

***FACTORS AFFECTING PERFORMANCE OF CONSTRUCTION
PROJECTS: A STUDY OF HEALTH CARE CONSTRUCTION
PROJECTS IN JIMMA ZONE, OROMIA, ETIOPIA***

***A Thesis Submitted to the School of Graduate Studies of Jimma University in
Partial Fulfilment of the Requirements for the Award of Master of Art in Project
Management & Finance***

***By:
Esmael Suleyman***



**JIMMA UNIVERSITY
COLLEGE OF BUSINESS & ECONOMICS
DEPARTMENT OF ACCOUNTING & FINANCE**

**OCTOBER, 2023
JIMMA, ETHIOPIA**

***FACTORS AFFECTING PERFORMANCE OF CONSTRUCTION
PROJECTS: A STUDY IN HEALTH CARE CONSTRUCTION
PROJECTS IN JIMMA ZONE, OROMIA, ETHIOPIA***

By:

Esmael Suleyman

Under the Guidance of

Main Advisor Dr Tezera Selamu (PhD)

&

Co-Advisor Haymanot Alemayew (Msc)



**JIMMA UNIVERSITY
COLLEGE OF BUSINESS & ECONOMICS
DEPARTMENT OF ACCOUNTING & FINANCE**

**OCTOBER, 2023
JIMMA, ETHIOPIA**

DECLARATION

I hereby declare that this research project work entitled “Factors Affecting Performance of Construction Projects: A Study of Health Care Construction Projects in Jimma Zone, Oromia” is my own research and it has not been submitted before anywhere for the award of any degree or diploma to any university or institution. Any information used from other works has been acknowledged.

Researcher’s Name

Date

Signature

Esmael Suleyman

CERTIFICATE

This is to certify that Esmael Suleyman has carried out this research project work intitled “Factors Affecting Performance of Construction Projects: A Study of Health Care Construction Projects in Jimma Zone, Oromia, under our supervision.

<i>Main Adviser’s Name</i>	<i>Date</i>	<i>Signature</i>
<i>Dr Tezera Selamu (PhD).</i>
<i>Co-Advisor’s Name</i>	<i>Date</i>	<i>Signature</i>
<i>Haymanot Alemayehu (MSc).</i>	-----	-----
<i>Internal Examiner</i>	<i>Date</i>	<i>Signature</i>
<i>Mr Abiy Getahun (Ass. Prof.)</i>	-----	-----

ACKNOWLEDGEMENTS

First, I would like to thank Jimma University, College of Business and Economics Department of Accounting for granting me the opportunity to further my studies. I would like to express my special thanks to my Advisor Dr. Tezera Selamu and Co-advisor Haymanot Alemayew for their constructive comments and support during the study of this research. Last but not least; I would like to thank Jimma zone health office and Consultants for their cooperation and contribution for the study of this research.

ABSTRACT

The construction industry in Ethiopia is characterized by its complexity due to various internal and external factors. This study aimed to identify factors that affect the performance of healthcare construction projects in the Jimma zone, Ethiopia, focusing on the most common performance issues and their impact on project performance. Data was collected from 55 professionals, including clients, consultants, project managers, contractors, and site engineers. The collected data was analysed using SPSS version 25 using descriptive statistics and the relative importance index (RII) to rate respondents' perceptions of major factors and performance issues towards project performance. The correlation between independent and dependent variables was also explained using binary logistic regression analysis. The research focused on 52 performance areas, grouped under eight broad key factors: cost, time, quality, productivity, client satisfaction, health and safety, regulatory and community satisfaction, and innovation and learning. The top performance areas were identified as having the greatest impact on project performance based on their relative importance index (RII) rank, with material and equipment cost having the highest RII score. Other factors included project labour cost, cash flow, overtime cost, quality of materials and equipment, decision-making speed, financial constraints, failure review and resolution, and leadership skills of project managers respectively. The study found a strong relationship between project success and time, productivity, client satisfaction, health and safety, and innovation and learning factors. These insights can provide guidance for project managers, stakeholders, and decision-makers across the construction industries and ultimately enhancing project success rates.

Key ward- *Factors affecting, Healthcare, Construction project, Jimma zone.*

Table of Contents

DECLARATION	i
CERTIFICATE	ii
ACKNOWLEDGEMENTS	iii
ABSTRACT	iv
Table of Contents	v
LIST OF TABLES AND FIGURES	vii
List of Tables	vii
List of Figures	vii
ACRONYMS/ABBREVIATIONS	viii
CHAPTER ONE: INTRODUCTION	1
1.1. Background of the Study	1
1.2. Statement of the Problem	3
1.3. Research Questions	4
1.4. Objective of the study	4
1.4.1. General objective	4
1.4.2. Specific objective	4
1.5. Significance of the Study	4
1.6. The Scope of the study	4
1.7. Limitations of the Study	5
1.8. Organization of the paper	5
CHAPTER TWO: REVIEW OF RELATED LITERATURES	6
2.1. Theoretical Review	6
2.1.1. The Theory of Performance	6
2.1.2. Construction Projects Performance	7
2.1.3. Theories Performance Measurement	7
2.2. Project Performance Measurement	8
2.2.1. Performance measurement of Construction projects	8
2.3. Factors Affecting Performance of Construction Projects	9
2.4. Key Performance Indicators in Construction Projects	11
2.4.1. Effect of Organizational Culture on Project Performance	12
2.5. Empirical Review	12
2.5. Conceptual Framework	16
CHAPTER THREE: RESEARCH DESIGN AND METHODOLOGY	18
3.1. Research approach	18
3.2. Research Design	18
3.3. Target Population	19
3.4. Sampling Techniques and Sample Size	19
3.5. Source of Data and Method of data collection	20
3.5.1. Data Source:	20
3.5.2. Data Collection Method:	20
3.6. Data Analysis	20
3.7. Definition of Terms	21
3.8. Ethical consideration	22

CHAPTER FOUR: RESULT AND DISCUSSION.....	23
4.1. Result	23
4.1.1. Reliability and validity testing	24
4.1.2. Socio-demographic characteristics	24
4.1.3. Factors affecting Performance of construction project	26
4.1.4. Relative importance index	34
4.1.5. Relative importance & rank of factors affecting performance of construction project.....	38
4.1.6. Relative importance and rank of top ten significant performance areas of construction.	39
4.1.7. Project success and predictive variables /Bivariate Model/ analysis	40
4.1.8. Multi variable logistic regression model.....	41
4.2. Discussion.....	42
CHAPTER FIVE: CONCLUSION AND RECOMENDATION	45
5.1. Conclusion	45
5.2. Recommendation	46
5.2.1. For Government Bodies and Owners:.....	46
5.2.2. For Consultant and Project managers:	46
5.2.3. For Contractor, and site Engineers:	46
5.2.4. Overall Project Management:	46
5.3. Further research directions.....	47
REFERENCES	48
APPENDIXES	53

LIST OF TABLES AND FIGURES

List of Tables

Table 1. Groups of Factors Affecting the Performance of Construction Projects 39.....	Error!
Bookmark not defined.	
Table 2. Target population.....	19
Table 3. Response rate the respondents	23
Table 4. Reliability (Cronbach’s alpha) test.....	24
Table 5. Demographic Characteristics of Respondents	24
Table 6. Respondents’ perception toward Performance Factors of construction Project.....	26
Table 7. Respondents perception toward cost factors of construction project.....	27
Table 8. Respondents perception toward time factors of construction project	29
Table 9. Respondents perception toward quality factors of construction project	30
Table 10. Respondents’ perception toward productivity factors of construction project.....	31
Table 11. Respondents Perception Towards Client Satisfaction Factors of Construction Project.	31
Table 12. Respondents Perception Toward Regulatory and Community Satisfaction Factors.....	32
Table 13. Respondents Perception Toward Health and Safety Factors of Construction Project ...	32
Table 14. Respondents’ Perception Toward Time Factors of Construction Project.....	33
Table 15. Relative Importance Index and Rank for Performance Areas Affecting Construction Projects.....	37
Table 16. Relative Importance and Rank of Major Factors Affecting Construction Project	39
Table 17. Top ten significant factors affecting the Performance of construction projects in Jimma Zone Health care construction project	40
Table 18. <i>Bivariate Model for Factors Affecting Project Success.</i>	41
Table 19. Multi Variable Logistic Regression Model	42

List of Figures

Figure 1. Conceptual Framework	Error! Bookmark not defined.
Figure 2. type of institution.....	25
Figure 3. responsibility of respondent	26

ACRONYMS/ABBREVIATIONS

GDP - Gross Domestic Product

IERC – Institutional Ethical Review Committee

KPI – Key Performance Indicator

LR – Logistics Regression

OR – Operating Room

PMI - Project Management Institute

RII - Relative Importance Index

ULG - Urban Local Government

ULGDP - Urban Local Government Development Project

CHAPTER ONE: INTRODUCTION

1.1. Background of the Study

Many definitions for a project can be found in the literature. A well-known definition of the project is that Project Management Institute (PMI) had presented in the Project Management Body of Knowledge guide (PMBOK Guide), and it stated that a project is “a temporary endeavour undertaken to create a unique product or service.” (PMI, 2017), (Turner & Müller, 2003)

Construction industry is a sector of the economy that transforms various resources into constructed physical economy and social infrastructure necessary for socio-economic development.(MUDC, 2016). The construction industry influences an economy’s gross domestic product (GDP) more than any other industries (Irani et al., 2004)

According to Ethiopian construction industry, construction has important contributions to the Ethiopian economy, as demonstrated by its share in the GDP. The share of construction industry subsector in GDP increased from 4 percent in 2009/10 to 8.5 percent by 2014/15. This showed that during the last five years (2010/11-2014/15), the construction sector has been the major driver both in terms of growth and structural change within the industry sector (MUDC, 2016).

Journal written by (Windapo & Cattell, 2013) indicated the construction industry plays a very dominant role in the socio-economic development of any nation. It is considered as one of the best ways of eliminating poverty, especially for developing countries such as Ethiopia. The construction in Ethiopia has become the most vigorous section to development and plays a critical role in decreasing the unemployment rate. Even though the industry plays an important role in country development, there are several problems while trying to improve its performance. These are due to the nature of the work, such as high fragmentation, instability, low productivity, poor quality control, and lack of standards (Soewin & Chinda, 2018).

Past, study works by (Akawak Endale, 2020), (Saraf, 2013) have shown the factors that contribute to construction performance, for example, contractual workers capacity, cost increment, quality, project the management system, the executives capacity, improper planning, improper designing, site supervision, construction techniques, lack of worker and specialized staff, quality and inadequacy of materials, construction botches and substandard work, efficiency, successful correspondences between building, expert, construction, and project management teams, and give support the project manager, increment in material cost, insufficient supply of human resource, inaccurate scheduling, incorrect estimation, and poor monitory control on the work area and so forth are among the elements that influences project performance in construction areas.

Studies show that there are many factors that contribute to the success or failure of construction projects. These factors can be broadly categorized into three areas: project-related factors, organization-related factors, and environment-related factors. Project-related factors include issues such as project scope, cost, and quality. Organization-related factors include management practices, project planning, and communication. Environment-related factors include regulatory requirements, political stability, and economic conditions.

In the healthcare sector, construction projects have an additional challenge, such as the need to maintain high levels of patient safety and infection control. Therefore, identifying the factors that contribute to the success or failure of healthcare construction projects is particularly important. This can help stakeholders in the construction industry to enhance their project management practices, improve project outcomes & ultimately provide better healthcare facilities for the community in need. The Jimma Zone in Oromia Regional State, Ethiopia, is an area where healthcare infrastructure development has been a priority in recent years. However, to the best of my knowledge there is no study done related to factors affecting performance of healthcare construction projects. Therefore, this study aims to fill the gap by identifying the factors that contribute to the success or failure of healthcare construction projects in Jimma Zone, Oromia Regional State, Ethiopia.

1.2. Statement of the Problem

Construction projects in Ethiopia suffer from many problems and complex issues in performance as far as being one part of developing country. Different studies have been conducted to assess and evaluate the efficiency of construction project performance in Ethiopia. Performance of construction projects are the main source of concern for clients, contractors, consultants and end-users. (Temam, 2018) examined the various types of factors which have a significant negative impact on the performance of both local and international contractors on Ethiopian building projects. As cited in by (Tebeje Zewdu, 2016), many projects in developing countries were encounter considerable time and cost overruns, fail to realized intended benefit or even totally terminated and abandoned before or after their completion. Moreover, the development of the construction industry in developing countries generally lags far behind from other industries in those countries and their counter parts in developing nations. Even though the construction industry plays an essential role in socio-economic development of all countries, in Ethiopia, the present state of the construction industry didn't meet domestic & international quality standards and performance demand expected from the sector (Gomero et al., 2022). Because Construction projects comprise processes starting from initiation to completion; it passes several activities in each significant stage to accomplish the project objective and will confront with different bottlenecks identified (Taber, 2018), (Azeb, 2016). According to (Tilahun Deneke, 2020) most of construction projects in Ethiopia are characterized by time delay, cost overrun and poor-quality construction due to poor performance of the contractor and weak stakeholder commitment.

Despite the increasing number and complexity of construction projects in Ethiopia, completing projects within allocated costs, timelines, and quality standards remains difficult. Therefore, identifying the factors that affect project performance and understanding the key performance indicators in health care construction projects in Jimma Zone, Oromia Regional State, Ethiopia, is crucial for addressing performance-related problems in the construction industry. The researcher has been reviewed many other studies that were conducted on Ethiopia context; (Berhanu, 2018), (Fetene, 2008), (Tadesse, 2009), (Dixit, 2020), (Tilahun Deneke, 2020), (ELIAS, 2020) and others but as to the best knowledge of the reasecher, none of them were not assess health care related construction that can affect its performance. Hence, this study was identified performance factors affecting health care construction projects under Jimma zone health care construction project. This study will fill the gap of present knowledge by examining the key factors that affect construction performance and test how they will correlate with overall performance of construction projects.

1.3. Research Questions

Consequently, the study will address the following basic research questions.

1. What are the main factors that influence the performance of health care construction projects?
2. What are the most common performance issues that arise in health care construction projects?
3. Is there a significant relationship between the factors identified as having the greatest impact on construction project performance and the overall performance of the project?

1.4. Objective of the study

1.4.1. General objective

The main objective of this study is to examine the factors that affects the performance of construction projects specifically in the context of health care construction of Jimma Zone.

1.4.2. Specific objective

- ✓ To identify critical factors affecting project performance in health care construction based on various objectives.
- ✓ To pinpoint the main performance issues affecting health care construction projects.
- ✓ To determine the relationship between key factors influencing performance in health care construction projects.

1.5. Significance of the Study

The findings of this study will provide sufficient information about factors affecting construction project performance;

First, this study can make valuable contributions to the construction industry by providing insights and guidelines to stakeholders and policymakers on enhancing the performance of health care construction projects.

Second, it fills a research gap in construction projects of rural areas of health care facilities.

Lastly, the finding will have practical implications for the construction industry and policymakers, not only in Jimma but also in other areas facing similar challenges.

1.6. The Scope of the study

This study was conducted to describe major factors affecting health care construction project performance of Jimma Zone, Oromia regional state, Ethiopia, which are under construction in last 5 years (2011 to 2015 EC). It constitutes 52 performance areas grouped under eight key factors affecting project performance namely; Cost, Time, Quality, Productivity, Client satisfaction, Health and safety, Regulatory and Community satisfaction, and Innovation and learning.

1.7. Limitations of the Study

The objective this study was to identify factors that affects the performance of construction projects specifically in the context of health care construction of Jimma Zone. Even though there are various construction projects in the zone, this study was limited to health care construction projects. Hence, it may not be directly applicable to other non-health care construction. Another limitation of this study was use of only quantitative study approach and primary data. Therefore, it may not have deeper understanding of experience, phenomenon and context.

1.8. Organization of the paper

This study was organized in five consequential chapters. Chapter 1 introduces the study by presenting the background and highlighting the specific problem being addressed. The objectives of the study are also outlined, along with the scope and limitations of the research. Chapter 2 conducts a thorough review of relevant literature, exploring previous studies on factors influencing the performance of construction projects. Chapter 3 details the research methodology, including the cross-sectional design and quantitative approach used for data collection and analysis. The chapter also explains the development of a survey instrument to gather information from individuals directly involved in health care construction projects. Chapter 4 Findings and analysis, summarizing the critical factors impacting project performance, particularly in terms of cost, time, quality, productivity, client satisfaction, health and safety, regulatory and community satisfaction, and innovation and learning. The implications of the findings will be discussed in relation to the research objectives. Chapter 5 Summary of the key findings and recommendations for the improvement of the performance of health care construction projects in Jimma Zone.

CHAPTER TWO: REVIEW OF RELATED LITERATURES

This chapter presents a literature review of the research work that was done by various scholars in the field of performance of construction project. This includes theoretical review, conceptual frame work and empirical reviews.

2.1. Theoretical Review

2.1.1. The Theory of Performance

Performance is a multi-dimensional concept as defined by different authors. Task performance is an individual's proficiency with which he or she performs a specific activity which contribute to the organization's 'technical core'. This contribution can be both direct (e.g., the case of production workers), or indirect (e.g., the case of managers or any office personnel). Contextual performance refers to activities which are not relating to the technical core but which support the organizational, social and psychological environment in which organizational goals pursued. Contextual performance includes behaviours such as helping co-workers or being a reliable member of the organization and making suggestions about how to improve work procedure. Performance can be defined as an evaluation of how well individuals, groups of individuals or organizations have done in search of a specific objective (Motowidlo, 1993)

Performance is associated with several factors such as time, cost, quality, client satisfaction, productivity and safety. There are other genuine reasons like closures, modification of drawings and changes of the design. Other grounds affecting construction projects performance are poor management and guidance; inapt participants; poor relations and coordination; lack of motivation, insufficient infrastructure, political problems, cultural problems and economic conditions (Makebo, 2020)

The Theory of Performance develops and relates six fundamental concepts to form a framework that can be used to explain performance as well as performance improvements. To perform is to generate valuable results. A performer can be an individual or a group of people who produces valuable result. Developing performance is a long journey, and level of performance describes location in that journey. Current level of performance depends generally on six components: these are context, level of knowledge, levels of skills, level of identity, personal factors, and fixed factors. There are three axioms proposed for effective performance improvements. These are a performer's mindset, immersion in an enriching environment, and engagement in reflective practice (Elger, 2010).

2.1.2. Construction Projects Performance

In construction projects, because of the numerous participants who contribute towards the achievement of project objectives, performance has been defined in one sense as a participant's (client, consultant or contractor) contribution to the execution of the task required to complete the project (Dagne & Markos, 2021)

As (Akanni et al., 2015) indicated the main performance criteria of construction projects as financial stability, progress of work, standard of quality, health and safety, resources, relationship with clients, relationship with consultants, management capabilities, claim and contractual disputes, relationship with subcontractors, reputation and amount of subcontracting. (D. D. Chan & Kumaraswamy, 2002) stated that construction completion time is increasingly important because it often serves as a crucial benchmarking for assessing the performance of a project and the efficiency of the project organization. (Soewin & Chinda, 2018) discussed about environmental aspects for better construction performance, the importance of client/ customer satisfaction is pointed out by ref

2.1.3. Theories Performance Measurement

(Mbugua et al., 1999) have outlined a distinction between performance indicators, performance measures and performance measurement. Based on his study, performance indicators rectify the measurable evidences necessary to prove that a planned effort has achieved the desired outcome. On the other hand, measures are defined as the situation when indicators can be measured with some degree of precision and without any ambiguity. However, when it is not possible to obtain a precise measurement, it is usual to refer to performance indicators. Performance basically measures effectiveness (doing the right thing) and efficiency (doing the right thing right). (Sinclair & Zairi, 1995) and (Takim & Akintoye, 2002) defined performance measurement as an organized way of assessing the inputs and outputs in manufacturing operations or construction activity and acts as a tool for continuous improvements. In every construction project, project management cannot succeed unless the project manager is willing to employ a good effective system approach to project management by analysing those variables that lead to success and failure in a project. Today, the concept of project performance is being developed in many ways as criteria for evaluating the success of a project.

2.2. Project Performance Measurement

Performance measurement is intended to help organizations understand how decision-making processes or practices lead to success or failure in the past and how that practice can lead to future improvements (Lyneis et al., 2001). According to (Tangen, 2004), performance measurement is complex issue that usually incorporates at least three different disciplines: economics, management and accounting. As (Navon, 2005) defined performance measurement as a comparison between the desired and the actual performances. Also, he stated that performance measurement is needed not only to control current projects but also to update the historic database. Such updates enable better planning of future projects in terms of costs, schedules, labour allocation, etc. (Lyneis et al., 2001) defined the purpose of key performance indicators as a way of comparison between various projects and enterprises. These authors implemented different representation of values to evaluate time and cost performance such as project characteristics, procurement system, project team performance, client representation' s characteristics, contractor characteristics, design team characteristics, external condition. According to (Enshassi et al., 2009a) the characteristics of emerging performance measurement indicators need analysis of both the organization and environment such as: nature of work, global competition, quality awards, organizational role, external demands and power of it. The indicators should be able to identify causes of problems, address all possible performance drivers, and identify potential opportunities for improvement. (Cheung et al., 2004) remarked seven main indicators for performance. these are time, cost, quality, client satisfaction, client changes, business performance, and safety and health.

(Ugwu & Haupt, 2007) developed and validated Key performance indicators for sustainability appraisal using South Africa as a case study. they used four major levels in a questionnaire to identify the relative importance of Key performance indicators. The main indicators were: economy, environment, society, resource utilization, health and safety and project management and administration.

2.2.1. Performance measurement of Construction projects

According to (Kingsley, 2010), performance indicators present measurable evidence necessary to prove that a planned effort has achieved the desired result. In other words, when indicators can be measured with some degree of precision and without ambiguity, they are called measures. However, when it is not possible to obtain a precise measurement, they are usually referred to as performance indicators. Two models were developed for measuring construction project performance. These are integrated performance index (Pillai et al., 2002) and key performance indicator (Construction Industry Task Force, 1998) (Barth & Formoso, 2008)

Integrated Performance Index was developed initially for performance measurement of R&D projects based on their real-life experiences of working on the project management system for the Integrated guided missile development program in India. The model has rectified three project phases and dealt with performance elements such as performance indicators or key factors associated with each phase. The three project phases identified were the project selection phase, the project execution phase and the implementation phase. The usefulness of the integrated performance index is that it can be applied at all the phases of the project life cycle to rank the project for selection, to compare project performance under the execution phase and to act as an input for the management of future projects. The only major problem of the model is lack of clarity in the way the mathematical formulae is used to integrate the identified factors into an integrated performance index. Due to this shortcoming, this model is not well received by practitioners.

Key Performance Indicators (KPIs) were the UK construction industry's response to Egan's report (Construction Industry Task Force, 1998) to measure project performances, based on 10 identified parameters. These consist of seven project performance indicators i.e., construction cost, construction time, cost predictability, time predictability, defects, client satisfaction with the product and client satisfaction with the service; and three company performance indicators i.e., safety, profitability and productivity. According (Enshassi et al., 2009a) and (Elizabeth & Africa, 2005), KPIs enable a comparison between different projects and enterprises to identify the existence of particular patterns. (Enshassi et al., 2009a), stated that KPIs are advantageous in order to deliver value to stakeholders. Therefore, companies must be sure for having right processes and capabilities in place. The KPIs also allow to advice which processes and capabilities must be competitively and distinctively applied and which are merely need to be improved or maintained

2.3. Factors Affecting Performance of Construction Projects

Various studies have identified different factors that affect the performance of construction projects but there is no common agreement on the factors. According to (T. F. Chan et al., 2000) generally perceived factors that affect quality performance can be grouped into categories of client, project environment, project team leaders, project procedures and project management procedures.

According to (Kumaraswamy & Thorpe, 1996) a number of unpredicted problems and changes from original design arise on the process of the construction phase are leading to problems in cost and time performance. They identified that poor site management, unforeseen ground conditions and low speed of decision making involving all project teams are the three major factors causing delays and problems of time performance in domestic building works. According to (Akanni et al., 2015) cost, quality and time performance has been identified as the major problems in the construction industry worldwide.

(Dissanayaka & Kumaraswamy, 1999) stated that project complexity, client type, experience of team and information flow are highly correlated with the time performance; on the other hand, project characteristics, client characteristics and contractor characteristics are highly correlated with the cost performance (Kuprenas, 2003) advised the need for focused effort by economy managers and construction industry associations to provide the infrastructures required for effective project management and project performance. According to (Dissanayaka & Kumaraswamy, 1999) the knowledge that would affect potential performance drives project managers to pay special attention to handle performance more effectively. (Abdussalam Shibani & Nawal Gherbal, 2017) stated that smooth communication and rapid information flow between managers and participants help to accelerate the building construction process and performance. (Kuprenas, 2003) studied the influence of the application of a project management based organizational structure, project manager training, repetition of design meetings and design reports on design phase cost performance. The situation of a design team meeting frequency and the level of written reporting of design phase progress were found to be statistically significant in minimizing design phase costs.

The researcher realized that there have been many past studies on cost and time factors of project performance. (Abdussalam Shibani & Nawal Gherbal, 2017) remarked that studies in various countries appear to have contributed significantly to the body of knowledge relating to time performance in construction projects over the past three decades, while (Iyer & Jha, 2005) remarked that project performance in term of cost has studied since 1960s

The study by (Belassi Walid, & Icmeli Tukel, 1996) have identified groups of construction project performance factors as follows:

Factors relating to cost: market share of organization, cash flow of a project, profit rate of a project, material and equipment cost, project labour cost, summarize "project overtime cost, cost of rework, cost of variation of orders, waste rate of materials, escalation of material prices, differentiation of currency prices, presence incomplete drawing

Factors relating to time: number of raised change orders from owner, level of project management assistance, ground conditions, speed of decision making, level project complexity, way of communication, level of financial constraints, average delay in claim approval, amount of average delay in payments from owner to contractors, site preparation time, condition of resources availability, time needed to rectify defects, time needed to implement variation of orders.

Factors relating to Quality: conformance to specification, availability of competent staff, quality of equipment or machineries and raw materials, quality assessment system in organization, quality training or meeting, escalation of material prices, incomplete drawing, incomplete technical specification.

Productivity related Factors: project size and complexity, management-labour relationship, absenteeism rate of project members, number of new projects per year, sequencing of work according to schedule, local cultural characteristics, number of non-working holidays, climate conditions, wedges rate, employee's motivation, employee attitudes.

Factors relating to Client Satisfaction: leadership skills of project manager, disputes between owner and project parties, speed and reliability of service to owner, number of rework incidents, information coordination between owner and project parties, conflict, poor workmanship and incompetence workers.

Factors relating to Health and Safety: reportable accidents rate in the project, application of health and safety factors in the organization, assurance rate of the project, easiness to reach to the site, wastes around the site, climate condition and air quality of the site, noise level on the site area.

2.4. Key Performance Indicators in Construction Projects

Ten key performance indicators of project performance in UK construction industry stated by (Takim & Akintoye, 2002). These indicators are: seven project performance indicators, i.e., construction cost, construction time, cost predictability, time predictability, defects, client satisfaction with the product and client satisfaction with the service; and three company performance indicators, i.e., safety, profitability and productivity. Most of these indicators can be considered as having results orientated, except for predictability of design cost and time, and predictability of construction cost and time, which can be regarded as procurement orientated, and safety, which can be regarded as process orientated. Also defined the purpose of KPI's as to facilitate a comparison between various projects and enterprises to assess the existence of particular patterns. As (Dissanayaka & Kumaraswamy, 1999) stated various representative values to evaluate time and cost performance are identified such as project characteristics, procurement system, project team performance, client representation's characteristics, contractor characteristics, design team characteristics, external condition. (Takim & Akintoye, 2002) remarked that the development and application of KPI's can help the project stakeholders to identify dysfunctional procurement processes. According to (Cordero, 1990) key performance indicators for construction projects are classified under four main aspects. The first aspect is cost, which includes construction cost, cost of certainty, and client satisfaction on cost. The

second aspect is time, which includes construction time, time of certainty, and client satisfaction on time. The third aspect is quality, which includes defects, liability period, and client satisfaction on cost. The fourth aspect is sustainable development, which includes profitability, partnership, environmental protection and health and safety.

2.4.1. Effect of Organizational Culture on Project Performance

The culture that an organization practice is important for performance of projects due to a number of reasons: According to (Thompson, 1993) for a project to be effective, compatibility must exist between the organization's values, its resources and the project environment. On the same study, he also stated that the culture in the organization reflects the way that employees perform tasks, set objectives and administer the necessary resources to achieve these objectives. It also determines the way employees make decisions, think, feel and act in response to the opportunities and threats affecting the project.

According to (Erez & Gati, 2004) the compatibility between organizational cultural characteristics and project management practices is considered as another important factor in the successful implementation of project management practices. According to (Mullins, 1993) a strong organizational culture is very important for successful implementation of project management. It was also stated by (Ghinea & Bratianu, 2007) that a strong organizational culture sets out the system of informal rules, which determines how people are to behave most of the time during project implementation. According to (Tharp, 2005) It has been recognized that organizational culture plays a very important role on project performance outcomes. According to his view, a strong, unique, and appropriate corporate culture of the organization has the ability to: Minimize uncertainty by developing a standard way to interpret events and issues, develops a sense of order within the members and everyone knows what is expected. Certify a sense of continuity, generate a shared identity and unity of commitment and provide a vision of the future around which the company can bring together.

2.5. Empirical Review

The study done by (Akawak Endale, 2020) descriptive design along with cross sectional method conducted and focuses on identifying and describing those factors that affecting the project performance of Bishoftu cobblestone construction project indicated that the top ten factors that affect the cobblestone project performance are awarding the contractor to the lowest bidder, poor use of computer software in project planning and scheduling, Problem of Cost overrun, client emphasis on quick construction instead of quality, Corruption, Escalation of material price, excessive bureaucratic condition, lack of top management support for the project, Poor use of computer software in equipment planning and assigning, and Lack of project management experience. Exploratory factor

analysis produced five main significant factors that can affect construction project performance based on covariance between the attributes and grouped into factors such as site management and coordination, leadership and financial management, planning, commitment, and coordination having a variance of 17.65, 11.8, 9.1, 8.5, and 7.5%, respectively. (Dixit, 2020)

According to (Enshassi et al., 2009a) The survey findings indicate that all respondents were agree that the most important factors affecting project performance are: delays because of borders/roads closure leading to materials shortage; unavailability of resources; low level of project leadership skills; escalation of material prices; unavailability of highly experienced and qualified personnel and poor quality of available equipment and raw materials.

The findings of (Biniyam Bekele Bezu, 2021) show that the assessment of the practice level of the identified factors within the building construction companies resulted in a high level of mean score values. Most project managers in the construction industry have an operational focus, and their mindset and success criteria are focused on “getting the job done”. While other success criteria have emerged, such as environmental impact, societal value, etc., industries still put heavy emphasis on finishing projects on time, within budget, and to specifications, (Nevstad et al., 2021), implicitly implying that this is the first step towards fulfilling the other success criteria. And all the factors that are considered as critical success factors (project manager competency, time, cost, and quality related factors) have a great contribution to the successful completion of a project and are being practiced within the companies under study. And from all the identified success factors, project manager competency related a critical success factor has the highest mean value. So, the research recommends for building construction companies to emphasis more on the competency of their construction project manager. So that they can resolve cost, quality, and time related problems.

As the study of Oromia industry and urban development Bureau shows the results it was found that 100% of the building construction projects suffered by both time and cost performance. The actual rate of cost performance ranges from a minimum of 12% to the maximum of 60% of the contract amount and the actual time performance ranges from a minimum of 7% to the maximum of 170% of the contract time (Abera Legesse Yada & Fekadu Takele Yadeta, 2016).The study results that done at Abuja, Nigeria show that the top three cost-factors affecting project performance are escalation of material prices, design changes, and discrepancies in contract documents; the top three time-factors that affect project performance are: non-availability of resources as planned throughout project, slow decision making and time required to implement variation orders; the top three quality-factors affecting project performance are the availability of experienced and qualified personnel, deficiencies in coordination and lack of managers involvement in decision making. The study also revealed that,

the top three factors for “others” category of factors that influence project performance are frequent staff development; good staff motivation and staff attitudes on the project. Finally, the study revealed the top three modalities to ensure effective project performance: frequent progress reviews; comprehensive contract management and dedicated leadership and management (Oghomwen et al., 2022). In the Case of Ethiopian Construction Works Corporation (ECWC) Project study stated that Cost Efficiency, Quality, Timely delivery and Customer satisfaction was the top Construction performance factors (Tilahun Deneke, 2020).

(Assbeihat, 2018) identified the major cause for construction project delay in private construction projects in Jordan. The study considered a field survey considering 50 consultants, 50 contractors, and 20 owners and 45 causes of delay were identified during the study time. The identified causes are combined into three categories. Data then collected were analysed by frequency and importance. The result of the study indicated that Shortage of manpower (skilled, semiskilled, unskilled labour), Delay in the approval of contractor submissions by the engineer, Shortage of materials and the relationship between different subcontractors’ schedules were the major causes of delays in private projects in Jordan. Owners specified that causes of delay are related to consultant and contractor; the consultants specified that the causes of delay are related to the contractor and the owners, and the contractors specified that the causes of delay are related to the consultants and owners. The findings of (Ifedolapo Helen et al., 2015) survey show that the most significant factors influencing the success of a project are: escalation in material cost, quality and shortage of materials, safety training, technical capability of site engineer, positive attitude of project participants, climatic conditions and suggestions are made for addressing all of those factors. (Ufitamahoro, 2021) findings revealed that contractor’s competence and stakeholders’ participation positively and significantly affect project performance ($\beta = 0.782$, $p < 0.05$; $\beta = 0.629$, $p < 0.05$). The study concludes that contractor’s competence and stakeholder’s participation affected project success. (Soewin & Chinda, 2018) the empirical findings of the study and the subsequent analyses suggest that the performance of a construction companies does not merely depends on the traditional iron triangle of time, cost, and quality. It also depends on many other factors such as safety & health, environment, client satisfaction, financial performance, internal stakeholder, external stakeholder, and information, technology and innovation. As (Makebo, 2020) study indicated that, the main factors affecting construction project considered; Cost, Time, Quality, Productivity, Client satisfaction, Community Satisfaction, Environment Factors, Health and Safety, Innovation and learning Factors. From the Cost factors: the escalation of material cost have been ranked one in the category of cost with RII 0.933. Material shortage stay as most important factor in time factor and it has an RII of 0.720. From the Quality factor: Need for a proper quality system in the organization

have most importance in quality category and has an RII of 0.740. Regarding the productivity; sequencing of work according to schedule leads in productivity the top identified factor with RII of 0.753. Client satisfaction related factors: Leadership skills of the concerned person's ranks first in this group with an RII of 0.680. On behalf of Community Satisfaction: Quality of regular documents has very high importance and it ranks top with RII of 0.707. Environment Factor: Wastes in and around the site the top identified factors that affects the performance of the projects with RII value of 0.660. And climatic factors with no doubt stand right. Application of health and safety factors in industry has been ranked as of high importance in health and safety factors with an RII of 0.700 and Coordination among different work groups stands first in innovation and learning factors with the RII of 0.773. Also (Nyangwara & Datche, 2015), categorized the factors into the following terms. Such as cost, time, quality, productivity, client satisfaction, regular & community, people and environmental factors. Lastly the study ranked the 10 most important factors using RII value. Such as Average delay in claim approval and payment approval owner to contractor (RII=0.942), availability of resources as planned through project duration (RII=0.893), Leadership skills for project Manager /Owner (RII=0.877), availability of personals with high experience and qualification (RII=0.872), Escalation of material prices (RII= 0.871), quality of equipment's and raw materials in project (RII=0.860), conformance to specification (RII=0.852), differentiation of coins prices (RII=0.838), Sequencing of work according to Schedule (RII=0.818) and material and equipment cost (RII=0.815). Also (Oke et al., 2017) identified the rank factors influencing project quality performance Use of unskilled trade subcontractors (MIS= 4.16, SD=7.467 1st in rank), Poor on-site supervision (MIS=4.16, SD= 7.884 2nd in rank), Construction labour skills and induction (MIS= 4.11, SD= 7.414 3rd in rank), Commitment by the Supervising team (MIS=4.05, SD=6.554 4th in rank), Poor planning and scheduling (MIS=4.05, SD=6.911 & 5th in rank), Lack of communication (MIS=3.93, SD=6.969 6th in rank), Project Manager's ignorance and lack of knowledge (MIS=3.89, SD=6.046 & 7th in rank), Scarcity of resources (MIS=3.84, SD=6.431 8th in rank), Poor material and plant management (MIS=3.82, SD= 5.741 9th in rank), Average delays in decision making (MIS=3.45 SD=4.118, 10th in rank). The study done by (Ifedolapo Helen et al., 2015) identified ten important factors that affect the construction project such as Escalation of material prices (A.I=4.85), Insufficient supply of materials (A.I=4.70), Motivating skills of the project team leader (A.I=4.65), Quality control of materials (A.I=4.60), Consultants commitment to ensure construction work is done according to specification (A.I=4.60), Delay of progress payment (A.I=4.60), Project team leaders experience (A.I=4.60), Technical skill of the project team leader (A.I=4.55), Overall management actions (A.I=4.50) and Economic environment (A.I= 4.50). According to (abu, Dr.Sudhakar, 2015) average delay because of closures

leading to materials shortage was the most important success factor as it has the first rank among all factors with relative index (RII) = 0.941 for owners, 0.896 for consultants, and 0.943 for contractors. The authors recommended to develop human resources in the construction industry through proper and continuous training programs about construction projects performance.

2.5. Conceptual Framework

A conceptual framework adopted from previous study by (Dagne & Markos, 2021) while performance areas under each factors were adapted to fit with Jimma zone healthcare construction circumstances. Based on the review eight perceived factors that could have an effect on project performance were identified. The research was revolved around these eight constructs or independent variables which are time related factors, cost related factors, quality related factors, productivity related factors, client satisfaction related factors, health and safety related factors and Regulatory and Community Satisfaction Factors. Under each of the independent variables there are factors that could influence project performance were also pointed.

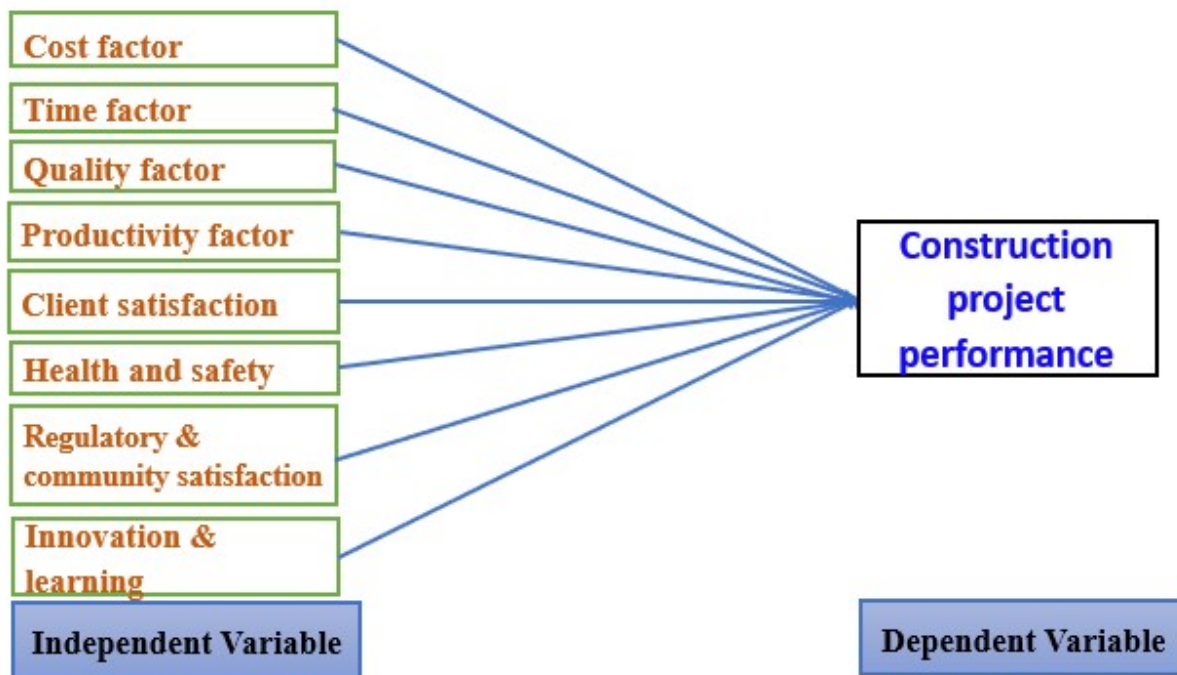


Figure 1. Conceptual framework: Source: (Dagne & Markos, 2021)

Cost related factors includes Cash flow of project, profit rate of project, material and equipment cost, project labour cost, project overtime cost, cost of rework, cost of variation orders, waste rate of materials and incomplete drawing

Time related factors include Change orders from owner, project size and complexity, unforeseen ground conditions, low speed of decision making, project complexity, effective communication, financial constraints, average delay in claim approval, average delay in payments from owners to contractors, site preparation time, unavailability of resources, time needed to correct defects and time needed to implement variation orders.

Quality related factors includes Conformance or meets to specification, quality of equipment or machineries and raw materials, quality assessment system in organization, quality training or meeting, incomplete drawing and incomplete technical specification.

Productivity related factors Project size and complexity, management-labor relationship, absenteeism rate through project (late start and early exists), number of new projects per year, local cultural characteristics, non-working holidays, local climate conditions, employee's motivation, and employee's attitudes.

Client Satisfaction related factors include disputes between owner and project parties, rework incidents, conflict and poor workmanship and incompetence workers

Regulatory and Community Satisfaction factors cost of compliance to regulators requirements and number of non-compliance events.

Health and Safety related factors includes application of health and safety factors in organization, assurance rate of project, easiness to reach to the site (location of project). and climate condition and air quality.

Innovation and learning related factors include learning from best practice and experience of others, review of failures and solving them, work group and training the human resources in the skills demanded by the project.

CHAPTER THREE: RESEARCH DESIGN AND METHODOLOGY

3.1. Research approach

This study was used quantitative research approach. This approach aligns well with the study's objectives as it allows for the collection of numerical data. By utilizing structured questionnaires surveys, systematically the information has been gathered on the critical areas of factors impacting project performance in case of Jimma zone health care construction project. This approach provides quantifiable data that can be analysed using statistical techniques, which enabling to answer the research questions and objectives.

A quantitative approach enables statistical analysis techniques such as correlation analysis to examine the relationships between key performance factors with the dependent factor. The respondents' perceptions towards the factors affecting construction performance have been analysed using the relative importance index and rank. The study has been provided empirical evidence and identified significant associations existed. This approach facilitates the generation of generalizable findings and allows for comparisons with existing literature or future research in similar contexts.

Furthermore, the quantitative approach allows for the examination of multiple variables simultaneously. By considering various objectives, such as cost, time, quality, productivity, client satisfaction, health and safety, regulatory and community satisfaction, and innovation and learning, the study can provide a comprehensive understanding of the factors influencing project performance.

3.2. Research Design

The research design for this study was descriptive and explanatory research design. Since the study is focusing on identifying the perceptions of construction professionals towards factors identified as having the greatest impact on construction project performance and with that of the overall project performance. A quantitative study approach was used to describe and drawing inferences from the findings. Binary logistic regression analysis was also used to examine the relationships between the independent and dependent variables and to show the extent to which the independent variables explained the effects of project performance. A questionnaire survey was used to elicit the perception of owners, consultants, contractors and site engineers towards the factors affecting the performance of health care construction projects.

3.3. Target Population

The scope of this study focused on health care construction project; hospitals, Health centre OR block second generation health post, where a majority of these projects are undertaken in 14 woredas of Jimma Zone. The selection of these woredas among 21 woredas were based on the availability of construction project within the last 5 years and most of them are still under construction while some of it recently completed. The study area included the construction projects of 3 hospitals, 8 OR blocks, and 3 Second-Generation Health post. Within this context, a total of 58 target population; 7 project owners/Clients, 4 consultants, and 36 contractors and site engineers and 11 project managers were selected. who are in health care construction projects.

The selection of these specific groups was based on their roles and responsibilities and holds significant influence and direct involvement throughout the construction process. Therefore, their perspectives and insights are crucial for understanding the factors impacting project performance. By focusing on this targeted population, the data has been gathered from individuals who have first-hand experience and knowledge in the areas of health care construction projects under Jimma Zone.

Table 1. Target population

Participants	Distributed			
	OR Block	Hospitals	Health Post	Total
Clients	1	3	3	7
Zonal Consultant				4
Project manager	5	3	3	11
Contractor	12	3	3	18
Site engineer	12	3	3	18
Total	30	12	12	58

NB- Number of projects under constructions are 8 OR Block, 3 Hospital & 3 second generation HP totally 14.

Source: Jimma zone health office & Jimma Zone project construction office.

3.4. Sampling Techniques and Sample Size

Census sampling technique was chosen and all 58 individuals of target population considered as a sample size. Since the target population was small, surveying the entire population ensures comprehensive insights into the diverse perspectives of all stakeholders. In the context of a relatively small population, this approach reduces sampling error and increases the accuracy and precision of the study's results.

3.5. Source of data and method of data collection

3.5.1. Data Source:

The main source for this study was primary data collected from individuals directly involved in health care construction projects of Jimma Zone; owners, consultants, project managers, contractors and site engineers who could provide valuable information regarding factors impacting health care construction project performance.

3.5.2. Data collection method:

The required data was collected using questioner survey instrument, consisting closed-ended demographic information and five score Likert-scale questions, specifically tailored to address the research objectives and capture relevant details about critical factors, performance issues and can show the relationship between key factors and project performance. The survey was administered through face-to-face interviews and self-administer depending on the feasibility and preferences of the respondents. Trained data collectors were facilitated the process of data collection accordingly. Before data collection, the study's purpose was clearly elaborated to study participants to maintain confidentiality and to guid them through the survey process.

3.6. Data Analysis

Data analysis was focused on describing and identifying the significant performance areas affecting construction projects and explain the relationship between factors affecting project performance. Descriptive and Relative importance Index (RII) analysis used to determine the level of importance of performance areas among its groups of factors. logistics regression analysis explained the correlation between dependent and independent variables. All completed research instruments were collected, coded, summarized, entered into the computer and analysed using the statistical package for social science (SPSS) version 25.

Relative importance index (RII) analysis is a technique used for ranking the performance areas from the survey given by various respondents. RII is calculated as follow

$$RII = \frac{\sum_{n=i}^n WiXi}{AN}$$

where:

W= weight assigned by respondents;

X = frequency of each weight;

A = highest weight; and

N = number of respondents.

The range of RII value is from 0 to 1, and an element with higher RII value is considered more important than others (Deepak et al., 2019).

Logistic regression analysis: This type of statistical model also known as *logit model* is often used for classification and predictive analytics. Logistic regression is a mathematical modelling approach which describes the occurrence or non-occurrence of an even. This dichotomous probability is measured by 0 or 1. In this study, 0 is for indicating the occurrence of “good” outcome and 1, otherwise. A LR model “predicts” the odds of an event occurring (i.e., ratio of the probability that good performance will occur to the probability that it will not). In order to construct a logistic model that can be used to describe the dichotomous (binary) dependent variable as a function of a number of independent variables, the probability function can be written as (et al., 2014)

$$\ln \left(\frac{p}{1-p} \right) = \beta_0 + \beta_1 x_1 + \beta_2 x_2 + \dots + \beta_k x_k$$

Where p is the probability of the binary outcome, ln is the natural logarithm, β_0 is the intercept, $\beta_1 \dots \beta_k$ are the coefficients for the predictor variables $x_1 \dots x_k$. respectively.

3.7. Definition of Terms

Key performance indicator (KPI): Is a type of performance measurement, which evaluates the success of an organization or of a particular activity in which it engages.

Time overruns: Is the extension of time beyond planned completion dates.

Cost overruns: Is the difference between the original cost estimate of project and actual construction cost on completion of works.

Project: is an activity to meet the creation of a unique product or service and thus activities that are undertaken to accomplish routine tasks cannot be considered projects (Mullins, 1995). For this research project is constructions that are done on Jimma zone health care Construction.

Construction: Construction of Jimma zone health care Construction project.

Owner: Organizations for whom the construction projects are being undertaking i.e., Jimma zone Health Office, woreda Health Office and the community benefited from:

Contractor: A natural or juridical person under contract with an owner to construct the construction projects.

Performance: The accomplishment of a given construction projects against the contractual cost, time and quality standards.

Consultant: is a professional also known as Expert and Specialist who provides support, advice in an area of specialization.

3.8. Ethical consideration

Ethical approval and clearance have been obtained from Jimma University, college of business and economics. The permission was also obtained from selected Jimma zone and woreda Health office as well as centres managers. Full verbal consent was obtained from the selected participants after clear explanation given about the aim of the study. Confidentiality and privacy were maintained during data analysis and reporting in which the information obtained from the respondents will not be shared with anyone other than the concerned body.

CHAPTER FOUR: RESULT AND DISCUSSION

4.1. Result

In this chapter, the study results have been presented and discussed to address the research questions and objectives. It focuses on analysis of data collected through questionnaire survey of Jimma zone Health care construction project. As a part of the study, this chapter analyse and presents the perception of the study participants; contractors, site engineers, Project managers, consultants and owners towards factors affecting performance of construction project by using statistical tool SPSS version 25. Based on the finding discussion was caried out. Data was collected using face to face interview and through self-administration. In this questionnaire was distributed to the candidate of study population who are directly involved in health care construction project of Jimma zone, that under taken in the last five years. The questionnaire was distributed to 58 project professionals and 55 of them were replied with the response rate of 95%.

The experience and knowledge of the respondents were extremely helpful to get reliable data and revealed insights on factors affecting project performance and provide a necessary solution and recommendation in the future.

Table 2. Response rate the respondents

Participants	Distributed				Collected	Percent
	OR Block	Hospitals	Health Post	Total		
Owner/Clients	1	3	3	7	5	71%
Zonal Consultant				4	4	100%
Project manager	5	3	3	11	10	91%
Contractor	12	3	3	18	18	100%
Site engineer	12	3	3	18	18	100%
Total	30	12	12	58	55	95%

Since the study was focusing on rating the perceptions of study participants and testing relationship between the factors identified as having the greatest impact on construction project performance with the overall performance, the researcher adopted a quantitative approach which focused on describing and drawing inferences from the findings. Correlation and Regression approaches was used to investigate the relationships between the variables and the extent to which the independent variables explained effects of project performance. This section comes to summarize the findings in to demographic characteristics of study population, descriptive analysis and based on relative importance index rate performance areas and on top of these the regression analysis specifically the binary logistic

regression model was used to define the relationship of each dependent variables; project performance to that of each independent factor of performance areas. Finally, the researcher discusses about the findings of this research whether the findings are consistent with previous claims of theories or not.

4.1.1. Reliability and validity testing

A pilot study was conducted to test validity and effectiveness of the questionnaire. A total of 5 experts were participated in the pilot study who have an experience of more than 10 years in construction industry, the questioner was reviewed and reframed based-on discussion made with them. In addition, the questionnaire has been validated by the criterion-related reliability test which measures the correlation coefficient between the factors affecting the performance of construction projects. Reliability of the data for all major factors were statistically analysed using SPSS V25 reliability analysis and ranges from 0.58 to 0.83, and as a rule of thumb, the value above 0.5 is accepted for the study (Doloi, 2008)

Table 3. Reliability (Cronbach's alpha) test

Performance Factors	Cronbach Alpha	No. of attributes
Ontime completion of the project	0.82	12
Completion with allocated budget	0.70	9
Performing with specified quality level	0.72	6
Fulfilling Client Satisfaction	0.62	5
Achieving project members Health and safety	0.66	4
Fulfilling Regulatory and community satisfaction	0.58	3
Promoting Innovation and Learning of employees	0.83	4
Insuring Productivity	0.70	9

Source: primary data of SPSS output

4.1.2. Socio-demographic characteristics

As shown in the Table 5: the age of respondents among the total 55 respondents, 14 (25.5%) were within 20-29 years of age category, 27 (49.1%) were in the range of 30-39 years of age whereas the rest 14 (25.50%) were within the range of 40-49 years category. Since the majority of the respondents involved in the study area, 41 (74.5%) were in the range of 20 - 39 years, they are young people, this shows that significant number of construction project workers and stakeholders were in the range of productive age group. Regarding the sex of the respondents, 47 (85.5%) were male and only 8 (14.5%) were female. This shows that the number of males involved in the study area were very high than females. Form this study result, the involvement of females in the construction project are very low as compared to males. With respect to educational level, the majority of the respondents are BA/BSc

degree holders which account about 33 (60%), MSC/MA 11 (20%), and Diploma holders are 9 (16.4%). This shows that the majority of the respondents 44 (80%) have degree and master level of education. The academic qualification of the respondents indicated that the respondents were well qualified to understand and respond to the factors and issues under study. In terms of work experience of respondents 17 (30.9%%) have below 5 years of work experience, however, the majority 38 (69.1%%) have more than 5 years of work experience. As a result, the researcher believed that the respondents were easily understood and rate the survey questioner regarding factors affecting performance of health care construction projects under Jimma zone.

Table 4. Demographic Characteristics of Respondents

Sociodemographic	Categories	Frequency	Percent
Age of respondents	20-29	14	25.5
	30-39	27	49.1
	40-49	14	25.5
Sex of respondents	Male	47	85.5
	Female	8	14.5
Educational qualification	MSC/MA	11	20.0
	BSC/BA	33	60.0
	Diploma	9	16.4
	Others	2	3.6
Work experience	1-5 Years	17	30.9
	5-10 Years	21	38.2
	10-15 Years	10	18.2
	15-20 Years	5	9.1
	>20 Years	2	3.6

Source: Survey data

Demographic characteristic, by type of institution

As indicated in figure below, the majority of the study respondents were from Micro enterprise, which account about 31 (56.4%). This indicated most of the health care construction projects are dominated by Micro enterprise and the rest 15 (27.3%) from private institution and about 9 (16.4%) from government organization.

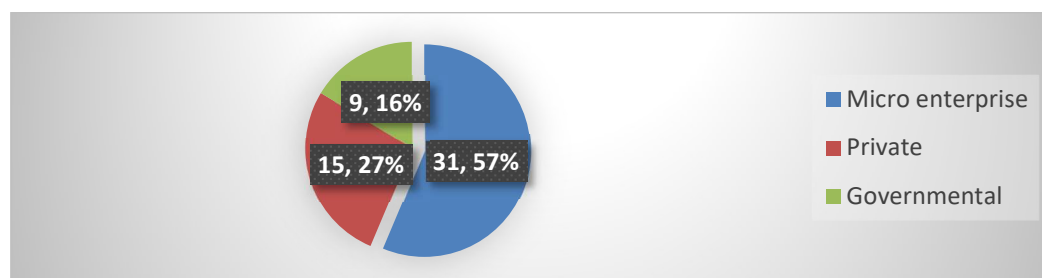


Figure 1. type of institution

Demographic characteristic, by respondents' responsibility

The respondent's responsibility indicated that 18 (32.7%) contractors, 18 (32.7%) site engineers, 10 (18.2%) project managers, 5 (9.1%) Owners and 4 (7.3%) were consultants. In this study the position of the respondents is very important as they are directly related to the study areas and they are provided necessary information about the factors affecting construction project performance.

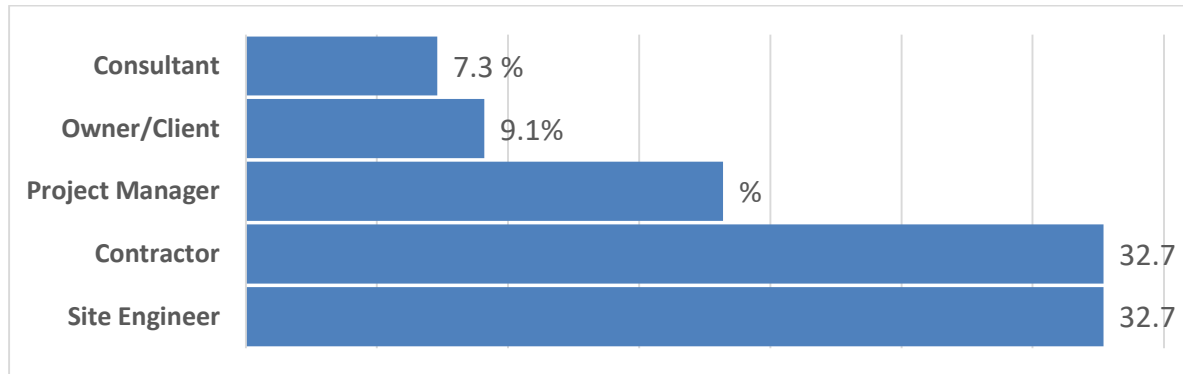


Figure 2. responsibility of respondents

4.1.3. Factors affecting Performance of construction project

When evaluating construction project performance, it's evident that on-time completion receives varying assessments. None of the respondents rated it as Very Low. Approximately (3.63%) two individuals considered it Low, while the majority (43.6%) found it to be Medium. Around 45.5% believed projects achieved a high level of on-time completion, with a notable 7.3% rating it as Very High. Budget adherence showed similar result, with only (1.8%) rating it as Very Low or Low. Around (30.9%) considered it Medium, while (47.3%) rated it High. Notable respondents, (18.2%) indicated Very High performance in staying within budget. Regarding specified quality level, (1.8%) found it Very Low, and (9.1%) rated it Low. The majority (43.6%) saw it as Medium, with (34.5%) rating it High. Approximately (10.9%) noted Very High adherence to quality standards. Client satisfaction performed well, with no Very Low ratings. Around (5.5%) found it Low, while (52.7%) deemed it Medium. A significant 30.9% rated it High, and 10.9% found it Very High. Health and safety concerns were generally addressed. None rated it Very Low. About (27.7%) saw it as Low, (43.6%) as Medium, and (20%) as High. Approximately (9.1%) noted Very High emphasis on safety. Regulatory and community satisfaction received (5.5%). Very Low ratings, around (9.1%) rated it Low, while (56.4%) considered it Medium. A substantial (29.1%) rated it High, but no one found it Very High. Innovation and learning had (1.8%) Very Low ratings, with (18.2%) at Low. About (56.4%) considered it Medium, and (18.2%) found it High. Around (5.5%) noted Very High emphasis on these aspects. For productivity, (1.8%) found it Very Low, and (18.2%) rated it Low. The majority (60%)

deemed it Medium, while (20%) considered it High. No respondents rated it Very High.

Table 5. Respondents' perception toward performance factors of construction project

Performance Factors	Very Low N ^o (%)	Low N ^o (%)	Medium N ^o (%)	High N ^o (%)	Very high N ^o (%)
Ontime completion of the project	0	2 (3.63)	24(43.6)	25(45.5)	4(7.3)
Completion with allocated budget	1(1.8)	1(1.8)	17(30.9)	26(47.3)	10(18.2)
Performing with specified quality level	1(1.8)	5(9.1)	24(43.6)	19(34.5)	6(10.9)
Fulfilling Client Satisfaction	0	3(5.5)	29(52.7)	17(30.9)	6(10.9)
Achieving project members Health & safety	0	15(27.7)	24(43.6)	11(20.0)	5(9.1)
Fulfilling Regulatory & community satisfaction	3(5.5)	5(9.1)	31(56.4)	16(29.1)	0
Promoting Innovation and Learning of employees	1(1.8)	10(18.2)	31(56.4)	10(18.2)	3(5.5)
Insuring Productivity	1(1.8)	10(18.20)	33(60.0)	11(20.0)	0

Source: primary data of SPSS output

i. Cost Related Factors

The respondent's perception towards cost related factors affecting performance of construction project showed that, on cash flow of the project about 16(29.1%) respondents were rate high, 10(18.2%), very high while 26(47.3%) respondents were rate medium and only about 3(5.5%) rate low effect on construction performance. Profit rate of project was rated by 15(27.3%) respondents as high, about 7(12.7%) respondents were rated very high and 20(36.4%) rated medium, while 12(21.8%) and 1(1.8%) respondent were rated low and very low respectively. About 18(32.7%) respondents were rate Material and equipment cost high, 24(43.6%) very high and 8(14.5%) respondents were rate medium, while about 5(9.1%) were rate low. Project labour cost was rated by 21(38.2%) respondents as high, 15(27.3%), very high and 16(29.1%) mediums, while only 3(5.5%) respondents were rate low. Regarding the Project overtime cost about 18(32.7%) respondents were rate high, 12(21.8%) rate very high and 15(27.3%) were rate medium, conversely about 10(18.2%) respondents were rate low. Cost of rework and cost of variation order were rated by 8(14.5%) and 10(18.2%) respondents as high, 5(9.1%) and 1(1.8%) very high as well as 30(54.5%) and 20(36.4%) s medium respectively, while 11(20%) and 20(36.4%) respondents were rate as low and 1(1.8%) and 4(7.3%) were rate very low respectively. About 7(12.7%) and 9(16.4%) respondents were rated the waste rate of materials and incomplete drawing as high, 4(7.3%) and 4(7.3%) as very high, and 18(32.7%) and 19(34.5%) mediums respectively, while 19(34.5%) and 19(34.5%) rate as low and 7(12.7%) and 4(7.3%) very low respectively.

Table 6. Respondents' perception toward cost factors of construction project

Cost Factors	Very Low N ^o (%)	Low N ^o (%)	Medium N ^o (%)	High N ^o (%)	Very high N ^o (%)
Cash flow of project	0.0	3(5.5)	26(47.3)	16(29.1)	10(18.2)
Profit rate of project	1(1.8)	12(21.8)	20(36.4)	15(27.3)	7(12.7)
Material and equipment cost	0.0	5(9.1)	8(14.5)	18(32.7)	24(43.6)
Project labour cost	0	3(5.5)	16(29.1)	21(38.2)	15(27.3)
Project overtime cost	0	10(18.2)	15(27.3)	18(32.7)	12(21.8)
Cost of rework	1(1.8)	11(20.0)	30(54.5)	8(14.5)	5(9.1)
Cost of variation orders	4(7.3)	20(36.4)	20(36.4)	10(18.2)	1(1.8)
Waste rate of materials	7(12.7)	19(34.5)	18(32.7)	7(12.7)	4(7.3)
Incomplete drawing	4(7.3)	19(34.5)	19(34.5)	9(16.4)	4(7.3)

Source: primary data of SPSS output

ii. Time Related Factors

The study examined various aspects related to time within the surveyed participants. Key findings from the analysis are as follows. Among respondents (47.3%) reported a high and very high level of financial constraints factors within their construction projects. Notably, there is a significant portion (43.6%) in the medium category, indicating some level of financial constraint problems. The analysis revealed that most respondents (30.9%) perceived the low speed of decision-making rate of their projects as High, (14.5%) as Very High and (40.0%) medium. This finding shows that potential concerns regarding project decision making within the surveyed population. However, of respondents in the low (12.7%) and (1.8%) Very low. A noteworthy observation is that a substantial proportion of respondents (54.7%) reported a medium level of engagement in effective communication. This indicates that a significant portion of the surveyed group actively seeks to incorporate smooth communication with different parties involved in the construction. However, it's important to note that a notable percentage also falls into the High category (21.8%) and in to Very High category (3.6%), suggesting a strong commitment to this aspect of time factors. The analysis showed that the majority of respondents (43.6%) perceived climate conditions and air quality as medium. There is also a notable representation in the High (27.3%) and low (16.4%) categories, highlighting diverse perceptions of climate and air quality conditions.

Table 7. Respondents' perception toward time factors of construction project

Time Factors	Very Low # (%)	Low # (%)	Medium # (%)	High # (%)	Very high # (%)
Too many change orders from owner	6(10.9)	16(29.1)	22(40.0)	7(12.7)	4(7.3)
Project size and complexity	8(14.5)	18(32.7)	20(36.4)	7(12.7)	2(3.6)
Unforeseen ground conditions	3(5.5)	14(25.5)	23(41.8)	15(27.30)	0
Low speed of decision making	1(1.8)	7(12.7)	22(40.0)	17(30.9)	8(14.5)
Effective communication	1(1.8)	10(18.2)	30(54.5)	12(21.8)	2(3.6)
Financial constraints	1(1.8)	4(7.3)	24(43.6)	23(41.8)	3(5.5)
Average delay in claim approval	2(3.6)	22(40.0)	26(47.3)	3(5.5)	2(3.6)
Average delay in payments from owners to contractors	1(1.8)	11(20.0)	32(58.2)	9(16.4)	2(3.6)
Site preparation time	2(3.6)	13(23.6)	29(52.7)	7(12.7)	4(7.3)
Unavailability of resources	1(1.8)	11(20.0)	23(41.8)	18(32.7)	2(3.6)
Time needed to correct defects	2(3.6)	13(23.6)	27(49.1)	10(18.2)	3(5.5)
Time needed to implement variation order	3(5.5)	17(30.9)	29(52.7)	5(9.1)	1(1.8)

Source: primary data of SPSS output

iii. Quality Related Factors

As reported by study participants, the conformance to the specification factor categorised by significant proportion of respondents (49.1%) were in the Medium and (25.5%) in the high range. This indicated that it has an effect on the quality performance of the project. Participants shared their observations on the quality of equipment and raw materials, the majority of them falling in the High at (47.3%) and in the medium at (32.7%) categories, still it is potential for improvement in this aspect. In terms of the quality assessment systems within organizations, most respondents were classified as Medium at (49.1%), while some of them noted as having High at (9.1%) revealed that this factor had quality effect. Opinions on the effectiveness of quality training and meeting, significant portion of respondents reported Medium (25.5%), and High (34.5%) categories respectively. While notable (27.3%) respondents were reported low. Study participants pointed out that incomplete drawings were a common issue, particularly in the Medium at (47.3%) and in the high at (21.8%) category with some instances in the low (23.6%). Finally, majority of participants were identified as having incomplete technical specifications, falling into the low (40.0%) and Medium (45.5%) categories.

Table 8. Respondents' perception toward quality factors of construction project

Quality Factors	Very Low # (%)	Low # (%)	Medium # (%)	High # (%)	Very high # (%)
Conformance or meets to specification	3(5.5)	10(18.2)	27(49.1)	14(25.5)	1(1.8)
Quality of equipment or machineries and raw materials	1(1.8)	6(10.9)	18(32.7)	26(47.3)	4(7.3)
Quality assessment system in organization	1(1.8)	8(14.5)	27(49.1)	16(29.1)	3(5.5)
Quality training or meeting	5(9.1)	15(27.3)	14(25.5)	19(34.5)	2(3.6)
Incomplete drawing	2(2.6)	13(23.6)	26(47.3)	12(21.8)	2(3.6)
Incomplete technical specification	0.0	22(40.0)	25(45.5)	8(14.5)	0.0

Source: primary data of SPSS output

iv. Productivity Related Factors

A significant portion of response rate of project size and complexity falls into the medium at (38.2%), while about (34.5%) are categorized as low, with varying proportions in the High at (12.7%) and Very High level at (3.6%) categories. In terms of the management-labour relationship, the majority of participants were reported medium level at (50.9%) and around one-fourth (25.5%) were reported High level. While notable portion of respondent reported low at (21.8%). Absenteeism rates through projects show that a significant portion (36.4%) experiences low absenteeism, while about one-third (34.5%) falls into the medium category. Regarding the number of new projects per year, a substantial number of participants (43.6%) undertake a low and (21.8%) very low impact on project productivity, whereas notable portion of respondents accounting (23.6%) and (10.9%) reported medium and high respectively. Local cultural characteristics mostly have a low impact (47.3%), with about one-fourth (23.6%) experiencing a medium impact. Non-working holidays are low in the majority of projects (47.3%), with approximately one-fourth (27.3%) having a medium effect on project productivity. Local climate conditions are Medium for most projects (50.9%), with around one-fourth (25.5%) experiencing High impact. Employee motivation is Medium in a significant proportion of projects (56.4%), while a notable number (25.5%) exhibit High. Employee attitudes vary across Medium (49.1%) and High (25.5%) categories.

Table 9. Respondents' perception toward productivity factors of construction project

Productivity Factors	Very Low # (%)	Low # (%)	Medium # (%)	High # (%)	Very high # (%)
Project size and complexity	6(10.9)	19(34.5)	21(38.2)	7(12.7)	2(3.6)
Management-labour relationship	1(1.8)	12(21.8)	28(50.9)	14(25.5)	0.0
Absenteeism rate through project (late start and early exists)	7(12.7)	20(36.4)	19(34.5)	5(9.1)	4(7.3)
Number of new projects per year	12(21.8)	24(43.6)	13(23.6)	6(10.9)	0.0
Local cultural characteristics	10(18.2)	26(47.3)	13(23.6)	5(9.1)	1(1.8)
Non-working holidays	11(20.0)	26(47.3)	15(27.3)	2(3.6)	1(1.8)
Local climate conditions	1(1.8)	8(14.5)	28(50.9)	14(25.5)	4(7.3)
Employees motivation	0.0	14(25.5)	31(56.4)	10(18.2)	0.0
Employees attitudes	1(1.8)	14(25.5)	27(49.1)	12(21.8)	1(1.8)

Source: primary data of SPSS output

v. Client Satisfaction Related factors

Respondents' perceptions of client satisfaction factors in construction projects revealed several notable trends. A significant portion (43.6%) views disputes between the owner and project parties as having a medium level of impact, with (29.1%) considering it low and (20.0%) perceived it as High. Interestingly, (7.3%) perceive it as Very Low, and none rate it as Very High. Regarding rework incidents, the majority (52.7%) respondents were reported low while (36.4%) rate it as Medium. A small percentage (5.5%) considered both High and very low. When comes to conflicts, significantly majority (60.0%) perceived them at a low level, and (20.0%) found it very low. While minority of respondents (5.5%), (10.9%) and (3.6%) were considered it as medium, High and very high respectively. Regarding poor workmanship and incompetent workers, about (40.0%) and (23.6%) respondents were reported as medium and high respectively. However, notable proportion (25.5%) and (9.1%) sees it as Low and Very low impact on project client satisfaction.

Table 10. Respondents' perception towards client Satisfaction Factors of construction project

Client Satisfaction factors	Very Low # (%)	Low # (%)	Medium # (%)	High # (%)	Very high # (%)
Disputes between owner & project parties	4(7.3)	16(29.1)	24(43.6)	11(20.0)	0.0
Rework incidents	3(5.5)	29(52.7)	20(36.4)	3(5.5)	0.0
Conflict	11(20.0)	33(60.0)	3(5.5)	6(10.9)	2(3.6)
Poor workmanship & incompetence workers	5(9.1)	14(25.5)	22(40.0)	13(23.6)	1(1.8)

Source: primary data of SPSS output

vi. Regulatory and Community Satisfaction Related Factors

The study examined various aspects related to regulatory and community satisfaction within the surveyed population. In this majority of respondents (47.3%) and (20%) reported quality and availability of regulatory documentation as medium and high level, indicating there is significant level of commitment to health and safety practices. While notable portion (30.9%) in the low category. The analysis revealed that most respondents (45.5%) and (29.1%) were perceived the cost of compliance to regulatory requirements of their projects as Medium and high impact respectively as it had an impact. Whereas, about (23.6%) found it as low impact. The analysis showed that the majority of respondents (45.5%) perceived number of non-compliance events as "medium and (10.9%) as high, revealed that it had impact on regulatory and community satisfaction factor of the project. There is also a notable proportion (36.4%) of participants were reported in the low categories.

Table 11. Respondents' perception toward regulatory and community satisfaction factors

Reg. & community satisfaction factors	Very Low # (%)	Low # (%)	Medium # (%)	High # (%)	Very high # (%)
Quality & availability of regulator documentation	1(1.8)	17(30.9)	26(47.3)	11(20.0)	0
Cost of compliance to regulators requirements	1(1.8)	13(23.6)	25(45.5)	16(29.1)	0
Number of non-compliance events	4(7.3)	20(36.4)	25(45.5)	6(10.9)	0

Source: primary data of SPSS output

vii. Health and Safety Related Factors

The study examined various aspects related to health and safety within the surveyed population. Key findings from the analysis are as follows. A majority of respondents (54.5%) reported low level for the application of health and safety factors within their organizations. Notably, there is a significant portion (21.8%) in the Medium (18.2%) in high category, indicating some level of effect of health and safety practices. However, it's essential to highlight that no respondents fell into the Very High category. The analysis revealed that most respondents (50.9%) perceived the assurance rate of their projects as low. This finding underscore regarding project assurance as low effect on project performance within the surveyed population. A substantial portion of respondents (34.5%) reported High, indicating some level of effect on project performance. A significant portion of respondents (32.7%) and (34.5%) reported medium and high to ease in reaching the project site, indicating unfavorable conditions in terms of accessibility. However, the presence of respondents in the low (21.8%) categories suggests varying levels of ease in reaching project locations. The analysis showed that the majority of respondents (43.6%) perceived climate conditions and air quality as medium. There is also a notable representation in the High (27.3%), indicating there was an effect on project performance and low (16.4%) categories, highlighting diverse perceptions of climate and air quality conditions as low effect.

Table 12. Respondents' perception toward health and safety factors of construction project

Health and Safety	Very Low # (%)	Low # (%)	Medium # (%)	High # (%)	Very high # (%)
Application of health and safety factors in organization	3(5.5)	30(54.5)	12(21.8)	10(18.2)	0
Assurance rate of project	7(12.7)	28(50.9)	19(34.5)	1(1.8)	0
Easiness to reach to the site (location of project).	4(7.3)	12(21.8)	18(32.7)	19(34.5)	2(3.6)
Climate condition and Air quality	3(5.5)	9(16.4)	24(43.6)	15(27.3)	4(7.3)

Source: primary data of SPSS output

viii. Innovation and learning factors

A noteworthy observation is that a substantial proportion of respondents (43.6%), (34.5%) and (7.3%) reported a medium, high and very high respectively, suggesting the engagement in learning from best practices and the experiences of others had an effect on innovation and learning factors of project performance. This indicates that a significant portion of the surveyed group actively seeks to incorporate external knowledge and expertise into their project activities. A significant portion (36.4%) and (45.5%) of respondents falls into the medium and high category respectively, emphasizing there is low practice in reviewing failures and solving it from past mistakes. The analysis revealed that a majority of respondents (30.9%) and (52.7%) reported as medium and high respectively, engaging in work group dynamics as a means of affecting innovation and learning. This finding highlights the importance of collaborative efforts and teamwork in the pursuit of project success. A significant portion of the surveyed group (47.3%) and (27.3%) indicated involvement in training human resources to acquire the necessary skills for project demand affects the innovation and learning.

Table 13. Respondents' perception toward time factors of construction project

Innovation and learning factors	Very Low # (%)	Low # (%)	Medium # (%)	High # (%)	Very high # (%)
Learning from best practice and experience of others	1(1.8)	7(12.7)	24(43.6)	19(34.5)	4(7.3)
Review of failures and solving them	1(1.8)	7(12.7)	20(36.4)	25(45.5)	2(3.6)
Work group	2(3.6)	6(10.9)	29(52.7)	17(30.9)	1(1.8)
Training the human resources in the skills demanded by the project	3(5.5)	9(16.4)	26(47.3)	15(27.3)	2(3.6)

Source: primary data of SPSS output

4.1.4. Relative importance index

The study examined various aspects related to factors affecting performance of construction project within the surveyed group under Jimma zone Health care construction projects. Key findings from the analysis of relative importance Index and rank were described by group of factors as follow:

i. Group one: Cost factors

The result indicated that, material and equipment cost has been ranked by the respondents in the 1st position with RII equal 0.822. this factor is the most important one for in Jimma zone health care construction project due to the rapid escalation of construction material prices. This escalation of material prices affects the cost performance of the projects, another study identify market inflation of materials ranked 1st(RII = 0.781 and MS = 3.90), (Abebe Kassie, 2020). Project labour cost and overtime cost have been ranked by the respondents in the 2nd and 4th position with RII equal 0.775 and 0.716 respectively. Due to the increment of cost of living, the labour cost and overtime cost have been increasing from time to time. These factors also affect project budget and cost performance. Cash flow of project has been ranked by the respondents in the 3rd position with RII equal 0.720. This mainly because cash flow affects the project budget and project cost performance. Profit of the project has been ranked by the respondents in the 5th position with RII equal 0.655. This factor affects the project budget and cost performance.

ii. Group two: time factors

Low speed of decision making has been ranked by the respondents in the first position with RII equal 0.687. This factor affects the on-time completion of the project. This affects the project budget and cost performance by permitting time over run. Financial constraint has been ranked by the respondents in the 2nd position with RII equal 0.684. this factors mainly affect micro enterprises, because most they are facing financial constraints. Most respondents account 31(56.4%) were from Micro enterprises. Unavailability of resources has been ranked by the respondents in the 3rd position with RII equal 0.633. Effective communication and Average delay in payments have been ranked by the respondents in the 4th and 5th position with RII equal 0.615 and 0.600 respectively.

iii. Group three: quality factors

Quality of equipment or machineries and raw materials has been ranked by the respondents in the 1st position with RII equal 0.695. this factor mainly affects the project performance and the degree of owner's satisfaction. Quality assessment system in organization and Quality training or meeting have

been ranked by the respondents in the 2nd and 5th position with RII equal 0.644 and 0.593 respectively. Conformance or meets to specification and incomplete drawing have been ranked by the respondents in the 3rd and 4th position with RII equal 0.600 and 0.596 respectively.

iv. Group four: Productivity factors

Local climate condition has been ranked by the respondents in the 1st position with RII equal 0.644. Local climate conditions are important factor for Jimma zone. Since most of the construction projects are in rural areas of Jimma zone woredas, where most of the road during runny time has not been functioning. Management-labour relationship has been ranked by the respondents in the 2nd position with RII equal 0.600. Management-labour relationship can assist for strong coordination and motivation between labour level and managerial level. This will assist for implementation of project with success productivity and good performance. Employee attitudes and Employees motivation have also been ranked by the respondents in the 3rd and 4th position with RII equal 0.593 and 0.585 respectively. Project size and complexity also ranked by respondents in the 5th position with RII equal to 0.527.

v. Group five: Client Satisfaction Factors

Poor workmanship and incompetence workers and disputes between owner and project parties have been ranked by the respondents in the 1st and 2nd position with RII equal 0.567 and 0.553 respectively. Competency is important factor because this factor can affect the degree of project performance and quality. Disputes between owner and project parties can affects the relationship between them and has negative effect on the degree of client satisfaction. It can also affect the performance of projects.

vi. Group six: Regulatory Community Satisfaction Factors

Cost of compliance to regulators requirements and number of non-compliance events have been ranked by the respondents in the 1st and 2nd position with RII equal 0.604 and 0.520 respectively. Cost of compliance to regulators requirements affects the cost performance of project. The more increase of noncompliance to regulation, the more dissatisfaction of regular and community for project. This will affect the project performance.

vii. Group seven: Health & Safety Factors

Climate condition and Air quality and Easiness to reach to the site have been ranked by the respondents in the 1st and 2nd position with RII equal 0.629 and 0.611 respectively. Application of health and safety factors in organization and assurance rate of project have also been ranked by the respondents in the 3rd and 4th position with RII equal 0.505 and 0.451 respectively. These factors can affect the safety performance of the project.

viii. Group eight: Innovation & Learning factors

Review of failures and solving them and learning from best practice and experience of others have been ranked by the respondents in the 1st and 2nd position with RII equal 0.673 and 0.665 respectively. Whereas Work group and training the human resources in the skills demanded by the project have been ranked by the respondents in the 3rd and 4th position with RII equal 0.633 and 0.615.

Table 14. Relative importance index & rank for performance areas affecting construction projects

Performance areas	RII	Rank
1. Cost Factors		
Material and equipment cost	0.82	1
Project labour cost	0.77	2
Cash flow of project	0.72	3
Project overtime cost	0.72	4
Profit rate of project	0.65	11
Cost of rework	0.62	17
Incomplete drawing	0.56	34
Cost of variation orders	0.54	38
Waste rate of materials	0.53	40
2. Time Factors		
Low speed of decision making	0.69	6
Financial constraints	0.68	7
Unavailability of resources	0.63	14
Effective communication	0.61	18
Average delay in payments from owners to contractors	0.60	22
Time needed to correct defects	0.60	25
Site preparation time	0.59	27
Unforeseen ground conditions	0.58	31
Change orders from owner	0.55	35
Time needed to implement variation orders	0.54	38
Average delay in claim approval	0.53	41
Project size and complexity	0.52	45
3. Quality Factors		
Quality of equipment or machineries and raw materials	0.69	5
Quality assessment system in organization	0.64	12
Conformance or meets to specification	0.60	22
Incomplete drawing	0.60	25
Quality training or meeting	0.59	27
Incomplete technical specification	0.55	37
4. Productivity Factors		
Local climate conditions	0.64	12
Management-labour relationship	0.60	22
Employees attitudes	0.59	27
Employees motivation	0.59	30
Project size and complexity	0.53	42
Absenteeism rate through project (late start & early exists)	0.52	43
Local cultural characteristics	0.46	48
Number of new projects per year	0.45	50
Non-working holidays	0.44	51

Performance areas	RII	Rank
5. Client Satisfaction Factors		
Leadership skills for project manager	0.66	10
Poor workmanship and incompetence workers	0.57	33
Disputes between owner and project parties	0.55	35
Rework incidents	0.48	47
Conflict	0.44	52
6. Regulatory Community Satisfaction Factors		
Cost of compliance to regulators requirements	0.60	21
Quality and availability of regulator documentation	0.57	32
Number of non-compliance events	0.52	44
7. Health & Safety factors		
Climate condition and Air quality	0.63	16
Easiness to reach to the site (location of project).	0.61	20
Application of health and safety factors in organization	0.51	46
Assurance rate of project	0.45	49
8. Innovation & Learning factors		
Review of failures and solving them	0.67	8
Learning from best practice and experience of others	0.67	9
Work group	0.63	14
Training the human resources in the skills demanded by the project	0.61	18

Source: primary data of SPSS output

4.1.5. Relative importance & rank of factors affecting performance of construction project

The major performance factors categories affecting performance of construction projects statistically computed and analysed by relative importance and rank from high to low effect on performance of the project as follows.

Cost group has been ranked by the respondents in the 1st position with RII equal 8.11 the cost group is the most important that strongly affects the performance of construction projects and it can be among the most important indicators to measure performance. Time group has been ranked by the respondents in the 2nd position with RII equal 7.65. This group is strongly affecting the performance of construction projects and it can be one of the most significant indicators to measure construction performance. Productivity group have been ranked by the respondents in the 3rd position with RII equal to 6.05. this factor is very important and significantly affect the project performance, since construction productivity is a vital component of any building project, without it projects become delayed and budgets quickly become overwhelmed. Quality group has been ranked by respondents in the 4th position with RII equal 5.19. since this factor is among the three pillars of project performance indicator, it is important to measure performance. Client satisfaction group has been

ranked by respondents in the 5th position with RII equal 3.93. Health and safety group has been ranked by respondents in the 6th position with RII equal to 3.51. Innovation and learning and Regulatory and community satisfaction group have been ranked by the respondents in the 7th and 8th position with RII equal to 3.20 and 2.27 respectively.

Table 15. Relative importance index & rank of major factors affecting construction project

Descriptive Statistics	RII	Rank
Cost factor	8.11	1
Time Factors	7.65	2
Productivity factors	6.05	3
Quality factors	5.19	4
Client satisfaction factors	3.93	5
Health & Safety factors	3.51	6
Innovation and learning	3.20	7
Regulatory and community satisfaction	2.27	8

Source: primary data of SPSS output

4.1.6. Relative importance and rank of top ten significant performance areas of construction.

The top ten performance areas affecting construction projects. Material and equipment cost was the most significant performance factor as it has the first rank among all factors with RII 0.82. All respondents were agreed because the inflation rate is highly affecting the construction material and equipment. Project labour cost, Cash flow, Project overtime cost have been ranked by respondents in the 2nd, 3rd and 4th with the RII 0.77,0.72 and 0.71 respectively. Quality of equipment or machineries and raw materials was ranked by the respondents in the 5th position with the RII equals 0.69. Low speed of decision making was ranked in the 6th position with RII 0.678. financial constraints and review of failures and solving them were ranked in the 7th and 8th position with RII equals 0.684 and 0.673 respectively. However, learning from best practice and experience of others and leadership skills for project manager were ranked in 9th and 10th position with RII 0.665 and 0.662 respectively.

Table 16. Top ten significant factors affecting performance of construction projects.

Performance areas	RII	Rank
Material and equipment cost	0.822	1
Project labour cost	0.775	2
Cash flow of project	0.720	3
Project overtime cost	0.716	4
Quality of equipment or machineries and raw materials	0.695	5
Low speed of decision making	0.687	6
Financial constraints	0.684	7
Review of failures and solving them	0.673	8
Learning from best practice and experience of others	0.665	9
Leadership skills of project managers	0.662	10

Source: primary data of SPSS output

4.1.7. Project success and predictive variables /Bivariate Model/ analysis

In the bivariate analysis, the researcher explored the significance of various factors concerning project success, employing a significance threshold of $p\text{-value} < 0.05$ as the criterion. Several variables emerged as strong candidates for inclusion in a multivariable logistic regression model designed to predict project success:

Firstly, project had cost effect with (P-Value: 0.003, OR: 5.9, 95% CI: 1.9-19.0) were notably associated with more likely affect project success. Project had delay effect with (P-Value: 0.003, OR: 6.0, 95% CI: 1.9-19.4) were linked to a significantly reduced project success. Additionally, projects with a noticeable quality effect (P-Value: 0.012, OR: 4.3, 95% CI: 1.4 - 13.3) were more likely affect project success, while non-productive projects (P-Value: 0.003, OR: 6.0, 95% CI: 1.7, 19.4) were notably less likely to achieve success. Projects with unsatisfied clients (P-Value: 0.001, OR: 7.0, 95% CI: 2.2 – 23.4) faced significantly lower likelihood of project success. Moreover, projects that had health and safety problems (P-Value: 0.023, OR: 3.7, 95% CI: 1.2-11.3) and those had regulatory and community unsatisfied (P-Value: 0.023, OR: 3.7, 95% CI: 1.2-11.3) were also less likely to be successful. Finally, projects that had innovation and learning effect with (P-Value: 0.022, OR: 3.8, 95% CI: 1.2-11.9) were significantly less likely to achieve project success.

These variables have demonstrated their individual significance in relation to project success. To further explore how they collectively influence project outcomes while accounting for potential confounding factors, multivariable logistic regression model was employed.

Table 17. Bivariate Model analysis for factors affecting project Success.

Variables	Variable outcome	Project success.		COR with 95% CI	P-Value
		Successful # (%)	Unsuccessful # (%)		
Cost Factor	No Cost effect	8(28.6)	20(71.4)	1	
	Had cost effect	19(70.4)	8(29.6)	5.9(1.85-19.01)	0.003
Time Factor	No Delay effect	9(30)	21(70)	1	
	Had Delay effect	18(72)	7(28)	6.0(1.86-19.36)	0.003
Quality Factor	No quality effect	8(30.8)	18(69.2)	1	
	Had Quality effect	19(65.5)	10(34.5)	4.3 (1.38-13.25)	0.012
Productivity factor	Productive	9(30)	21(70)	1	
	Non productive	18(72)	7(28)	6.0 (1.86-19.36)	0.003
Client Satisfaction factor	Satisfied	8(27.6)	21(72.4)	1	
	Unsatisfied	19(73.1)	7(26.9)	7.1(2.17-23.40)	0.001
Health and Safety factor	No Safety problem	8(32)	17(68)	1	
	Had Safety problem	19(63.3)	11(36.7)	3.7(1.19-11.26)	0.023
Regulatory and community satisfaction	Satisfied	8(32)	17(68)	1	
	Unsatisfied	19(63.3)	11(36.7)	3.7(1.11-11.27)	0.023
Innovation and learning factor	No effect of innovation & learning	7(30.4)	16(69.6)	1	
	Had effect of innovation & learning	20(62.5)	12(37.5)	3.8(1.22-11.92)	0.022

Source: primary data of SPSS output

4.1.8. Multi variable logistic regression model

Projects that were delayed had significantly less likely being successful project, with an AOR of 51 (95% CI: 2.62-1012) with P-Value of (P = 0.009) compared to non-delayed projects. The non-productive projects had significantly associated with project success, with an AOR of 73 (95% CI: 2.66-2021) and p-value of (P = 0.011), that affects the project success compared to productive project. Projects that had un satisfied clients had significantly affect by 24 times more likely (AOR 24 (95% CI: 2.22-264) and (P = 0.009) project success compared to satisfied projects. Projects with health and safety problems had significant effect on project success, 45 times more likely (AOR of 45(95% CI: 1.92-1063) and (P = 0.018), compared to projects with no health and safety problems.

Projects with a high effect on innovation and learning had significant effect on project success by 37 times more likely (AOR of 37 (95% CI: 1.78-772) and (P = 0.020) compared to projects with no effect on innovation and learning. In summary, the multivariable logistic regression analysis revealed that time factors, productive factors, client satisfaction factors, health and safety factors, and innovation and learning all had significantly associated to project success at significant level with P-value <5%.

Table 18. Multi Variable Logistic Regression analysis for project Success.

Variables	Variable outcome	Project success.		AOR with 95% CI	P-Value
		Successful # (%)	Unsuccessful # (%)		
Time Factor	No Delay effect	9(30)	21(70)	1	
	Had Delay effect	18(72)	7(28)	51(2.62-1012)	.009
Productivity factor	Productive	9(30)	21(70)	1	
	Non productive	18(72)	7(28)	73(2.66-2021)	.011
Client Satisfaction factor	Satisfied	8(27.6)	21(72.4)	1	
	Unsatisfied	19(73.1)	7(26.9)	24(2.22-264)	.009
Health & Safety factor	No Safety problem	8(32)	17(68)	1	
	Had Safety problem	19(63.3)	11(36.7)	45(1.92- 1063)	.018
Innovation and learning factor	No effect on innovation & learning	7(30.4)	16(69.6)	1	
	Had effect on innovation & learning	20(62.5)	12(37.5)	37(1.78- 772)	.020

Source: primary data of SPSS output

4.2. Discussion

Respondents' perceptions regarding project performance factors highlight the importance of on-time project completion and staying within budget, aligning with prior research, (Nevstad et al., 2021).

Material and equipment costs emerge as the most significant cost-related factors affecting construction projects, consistent with the documented impact of material costs. Labor costs and cash flow are also considered crucial, emphasizing the financial aspects of project management, (Tadesse Borku, 2022) Financial constraints are identified as a significant issue affecting project performance, emphasizing the importance of effective financial resource management to prevent delays, (Dagne & Markos, 2021). The slow pace of decision-making is seen as a potential concern, which can lead to project delays and cost overruns, (Dlamini & Cumberlege, 2021). The quality of equipment and raw materials is considered crucial for project performance, aligning with research highlighting the role of quality in construction projects, (Enshassi et al., 2009b). Incomplete drawings are identified as an issue, emphasizing the importance of accurate project documentation.

Local climate conditions are recognized as a significant factor, particularly in rural areas with challenging weather conditions. Management-labour relationships were seen as vital for project success, highlighting the importance of effective coordination and communication, (Dagne & Markos, 2021) The cost of compliance with regulatory requirements is considered a significant factor, aligning with research on the impact of regulatory compliance on project costs. Non-compliance events can result in community dissatisfaction and legal issues, (Dagne & Markos, 2021). The application of health and safety factors is rated at 6th place, indicating a need for improvement in this critical area,

underscoring the importance of prioritizing safety in construction projects. The study underscores the importance of learning from best practices and experiences as well as review of failures for project success, emphasizing the need for a culture of continuous improvement.

The summary of Relative Importance Index (RII) analysis highlights among 52 performance areas expected to affect construction projects, the top ten significant problems are; material and equipment cost emerge as the most critical factor ranked 1st with RII equals 0.82, profoundly impacting project budgets due to the rapid escalation of construction material prices. Additionally, project labour cost, cash flow and project overtime cost ranked 2nd to 4th with RII (0.77, 0.72, 0.72) respectively play pivotal roles in project performance, necessitating vigilant cost management. Quality considerations encompasses the quality of equipment or machinery and raw materials ranked 5th and quality assessment system in organization along with adherence to specifications are identified. Time-related factors pose significant challenges, including the slow decision-making process, financial constraints ranked 6th and 7th with RII (0.69 & 0.68) respectively, especially since micro-enterprises currently working in the study area accounts about 56.4%, may be affected by financial constraints. In addition, availability of resources, importance of effective communication and timely payments are among most important one. Productivity centers on local climate conditions and management-labour relationships. Regarding innovation and learning mainly the proactive review of failures and solving them and learning from best practice and experience were ranked 8th and 9th respectively. Client satisfaction is influenced mainly by leadership skills of project managers ranked at 10th level.

The finding of multi variable logistic regression model indicated that, the multifaced nature of project, emphasizing the critical roles of timeliness, productivity, client satisfaction, health and safety and innovation and learning factors have correlation with that of project success.

This study delves into the complex relationship between various project factors and their impact on project success, employing a rigorous multivariable logistic regression analysis. These associations contribute to the researcher understanding of the multifaceted nature of project success, offering valuable insights for project managers and stakeholders across industries. One key finding of this study was that non-delayed projects demonstrate significantly higher odds of success compared to their delayed counterparts (AOR: 51, 95% CI: 2.62-1012). This result reinforces the importance of timely project completion, especially in sectors like construction where project schedules are pivotal, a point previously highlighted by (Asfoor et al., 2022). Furthermore, the study revealed that productive projects had substantially higher odds of success (AOR: 73, 95% CI: 2.66-2021). It emphasized the integral role of high productivity leveled in improving overall project outcomes. Another significant finding was the strong link between satisfied clients and increased odds of project success (AOR: 24,

95% CI: 2.22-264), in line with established principles of customer satisfaction in project management. This underscores that beyond technical aspects, client contentment plays a pivotal role in project success, as demonstrated by (Lechler Thomas & Gao Ting, 2012). Projects with low health and safety effect displayed significantly with increased odds of project success (AOR: 45, 95% CI: 1.92-1063) compared to projects with high health and safety effect on project success. Moreover, the association between projects that foster innovation and learning enhanced odds of success (AOR: 37, 95% CI: 1.78-772) aligns with the growing emphasis on innovation and learning in project management, as supported by (Dagne & Markos, 2021). It underscores the importance of adaptability and responsiveness to evolving challenges.

CHAPTER FIVE: CONCLUSION AND RECOMENDATION

5.1. Conclusion

The main objective of this study was to assess factors affecting performance of construction projects under Jimma zone health care project. To achieve the intended objective of the study descriptive and explanatory study design with quantitative research approach was adopted. The data was collected from 55 respondents of Jimma zone health care projects which are under construction and recently completed within the last 5years. Census sampling was used to select the respondents since the total target populations were very small. Thae data collected from respondents through five scale Likert scale and close-ended questionnaire. The collected numerical data were analysed using descriptive statistic, relative importance index and binary logistic regression. Based on the provided information, data was analysed and several conclusions were drawn regarding the factors affecting construction projects performance:

First, the finding of relative importance index and rank analysis revealed, among 52 performance areas expected to have an effect on construction projects, top ten performance issues were Material and equipment costs, labor costs, cash flow, overtime costs, equipment and material quality, decision-making speed, financial constraints, review of failure and solving it, learning from pest practice and experience and leadership skill of project managers.

Second, the descriptive statistics for various factors, along with their Relative Importance Index (RII) rank identified; cost factor having the highest RII score, followed by time factor, productivity, quality, client satisfaction, health & safety, innovation and learning & regulatory respectively and regulatory and community satisfaction having the lowest RII score.

The study identified the strong relationship between project success and time, productivity, client satisfaction, health and safety and innovation and learning factors. However, the relationship between cost, quality, and community satisfaction with the project success calls for further exploration.

In General, these insights will provide guidance for project managers and stakeholders s and decision makers across diverse industries to facilitating more informed decision-making and ultimately enhancing project success rates.

5.2. Recommendation

5.2.1. For Government Bodies and Owners:

- ❖ Recognize the financial constraints faced by micro-enterprises and provide support mechanisms such as access to affordable loans, training in financial management, and mentoring to help them manage their projects more effectively.

5.2.2. For Consultant and Project managers:

- ❖ Improve the speed of decision-making processes within construction projects to prevent delays and cost overruns. Empower teams to make timely decisions, and establish clear protocols for efficient decision-making.
- ❖ Implement rigorous quality control measures for equipment, machinery, and raw materials to ensure compliance with specifications. Address incomplete drawings promptly to avoid rework and delays.
- ❖ Proactively manage and resolve disputes between project parties to maintain client satisfaction.
- ❖ Streamline decision-making processes, empower teams to make timely decisions, and establish clear protocols for efficient decision-making.
- ❖ Foster a culture of learning from failures, establish robust failure analysis processes, and implement corrective actions to prevent recurring issues

5.2.3. For Contractor, and site Engineers:

- ❖ Prioritize effective cost management strategies to mitigate the impact of rising material and equipment costs. This includes exploring bulk purchasing options, long-term contracts, and cost-effective procurement methods.
- ❖ Promote a culture of innovation and continuous learning within project teams. Encourage knowledge sharing, establish mechanisms for capturing best practices, and facilitate cross-functional learning and collaboration

5.2.4. Overall Project Management:

- ❖ Recognize that cost and time factors are of paramount importance in project success. Prioritize effective project management strategies that address these aspects while also considering productivity, quality, client satisfaction, health and safety, innovation, and regulatory

compliance

- ❖ These recommendations can serve as a guideline for project managers, stakeholders, and decision-makers involved in Health care construction projects in the Jimma zone. By implementing these strategies and focusing on the identified key factors, projects are more likely to achieve success and deliver value to their stakeholders.

5.3. Further research directions

This study focussed on the identification of factors affecting the performance construction project, in case of Jimma zone health care construction project. In This the researcher view that:

- ❖ To enable deeper understanding of experience, phenomenon and the context, better to use both qualitative and quantitative study approach.
- ❖ Bbetter to conduct same study with adequate sample and broader geographical coverage to improve precision of the study's estimate and to draw conclusions upon it.

REFERENCES

- Abdussalam Shibani, & Nawal Gherbal. (2017). Using the Balanced Scorecard as a Strategic Management System in the Libyan Construction Industry. *Management Studies*, 6(1). <https://doi.org/10.17265/2328-2185/2018.01.001>
- Abebe Kassie. (2020). Determinants of cost overrun: the case of condominium housing projects in bole sub-city.
- Abera Legesse Yada, & Fekadu Takele Yadeta.(2016). *Factors Affecting the Performance of Construction Project under Oromia Industry and Urban Development Bureau, Ethiopia* . 4(2), 1–56.
- abu, Dr.Sudhakar, S. S. B. (2015). Critical Success Factors Influencing Performance of Construction Projects. *International Journal of Innovative Research in Science, Engineering and Technology*, 4(5), 3285–3292. <https://doi.org/10.15680/ijirset.2015.0405048>
- Akanni, P. O., Oke, A. E., & Akpomiemie, O. A. (2015). Impact of environmental factors on building project performance in Delta State, Nigeria. *HBRC Journal*, 11(1), 91–97. <https://doi.org/10.1016/j.hbrj.2014.02.010>
- Akawak Endale. (2020). *Assessment factors affecting project performance: a case study*. 68.
- Asfoor, H. M. A., AL-Jandeel, A. A. T., Kozhevnikov, K., & Lykova, A. (2022). Construction Project Management by Controlling the Time, Cost and Quality. In A. Ginzburg & K. Galina (Eds.), *Building Life-cycle Management. Information Systems and Technologies* (pp. 319–327). Springer International Publishing.
- Assbeihat, J. M. (2018). *Factors affecting delays on private construction projects*. february.
- Azeb, G. (2016). *Comparative Analysis on Comparative Analysis on Factors Affecting Performance of Local and International Contractors in Road Projects Road Projects Administered by Ethiopian Roads Authority*. November.
- Barth, K. B., & Formoso, C. T. (2008). Improvement of performance measurement systems using production management dashboards. *Proceedings of IGLC16: 16th Annual Conference of the International Group for Lean Construction, January*, 769–780.
- Belassi Walid, & Icmeli Tukul. (1996). A new framework for determining critical success/failure factors in projects. *Lecture Notes in Engineering and Computer Science*, 14(3).
- Berhanu, N. (2018). *Assesment of factors causing delay of construction projects: evidence from construction project managers*.
- biniyam bekele bezu. (2021). *assessment of the critical success factors in the case of selected building construction projects in hawassa*. 58.

- Chan, D. D., & Kumaraswamy, M. (2002). Compressing construction durations: Lessons learned from Hong Kong building projects. *International Journal of Project Management*, 20, 23–35. [https://doi.org/10.1016/S0263-7863\(00\)00032-6](https://doi.org/10.1016/S0263-7863(00)00032-6)
- Chan, T. F., Carvalho, J., Riles, L., & Zheng, X. F. S. (2000). A chemical genomics approach toward understanding the global functions of the target of rapamycin protein (TOR). *Proceedings of the National Academy of Sciences of the United States of America*, 97(24), 13227–13232. <https://doi.org/10.1073/pnas.240444197>
- Cheung, S. O., Suen, H. C. H., & Cheung, K. K. W. (2004). PPMS: A Web-based construction Project Performance Monitoring System. *Automation in Construction*, 13(3), 361–376. <https://doi.org/10.1016/j.autcon.2003.12.001>
- Cordero, R. (1990). The measurement of innovation performance in the firm: An overview. *Research Policy*, 19(2), 185–192. [https://doi.org/10.1016/0048-7333\(90\)90048-B](https://doi.org/10.1016/0048-7333(90)90048-B)
- Dagne, H. A., & Markos, S. (2021). *Assessment of factors affecting construction project performance _ the case of Bole International Airport terminal expansion and Minilik II Referral Hospital Eye care center construction projects. June.*
- Dissanayaka, S. M., & Kumaraswamy, M. M. (1999). Evaluation of factors affecting time and cost performance in Hong Kong building projects. *Engineering, Construction and Architectural Management*, 6(3), 287–298. <https://doi.org/10.1108/eb021119>
- Dixit, S. (2020). Study of factors affecting the performance of construction projects in AEC industry. *Organization, Technology and Management in Construction*, 12(1), 2275–2282. <https://doi.org/10.2478/otmcj-2020-0022>
- Dlamini, M., & Cumberlege, R. (2021). The impact of cost overruns and delays in the construction business. *IOP Conference Series: Earth and Environmental Science*, 654(1). <https://doi.org/10.1088/1755-1315/654/1/012029>
- DUNFA, B. K. (2018). *Determinants of building construction project success in jimma zone.* 1–82.
- ELIAS, E. (2020). *Assessment on the causes of construction project failures and abandonment: the case of yeka hills 4star hotel construction project in addis abeba.*
- Elizabeth, P., & Africa, S. (2005). *Keynote Address Performance Measurement in Construction Process Management. May, 12–27.*
- Enshassi, A., Mohamed, S., & Abushaban, S. (2009a). Factors affecting the performance of Construction projects in the Gaza Strip. *Journal of Civil Engineering and Management*, 15(3), 269–280. <https://doi.org/10.3846/1392-3730.2009.15.269-280>
- Enshassi, A., Mohamed, S., & Abushaban, S. (2009b). Factors affecting the performance of

- Construction projects in the Gaza Strip. *Journal of Civil Engineering and Management*, 15(3), 269–280. <https://doi.org/10.3846/1392-3730.2009.15.269-280>
- Erez, M., & Gati, E. (2004). A dynamic, multi-level model of culture: From the micro level of the individual to the macro level of a global culture. *Applied Psychology*, 53(4), 583–598. <https://doi.org/10.1111/j.1464-0597.2004.00190.x>
- Ghinea, V., & Bratianu, C. (2007). *Organizational culture modeling*.
- Gomero, G., Bhat, M., & Obsilencha, K. (2022). Determinants of public construction works contract performance Application: An Empirical survey. *Management Dynamics*, 19, 34–45. <https://doi.org/10.57198/2583-4932.1021>
- Ifedolapo Helen, B., Opeyemi Emmanuel, O., Lawal, A., & Elkanah, A. (2015). Factors Influencing the Performance of Construction Projects in Akure, Nigeria. *International Journal of Civil Engineering*, 3(57), 57–67.
- Irani, Z., Beskese, A., & Love, P. E. D. (2004). Total quality management and corporate culture: Constructs of organisational excellence. *Technovation*, 24(8), 643–650. [https://doi.org/10.1016/S0166-4972\(02\)00128-1](https://doi.org/10.1016/S0166-4972(02)00128-1)
- Iyer, K. C., & Jha, K. N. (2005). Factors affecting cost performance: Evidence from Indian construction projects. *International Journal of Project Management*, 23(4), 283–295. <https://doi.org/10.1016/j.ijproman.2004.10.003>
- Kumaraswamy, M. M., & Thorpe, A. (1996). Systematizing Construction Project Evaluations. *Journal of Management in Engineering*, 12(1), 34–39. [https://doi.org/10.1061/\(asce\)0742-597x\(1996\)12:1\(34\)](https://doi.org/10.1061/(asce)0742-597x(1996)12:1(34))
- Kuprenas, J. (2003). Implementation and performance of a matrix organization structure. *International Journal of Project Management*, 21, 51–62. [https://doi.org/10.1016/S0263-7863\(01\)00065-5](https://doi.org/10.1016/S0263-7863(01)00065-5)
- Lechler Thomas, & Gao Ting. (2012). Explaining project success with client expectation alignment. *PMI® Research and Education Conference*, 1–20.
- Lyneis, J. M., Cooper, K. G., & Els, S. A. (2001). Strategic management of complex projects: A case study using system dynamics. *System Dynamics Review*, 17(3), 237–260. <https://doi.org/10.1002/sdr.213>
- M. Kapote, M. M., & Pimplikar, P. D. S. S. (2014). Suggested Mathematical Model for Specialized Subcontractor Prequalification Scrutiny and Ultimately the Performance Prediction. *IOSR Journal of Mechanical and Civil Engineering*, 11(3), 43–51. <https://doi.org/10.9790/1684-11364351>

- Makebo, G. M. (2020). Study on Significant Factors that Affect the Construction Project Performance: A Review Paper. *Civil and Environmental Research*, 12(7), 13–18. <https://doi.org/10.7176/cer/12-7-02>
- Mbugua, L. M., Harris, P., Holt, G. D., & Olomolaiye, P. O. (1999). A Framework for Determining Critical Success Factors Influencing Construction Business Performance. *Proceedings of the 15th Annual ARCOM Conference*, 1(OCTOBER 1999), 255–264.
- MUDC. (2016). *Ministry of Urban Development and Construction*. July, 18.
- Navon, R. (2005). Automated project performance control of construction projects. *Automation in Construction*, 14(4), 467–476. <https://doi.org/10.1016/j.autcon.2004.09.006>
- Nevstad, K., Madsen, T. K., Eskerod, P., Aarseth, W. K., Karlsen, A. S. T., & Andersen, B. (2021). Linking partnering success factors to project performance - Findings from two nation-wide surveys. *Project Leadership and Society*, 2(June 2020). <https://doi.org/10.1016/j.plas.2021.100009>
- Nyangwara, P. O., & Datche, E. (2015). Factors Affecting the Performance of Construction Projects : A Survey of Construction Projects in the Coastal Region of Kenya. *International Journal of Scientific and Research Publications*, 5(10), 1–43.
- Oghomwen, S.-E. B., Ihensekhie, A. M., & Osamudiamen, B. B. (2022). Factors Affecting Project Performance of Building Construction Projects in Federal Capital Territory (FCT) Abuja, Nigeria. *Current Journal of Applied Science and Technology*, 41(35), 44–53. <https://doi.org/10.9734/cjast/2022/v41i353960>
- Oke, A., Aigbavboa, C., & Dlamini, E. (2017). Factors Affecting Quality of Construction Projects in Swaziland. *The Ninth International Conference on Construction in the 21st Century (CITC-9)*, March 5th-7th, 1–6.
- Pillai, A. S., Joshi, A., & Kosiganti, S. (2002). Performance measurement of R&D projects in a multi-project, concurrent engineering environment. *International Journal of Project Management*, 20, 165–177. [https://doi.org/10.1016/S0263-7863\(00\)00056-9](https://doi.org/10.1016/S0263-7863(00)00056-9)
- Saraf, D. (2013). Study of Factors Affecting Performance of Construction Project. *International Journal of Science and Research*, 4(5), 2319–7064. www.ijsr.net
- Sinclair, D., & Zairi, M. (1995). Effective process management through performance measurement. *Business Process Re-Engineering & Management Journal*, 1(3), 50–65. <https://doi.org/10.1108/14637159510103220>
- Soewin, E., & Chinda, T. (2018). Factors affecting construction performance: Exploratory factor analysis. *IOP Conference Series: Earth and Environmental Science*, 140(1).

<https://doi.org/10.1088/1755-1315/140/1/012102>

- Taber, K. (2018). The Use of Cronbach's Alpha When Developing and Reporting Research Instruments in Science Education. *Research in Science Education*, 48, 1–24. <https://doi.org/10.1007/s11165-016-9602-2>
- Tadesse Borku, W. (2022). Assessing The Impact Of Cost Inflation On Building Construction Material: A Study In Wolaita Zone, Southern Ethiopia. *Journal of University of Shanghai for Science and Technology*, 24(1), 339–345. <https://doi.org/10.51201/jusst/22/0148>
- Takim, R., & Akintoye, A. (2002). Performance Indicators for Successful Construction Project Performance. *18th Annual ARCOM Conference.*, 2(September), 545–555.
- Tangen, S. (2004). Performance measurement: From philosophy to practice. *International Journal of Productivity and Performance Management*, 53, 726–737. <https://doi.org/10.1108/17410400410569134>
- Tebeje Zewdu, Z. (2016). Construction Projects Delay and Their Antidotes: The Case of Ethiopian Construction Sector. *International Journal of Business and Economics Research*, 5(4), 113. <https://doi.org/10.11648/j.ijber.20160504.16>
- Temam, F. (2018). *Comparisons of Factors Affecting Performance of Local and International Contractors in Building Projects in Ethiopia In Partial Fulfillment of the Requirements for the Award of Master of Arts Degree in Project Management. June.*
- Tilahun Deneke. (2020). *The Assessment of Factors Affecting Performance of Construction Projects. The Case of ECWC Construction Projects. February.*
- Turner, J. R., & Müller, R. (2003). On the nature of the project as a temporary organization. *International Journal of Project Management*, 21(1), 1–8. [https://doi.org/10.1016/S0263-7863\(02\)00020-0](https://doi.org/10.1016/S0263-7863(02)00020-0)
- Ufitamahoro, S. (2021). Factors Affecting Project Performance in Rwanda: Case Study of Bugesera Airport Construction. *Theijbmt.Com*, 5(5), 158–164. <https://www.theijbmt.com/archive/0941/1951956006.pdf>
- Ugwu, O., & Haupt, T. (2007). Key performance indicators and assessment methods for infrastructure sustainability—a South African construction industry perspective. *Building and Environment - BLDG ENVIRON*, 42, 665–680. <https://doi.org/10.1016/j.buildenv.2005.10.018>
- Windapo, A. O., & Cattell, K. (2013). The South African construction industry: Perceptions of key challenges facing its performance, development and growth. *Journal of Construction in Developing Countries*, 18(2), 65–79.

APPENDIXES

JIMMA UNIVERSITY BUSINESS AND ECONOMICS COLLEGE SURVEY QUESTIONNAIRE

Dear Respondents,

This study will examine the factors affecting construction projects performance in case of health care construction project of Jimma zone for my fulfillment of Masters in Project Management and financing study in Jimma University business and economics department. To successfully undertake this study, it is important to look into the issues from different perspectives by involving different professionals who have experience and knowledge in the construction area. Therefore, you are the one who can respond genuine and necessary information. So, I kindly request you to complete the questionnaire and be sure that, your response will keep confidentially and it will be used for the purpose of this study only.

Thank you very much for your help for timely completion and cooperation

Yours Sincerely,

Esmael Suleyman

Part One: General Information: Please add (X) as appropriate

1. Age _____ Sex: Male, Female

2. Level of education

- PhD
- MSc/MA
- BSc/BA
- Diploma
- Other (Specify) _____

3. Work Experience: _____ years

4. Type of Institution

- Micro enterprise
- Private
- Governmental
- Non-Governmental
- Other (Specify) _____

5. Responsibility

- Project manager
- Consultant
- Site Engineer
- Contractor
- Owner/Client
- Other (Specify) _____

6. Number of workers (daily labour and employees): _____

Part Two: Questions that measure construction project performance

Table below will measure construction project performance. Please express your experience and opinion on factors affecting construction projects performance. (Please tick in the appropriate box).

1= very low, 2= low, 3= medium, 4= high and 5= very high

S/N	Construction project performance	Very Low	Low	Medium	High	Very High
1	On time completion of the project					
2	Completion with allocated budget					
3	Performing with specified quality level					
4	Fulfilling Client Satisfaction					
5	Achieving project members Health and safety					
6	Fulfilling Regulatory and community satisfaction					
7	Promoting Innovation and Learning of employees					
8	Insuring Productivity					

Part Three: Factors Affecting the Construction Projects performance

Below listed are performance problems that can affect construction projects. Please, rate your opinion on following performance problems. (Please tick the appropriate box).

1= very low, 2= low, 3= medium, 4= high and 5= very high

Performance area	Very Low	Low	Medium	High	Very High
1. Cost factors					
1. Cash flow of project					
2. Profit rate of project					
3. Material and equipment cost					
4. Project labour cost					
5. Project overtime cost					
5. Cost of rework					
7. Cost of variation orders					
8. Waste rate of materials					
9. Incomplete drawing					
2. Time factors					
1. Change orders from owner					
2. Project size and complexity					
3. Unforeseen ground conditions					
4. Low speed of decision making					
5. Project complexity					
6. Effective communication					
7. Financial constraints					
8. Average delay in claim approval					
9. Average delay in payments from owners to contractors					
10. Site preparation time					
11. Unavailability of resources					
12. Time needed to correct defects					
13. Time needed to implement variation orders					

Performance area	Very Low	Low	Medium	High	Very High
3. Quality factors					
1. Conformance or meets to specification					
2. Quality of equipment or machineries and raw materials					
3. Quality assessment system in organization					
4. Quality training or meeting					
5. Incomplete drawing					
6. Incomplete technical specification					
4. Productivity factors					
1. Project size and complexity					
2. Management-labour relationship					
3. Absenteeism rate through project (late start and early exit)					
4. Number of new projects per year					
5. Local cultural characteristics					
6. non-working holidays					
7. Local climate conditions					
8. Employees motivation					
9. Employees attitudes					
5. Client Satisfaction factors					
1. Leadership skills for project manager					
2. Disputes between owner and project parties					
3. Rework incidents					
4. Conflict					
5. Poor workmanship and incompetence workers					

Performance area	Very Low	Low	Medium	High	Very High
6. Regulatory and community satisfaction factors					
1. Cost of compliance to regulators requirements					
2. Quality and availability of regulator documentation					
3. Number of non-compliance events					
7. Health and Safety					
1. Application of health and safety factors in organization					
2. Assurance rate of project					
3. Easiness to reach to the site (location of project).					
4. Climate condition and Air quality					
8. Innovation and Learning					
1. Learning from best practice and experience of others					
2. Review of failures and solving them					
3. Work group					
4. Training the human resources in the skills demanded by the project					

Part four: Overall performance of Construction Projects on the selected site

<i>Description</i>	<i>Very Good Performance (5)</i>	<i>Good Performance (4)</i>	<i>Moderate Performance (3)</i>	<i>Low Performance (2)</i>	<i>Poor Performance (1)</i>
Perceived Overall executed construction project performance by considering the above factors					

Source for questioner development: (Dagne & Markos, 2021) & (DUNFA, 2018), with some modification.