contractual price, actual cost to complete, deviation amount from the planned cost, and percentage of deviation. The data were obtained from the reports of corporation's ERP systems and analyzed and interpreted to examine how cost could measure the success of these sampled transport and infrastructure projects adhered to or deviated from the contractual budget by comparing their initial scheduled cost with their corresponding actual cost incurred to complete those sampled projects.

Table 4.21 Transport and Infrastructure Construction Projects

S.N	Project Name	Contractual Budgeted Date (Birr)	Actual Cost to Date (Birr)	Deviation	Dev. %	Remark
97	Ambo Bus Terminal	72,895,518.11	107,891,063.79	34,995,545.68	48	Unsuccessful
98	AAWSA	263,522,332.16	302,824,111.04	39,301,778.88	15	Unsuccessful
99	Qobbo D.-Golaqoxi	122,633,115.79	126,693,358.37	4,060,242.58	3	Unsuccessful
100	Gelan arabsa Jida DB	2,279,826,766.67	3,384,393,687.83	1,104,566,921.16	48	Unsuccessful
101	Metu Bypass	772,020,833.38	937,129,550.68	165,108,717.30	21	Unsuccessful
	Total	3,510,898,566.11	4,858,931,771.71	1,348,033,205.60	135	Unsuccessful
	Average	702,179,713.22	971,786,354.34	269,606,641.12	27	Unsuccessful

Source: OCC ERP Reports

Table 4.21 above showed that all the 5 sampled water construction projects were unable to be completed within the initial contractual cost as per scheduled. The average planned budget was 702,179,713.22 whereas their actual average cost performance was 971,786,354.34 resulting in cost deviation of 269,606,641.12 (27%) ETB. The additional cost incurred by the corporation would lead to cost overruns and negatively affect the success of these transport and infrastructure construction projects.

Table 4. 22 Summary of Construction Project Cost Performance by Project Types

No.	Sector/Project Type	Number of samples	Successful	Unsuccessful	Success Rank
1.	Water Supply Construction	14	8 (57%)	6(43%)	1
2.	Drilling Construction	31	15 (48%)	16 (52%)	2
3	Building Construction	38	14(37%)	24 (63%)	3
4.	Irrigation Construction	13	1(8%)	12 (92%)	4
5	Transport and Infrastructure	5	0(0%)	5(100%)	5
	Total	101	38 (38%)	62(62%)	

Source; Own Survey 2026

To sum up based on the findings, differences have been observed in terms of cost performance among the projects while compared in sectors both within the same individual projects and across project types.

Accordingly, successful rate of projects for water construction (57%), Drilling Construction (48%) Building Construction (37%), and irrigation construction (8%) while no transport and infrastructure project has been successful. Out of 101 total sampled projects only 38(38%) have become successful whereas the remaining 62(62%) have been found unsuccessful. These results suggest that water construction projects have been ranked as the most cost effective or efficient (less deviated) followed by drilling construction projects consistently as they were found in time performance. Transport and infrastructure projects have been ranked as the least performing in project cost performance. The finding further revealed that despite the fact that time measures the success of construction projects in general, the degree or magnitude of the measurement is different depending on the types of the project.

4.6.3 Quality Related Success Criteria

This section presented the perception of respondents with regard to quality related success criteria of construction projects. implemented at the corporation, Quality performance was evaluated using five indicators which included compliance with technical specification, material quality, workforce level, defect management, and effectiveness of quality assurance and inspection procedures.

Table 4.23. Quality Related Construction Project Success Criteria

S. N	Statements	Mean	Stand. Dev
1	The finished work has met the technical specifications.	3.21	0.79
2	Material quality has met the required standards.	3.42	0.76
3	The level of workmanship has been satisfactory.	3.37	0.93
4	Defects have been minimal and have been fixed promptly.	3.4	0.82
5	Quality assurance and inspection procedures have been effective.	3.41	1.03
	Grand Mean and Standard Deviation	3.36	0.87

Source: Own Survey ,2026.

The aggregate result indicated a grand mean score of 3.36% with its corresponding standard deviation of 0.87 which showed that the respondents generally agreed that construction projects at OCC have achieved acceptable quality standards. The result also suggested that despite the existence of challenges in other areas of performance like cost and time, quality performance of the projects has become relatively satisfactory.

Compliance with Technical Specification

The first statement has examined whether the finished work has met the requested technical specification. The result reflected that a mean score of 3.21 with 0.79 standard deviation. The finding indicted that though many respondents believed that the technical specifications were generally achieved, a significant number of respondents remained neutral. This might further suggested inconsistent adherence to the technical specification across the projects. Therefore, consultants had to play their critical role through preparation of design supervision, and monitoring of compliance.

Material Quality

The second indicator checked whether the construction materials have met the standards set. Accordingly, a mean score of 3.42 with 0.76 standard deviation have been recorded. The result indicated in aggregate that material quality has been generally perceived adequate in corporation's construction projects. Supplier selection and inspection systems or mechanism, consultants' material testing and approvals probably contributed to these achievements.

Level of workmanship

The third statement evaluated whether the level of workmanship was satisfactory. The results indicated that majority of the respondents showed agreement resulting in a mean value of 3.37 with 0.93 standard deviation. The result suggested that though the construction material quality was aggregately acceptable, the significant number of respondents who remained neutral might show variability in the performance of the contractor across the projects.

Defect Management

The fourth indicator examined whether defects have been minimal and properly fixed or corrected. A mean score of 3.40 and 0.82 standard deviation scored. Even though some respondents remained neutral or moderate in their perception, defect management practices were relatively effective in OCC construction projects. It showed consultants, effective supervision, commitment of the contractor to quality control, and enforcement of contractual quality requirements of the clients.

Quality Assurance and Inspection Procedures

The fifth (final) statement evaluated whether quality assurance and inspection procedures have been effective. The response indicated that majority of the respondents had positive perception, producing a mean value of 3.41 with corresponding standard deviation of 1.03. Furthermore, the results demonstrated that inspection and quality assurance procedures have been reasonably performing well despite the relatively higher standard deviation suggesting variance in perception among some of the respondents.

In aggregate the mean value of 3.36 showed that quality performance at construction projects undertaken by OCC has been satisfactory. When compared with other project success criteria under this study, quality was found to be relatively well maintained.

4.6.4 Client Satisfaction Related Construction Project Success Criteria

Table 4.24 presented the analysis of client satisfaction as key success measurement of OCC construction projects. It examined four indicators namely; satisfaction of the client with overall project outcomes, fulfillment of client expectation, effectiveness in communication, and post completion support.

Table 4.24. Client Satisfaction Related Construction Project Success Criteria

N. S	Statements	Mean	Stand. Devn
1	The client is satisfied with the overall project outcome.	3.11	0.87
2	The client's expectations have been met or exceeded.	3.15	0.84
3	Communication with the client has been timely and effective.	3.21	0.79
4	The client is satisfied with post-completion support/warranty.	2.92	0.91
	Grand Mean and St. Dev.	3.10	0.85

Source: Own Survey ,2026

The aggregate results indicated a grand mean score of 3.10 with respective standard deviation of 0.85 resulting in a moderately positive perception of client satisfaction in OCC's construction projects.

Overall client Satisfaction with project outcome

The first indicator evaluated whether the client has been satisfied with the overall project outcome. A significant number of the respondents showed agreement with the overall client satisfaction with project outcome resulting in a mean score of 3.11 with corresponding standard deviation of 0.87. The higher response of neutrality suggested that there had been a mixed perceptions with regard to client satisfaction across the construction projects. It further indicated that not all projects fully have met client expectation.

Meeting or exceeding client expectation

The second indicator checked whether client expectations were met or exceeded. The result indicated a mean score and standard deviation of 3.15 and 0.84 respectively. This suggested that OCC construction projects generally fulfilled client expectation, even though the level of satisfaction was not the same across all sampled projects.

Communication with the client

The third statement examined whether communication with the client was timely and effective. It, has been resulting in a mean score and standard deviation of 3.21 and 0.79 respectively. These results suggested that communication practices were relatively moderate and acceptable yet required improvement. Its effectiveness generally depends on coordination and reporting of consultant, responsiveness of contractors to client concerns, and involvement of clients in decision making processes.

Post-completion support and warranty

The final(fourth) indicator evaluated whether the client was satisfied with post -completion support or warranty services. The responses indicated the lowest mean score of 2.92 with 0.91 standard deviation. These results suggested that the provision of post-completion support and warranty services were inadequate.

4.7 Analysis of RII to rank factors that determine construction project success

The Relative Importance Index (RII) was used to rank factors that determine the success of construction projects at OCC. Besides those factors that have been categorized as success criteria for project success were also analyzed using RII to rank their ranks in measuring the success of construction projects under study. To conduct the analysis the following formula was employed.

$$RII = \sum W / A \times N$$

W = weight given to each factor by the respondents and ranges from 1 to 5;

A = the highest weight = 5; and

N = the total number of respondents.

The ranking procedures were used for each category and each item with their respective category for success factors and success criteria as well.

4.7.1 Contractor Related Factors

Under this category, seven indicators were incorporated namely implementing effective project management practices and leadership is implemented, top management support-/good leadership, effective procurement process and tendering methods, project monitoring, evaluation and feedback (follow-up), contractor's strong financing capacity (on time cash availability), material and equipment (resources) availability, extensive project planning, scheduling& control. The contractor related factors category showed relatively high values of RII (ranging from 0.52 to 0.68. This implied that contractor performance plays critical role in determining the success of construction projects in the context of OCC. The individual predictor that constituted the category was interpreted and put in the order of their importance as shown in the table 4.25 below

Table 4.25 Ranking of Factors Related to Contractors

S. N	Success Factors Related to Contractors	RII	Rank
1	Project monitoring, evaluation and feedback (follow-up)	0.68	1
2	Top management support-/Good leadership	0.67	2
3	Extensive project planning, scheduling& control	0.65	3
4	Effective project management practices and leadership	0.60	4
5	Material and equipment (Resources) availability	0.57	5
6	Contractor's strong financing capacity (on time cash availability)	0.53	6
7	Effective Procurement and tendering processes	0.52	7

Source: Own Computation from SPSS

The results of project monitoring, evaluation and feedback (follow-up) RII =0.68) ranked first in the category and found to be the most critical factor among all factors related to contractors. It suggested that implementation of continuous monitoring, evaluation, feedback and follow-up would help to identify problems proactively in taking timely corrective action. The relative importance index value (RII=0.67) for top management support and leadership revealed that strong commitment shown by OCC leadership improved coordination, guidance and effective decision-making processes throughout the project life cycle. With regard to extensive project planning, scheduling& control having the value of (RII=0.65) resulted in ensuring efficiency in the utilization of time and resource. The practice of effective project management by the leadership, on the other hand with the value of (RII=0.60) also implied the importance of the structure in the management systems to achieve the project deliverables. Similarly, material and equipment (resources) availability with the value of (RII=0.57) highlighted the corporation's resource readiness to support smoothly the execution of the projects. However, the corporation's financial capacity or on time cash availability with the value of (RII=0.53) reflected moderate importance yet exhibited inefficiencies that could result in delays of construction projects which in turn affect project success.

Finally, concerning the corporation's effective procurement and tendering processes the value of (RII=0.52) indicated the least ranked among all indicators that constituted contractor related factors. Despite the availability of materials and equipment at OCC, weaknesses in converting those resources into liquid assets would lead to challenges of cashflow which negatively impact construction project success.

4.7.2 Client Related Factors

In this category, five predictors were included namely: the project size and characteristics, adequate budget or funding throughout the project from the clients, the urgency of completing the project, client's experience in construction project organization and management, and change orders from the client

Table 4.26 Ranking of Clients Related Factors

S. N	Success Factors Related to Clients	Mean	Std. Dev	RII	Rank
1	Client's experience in construction project	3.25	0.971	0.65	1
2	Adequate Budget or funding throughout the project	3.17	0.786	0.63	2
3	The project size and characteristics.	3.10	0.852	0.62	3
4	The urgency of completing the project	2.91	0.764	0.58	4
5	Change orders from the client	2.48	0.500	0.50	5

Source: Own Computation from SPSS

As depicted in table 4.26, the values of RII of client related factors ranged from 0.50 to 0.65. More specifically, Client's experience in construction project (RII=0.65), adequate Budget or funding throughout the project (RII=0.63), and the project size and characteristics (RII=0.62) suggested that the three indicators have been the most determinants compared to other indicators in the category getting the ranks from 1st to 3rd respectively. The urgency of completing the project (RII=0.58) was found to have the 4th rank and moderately determine construction project success. However, management of change order from clients (RII=0.50) ranked last(5th) indicating existence of frequent change orders from the client during the execution processes which interrupted the workflow. These would negatively contribute to project success.

4.7.3 Consultant Related Factors

In this category, four indicators were listed namely: completion of the project design before the start of construction, support and competence of project consultant, the design's sufficient detail and specifications to ensure constructability and manage project complexity, and designers and consultant's necessary skills and capabilities.

Table 4.27 Ranking of Consultants Related Factors

S. N	Success Factors Related to Consultants	Mean	Std. Dev.	RII	Rank
1	Designers and consultant's necessary skills and capabilities.	3.37	0.913	0.67	1
2	Support and competence of project consultant	2.75	0.993	0.55	2
3	The design's sufficient detail and specifications to ensure constructability and manage project complexity.	2.63	0.818	0.53	3
4	Completion of the project design before construction starts	2.59	0.902	0.52	4

Source: Own Survey 2026

Table 4.27 showed that the values of RII of consultant related factors ranged between 0.52 to 0.67 which were found to be moderately important. The consultant's possession of the necessary skills and capabilities with (RII=0.67) found to be highly important followed by support and competence of project consultant (RII=0.55). These results suggested that possession of required skills and competence would enhance execution and supporting projects improved coordination which positively influence project performance.

However, the remaining two indicators, namely design's sufficient detail and specifications to ensure constructability and manage project complexity and completion of the project design before the start of construction (RII= 0.52 and 0.53) respectively had shown relatively low importance compared to other indicators in context to OCC construction projects. These results revealed that there were delays in the completion of design before the start of construction and insufficient detail and specification of design in ensuring constructability and managing complexity of the projects. These gaps might result in time and cost overruns which negatively impact project success.

4.7.4 External Environment Related Factors

Under this category, four indicators were presented namely: Use of up-to-date construction technology and digitalization systems, commitment of all parties (stakeholders) to the project, the formal dispute or conflict resolution process, and economic and political stability of the country.

Table 4.28 Ranking of External Environment Related Factors

S. N	Success Factors Related to External Environment	Mean	Std. Dev.	RII	Rank
1	Use of up-to-date construction technology and digitalization	2.58	0.960	0.52	1
2	Commitment of all parties (stakeholders) to the project	2.56	0.835	0.51	2
3	The formal dispute or conflict resolution process	2.45	0.755	0.49	3
4	Economic and Political Stability of the country	1.98	0.924	0.40	4

Source: Own Survey 2026

The score of RII value for factors related external environment ranged from 0.40 to 0.52 as shown in the table 4.28 above. The use of up-to-date construction technology and digitalization systems with (RII=0.52) had relative high importance followed by commitment of stakeholders to the project (RII=0.51). The results indicated that despite the moderate use of up-to-date construction technology and digitalization systems and the commitment of stakeholders to the project, yet there have been rooms for improvement in the use of technology and devotion of all participants to the projects. The remaining two indicators the formal dispute or conflict resolution process and economic and political stability of the country with the values of RII 0.49 and 0.40 respectively scored RII below 0.5 resulting in their third and fourth. Rank. These lower value of conflict resolution process revealed that weak dispute resolution systems resulted in delays and negative customers' attitude towards the service provided by OCC. On the other hand, the lowest value of economic and political stability of the country suggested that OCC has been undertaking projects where there have been challenges of inflation and instability problems in some project areas. Thus, although these external issues are uncontrollable the corporation would have to adapt itself to those dynamic and challenging environments which adversely impact the success of construction projects

4.8 Analysis of RII to rank factors that measure construction project success

This section presented the rankings of construction project success criteria related to time, cost, quality and client satisfaction using Relative Importance Index (RII).

4.8.1 Time Related Factors

This category constituted four indicators namely: the project was completed within the originally planned schedule, major project milestones were met on time, delay occurrences (if any) were minor and controlled, and the contractor adhered to the agreed construction program.

Table 4.29 Ranking of Time Related Factors

N. S	Statements	Mean	Stand Dev.	RII	Rank
1.	The contractor adhered to the agreed construction program.	2.28	0.86	0.46	1
2.	Major project milestones were met on time.	2.05	0.74	0.41	2
3.	Delay occurrences (if any) were minor and controlled.	1.95	0.78	0.39	3
4	The project was completed within the originally planned time	1.68	0.72	0.34	4

Source: Own Survey 2026

The ranking of time related factors to measure construction project success table 4.29 depicted that the RII values ranged from 0.34 to 0.46 which were the lowest RII values showing poor performance of schedule. Even though contractor's adherence to the agreed construction program ranked first in the category with (RII=0.34) with some level of compliance, completion of the project within planned schedule notably suggested lowest value (RII=0.34) in meeting originally planned schedule. It revealed that there have been significant delays. The result of meeting of major project milestones on time with (RII=0.41) indicated partial compliance of the plan. With regard to control of delays (RII=0.39) the result showed they occurred but somehow managed.

4.8.2 Cost Related Factors

This category constituted four indicators namely: the final project cost was within the approved budget, cost overruns were promptly justified and documented, financial control and reporting have been adequate throughout the project, and changes in scope have been managed without significant extra cost.

Table 4.30 Ranking of Cost Related Factors

S. N	Statements	Mean	Stand Dev.	RII	Rank
1.	Financial control and reporting have been adequate throughout the project	2.35	0.88	0.47	1
2.	Cost overruns were promptly justified and documented.	2.32	0.88	0.46	2
3.	Changes in scope is managed without significant extra cost.	1.84	0.67	0.37	3
4	The final project cost was within the approved budget.	1.66	0.65	0.33	4

Source: Own Computation from SPSS

The values of RII of cost related factors ranged from 0.33 to 0.47 indicated relatively low performance. While adequacy of financial control and reporting ranked highest (RII=0.47) on the one hand, the final project budget compliance (RII=0.33) was found to be the lowest on the other extreme. Justification of cost overruns with RII value 0.46 suggested that deviations have been tracked. With respect to management of changes in scope the (RII =0.37) score indicated that changes in scope have been yet unmanaged and resulted in the increase of costs. Therefore, despite the financial management systems in place, OCC projects usually experienced cost overruns which negatively influence project success and do something about it.

4.8.3 Quality Related Factors

This category constituted five indicators namely: Compliance with Technical Specification, Material quality, level of workmanship, defect Management, and quality assurance and inspection procedures

Table 4.31 Ranking of Quality Related Factors

	Statements	Mean	Stand. Dev	RII	Rank
1	Material quality has met the required standards.	3.42	0.76	0.68	1
2	Defects have been minimal and fixed promptly.	3.40	0.82	0.68	1
3	Quality assurance and inspection procedures have been effective.	3.41	1.03	0.68	1
4	The level of workmanship has been satisfactory.	3.37	0.93	0.67	2
5	The finished work has met the technical specifications.	3.21	0.79	0.64	3

Source: Own Survey 2026

Table 4.31 depicted the ranking of quality related factors in measuring success using RII. The overall result indicated that the values of RII ranged from 0,64 to 0.68 resulting in highest RII that suggested strong performance. Material quality, defect management, and quality assurance procedures as key indicators were found to be highly rated. The results implied that construction projects undertaken by OCC have been consistently achieving high quality standards despite the challenges of time and cost overruns it has encountered.

4.8.4 Client Satisfaction Related Factors

Under the category of client-satisfaction, four indicators were incorporated namely: Overall client-satisfaction with project outcome, meeting or exceeding client expectation, communication with the client, and post-completion support and warranty.

Table 4.32 Ranking of Client Satisfaction Related Factors

N. S	Statements	Mean	Stand. Dev.	RII	Rank
1	Communication with the client has been timely and effective.	3.21	0.79	0.64	1
2	The client's expectations have been met or exceeded.	3.15	0.84	0.63	2
4	The client is satisfied with the overall project outcome.	3.11	0.87	0.62	3
4	The client is satisfied with post-completion support/warranty.	2.92	0.91	0.58	4

Source Own Computation from SPSS

Ranging RII values from 0.58 to 0.64, client satisfaction dimensions moderately indicated high performance. Effective and timely communication with clients (RII=0.64) was placed in the highest (first) rank highlighting the importance of communication to achieve the satisfaction of clients. Meeting clients/ expectation with (RII=0.63) suggested that the requirements were largely satisfied. Overall satisfaction of the client with project outcomes (RII=0.62) showed that clients have been generally satisfied while post-completion support/warranty. (RII=0.58) yet needed continuous improvement. From these results it could be inferred that effective communication and acceptable quality standards made clients to have remained relatively satisfied with OCC construction projects outcomes.

4.9 Overall Rankings success factors and success criteria

This section presented the overall rankings of success factors and success criteria at categorical/aggregated level. The RII was used to rank the factors that determine construction project success and the success criteria in measuring project success

4.9.1 Overall Ranking of success factors by Category

As previously discussed, the 20 predictors were grouped into four categories namely contractor, client, consultant, and external environment factors. The four categories were arranged in the order of their rank from first to fourth. These rankings of the independent variables in the order of their ranking would help in answering the basic research question stating what are the key factors that determine the success of construction projects evidenced from Oromia Construction Corporation.

Table 4.33 Overall Ranking of success factors by Category

S. N	Category	Average Mean	Average RII	Rank
1	Contractor Related Factors	3.01	0.60	1
2.	Clients Related Factors	2.98	0.59	2
3.	Consultants Related Factors	2.84	0.57	3
4.	External Environment Related Factors	2.39	0.48	4

Source: Own Survey 2026

Table 4.33 depicted that the average RII values of the factors grouped as category ranged from 0.48 to 0.60 as shown above. The results revealed that contractor related factor with average (RII=0.60) was ranked first followed by clients, consultants, and external environment factors with their respective (RII =0.59,0.57, and 0.48) values respectively. Overall, the results suggested that contractor

related factors have been investigated to be key factors that significantly determine construction projects success.

4.9.2 Overall Ranking of success criteria by category

The seventeen (17) predictors of construction project success criteria were grouped into four categories namely time, cost, quality and client satisfaction related factors. The four categories were arranged in the order of their rank from first to fourth.

Table 4.34 Overall Ranking of success criteria by category

S. N	Category	Average Mean	Average RII	Rank
1	Quality Related Criteria	3.36	0.67	1
2	Client Satisfaction Related Criteria	3.10	0.62	2
3	Cost Related Criteria	2.04	0.41	3
4	Time Related Criteria	1.99	0.40	4

Source: Own Computation

Table 4.34 depicted that the average RII values of the success criteria grouped as category ranged from 0.40 to 0.67. The results revealed that quality related criteria with average (RII=0.67) was ranked first followed by client satisfaction, cost, and time related success criteria with their respective (RII =0.62,0.41, and 0.40) values respectively. While quality achieved the highest rank followed by a moderate achievement of client satisfaction, in contrast, cost and time categories attained lower values ranking third and fourth respectively in their relative importance.

In general, the results suggested that quality and client satisfaction have been the primary measures of project success, while cost and time have played a secondary role. The results further suggested a comprehensive shift towards quality and client -centered delivery of the project deliverables, where the ultimate goal has been to deliver high perceived value rather than merely emphasizing on time and cost overruns.

4.10 Correlation Analysis to evaluate the relationship among factors

To evaluate the relationship between independent variables (contractor, client, consultant, and external related factors) and dependent variable (construction project success at OCC), the study employed correlation analysis. It is important to determine the direction and strength of the relationship between or among the variables which creates a foundation before going into the multiple regression analysis.

The Pearson correlation coefficient measures the strength and direction of the relationship between or among two continuous variables. According to Pearson, correlation shows the extent to which two or more variables are associated. It also indicates the degree to which the variables change simultaneously. The correlation coefficient is represented by (r) indicating the magnitude and nature of a linear relationship between or among two or more dependent and independent variables. The value of (r) ranges between negative 1 and positive 1. Pearson further explains that the positive value indicates a positive association between or among variables. Conversely, the negative value shows a negative association. The (r) value of +1 shows a perfect positive association and -1 denotes a perfect negative association. On the other hand, a zero value of (r) shows no linear relationship between or among variables. The following data analysis illustrated the Pearson Correlation Matrix. Based on this fact the Pearson Correlation analysis result revealed a significant positive relationship among all independent variables (contractor, client consultant, and external environment related factors) and dependent variable (construction project Success) within the sampled respondents of 281. The results confirmed that all correlations were significant at 0.01 level of significance ($p < 0.01$). The results further suggest that it has been very unlikely that the relationships have been due to chance. Accordingly, the correlation of each independent variable with construction project success and the relationship among the independent variables themselves have been discussed in the up coming paragraphs.

Contractor related factors ($r = 0.308$, $p = 0.001$), consultant related factors ($r = 0.334$, $p = 0.001$), and external environment related factors ($r = 0.331$, $p = 0.001$) indicated a moderate relationship with construction project success. However, a client related factor with ($r = -0.230$, $p = 0.001$) resulted in negative small correlation with the success of construction projects. The results revealed that all independent variables (factors) have positive and statistically significant relationships with construction project success. It suggested that improvements in the performance of the contractor involvement of the, clients, effectiveness of the consultants, and management of external environment have been associated with higher level of project success.

As indicated in table 4.35, Pearson correlation analysis was conducted to evaluate the relationship between the four categories of success factors of contractor, client, consultant, and external environment related and construction project success based on the responses from 281 respondents. The finding showed that all four categorized factors have been significantly related to construction project for the fact that the significance values for all variables have been found to be below 0.01,

$p=0.000$ at level of significance. The results further revealed that contractor related ($r=0.308$), consultant related ($r=0.334$), and external environment related factors ($r=0.331$) have positive and significant relationship with construction project success at OCC. However, client related factors ($r=-0.230$) have indicated a negative and significant relationship with construction project success reflecting challenges such as delays in the provision of adequate budget throughout project lifecycle, frequent change orders, reluctance in the release of payments to the contractors, experience in construction projects, appropriateness of project size and characteristics, and communicating urgency of the projects to the stakeholders could negatively impact project performance.

Therefore, in this particular study, the results of contractor, consultant, and external environment related factors with ($r=0.308$, 0.334 , and 0.331), respectively showed that they had a medium positive correlation with the success of construction projects. However, the client related factor with ($r = -0.230$, $p < 0.001$) had a small effect negative correlation with the success of construction projects.

With regard to intercorrelations among the independent variables themselves, the results indicated variations in the degrees of interrelatedness among project success factors. Accordingly, contractor-client recorded correlation ($r= -0.070$) showed very negative and small effect correlation. Contractor-Consultant-recorded a correlation ($r=0.207$) indicating very small correlation though it was statistically significant. Contractor-External had a correlation ($r= 0.285$).

It was also checked to know the correlation of client related factors with the consultant and external related factors. The results indicated that client-consultant and client -external scored a negative correlation coefficient ($r= -0.240$), and ($r= -0.230$) respectively. Finally, consultant related factors with external related factors were checked about their correlation. The results suggested the value of Pearson Correlation Coefficient (r) was found to be 0.384 showing a very strong interrelatedness.

In summary, the analysis suggested a positive relationship among factors related to contractor, consultant, and external environments implying that these factors possibly work together to enhance the success of construction projects. Nevertheless, factors related to clients have a negative correlation with all contractor, consultant, and external related factors showing that challenges related clients might influence collaboration and overall construction project success. In general, the study revealed that strong coordination among contractors, consultants, and external stakeholders positively improve the success of construction projects while poorly implemented management practices in client related factors can negatively undermine construction project success.

Table 4.35 depicted the Pearson Correlations

Correlations		Project Success	Contractor related	Client related	Consultant related	External related
Project Success	Pearson Correlation	1	.308**	-.230**	.334**	.331**
	Sig. (2-tailed)		.000	.000	.000	.000
	N	281	281	281	281	281
Contractor related	Pearson Correlation	.308**	1	-.070	.207**	.285**
	Sig. (2-tailed)	.000		.243	.000	.000
	N	281	281	281	281	281
Client related	Pearson Correlation	-.230**	-.070	1	-.240**	-.301**
	Sig. (2-tailed)	.000	.243		.000	.000
	N	281	281	281	281	281
Consultant related	Pearson Correlation	.334**	.207**	-.240**	1	.384**
	Sig. (2-tailed)	.000	.000	.000		.000
	N	281	281	281	281	281
External related	Pearson Correlation	.331**	.285**	-.301**	.384**	1
	Sig. (2-tailed)	.000	.000	.000	.000	
	N	281	281	281	281	281

Source: Own Survey 2026

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

4.11 Regression analysis for factors that determine the Project success

4.11.1 Test for Multiple Linear Regression Model Assumption

To examine the effect of contractor, client, consultant, and external environment related factors on construction project success, multiple regression analysis was used. The analysis was employed to test by how much the variances in the construction project success were explained by the factors related to contractor, client, consultant, and external environment. The section consisted of tests for multiple linear regression model assumption and the analysis itself.

This section presented the analysis and interpretation of testing multiple linear regression model assumption including normality, linearity, multicollinearity, autocorrelation, homoscedasticity. Moreover, the analysis of factors that determine the success of construction projects

Tests of Normality

Before diving into further analysis of the data, checking the normality of data distribution was very essential. That being the case, for larger samples, the Shapiro-Wilk was used to test the normality of the data. According to (Shapiro; M. B. Wilk, 2007) if the significance level of p-value is ≥ 0.05 or

statistically insignificant, it indicated data are normally distributed. In this case, the result ($p=0.096$) showed that data were not significantly deviated from normal distribution. In other words, there was no evidence that the data deviated from normality. Therefore since ($p = 0.096$) was < 0.05 it would be considered that data were normally distributed.

Table 4.36 Tests of Normality

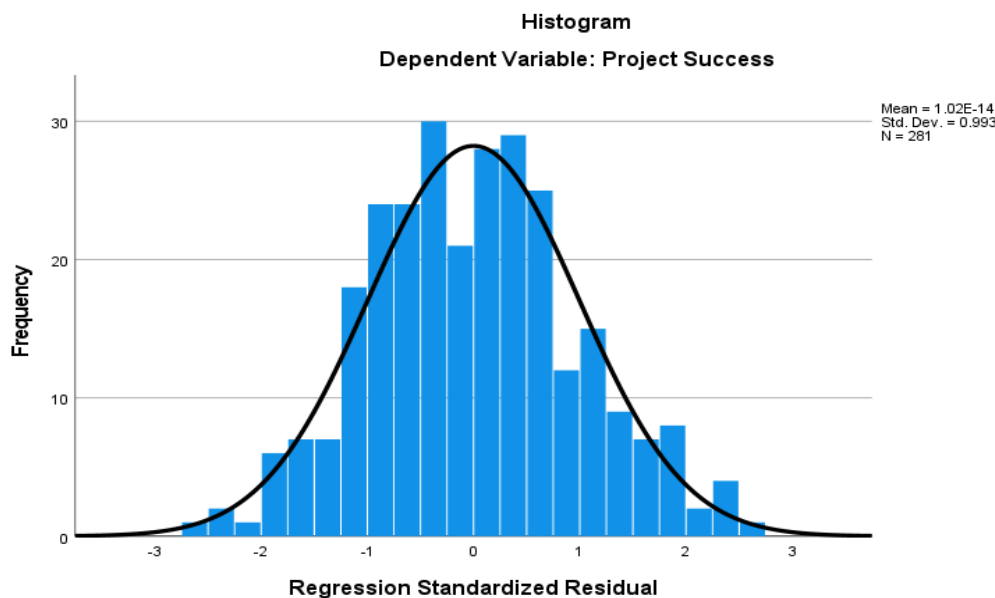
	Kolmogorov-Smirnov ^a			Shapiro-Wilk		
	Statistic	df	Sig.	Statistic	df	Sig.
Project Success	.053	281	.055	.991	281	.096

a. Lilliefors Significance Correction

Source: Sown Survey 2026

The other method to check normality is by using graph or histogram as depicted in the figure 3 below. The normal probability plot is a graphical method that checks whether data are normally distributed. If the distribution of errors shown on the histogram is bell-shaped it indicates that the residuals or the error terms are normally distributed. Therefore, in both cases, the result confirmed that the error terms were normally distributed thereby satisfying the normality test.

Figure 3 indicated a histogram suggesting a normally distributed residual.



Source: Researcher Own from SPSS normality test

Figure 3. Histogram

Linearity Test

One of the assumptions of multiple linear regression is that the relationship between or among dependent and independent variables has to be linear. According to Flatt & Jacobs (2019) and Cardoso et al., (2023), the normal P–P plot of regression standardized residuals indicates that the points closely approach and follow the diagonal line, showing that the residuals or error terms are approximately normally distributed. It reveals that the model is nearly specified and gives indirect evidence that the linearity assumption is met. Thus, the absence of systematic deviation or curvature further supports that the relationship among the independent variables and dependent variable (project success) is linear as shown in figure 2 below.

Figure 2 depicted that the distribution of construction project success has been approximately normal.

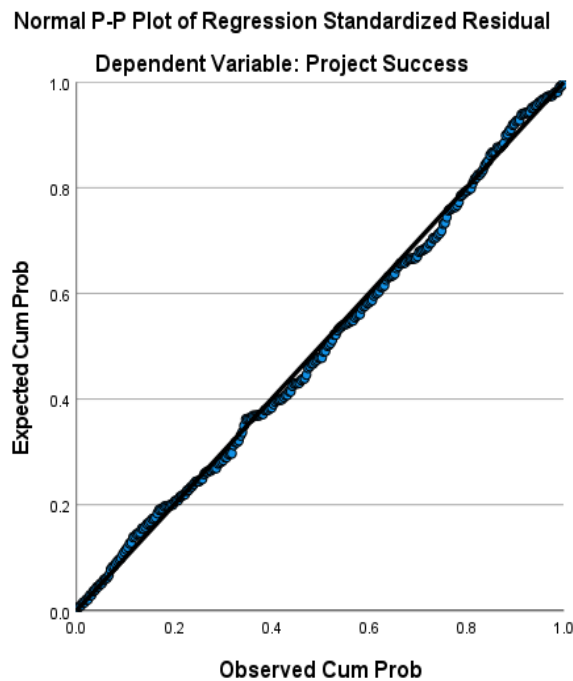


Figure 4.2. Linearity

Multicollinearity Test

Tolerance (TOL) and variance inflation factor (VIF) test multicollinearity. As R^2 increases, VIF rises, showing stronger collinearity; values above 10 suggest a serious multicollinearity issue. TOL, being the inverse measure, approaches 0 with high collinearity and 1 when collinearity is low (Gujarati, 2003). According to Gujarati (2003) multicollinearity happens when a certain variable shows a strong relationship among each. If variables are found to be more interrelated, it would be more challenging to know the individual effect on construction project success in the analysis. The researcher examined

multicollinearity assumption using Variance Inflation Factor (VIF) and Tolerance to check its absence or presence. As a rule of thumb, if the values of Tolerance are greater than 0.2 and the values of VIF are less than 10, it shows there would be no multicollinearity

Variance Inflation Factor (VIF)

Table 4.37. Multicollinearity Test

Model		Collinearity Statistics	
		Tolerance	VIF
1	(Constant)		
	Contractor Related	.907	1.103
	Client Related	.890	1.123
	Consultant Related	.825	1.213
	External Related	.764	1.309

Source: Own Survey 2026

. In this study, results indicated that the values of Tolerance ranged from 0.764 to 0.907 while the values of VIF ranged from 1.103 to 1.309. The results suggested that there was no evidence for the presence of multicollinearity. It was further investigated that the independent variables were not strongly correlated with one another. Thus, the assumption of multicollinearity was satisfied.

Autocorrelation

The Durbin-Watson was used to examine the autocorrelation whether there were relationships among residuals and independent variables (contractor, client, consultant, and external related factors). According to Durbin & Watson, (1950) and Field (2018), the values of the statistic around 2 suggest that there would be independence of residuals while the values less than 2 show positive autocorrelation and values greater than 2 show negative autocorrelation. In the model summary, the Durbin–Watson statistic value of 2.017 equals to 2, showing strongest evidence that there was no autocorrelation in the error terms. In other words, there was no significant autocorrelation. Thus, the autocorrelation assumption was fulfilled.

Homoscedasticity Test

The dependent variable has the same variance for all of the values of independent variables

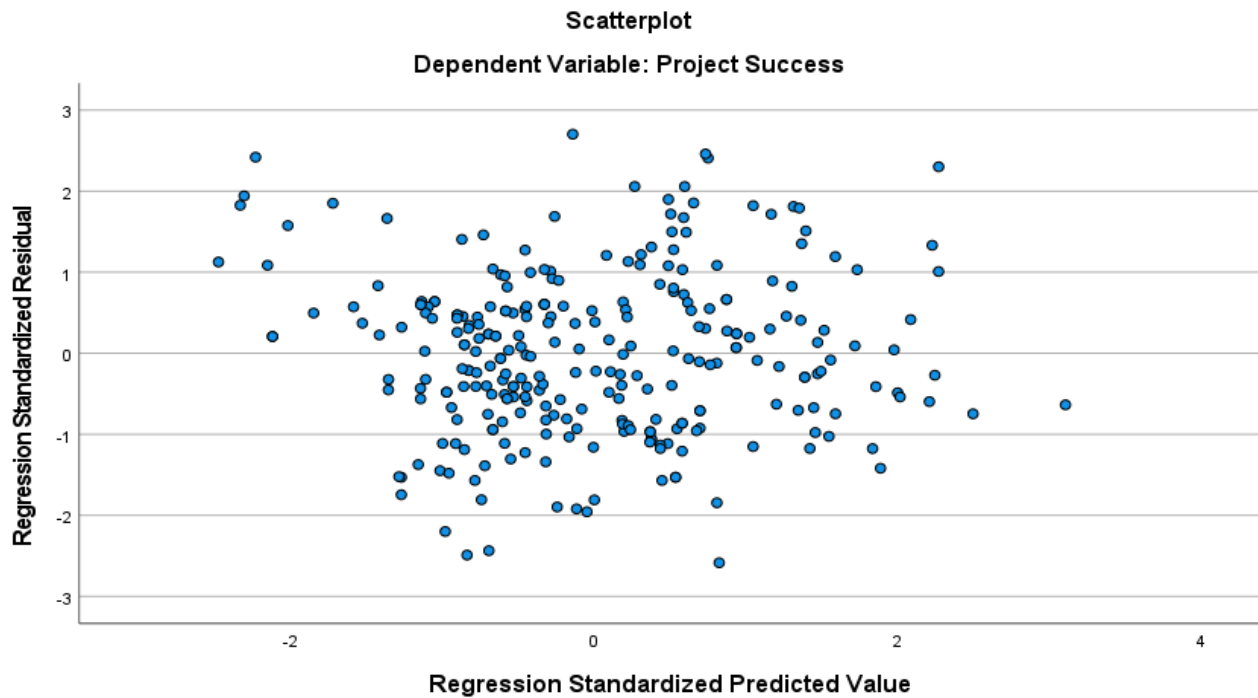


Fig. 4.3 Homoscedasticity Test

In multiple regression model, the scatter plot is used to visually confirm the assumption of homoscedasticity. It shows that the variance of the residuals is the same across all the estimated levels of the construction project success. Homoscedasticity is likely to exist when the distribution of the points which represent the residuals are found to be roughly the same across the whole range of the estimated values. As depicted in fig. 4 above, the spread of the points seems to be randomly scattered forming no distinct shape or pattern like a funnel. It implied that the variance of residuals is relatively constant across all the estimated values of construction project success. Thus, by having a look at the figure 4, it verified that the assumption of homoscedasticity is fulfilled thereby indicating the absence of heteroscedasticity. When that happens the multiple linear regression analysis would be reliable.

4.11.2 Multiple Regression Analysis of Factors that determine project success

Under this section the results of multiple regression were presented and interpreted to investigate key factors that determine the success of construction projects at OCC. Accordingly model summaries at aggregated or categorical level were analyzed, discussed and interpreted.

ANOVA table was used to test whether the set of the four independent categorical variables together significantly predict the dependent variable -construction project success and evaluate the overall significance of regression model Comparisons were made to provide deeper insight into both specific and broader factor groupings. Finally, hypothesis testing was analyzed, discussed, and interpreted.

Model Summary

In a multiple regression model the coefficient of determination (R^2) is determined by the pairwise correlation between or among all the variables, including correlations of independent variables namely contractor, client, consultant, and external related factors among each other and their correlation with dependent variable which is construction project success. The correlation coefficient (R) measures the strength of the relationship between construction project success and the four predictors. Accordingly in Table 4.38 model summary the multiple regression results indicated a moderate relationship between the contractor, consultant, and external factors and construction project success. The model summary below indicates that the correlation coefficient ($R=0.461$) revealed a moderate positive association between predictors namely contractors, client, consultant, and external related factors and construction project success. The coefficient of determination ($R^2=0.212$) shows that nearly 21.2% of the variation in the construction project success has been explained by the model. The adjusted R^2 (0.201) shows the proportion of variance in the dependent variable that would be explained by the model if generalized to the broader population, accounting for potential differences between the sample and the population (Statistical Solution, 2017). In the model after adjustment or the number of predictors has been made, the adjusted R^2 slightly decreases to 0.201 showing a reasonable model fit.

Table 4. 38 Model Summary^b

Model Summary ^b										
Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Change Statistics					Durbin-Watson
					R Square Change	F Change	df1	df2	Sig. F Change	
1	.461 ^a	.212	.201	.29027	.212	18.577	4	276	.000	2.017

a. Predictors: (Constant), External related, Contractor related, Client related, Consultant related

b. Dependent Variable: Project Success

Source: Own data from SPSS

The ANOVA Analysis

The analysis of variance (ANOVA) in multiple regression examines whether the overall, model is statistically significant which means that it tests whether the group of independent variables jointly predicts the dependent variable. In table 4.39 the ANOVA result ($F=18.577$, $p<0.001$) shows that the overall regression model is highly significant thereby the combination of contractor, client, consultant, and external related factors jointly predict construction project success better than a model with no

predictors. The result further suggests that the p -value being less than 0.001 indicates that the probability of getting this same result by chance is very low. To this end, it could be concluded that at least one of the independent variables would have a significant effect on the construction project success and the model in general has been statistically meaningful.

Table 4.39 ANOVA Analysis

ANOVA ^a						
Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	6.261	4	1.565	18.577	.000 ^b
	Residual	23.254	276	.084		
	Total	29.515	280			

a. Dependent Variable: Project Success

b. Predictors: (Constant), External Related, Client Related, Contractor Related, Consultant Related

Source: Own Survey 2026

4.11.3 Categorical Regression Analysis

Table 4.40 depicted coefficients of categorical regression analysis that provided insight into the respective contribution of each independent variable to the success of construction projects at OCC In this multiple regression analysis, the standardized beta(β) coefficients were used to compare the strength of each predictor in explaining the dependent variable. Standardized beta coefficients used to convert all variables into similar standard deviation units to allow direct comparison of the relative effect of each independent variable in the regression model. Aligning to the title of this study Investigating key factors that determine construction project success, the values of coefficient betas are more appropriate because they indicate which factor would have strongest influence on the given dependent variable compared to other factors in the category. Accordingly, the result showed that contractor related factors have the strongest positive and statistically significant effect on the construction project success ($\beta=0.213$, $p<0.001$). The results implied that improvements in the performance of contractor related factors such as top management support, project planning, evaluation and monitoring and follow up activities, availing construction materials and equipment are the most critical in determining the success of construction projects. Factors related to consultants also indicated statistically significant and have positive influence on the construction project success ($\beta=0.201$, $p=0.001$) indicating that improvements in consultant related factors such as, consultant's

provision of adequate support and demonstrating sufficient competence and design's sufficient detail and specifications to ensure constructability and manage project complexity. play a critical role in determining the success of construction projects. Likewise, external environment related factors also showed a positive and statistically significant relationship ($\beta=0.157$, $p=0.011$) suggesting that external environment related factors moderately affect the performance of construction projects. The results reflected that improvements in the performance of external related factors such as showing strong commitments from all stakeholders significantly would play an import role in determining construction project success Finally, factors related clients resulting in ($\beta=-0.119$, $p=0.036$) have a statistically significant negative effect on the success of construction projects. The negative beta coefficient shows an inverse relationship between client related factors and construction project success, indicating that an increase in client related challenges leads to a decrease in construction project success. Specifically, a one unit increase in adverse client related factors is associated with a 0.119-unit reduction in construction project success, keeping others variables constant. This finding suggests that client related deficiencies, such as delays in budget allocation, frequent change order, delays decision making, in release of payments, ang inadequate client engagement, negatively influence the successful delivery of construction projects. Therefore, although client related factors significantly affect project success, the direction of the influence is negative indicating that weaknesses in client performance hinder construction project success in context to OCC.

In general, at the categorical level the standardized beta (β) coefficients showed that contractor related factors have been found to be the key factors that determine the success of construction projects at OCC followed by consultant related, external environment, client related factors which were all statistically significant.

Table 4.40 Regression Coefficients

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	1.816	.226		8.030	.000
	Contractor related	.189	.050	.213	3.802	.001
	Client related	-.097	.046	-.119	-2.108	.036
	Consultant related	.107	.031	.201	3.416	.001
	External related	.094	.037	.157	2.566	.011

a. Dependent Variable: Project Success

To determine the relationship between construction project success at OCC and contractor, client, consultant, and external environment related factors, the equation of multiple regression analysis has been found to be as follows.

$$Y = \beta_0 + \beta_1 CR + \beta_2 CL + \beta_3 CNS + \beta_4 EXT + \varepsilon$$

Where:

Y = Construction Project Success at OCC

CR = Contractor Related Factors

CL = Client Related Factors

EXT = External Environment Related Factors

ε = Error terms (Residuals)

β_0 , β_1 , β_2 , β_3 , and β_4 = Coefficients of constants, contractor, clients, consultants, and external environment related factors respectively.

Accordingly given the equation above:

$$Y = 1.816 + 0.213CR - 0.119CL + 0.201CNS + 0.157EXT + \varepsilon$$

From the given equation above, it could be further interpreted that if contractor related factors changed by one-unit, other factors (client, consultant, and external) kept constant, Y (construction project success at OCC) would also be changed by 0.213 units on average. In other words, according to this model if contractor related factors increased by 1% on average, construction project success at OCC would also be increased by 0.213%. The same would be true for clients, consultants, and external related factors as well. By the same token, a percentage change in client, consultant, and external related factors on average could bring a change of -0.119, 0.201, and 0.157 units on the success of construction projects respectively. However, if all factors that were assumed to determine the success of construction projects at OCC (contractors, clients, consultants, and external related) would not be implemented or equal to zero, the construction project success at OCC would start from 1.816.

4.11.4 Comparison with the Existing Literature

References were made to different previous studies conducted on the project success. The results of the analysis both supported and extended previous studies on construction project success. From the contractor related factors was consistent with earlier findings as a key success for construction

projects. Borges et al. (2024), in their study on project success and critical success factors in construction projects from a multicultural team perspective identified top management support, contractor competence and experience as key determinants of construction project success.

Despite the emphasis of many studies on capabilities of contractor at individual level, yet this study suggested that their influence has become significant only when aggregated. It further highlighted that contractor performance is multidimensional requiring a holistic assessment instead of depending on single predictors. Contractor's experience and competency are crucial to the success of a construction project (Cheong et.al, 2016)

The importance of design adequacy in its detail and constructability supported previous studies explaining significant contribution. Adequate design details and clear specification minimize uncertainty reduces rework and enhance execution efficiency. According to Cheong et.al (2016) adequacy of design details and specification significantly influence the success of construction projects. The role of consultant competence was confirmed that it indicated consistency with the previous studies emphasizing the responsibilities of consultants to ensure technical integrity and construction project control. Consultant related factors showed a dual significance strengthening this argument. Similarly, the client related factors, were found to be statistically significant and prior findings, consistent to this study showed that client-related factors that contribute to the success of the construction project (Cheong et.al,2016)

4.11.5 The theoretical implication of results of regression analysis

The contribution of this study to the theory of construction management has been analyzed in different ways.

Reconceptualization of the influence of Contractor on construction project success

Despite the seven components that constituted contractor related factors, the results suggested that contractor effectiveness has to be viewed holistically as a system of interrelated practices instead of isolated capabilities of each individual component.

Theory of refinement of stakeholder in construction project management

This study investigated that the role of contractor, consultant and stakeholder commitment influence was strong showing that coordination and relational factors might be more critical than traditional client-focused approach in models suggest.

4.11.6 The Practical implication of results of regression analysis for OCC

In this study the practical implication of results of the multiple regression analysis for OCC was further interpreted. The finding suggested some priority areas from leadership and managerial points of view. Accordingly, OCC, as contractor must focus on its internal strengths and weaknesses (inward looking) instead of external factors by investing its resources and commitments in the areas of top management support and leadership to engage in project oversight and decision-making project planning, scheduling, monitoring, evaluation, and follow-up and efficient utilization of resources (construction materials and equipment). These are assumed to be the key responsibilities of the corporation. Additionally, the selection and retention of competent and professional consultant have to another critical area of responsibility of the corporation to improve the performance of construction projects. Furthermore, enhancing top management is very important. Strategies that ensure alignment and sustained commitment should be another priority area that OCC should practiced regularly. Furthermore, improving stakeholder involvement has to be considered a critical strategic area while exerting efforts in high quality design processes to strengthen constructability is also an essential focus area. Finally, rather than giving emphasis to isolated single predictors, adaptation of an integrated systems to contractor performance is a key area that the corporation as a contractor should prioritize in the execution of construction projects.

4.12 Hypothesis Testing

This study, initially proposed that contractor, client, consultant, and external environment related factors have a significant effect on the success of construction project. To investigate key factors that determine the success of construction projects at OCC, the hypothesis developed for each of the four categories were tested to evaluate their impact on construction project success.

Table 4.41 Hypothesis Testing for categorical success factors

No.	Categorical Factors	Standardized Coefficient of (β) Value	Sig (P-Value)	Significance Level	Sign of the effect	Impact on Project Success
1	Contractor Related	0.213	0.001	Significant	Positive	Have impact
2	Consultant Related	0.201	0.001	Significant	Positive	Have impact
3	External Related	0.157	0.011	Significant	Positive	Have impact
4	Client Related	-0.119	0.036	Significant	Negative	Have impact

Source: Own Survey 2026

Table 4.41 presented the hypothesis testing of categorical success factors namely contractor related, consultant related, client related, and external environment related factors. The results of the hypothesis testing showed that the all-categorized success factors have been statistically significant at p- value 0.001 and 0.05 level of confidence.

Therefore contractor, consultant, and external related factors have a significant and positive effect on the success of construction projects whereas client related factors have a significant and negative effect on the success of construction projects at OCC.

Chapter Five

Summary of Major Findings, Conclusion, and Recommendations

5.1 Introduction

The main objective of the study was to investigate key factors that determine the success of construction projects at Oromia Construction Corporation (OCC). To achieve the objective the study potential determinants of construction project success from literature were identified and categorized into four main categories namely contractor, client, consultant, and external environment related factors. The data collected from 101 sampled projects of building, water, irrigation, drilling, and transport and infrastructure construction projects totalling 281 valid questionnaires from contractors, clients, consultants and other professionals were analyzed and interpreted using descriptive statistics, SPSS software Version 27, correlation, and multiple regression analysis. Relative Importance Index was also employed for rankings of the success factors. Besides the primary data obtained from questionnaire, secondary data from OCC were also analyzed and interpreted to evaluate how time and cost performance measure the success of construction projects of the corporation under study. Finally, the initially proposed hypotheses were tested to determine whether the results supported the influence of the identified factors on the success of construction project.

5.2 Summary of Major Findings

Among all the 303 distributed questionnaires ,281 were returned and found to be valid showing that the response rate was high. Depending on the number of sample size of project type., majority responses came from building construction 110(39%) followed by drilling construction 89(32%) whereas water, irrigation, and transport and infrastructure construction were found to be 36(13%), 35(12%), and 11(4%) respectively. The evenly distribution of respondents among project managers 92(33%), resident engineers 90(32%), and clients 90(32%) revealed a balanced and representative dataset.

With regard to respondents, background (demographic characteristics), majority 210(75%) of them were found to be predominantly male and majorly ranged within 31 to 40 years of age group suggesting that OCC has a mature and active workforce. Majority 235(84%) were married. Over 278% (99%) were highly educated holding first degrees and above level of qualification that most of them had more than 10 years of working experience. Reflecting OCC's construction project focus, large number of respondents were drawn from building construction sector 110(39%) and drilling construction sector 89(32%) followed by Water construction 36(13%),irrigation construction 35(12%),and transport and infrastructure construction 11(4%) .Professionally, the respondents were fairly balanced across key professional roles namely project managers, 92(33%),

clients 90(32%), and resident engineer(consultants) 90(32%) indicating that construction projects at OCC have been managed by highly skilled and experienced engineers.

The evaluation of preliminary data confirmed that the dataset has been complete and suitable for further analysis. Accordingly, the results showed that there were no missing data, outliers and all standardized values fell within the acceptable ranges of the plus or minus 3.29, and showing a normal data distribution satisfied by Shapiro Wilk test, $P=0.096$ found to be greater than 0.05. Overall, the finding revealed that data were complete, reliable, and satisfied the assumptions needed for advanced statistical analysis

In line with the first specific objective of the study which was examining the effect of contractor-related factors on the success of construction projects in context to Oromia Construction Corporation, the finding indicated that contractor related factor with (grand mean=3.01 and SD= 0.87) moderately affect construction project success at OCC. Among all predictors that constituted the category, project monitoring, planning, and management practices indicated a relatively stronger effect, whereas the financial capability, and effective procurement and tendering procedures have been less effective, suggesting rooms that need improvements to improve construction process success.

Aligning the second specific objective which was to analyze the contribution of client-related aspects to the success of construction projects, the findings showed that client related factor with (grand mean=2.98 and SD= 0.98) moderately influence the success of construction project at OCC. Out of the five components of client related factors suitability of project size and clarity in construction project urgency indicated relatively to have a better influence, while client's inadequate funding and poor management of change orders scored lower rate, showing a critical challenges from client side influencing construction project success.

The third specific objective of this study was to evaluate the effect of consultant-related factors on overall construction project success. When aligned with the specific objective, the finding revealed that consultant related factors (grand mean=2.84, SD=0.91) moderately impact construction project success. Despite respondents' belief that consultants possessed the necessary technical skills, some critical areas such as design completion before construction started, adequacy in design documentation, and consultant support remained relatively weak. However, these imbalances might not necessarily because of lack of professional skills but rather due to failure in project planning, coordination of design, and consultant involvement during implementation of the project. Therefore,

these weaknesses would contribute to delays, time and cost overruns, and coordination problems thereby requiring improvements to enhance project performance.

The fourth specific objective of the study was to examine the impact of external related factors on the success of construction projects of OCC. In line with the objective, the finding showed that external environment factors with a grand mean of 2.39 and standard deviation of 0.87 have a generally negative impact on the construction projects context to the corporation under study. Most components that constituted this category including use of up-to-date technologies and digital systems, stakeholder engagement, political, and economical stability were not sufficiently supportive of high construction project success. However contrary to this finding previous studies indicated that factors related to external environment have been found to significantly determine the success of construction projects. Failing to address these factors primarily leads to higher risks, lower efficiency, and weakened outcomes.

Based on both primary data and secondary data the key findings on time related factors as measures of construction projects at OCC were resented in the following paragraphs. The primary data indicated that project time performance at OCC has been a major challenge for construction projects revealing a low grand mean of 1.99 with standard deviation of 0.78.

The finding further suggested the widespread concerns about poor performance in meeting originally planned timeframe, frequent delays, poor milestone achievement, and ineffective control of delays. The key findings found from the analysis and interpretation of primary data were strongly been supported by the analysis of secondary data across various construction projects indicated that a considerable number of projects were completed beyond their initially time scheduled resulting in substantial time overruns. Accordingly, actual completion time was consistently found to be beyond the planned timeline particularly highest delays in irrigation 11(85%), and transport and infrastructure or roads 4(80%) followed by building construction 21(55%), and drilling construction projects(48%) whereas only few construction projects, mainly that of water construction sector 5(36% delays) indicated a relatively better success in time performance .It could be further inferred that out of 101 sampled construction projects only 45(45%) were completed within the originally planned time schedule while the remaining 56(55%) were unable to adhere to their initially scheduled timeframe. Water construction has been relatively better time effective where as irrigation and transport and infrastructure construction projects have been found to be the least time efficient.

Overall, the findings from both primary and secondary sources were persistent suggesting that time overruns and poor schedule management have been investigated as key challenges that negatively impact the success of construction projects at OCC.

With a lower grand mean of 2.04 and (standard deviation= 0.77), the findings from analyzed questionnaire showed that construction project cost performance has been a critical challenge that undermined the success of construction projects. The findings further revealed that there have been weaknesses in control of costs, documentation of cost overruns, and financial reporting highlighting poor implementation of cost management. In general, the findings from primary data(survey) indicated that the prevailing frequent cost overruns, weak financial control, and ineffective scope changes management would have a significant impact on the success of construction projects in terms cost performance.

The major findings summarized from the analysis and interpretation of questionnaires were strongly been supported by the analysis of secondary data across different construction projects indicating that a significant number of construction projects were completed beyond their originally planned budget(cost) resulting in substantial cost overruns. The study investigated that the cost overruns have been higher particularly 92% projects and 37% average deviation of irrigation construction projects, 100% projects and 27% average deviation of transport(roads) construction, and 63% of projects and 33% average deviation of building construction projects. It was also indicated in drilling construction projects that the cost overruns have been found to be substantial (52% of projects and 47% of average deviation) whereas construction projects with 50% cost overruns a 9% average deviation relatively performed better in cost performance. Furthermore, the findings suggested that actual completion costs exceeded planned costs persistently confirming that cost overruns have been systematic and critical challenges across all sectors of construction projects.

It could be further inferred that among all of 101 sampled construction projects only 38(38%) were completed within the originally planned budget while the remaining 62(62%) were unable to meet to their initially scheduled cost or budget. Water construction has been relatively better cost effective where as irrigation construction projects have been found to be the least cost efficient. In general, the findings from both sources consistently showed inefficient cost control, frequent budget overruns, and poor financial management practices have been investigated as key challenges that negatively influence construction projects success of the corporation under study.

With regard to the third criteria, the finding showed that quality performance as a measurement of construction project success at OCC has relatively been strong with a grand mean of 3.36 with standard deviation of 0.87 suggesting overall agreement that construction projects have met standards of acceptable requirements. Major indicators including material quality, workmanship, defect management, and quality assurance were rated positively though some neutralities that revealed inconsistencies across various construction projects. However, client-satisfaction related dimensions with an (overall mean =3.10) demonstrated a moderate performance with acceptable scores in satisfying expectations and communication of clients, yet noticeable gaps were observed in post-completion support/warranty and overall consistent satisfaction.

Overall comparison of construction project success criteria, confirmed that quality has been the most essential and best performing measurement followed by client satisfaction whereas the rank of time and cost related criteria has been significantly lower. The analysis of RII indicated that material quality, defect control, and quality assurance have been found to be among the top success criteria indicators while meeting budget and schedule were found as the least ranked indicators. Here, very importantly, the finding revealed a new shift from that of traditional time-cost focus concept to a stronger emphasis on client-oriented and quality construction service by the corporation under study.

In rankings of the construction project success factors, the RII analysis demonstrated that contractor related factors with (RII=0.60) have been ranked as the most overall determinants of construction project success where as client related factors (RII=0.59), consultant related factors (RII=0.57), and external environment related factors (RII=0.48) ranked as second, third, and fourth respectively as major factors that determine the success of construction projects at OCC. The finding further suggested that internal management capability particularly contractor performance and management practices played critical role in construction project success.

The results from the correlation analysis of contractor ($r = 0.308$, $p < 0.001$), consultant ($r = 0.334$, $p < 0.000$), and external environment ($r = 0.331$, $p < 0.001$) revealed a moderate relationship with construction project success. However, a client related factor with ($r = -0.230$, $p < 0.001$) resulted in small and negative correlation with the success of construction projects. The correlation coefficient results further demonstrated that all independent variables have statistically significant relationships with construction project success suggesting that improvements in the performance of the contractor,

client engagement, effectiveness of the consultants, and management of external environment have been associated with higher level of project success

The findings from regression analysis also showed that the categorical level the standardized beta (β) coefficients showed that contractor related factors ($\beta=0.213$, $p<0.001$). and have been found to be the most influential determinants of the success of construction projects at OCC followed by consultant related ($\beta=0.201$, $p=0.001$), external environment factors ($\beta=0.157$, $p=0.011$), and client related factors ($\beta=-0.119$, $p=0.036$) all have been found to be statistically significant. The results revealed that success in construction projects has been mainly driven by execution capability, professional experience, and external environment factors and clients' active role in the execution of the project throughout the phases of the project...

5.3 Conclusion

The main objective of the study was to investigate key factors that determine the success of construction projects evidenced from Oromia Construction Corporation (OCC) by categorizing them into four categories namely contractor, client, consultant, and external environment related factors. Based on the findings investigated from the analysis and interpretations of both primary and secondary sources, several key essential conclusions have been reached.

Firstly, the success of construction projects of OCC has not been uniform across various success criteria and construction project types. Despite a relatively strong performance in quality and moderate client satisfaction where most construction projects have met the required standards, both time and cost performance have been found to be considerably weak. Several construction projects were completed beyond their planned time and approved budget suggesting the underlining deficiencies in the practices of planning, scheduling, and financial management. Regardless of the extra time taken and extra cost incurred the strong performance in quality and a moderate client satisfaction suggested a paradigm shift from traditional emphasis on cost and time towards high quality and high perceived client-satisfaction. This further revealed that though OCC possesses the technical capability to provide high quality and client-oriented construction project services, though encountered challenges in managing time and financial resources effectively. With respect to project type, a considerable number of construction projects (more than half) did not meet their initial completion deadlines, resulting in severe delays occurring particularly in irrigation construction and transport infrastructure construction projects, while very few mainly in the water construction sector indicated relatively better time

performance. Therefore, it could be concluded that construction project success would be different across various construction project types. The same held for cost performance where the study investigated that the cost overruns have been higher particularly in transport and irrigation construction projects. The variations in the cost overruns across different construction projects resulted in the variations of project success.

Secondly, from the findings it could be concluded that contractor related factors such as effective planning, continuous monitoring, strong leadership, and solid management practices have been investigated as key determinants of construction project success. Inline with this, the finding emphasized the importance of internal operational capability and managerial efficiency to ensure the execution of successful construction projects.

Thirdly, consultant related factors have also been found to have a significant positive effect on the success of construction projects. Despite the consultants' possession of skills, predictors such as design completeness, documentation quality, and coordination have been identified as areas of weaknesses. These challenges have highlighted the importance of more effective integration of consultancy services across all phases of construction project lifecycle to minimize inefficiencies resulting in delays and cost overruns.

Fourthly, client related factors indicated to have a moderate and negative statistical effect on the construction projects. Inadequate funding through out the project and weak change management suggested that clients (project owners) have still been played a crucial role in shaping construction project results.

Fifthly, external environment related factors have been found to adversely influence the success of construction projects at OCC. Constraints related to the use of up-to-date technologies and digital systems, political, and economical stability were identified as critical challenges suggesting the importance of creating a conducive and enabling external environment to enhance the performance of construction projects. Lastly but not least, very importantly, the finding revealed a new shift from that of traditional time-cost focus concept to a stronger emphasis on client-oriented and quality construction service by the corporation under study. In conclusion based on the results of multiple regression analysis, among all four categorically grouped success factors contractor related factors have been investigated to be key factors that determine the success of construction projects at OCC.

5.4 Recommendations

A set of recommendations have been proposed to enhance the performance and success of construction projects at OCC based on the findings and conclusions of the study.

To start with, it is crucial to improve project planning, and control systems to solve the challenges of time and cost overruns. The corporation has to adopt advanced construction project management practices and methodologies namely techniques of sophisticated scheduling, systems of real time progress monitoring, frameworks of systematic risk management. Moreover, strengthening transparency and accountability measures throughout project execution is important to ensure adherence to the established timelines and plans. Besides, to solve cost related challenges, enhancing effective cost management practices is very essential. Thus, OCC, is expected to implement a comprehensive financial control systems that focus on estimation of accurate cost, consistent monitoring of cost, and thorough documentation of project expenses. To reduce the likelihood of cost overruns, managing changes in construction project scope efficiently should be due attention by the corporation.

Furthermore, improving contractor capabilities has to be emphasized as a strategic area of priority by OCC. Inline with the significant effect of contractor related factors on the success of construction projects, the corporation should invest in targeted capacity building programs, stressing on top management support, project planning, evaluation and monitoring and follow up activities, availing construction materials and equipment which are the most critical in determining the success of construction projects.

The need to enhance consultant performance and integration is equivalently important. Accordingly, the corporation has to confirm that project designs are thoroughly developed and rigorously reviewed before project construction activities begin. Enhancing collaboration consultants and contractors along with ensuring ongoing consultant engagement throughout the project lifecycle will help minimize the risk of issues related to design. Moreover, from clients' side improvements are also needed to support the success of construction projects. OCC clients should be committed to ensure timely budget allocation throughout the project lifecycle and make the necessary payments to the contractor regularly. The corporation should also adopt structured approach to manage scope changes. To minimize potential disruptions during implementation., clearly defining project goals and priorities at the initial stages is very crucial for the success of construction projects.

To solve challenges related to external environments, OCC should implement the adoption of modern construction technologies and digital systems. Coordination with the respective government bodies and other stakeholders is also essential to improve the regulatory and economic conditions within which construction projects are executed. Finally, it is advised that the corporation should establish a comprehensive performance measurement framework that would incorporate key indicators including time, cost, quality, and client satisfaction. While OCC has been showing strong performance in terms of quality, and moderate client satisfaction increased emphasis should be put on improving time and cost efficiency to ensure sustainable construction project success. In summary, a holistic and integrated approach that combines strengthened internal management practices, enhanced professional collaboration, and effective adaptation to external environmental challenges are required to improve the success of construction project at OCC.

5.5 Areas for Further Research

Even though this study has provided significant insights into the success of construction projects as evidenced from OCC, many areas yet need further investigation. In the first place, the study was limited to the four categories namely contractor, clients, consultants, and external environment related factors where 20 indicators are incorporated. The coefficient of determination ($R^2=0.212$) showed that nearly 21.2% of the variation in the construction project success has been explained by the model. This means that there would be still many other factors other than those identified by this study, where the researcher only tested four factors. Although explaining only 21.2% would be meaningful, it suggested that other variables outside the researcher's model could also influence construction project success. Therefore, future studies should broaden this framework by incorporating indicators like organizational culture, innovation capability risk management maturity, and digital technologies such as Building Information Modeling (IBM) to achieve a more comprehensive view. The incorporation of these recently emerging indicators would probably make the understanding of construction project success more comprehensive and holistic.

The study focused on Oromia Construction Corporation (OCC) which is a public enterprise named after four different Oromia Construction enterprises have been merged and formed a corporation. Despite the gaps bridged by this study by looking broadly the project success from various sector perspective instead of single sector which many researchers did earlier. Thus, future research should incorporate comparative analyses across different construction firms, industries, geographical contexts

or regions to enhance external validity and broader applicability of the findings. Despite time delays and cost overruns identified as critical challenges, there are rooms still for their underlying causes which were not thoroughly analyzed. Future research should emphasize on investigating these root causes and developing mitigation strategies employing advanced analytical tools. In conclusion further exploring these areas would improve the overall awareness of the success of construction projects and contribute to more informed and effective decision-making in the modern project management.

REFERENCES

- Abdurezak et.al. (2019). Causes of Delay in Public Building Construction Projects: A Case of Addis Ababa Administration ,Ethiopia. *Asian Journal of Managerial Science*.
- Ahmed. (2017). Analyzing the Project Management Body of Knowledge (PMBOK) Through Theoretical Lenses: A Study to Enhance the PMBOK through. *PM World Journal*, 1-31.
- Akiner, B. G. (2025). Investigating Key Factors influencing the Success of Construction Projects at International Level. *Discover Civil Engineering*.
- Akintoye et.al. (2024). A Review of Importance of Construction Documents on Project Deliver. *INTERNATIONAL JOURNAL OF LATEST TECHNOLOGY IN ENGINEERING, MANAGEMENT & APPLIED SCIENCE (IJLTEMAS)*, 28-38.
- Akner, B. K. (2025). Investigating Key Factors influencing the Success of Construction Projects at International Level. *Discover Civil Engineering*.
- al, T. e. (2016). Critical Success Factors for the Construction Industry. *PM World Journal*.
- Alafeef. (2025). CRITICAL SUCCESS FACTORS FOR SUCCESSFUL CONSTRUCTION. *Journal of Life Style and SDG's Review*.
- Albtoush et.al. (2022). Critical Success Factors of Construction Projects in Jordan : An empirical Investigation. *Asian Journal of Civil Engineering*.
- Babu. (2015). Factors affecting Success of Construction Projects. *Journal of Mechanical and Civil Engineering*, 17.
- Babu. (2015). Factors affecting the success of Construction Projects. *Journal of Mechanical and Civil Engineering*, 17-26.
- Babu, N. J. (2015). Factors Affecting Success of Construction Project. *IOSR Journal of Mechanical and Civil Engineering (IOSR-JMCE)*.
- Babu, N. J. (2015). Factors Affecting Success of Construction Projects. *Journal of Mechanical and Civil Engineering*.
- Bezu, B. B. (2021). Assessment of the critical success factors in the case of selected building construction projects.

- Biniyam. (2021). Assessment of the Critical Success Factors in the Case of Selected Building Construction Projects in Hawassa. *Addis Ababa University Thesis*.
- Blackwell, W. (2023). *Research Methodology and Strategy*. Hoboken: John Wiley and Sons, Inc.
- Chan and Scott. (2004). Exploring Critical Success Factors for Partnering in Construction Projects. *Journal of Construction Engineering and Management*, 188-198.
- Chepchiong & Siringi. (2019). Leadership style, organizational structure, stakeholder engagement and performance of donor-funded health projects. *International Academic Journal of Information Sciences and Project Management*, 38-51.
- Cleland, D. I. (1986). Project stakeholder management. *Project Management Journal*, 17(4), 36–44.
- Freeman, R. E. (1984). *Strategic Management: A Stakeholder Approach*. Boston, MA: Pitman.
- Freder AA, M. M. (2018). Overview Success Criteria and Critical Success Factors in Project. *Industrial Engineering & Management*.
- Gujarati, D. N. (2003). *BASIC ECONOMETRICS*. United States Military Academy, West Point: McGraw-Hill Higher Education.
- Hayat, M. (2023). Determinant Factors of Construction Project Success. The case of Federal Housing Corporation Building Project.
- Igbokwe et.al. (2025). Developing stakeholder collaboration and communication to enhance project. *Journal of Commerce Management and Tourism Studies*, 72-83.
- Isaiah Gichohi Mwangi and Dr. Johnbosco Mutuku Kisimbi. (2020). Critical Success Factors Influencing the Performance of infrastructure Projects in The Aviation Industry in Kenya. *Journal of Entrepreneurship and Project Management*, 93-113.
- J. Durbin and G. S. Watson. (1950). Testing for Serial Correlation in Least Squares Regression: I. *Biometrika, Oxford University Press*, 409-428.
- L. Bannerman, P. (2014). Defining Project Success : A Mult-Level Framework. *NICTA Australian Technology Park, Sydney*.
- Larson and Gray. (2018). *Project Management : The managerial Process 7E*. New York: MacGraw-Hill Education.

- Malikov, A. (2023). Critical Success Factors in Construction Projects and Measuring Project Success. *European Journal of Economics and Management Sciences* .
- Mamaru. (2016). Investigating Major Success Factors in Building. *Jimma University*.
- Manambedu. (2025). Strategic Evolution of Project Management Theoretical Perspective on trends Shaping the next decade. *Journal of Business and Management Studies*.
- Mohammed and Nasamu. (2025). Effect of Stakeholder Engagement Strategies on the Timely Completion of Construction Projects in North-Central Nigeria,a conceptual and theoretical perspectives,Nile University of Nigeria, Abuja. *Pakistan Journal of Life and Social Sciences*, 7595-7607.
- Murat and Mohammed. (2020). Critical Success Factors for Sustainable Construction Project Management. *Sustainability*.
- N.A.J.N. Srimal, Vijitha Disaratna and P. Ganeshu*. (2018). IMPACT OF INEFFECTIVE TENDERING PROCESSES ON CONSTRUCTION PROJECTS. *The 7th World Construction Symposium 2018: Built Asset Sustainability: Rethinking Design, Construction and Operations*, 298-303.
- Oppong, G. D., Chan, A. P. C., & Dansoh, A. (2017). A review of stakeholder management performance attributes in construction projects. *International Journal of Project Management*, 35(6), 1037–1051.
- Pinto et.al. (2022). Coming to terms with project success: Current perspectives and future challenges. *International Journal of Project Management* , 831-834.
- Pirotti. (2020). Effective Factors on Project Success in Malaysian Construction Industry. *Journal of Engineering, Project and Production Management*.
- PMBOK. (2017). *A Guide to the Project Management Body of Knowledge*. Chicago, IL 60610 USA: Project Management Institute, Inc.
- PMII. (2017). Project Management Institute. *PMI*, 715-716.
- Probhat Pandey and Meenu Mishra Pandey. (2015). *Research Methodology and Techniques*. Romania: Bridge Center.

- Ralf Müller, Kam Jugdev. (2025). Critical success factors in projects: Pinto, Slevin, and Prescott - the elucidation of project success. *International Journal of Managing Projects in Business, Emerald*.
- Ramadhan. (2025). Impact of Change Orders on Cost Overruns and. *Engineering, Technology & Applied Science Research*, 20291-20299.
- Ramgy et.al. (2024). Exploring causes of ineffective material management and impact on successful project deliverables in civil engineering construction projects in Sri Lanka. *Construction Innovation: Information Process Management* , 22-43.
- Ramlee N. et.al. (2023). Critical success factors for construction project. *AIP PUBLISHING*, 2.
- Rehan et.al. (2025). An Empirical Study on Project Managers' Leadership Behavioral Practices Impacting Project Success ,The Australian Construction Sector. *International Journal of Construction Education and Research*,.
- Richardson and Jackson. (2019). *Project Management Theory and Practice*. Taylor and Francis Group ,LL,p11.
- Samuel. (2020). Factors Affecting the Performance of Public Construction Projects: The Case of Addis Ababa Roads and Condominium Projects. *Addis Ababa University*.
- Shapiro; M. B. Wilk. (2007). An Analysis of Variance Test for Normality (Complete Samples). *JSTOR-Journal Storage*, 591-611.
- Srimal et.al. (2018). IMPACT OF INEFFECTIVE TENDERING PROCESSES ON CONSTRUCTION. *The 7th World Construction Symposium 2018: Built Asset Sustainability: Rethinking Design, Construction and Operations*, 298-303.
- T.B.Venczel et.al. (2021). Project Management Success Factors. *Journal of Physics*:, 1-10.
- Tewodros. (2023). CONSTRUCTION PROJECT MANAGEMENT PRACTICE IN ETHIOPIA:THE CASE OF ETHIOPIAN FEDERAL ROAD CONSTRUCTION PROJECTS. *AA*.
- Tilahun. (2020). Assessment of factors affecting effective performance of construction projects in the case of projects of Ethiopian Construction Works Corporation. *Addis Ababa University*.
- Venczel et.al. (2021). Project Management Success Factors. *Journal of Physics*, 3.

- Viktorya and Leila. (2019). Critical Success Factors in Project Management : A comprehensive Review. *PM World Journal*, 2-3.
- Vishrut Tamgadge, D. K. (2018). Analysis of Critical Success Factors for Construction Projects. *International Research Journal of Engineering and Technology (IRJET)* .
- Werku et.al. (2018). Investigating Causes Construction Delay Ethiopian Construction Industries. *Journal of Construction Engineering and Management*.
- Yenealem. (2020). Determinants of Infrastructure Projects Delay and Cost Escalation : The Case of Federal Roads and Railway Construction Projects in Ethiopia. *American Scientific Research Journal for Engineering, Technology, and Science (ASRJETS)*.
- Yerosan. (2021). Challenges on Successful Completion and Delivery of Public Building Construction Projects: The Case of West Shoa Zone, Oromia, Ethiopia. *INDIAN JOURNAL OF SCIENCE AND TECHNOLOGY*.
- Zakari Tsiga, M. E. (2016). Critical Success Factors for the Construction Industry. *PM World Journal* .

Appendix 1

QUESTIONNAIRE

ADDIS ABABA UNIVERSITY

College of Business and Economics

Department of Management

MBA (Management)

A Questioner designed for respondents for Investigating Key Factors that determine the Success of Construction Projects. Evidence from Oromia Construction Corporation (OCC).

Dear Respected Respondents,

My name is Temam Mame, and I am conducting a thesis on *Factors that Determine the Success of Construction Projects*. ” The information you provide will be used exclusively for research purposes and will be treated with strict confidentiality at all stages.

Given your experience in project management and related activities, your participation in this survey is highly valuable and will significantly enhance the accuracy and relevance of the research findings. I kindly request that you provide honest and thoughtful responses, as the quality of this study depends entirely on your candid opinions. Please consider each statement carefully before providing your evaluation.

Should you have any questions or require further clarification, please feel free to contact me at your convenience via telephone at +251912363229 or +251931267072.

Instruction: -No need to mention your name

Part I: Demographic data/ Respondent Profile/

Please put tick mark (✓) on your choice(s)

1. Please indicate your gender: Male ☐ Female ☐
2. Age of respondents (year) 22 -30 ☐ 31_40 ☐ 41-49 ☐ 50 and above ☐
3. Level of education: Certificate ☐ Diploma ☐ BA/BSC ☐ MA/MSc/ ☐
4. Work Experience: Less than 5 years ☐ 6—10 years ☐ 11—15 yrs ☐ Above 15yrs ☐

5. Your area of experience A) more of building B) more of water sector C) Irrigation d) drilling e) Transport and Infrastructure (Road) f) Design works g) others (please specify if any) -----
6. Would you specify the project currently you worked on -----?
7. Occupational level
- Project manager ☐
 - Resident Engineer ☐
 - Counter-part Engineer ☐
 - Other (please specify) _____

9. Organization

- Oromia Construction Corporation/contractor/
- Consultant (Resident Engineer)
- Client
- Others

Part-II: Project Performance Status:

A) Project Time Performance

No.	Project Name	Scheduled Completion Time (days)	Actual Completion Time (days)
1.			
2.			
3			

B) Project Cost Performance

No.	Project Name	Budgeted Cost to Date (Birr)	Actual Cost to Date (Birr)
1.			
2.			
3			

C) Project Quality Performance

No.	Project Name	Estimated discrepancy in meeting project specifications (%)
1.		
2.		
3		

Part-III: Investigating Key Factors that determine the success of construction projects:

Instructions:

The factors listed below have been identified from a review of the literature as potential determinants of construction project success. Based on your professional experience, please indicate the extent to which you believe each factor influences the success of construction projects undertaken by Oromia Construction Corporation (OCC).

Please put a tick (✓) mark parallel to a number from 1 to 5 using the scale below.

1 = strongly disagree

2 = disagree

3 = neutral

4 = agree

5 = strongly agree

NO	Factors	Degree of Rank				
A	Independent Variables					
1.	Factors Related to Contractors	1.	2.	3.	4.	5
1.1.	The contractor implements effective project management practices and leadership.					
1.2	Top management provides adequate support and demonstrates good leadership.					
1.3	Procurement and tendering processes are conducted effectively.					
1.4	The contractor carries out regular project monitoring, evaluation, and follow-up.					
1.5	The contractor has strong financial capacity and ensures timely cash availability.					
1.6.	Construction materials and equipment (Resources) are available.					
1.7	The contractor performs extensive project planning, scheduling, and control activities.					

2.	Factors Related to Clients	1.	2.	3.	4.	5
2.1	The project size and characteristics are appropriate and manageable for successful delivery.					
2.2	The client provides adequate funding throughout the project.					
2.3	The urgency of project completion is clearly communicated and reasonable.					
2.4.	The client has sufficient experience in construction project organization and management.					
2.5.	Change orders from the client are minimized and well-managed.					
3.	Factors Related to Consultants	1.	2.	3.	4.	5
3.1	The consultant is committed to ensuring the proper execution of construction works.					
3.2	The project design is completed before the start of construction.					
3.3	The project consultant provides adequate support and demonstrates sufficient competence.					
3.4	The design offers sufficient detail and specifications to ensure constructability and manage project complexity.					
3.5	Designers and consultants possess the necessary skills and capabilities.					
4	Factors Related to External Environment	1.	2.	3.	4.	5
4.1	Up-to-date construction technologies and digital systems are available and used effectively.					
4.2.	All stakeholders show strong commitment to the project.					
4.3	A formal dispute and conflict resolution process exists and is effectively applied.					
4.4	Currency price consistency and national economic stability support project success.					
4.5	The country's economic and political environment is stable					
B	Dependent Variable					
	Project Success					
5.	Factors Related to Time	1.	2.	3.	4.	5
5.1	The project was completed within the originally planned schedule.					
5.2	Major project milestones were met on time.					
5.3	Delay occurrences (if any) were minor and controlled.					
5.4	The contractor adhered to the agreed construction program.					

6.	Factors Related to Cost	1.	2.	3.	4.	5
6.1	The final project cost was within the approved budget.					
6.2	Cost overruns were promptly justified and documented.					
6.3	Financial control and reporting have been adequate throughout the project					
6.4	Changes in scope have been managed without significant extra cost.					
7.	Factors Related to Quality	1.	2.	3	4.	5
7.1	The finished work has met the technical specifications.					
7.2	Material quality has met the required standards.					
7.3	The level of workmanship has been satisfactory.					
7.4	Defects have been minimal and have been fixed promptly.					
7.5	Quality assurance and inspection procedures have been effective.					
8.	Client Satisfaction	1.	2.	3.	4.	5
8.1	The client is satisfied with the overall project outcome.					
8.2	The client's expectations have been met or exceeded.					
8.4	Communication with the client has been timely and effective.					
8.5	The client is satisfied with post-completion support/warranty.					

Annex 2. Names of Projects in Each Sector

I . Building Construction Sector

1. Sire Gudo construction
2. Huruta Hospital
3. Cafeteria Expansion for Caffee Oromia
4. Renovation of Oromia Road and Logistics Bureue
5. Mata Qoma Hara Health Center
6. Chiro Hospital Expansion Project
7. Comprehensive health post project at shaggar city.
8. Laga Tafo G+4 Police office building
9. Sululta INSA-PKI Project
10. Renovation of Oromia Transport Agency Office Building (
11. Renovation for Vice President office
12. Renovation of ministry of Revenue Office
13. Sabata Health Center
14. Expansion of Oromia Police Comision @ 6 kilo
- 15 Bishoftu Hospital
- 16 Sululta Town Mini Stadium
- 17 Dukem Hospital Store Building
- 18 Dukem City Administration Office
- 19 Dawuro Assembly Hall
20. OSU 3rd Phase
21. Oro-Fresh Project (OF)
22. Construction of Revenue Office B+G+6 Building @ Adama
23. Construction of Revenue Office B+G+6 Building @ Hawasa
24. Kella Jima (Chat Customs)
25. Nekemt Industry Park
26. Renovation of Oromia Public Service and Human Resource Development Bureau
27. Bordodde Chat Terminal project
28. Café Cafeteria Fence, guard house, & gate
29. Sebata City Administration Office
30. Renovation works of 3 Houses and Fence works
31. Oromia Development Displacement Community Agency Office Building
32. The Renovation works of Oromia Health Bureau Head Office
33. Oromia Police Commission Head Quarter
34. Renovation Works of Prosperity Party 2nd Phase
35. Construction of Chiro Seed Quality Control lab.
36. Bishan Guracha-G+4 building

37. Construction of House of Federation
Office Building

38. Hariro Hospitala

II. Water Supply Construction Projects

39. Eldama Supply & Installation Works

40. Lome Anchebo SSIP (sublet)

41. Dodola Town WSP

42. Meyu WSP

43. Aweday WSP

44. Galchat Multi Village

45. Gelchet Transportation work

46. Bedesa EM Works

47. African leadership WSP

48. Lalo Kile WSP

49. Yayo Town WSP

50. Dembi-Dolo WSP

51. Bordode WSP

52. Agaro Town water supply Project Pipe &
Fitting Transportation.

III. Irrigation Construction Projects

53. Walinchiti Boffa Expansion

54. Guder Faxo IP

55. Shamo Gatore SSIP

56. Gololcha Dam

57. Calcal Irrigation

58. Irba Giristu

59. Awash Bishole Ware house

60. Fantallee(Metahara) camp

61. Fedis Midhaga Tola

62. Welmel Irrigation

63. Keta Dibe Dam

64. Lome Anchebo SSIP

65. Wando SSI

VI. Drilling Construction Projects

66. Mi'o Gasera BH #4=400m

67. Melka Oda #2

68. Bedessa BH

69. Metu University Bedele Campus BH#2

70. Shipping & Logistic Service Enterprise

71. Addis Ababa City Bus Service Enterprise

72. Cheffe 13 Well #1

73. Dedu Town BH #2-200

74. Geda City Park # 7, 500m

75. Daro Lebu BH #2(350)

76. Daro Lebu BH #3(350)

77. Stewa Kenisa

78. Harjarte BH 3

- | | |
|---|--|
| 79. Ajambaa BH | 99. Qobboo.D.-Golaqooxii |
| 80. Gamada (Sub Contract) | 100. Gelan Arabsa -Kura Jida DB Road Project |
| 81. Cheri BH-400 | 101. Metu Bypass |
| 82. Ilu #4 | |
| 83. Ejere #8 | |
| 84. Walmera #6 | |
| 85. Walmera #7 | |
| 86. Chaffe 13 BH#2 pumping Test works | |
| 87. Well Rehabilitation & Pumping of Hajamba BH | |
| 88. Well Rehabilitation & Pumping Test of Bishoftu Automotive | |
| 89. Benna-1 | |
| 90. Bishoftu Town-1 | |
| 91. Abomsa | |
| 92. Waltane (Mud) | |
| 93. Bantu BH #2 Pumpint Test | |
| 94. Silxee Zone BH-2= 350m | |
| 95. Arsi Nagale Shall Siraro BH #5 -350 | |
| 96. Oromia Police Commission Water wel | |
| VI. Transport and Infrastructure Projects | |
| 97. Ambo Bus Terminal | |
| 98. AAWSA | |