

FACTORS AFFECTING PERFORMANCE OF PUBLIC  
BUILDING CONSTRUCTION PROJECTS; IN CASE OF ARSI  
ZONE.



Research Thesis.

Submitted to Harambee University in Partial Fulfilment for  
the Requirement of the Award of Degree of Masters of  
science in Project Management.

**By: Mekiya Aman**

Advisor: Mulachew Haile (Rs)

**HARAMBEE UNIVERSITY**

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Adama, Oromia, Ethiopia

## **DECLARATION**

I, the undersigned, hereby declare that the Thesis entitled “FACTORS AFFECTING PERFORMANCE OF PUBLIC BUILDING CONSTRUCTION PROJECTS IN ARSI ZONE, submitted by me for the award of the degree of Master of Art in project management of Harambee university, is original work and it has not been presented for the award of any other Degree, Diploma, Fellowship or other similar titles of any other university or institution.

*Name: Mekiya Aman*

Signature: \_\_\_\_\_

## **Confirmation**

This is to confirm that Mekiya Aman has carried out this research on the topic entitled “*Factors affecting performance of public building construction projects*” in Arsi Zone, Oromia regional state under my guidance. The work is suitable for submission for the award of the Master in project management.

**Advisor’s Name:**Mulachew Haile(RS)

Signature: \_\_\_\_\_

Date: \_\_\_\_\_

EXAMINERS' THESIS APPROVAL SHEET  
SCHOOL OF GRADUATE STUDIES  
HARAMBEE UNIVERSITY

We, the undersigned, members of the Examiners of the final thesis by Mekiya Aman have read and evaluated her thesis entitled “*Factors affecting performance of public building construction projects in Arsi Zone, Oromia regional state,*” and examined the candidate’s oral presentation. This is, therefore, to approve that the thesis has been accepted with the incorporation of comments given in partial fulfilment of the requirements for Master in project Management.

Name of External Examiner \_\_\_\_\_ Signature \_\_\_\_\_ Date \_\_\_\_\_

Name of Internal Examiner \_\_\_\_\_ Signature \_\_\_\_\_ Date \_\_\_\_\_

### **Abstract**

*The construction industry plays an indispensable role in the Ethiopian economy, and is a significant contributor to economic growth. However, several challenges have been recognized as confronting and influencing the performance, development and growth of Ethiopian construction industry. The objective of this study was to examine Factors affecting performance of public building construction in Arsi zone Construction projects as a case study. The research was primarily based on primary data collected through self-administered questionnaire. A total of 109 questionnaires were distributed to selected employee of the projects which constituted response rate of (100) or 91% and this was adequate for statistical generalization of the study findings. The data was displayed by use of charts and tables. The researcher adopted quantitative approach to research.*

*In this study, explanatory and descriptive research method were used. These types of research method help the researcher describe the actual performance indicators and the variables or factors affecting construction project performance of public building construction projects in Arsi zone. The researcher further employed a multiple linear regression model to analyse the factors affecting the performance of projects in Arsi Zone. The regression result revealed resources, stakeholder, and quality related factors positively and significantly influenced the project cost performance but procurement management related factors were found positive but not significant factor influencing the cost performance of project. The researcher based on findings suggest that the projects need to give more emphasis on resource and stakeholder management to enhance project performance.*

**Key Words: Project, Project Performance, Construction Industry-**

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## **List of Abbreviations**

|      |  |
|------|--|
| GDP  | Growth Domestic Product.               |
| SPSS | Statistical Package for Social Science |
| ETB  | Ethiopian Birr                         |
| GC   | Gregorian calendar                     |
| EC   | Ethiopian calendar                     |
| KPI  | key performance indicators             |

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# CHAPTER ONE

## INTRODUCTION

### **1.1. Background of the study**

The construction sector worldwide in general is a multibillion-dollar industry that almost always grows in size and complexity of technology. It is a vital sector of the economy that has a significant effect on the efficiency and productivity of other industry sectors. In some of the developing countries, the growth rate of construction activity outstrips that of population and of GDP (Chitkara, 2004). Construction industry in the projects has complexity in its nature because it contains large number of parties as clients, contractors, consultants, stakeholders, shareholders and regulators, this parties can affect the performance of the project through many related topics and factors. These involvements of numerous parties, with various processes, different phases and stages of work and a great deal of input from both the public and private sectors, with the major aim being to bring the project to a successful completion. The level of success in carrying out construction project development activities will depend heavily on the quality of the managerial, financial, technical and organizational performance of the respective parties, while taking into consideration the associated risk management, the business environment, and economic and political stability (Takin, R and Akintoye, 2004).

The long-term success of construction project depends on its performance, which is measured based on timely completion, within the budget, required quality standards and customers satisfaction (Omran, 2012). It is realized that maximization of the success factors and minimization of failure factors will ensure the construction industry realizes its goals. Okuwoga (1998) stated that the performance of the construction industry is considered as a source of concern to both public and private sector clients. Karim and Marosszky (1999) studied performance measurement using Key performance indicators. Studies were conducted to examine factors impacting on project performance in developing countries. Shortage of skills of manpower, poor supervision, poor site management, unsuitable leadership, shortage and breakdown of equipment among others contribute to construction delays in the United Arab Emirates. (Faridi and El-Sayegh, 2006). According to Ajayi et al. (2010) the choice of contractor(s) is a critical factor for the project manager and usually has a significant impact on the success or failure of a project. The performance of a

contractor will definitely correlate with the performance of the contract. He further observed that the evaluation of performance has been a challenge for the construction industry for decades. Several models and methods have been proposed by researchers for the evaluation of project performance. However, most of these procedures according to Ajayi et al. (2010) limit their analysis to selected measures such as cost, schedule or labour productivity. Construction performance embraces client's satisfaction, time performance, cost performance, construction quality and sustainable development. A research done by Tatiana (2005) specified that project participants, project procedures, human aspects and environment may affect project performance. These factors may be associated with the different parties who are involved in construction project, and each of them will play their individual roles contributing to the success of a project. It is widely believed that the performance of projects consists of the performance of all stages with each other to result in the final performance according to time, cost and quality and other factors.

As Carpenter (2014) described, dramatic changes have affected the construction industry over the past several decades and owners, architects, and contractors alike have been searching for methods to construct projects in a manner that improves performance while reducing risk. The construction industry is an increasingly complex, fragmented, and dynamic industry.

Present-day construction projects involve a lot of stakeholders with dozens of project staff members in decision-making capacities of multiple firms and disciplines, each with their own separate focus on project planning, designing and construction. The quality of life of human beings relies in part on the products of construction industry—houses, office buildings, factories, shopping centers, hospitals, airports, universities, refineries, roads, bridges, power plants, water and sewer lines, and other infrastructure. Construction products such as buildings and infrastructures provide shelter, water, power, and support commerce, education, recreation, mobility and connectivity (USCINRC, 2009).

Building projects are unique in their nature and construction process varies widely because of variations in factors such as the physical and the economic environments, the construction team and/or location and time. Internationally distinctive cultural features, traditions and customs present even further obstacles towards performance of construction projects (Xiao and Proverb, 2003).

The construction industry has important contributions to the Ethiopian economy, as demonstrated by its share in the GDP. The sector has registered relatively higher growth as compared to the growth of GDP during this period. Over this period, there has been increased investment on the development and expansion of various infrastructure projects like roads, airports and residential and non-residential housing units. Every government has a vision to improve the living standards and conditions of its citizen and, generally, this is achieved through development programs. It is an accepted assumption that a development program can be broken down into well-organized development projects and that if project activities are planned and implemented effectively the overall intended objectives and purpose of program will be achieved. Maintaining steady cost projection on construction projects had been until recently an issue of serious concern, both to the client and project contractors. Cost deviation from initial cost plan, had been prevalent on construction sites Amusan (2011). Every year, large companies spend large sums on the research and development about the most optimum combination of production or the most optimum function and feature of their products and services. The impact of poor quality on the price of products, organization earnings and the amount of improvement and so forth (Amin, 2011). Cost should be paid for high quality has raised many important issues affecting cost accounting, quality control, repairs and maintenance, supply chain, production management, stores, safety and health, education. Due to the uniqueness of projects, there is no one way or method of organizing the resources for all projects. Every construction project is unique and has its own operating environment and sets of technical requirements. As a result, the execution of a construction project is subjected to numerous constraints that limit the commencement or progression of field operation. Arsi zone construction office is Governmental Organization which has been actively and continuously involved in Ethiopia in varieties of developmental and humanitarian activities.

Currently, it is operating in over 600 projects. Though the type and degree of involvement is different in different woredas. In most of programs, there are small to large construction projects undertakings as part of their plan. However, there is implication that despite trained professionals in Arsi zone construction projects do not always meet their goals. This is manifested in road and building projects undertaken by the companies that have cost overrun, delayed completion period and poor quality resulting in reworks in various projects, high

maintenance costs, dissatisfied clients. On which have significant impact on project performance.

This study were focused on identifying the main building construction performance factors for public building construction projects in Arsi zone and examine how they affect with overall performance to help improve performance of the future construction projects.

### **1.2. Statement of the problem.**

Ethiopia as a country has witnessed a substantial increase in the number of stalled projects due to inappropriate project organization structures and ineffective leadership Abera and Fekadu (2016). It is shown from previous studies (Samson and Lema, 2002; Abera and Fekadu, 2016; Kuprenas, 2003; Cheung, 2004; Iyer and Jha, 2005) that the failure of any project is mainly related to the problems and failure in performance.

According to a report by Federal Democratic Republic of Ethiopian, Ministry of Urban Development, Housing and Construction (2014) on project performance status evaluation stated that among 14 public building projects under construction 8 projects, i.e. 57%, have failed to meet the planned percentage, (MOUDHD, 2014).

Moreover, there are many reasons and factors which attribute to such this problem. In Arsi zone public building construction companies, there are many construction projects fail in performance. In addition, performance measurement systems are not effective or efficient to overcome such this problem. There is implication that the performance of public building construction project in Arsi zone is poor in terms of time, cost and quality performance. Arsi zone construction companies Financial and Physical Performance Report (2011 - 2021). There was rework and maintenance due to poor quality of constructions once the provisional acceptance had been undertaken. This is manifested by high maintenance costs, dissatisfied clients and even projects which are not functional among the main causes of poor performance of construction projects are ineffective resource managements, lack of stakeholder management mechanism, lack of effective and efficient procurement management, and inappropriate quality management. (Gebremedhin 2009) There are various resource, stakeholder, procurement, and quality management related factors which lead to failure of construction project performance in terms of time overrun, cost overrun, and quality problem. Hence, this study is aimed at investigating construction resources, stakeholder, procurement, and quality management related factors that cause construction

cost overrun, time overrun and quality problem in Arsi zone public building construction projects.

### **1.3. Research Question**

- What is the level of public Building construction projects performances in Arsi Zone?
- What is effect of the (resources, procurement, stakeholder, and quality management related factors) on performance of public building construction projects in Arsi zone?

### **1.4. Objective of the Study.**

#### **1.4.1. General objective**

To investigate and examine the perceived factors affecting the performance of public Building construction projects in Arsi zone.

#### **1.4.2. Specific Objectives.**

- To examine the level of public building construction projects performance in Arsi Zone.
- To examine the relationship between the identified factors (resource related factors, procurement related factors, quality management related factors, stake holders related factors) and performance in construction projects.

### **1.5. Significance of the study.**

The results of this research will have importance to various construction parties. It used to identify and to evaluate the resource management, procurement management, stakeholder management, and quality management related factors affecting the performance of public Building construction projects in Arsi zone. And also serve as useful material for construction ownership and shareholders in making policies and decisions. Additionally, to fill the research gap that many studies have not been conducted on Factor affecting performance of public building construction in Arsi zone. Finally, serve for future researchers and suggest areas where further research studies are required in the field.

### **1.6. Scope of the study**

#### **Methodological scope**

The researcher used Descriptive research design, quantitative research method and multiple linear regression analysis. Questionnaire and document review will be used for the study.



**Geographic Scope:** The scope of the study is limited to evaluate and examine the factor affecting performance of public building construction projects in Arsi zone.

**Timeline Scope:** The study focused on projects completed between (2012 -2014 EC) and now on-going .For the sake of getting relevant information.

**Limitations of the study:** Since the study takes in to account the influence of resource management, procurement management, stakeholder management and quality management related factors to the public building project performance, the influence of other factors such as organizational capability, leadership, etc. This may have significant influence in the project management process and thus was not considered in the study. And the study is limited to public building projects.The study was predicted from the contractor’s perspective towards factor affecting the construction project and clients and consultant views were not considered in the study.

### **1.7. Organization of the Study**

The study comprises five chapters. The first chapter deals with introductory background, statement of the problem, objectives, hypotheses, significance, delimitations and limitations of the study. The second chapter deals with definitions, conceptual and theoretical framework and empirical literature reviews that are relevant to the study. The third chapter deals with methodology.

The collected data from the subject of the study are carefully analysed and interpreted under the fourth chapter. The fifth chapter presents summary, conclusions and recommendations on the findings of the study. Reference and appendix which include questionnaire are also be part of this study paper.

## **CHAPTER TWO.**

### **2. REVIEWS OF LITERATURE**

#### **Introduction**

A project is a temporary endeavour undertaken to create a unique product, service or result Project Management institute (2008). According to Hillson D. (2009), all projects are risky and there are three separate reasons for that. The first reason is that all projects share common characteristics which inevitably introduce uncertainty. Some of this common characteristic are projects are unique, complex, involve assumptions and constraints, performed by people and involve change from a known present to an unknown future. The second reason is that all projects are undertaken to achieve some specific objectives. The final reason is that all projects are affected by the external environment they exist in. A construction project in simple words is a process of constructing something by human for one purpose or another. It may be a road, bridge, a dam, a private residence, an airport, a commercial building, office and etc. Construction is the recruitment and utilization of capital, specialized personnel, materials, and equipment on a specific site in accordance with drawings, specifications, and contract documents prepared to serve the purposes of a client. According to Moavenzdاده F. (1976), construction contributes to the economic development of any country by satisfying some of the basic objectives of development including output generation, employment creation and income generation and re distribution; it also plays a major role in satisfying basic physical and social needs, including the production of shelter, infrastructure and consumer goods.

#### **2.1 Theoretical Review**

##### **2.1.2. Critical Chain Project Management Theory**

Critical Chain Project Management is an extension of Theory of Constraints, which is based on the premise that every repetitive production systems have constraints and if the repetitive production system is to improve its performance, it should improve constraining factors .It is named after the essential element; the longest chain of dependent resourced tasks in the project. The aim of the solution is to protect the duration of the project, and therefore completion date, against the effects of individual task structural and resource dependency, variation, and uncertainty. The outcome is a robust and dependable approach that will allow us to complete projects on-time, every time, and most importantly within at most 75% of the

current duration for single projects and considerably less for individual projects within multi-project environments. The shorter duration provides a sterling opportunity in the marketplace to differentiate ourselves from our competitors who deliver poorer outcomes, and late at that, via other project management methods. It also offers the opportunity to deliver more projects over all, in the same amount of time, and at no increase in operating expense, thus significantly improving the bottom line Youngman(2009).

### **2.1.3. Performance Measurement Theory**

According to Mbugua et al. (1999), performance indicators specify the 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, it is usual to refer to performance indicators. Performance measures are the numerical or quantitative indicators Sinclair and Zairi, (1995). On the other hand, performance measurement is a systematic way of evaluating the inputs and outputs in manufacturing operations or construction activity and acts as a tool for continuous improvements Sinclair and Zairi, 1995; Mbugua et al. (1999).

Neely et al. (1995) refer to the performance measurement system as “... a set of metrics used to quantify both efficiency and effectiveness of actions.” Performance measurement has two main aims: to connect company goals and objectives to improvements and to set targets for improvement activity (Grunberg, 2004). Measurement enables increased visibility of the quality and progress of a certain task and helps to justify, manage and evaluate quality and productivity improvement programs at the operations level. The point has been made that proper measurement goals are those that focus as much on communication as on evaluation and targets (Pekuri et al., 2011).

According to a critical review of Deng et al. (2012) performance measurement in construction can be broadly done at three general levels.

1. Industry level: assesses the performance of the industry, both nationally and internationally
2. Business level: measures the performance of the construction organization, including both one-time evaluation and continuous measurement. The spreading and embedding of lessons learnt to generate improvement in project businesses and construction.
3. Project level: evaluate the performance (and success) of construction projects. This may work over the project lifecycle, but most project organizations measure insufficiently to

induce improvement opportunities within a project hence potential benefit is to obtain general lesson for spreading and embedding of lessons on other projects.

According to cost and time factors. Chan and Kumaraswamy (2002) 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 and Jha (2005) remarked that project performance in term of cost is studied since 1960s.

Chan and Kumaraswamy (1996) stated that a number of unexpected problems and changes from original design arise during the construction phase are leading to problems in cost and time performance. They found that poor site management, unforeseen ground conditions and low speed of decision making involving all project teams are the three most significant factors causing delays and problems of time performance in local building works. Okuwoga (1998) stated that cost and time performance has been identified as general problems in the construction industry worldwide. Dissanayaka and Kumaraswamy (1999) remarked that project complexity, client type, experience of team and communication are highly correlated with the time performance; whilst project complexity, client characteristics and contractor characteristics are highly correlated with the cost performance.

Iyer and Jha (2005) remarked that the factors affecting cost performance are: project manager's competence; top management support; project manager's coordinating and leadership skill; monitoring and feedback by the participants; decision making; coordination among project participants; owners' competence; social condition, economical condition and climatic condition. Coordination among project participants was identified as the most significant of all the factors having maximum influence on cost performance of projects. Chan and Kumaraswamy (2002) proposed specific technological and managerial strategies to increase speed of construction and so to upgrade the construction time performance. It is remarked that effective communication, fast information transfer between project participants, the better selection and training of managers, and detailed construction programs with advanced available software can help to accelerate the performance.

#### **2.1.4. Factors Affecting Cost and Time Performance**

Heng and Chuan (2006) stated that there have been many past studies on project performance according to cost and time factors. Chan and Kumaraswamy (2002) 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 and Jha (2005) remarked that project performance in terms of cost is studied since the 1960s.

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### **2.1.5. Factors Affecting Quality Performance**

Arditi & Gunaydin (1998) find that management commitment to continuous quality improvement, management leadership in promoting high process quality; quality training of all personnel; efficient teamwork to promote quality issues at the corporate level; and effective cooperation between parties taking part in the project are generic factors that affect process of quality. Pheng and Chuan (2006), through case studies, has shown that total quality management as a successful management philosophy in the manufacturing and service industry could be replicated in the construction industry with similar benefits. The benefits may be in

terms of reduction in quality costs, and better employee job satisfaction. Iyer and Jha (2005) observe that a contractor's quality assurance system, which ensures consistent quality, is essential in preventing problems and the reoccurrence of problems. His survey also points to the lack of documentation of a quality system for the majority of the contractors.

#### **2.1.6. Stakeholder Theory**

In the stakeholder theory, the idea is that stakeholders "who have stakes" interact with the organization and thus make its operation possible. Blair (1998) et al. It's a theory that explains how organizations function with respect to various constituencies with whom they are inextricably embedded. Stakeholder theory development has centered on defining the stakeholder concept and classifying stakeholders into categories that provide an understanding of individual stakeholder relationships. Freeman define stakeholder as any group or individual who can affect or who is affected by the achievement of the firm's objectives and continues to provide the boundaries of what constitutes a stake.

#### **2.1.7. Implication of Time and Cost Overrun**

Time and cost overrun have an implication and affection to the construction project performance and to the client or project owner. Time and cost certainty is known to be the top priorities of construction clients Davenport (1997). Although affected by many internal and external factors, construction time and cost are considered a good and measurable indicator of project performance. However, low cost and speedy project are not always the main concern of clients today; instead time and cost certainty are becoming increasingly important Flanagan et al. (1998) and it is one of the most important contractor performance criteria for clients' satisfaction. et al. (2001) and Construction Industry Board (1996).

### **2.2. Empirical Review**

#### **2.2.1. Construction Projects and Performance**

Success of construction projects depends mainly on success of performance. Many previous researches had been studied performance of construction projects. Dissanayaka and Kumaraswamy (1999) remarked that one of the principle reasons for the construction industry's poor performance has been attributed to the inappropriateness of the chosen procurement system. Reichelt and Lyneis (1999) remarked three important structures underlying the dynamic of a project performance which are: the work accomplishment

structure, feedback effects on productivity and work quality and effects from upstream phases to down streamphases.

### **2.2.2. Factors Affecting Project Performance**

Chan and Kumaraswamy (2002) remarked that studies in various countries appear to have contributed significantly to the body of knowledge relating to time performance in construction projects. Iyer and Jha (2005) remarked that project performance in term of cost is studied since 1960s. These studies range from theoretical work based on experience of researcher on one end to structured research work on the other end. Moreover, Pheng and Chuan (2006) stated that there have been many past studies on project performance according to cost and time factors. Chan and Kumaraswamy (1996) stated that a number of unexpected problems and changes from original design arise during the construction phase, leading to problems in cost and time performance. It is found that poor site management, unforeseen ground conditions and low speed of decision making involving all project teams are the three most significant factors causing delays and problems of time performance in local building works.

#### **2.2.2.1. Resource Management Related Factors**

Completion of any project within the estimated cost is the basic criteria for the success of any construction project. Primary target of practitioners involved in construction projects is to complete the project within budgeted cost regardless of size and complexity of project. However, completion of any project highly depends on the construction resources. Project resources provide the means for accomplishing the work objectives Padila and Car (1991). Construction resources management is the most important factor contributing to cost success Meepol and Ogunlana (2006). Construction resources management has a high and significant relationship with cost performance for successful projects Meepol and Ogunlana (2006). As cited by Zujo, Pusic and Veizovic (2010) in a multiannual research conducted in Croatia from 1996 till 1998 as part of the scientific project Construction Project Risk and Resource Management, the occurrence of price overrun was observed in no less than 81% of the projects.

Previous studies reveal that there are various construction resource related factors which significantly influence construction cost. Enshassi, Al-Najjar, and Kumaraswamy (2009) found that increment of construction materials prices due to continuous border closures, delay in construction and supply of raw materials and equipment by contractors, fluctuations in the

cost of building materials, and resources constraint of funds and the associated auxiliaries not ready, were among the top ten factors affecting construction cost. Financial difficulties of owner and contractor were ranked as the first problems affecting construction cost in Vietnam Le-Hoai, Lee, & Lee (2008). If the contractor can minimize problems such as inefficient use and lack of construction equipment and shortage of quality material, the construction budget can be reduced Meepol and Ogunlana (2006). In any project, various types of resources are essentially required be managed for the success of the project.

#### **2.2.2.2. Procurement Management Related Factors**

**1. Procurement Planning and Project performance** Procurement planning plays a major role in successful project implementation Frese (2013) contends that procurement planning requires excellent forward planning, which includes detailed planning of the process implementation stages and milestones, task timeliness, fallback positions and re-planning. What this means is that initial planning is not enough. Projects often take wrong turns, or initial solutions prove unfounded thereby necessitating re-planning and going back to the drawing board. A procurement plan may thus be subjected to review from time to time as and when necessary. Frese (2013) emphasizes that planning requires an interactive process that requires agile re-thinking as the known environment shifts. According to Brown and Hyer (2010), planning also encompasses the aspects of forecasting techniques to help in the process of predicting costs and cash flows (financial disbursements).

**2. Contract Management and Project Performance** Cleland and Bidanda (2009) have stated that in a highly connected and competitive world, most projects must function in an environment that interacts with joint ventures, alliances, multinational sourcing, sub-contractors, and intricate vendor relations. Relationships with external organizations are managed through contracts. In general, companies provide services or products based on the results of direct contract negotiations with the client.

**3. Contract Monitoring and Evaluation and Project Performance** Contract monitoring and evaluation system is the structure, policies, and procedures used to ensure that the objectives of a contract are accomplished and vendors meet their responsibilities and implement project. The procurement unit is charged with the responsibility to monitor contract management by user departments to ensure implementation of projects contracts in accordance with the terms and conditions of the contracts Wafula, (2014). The unit is also



required to report any significant departures from the terms and conditions of the contract to the head of the procuring entity and to coordinate internal monitoring and evaluation of the supply chain function in respect of the projects being implemented. Contract evaluation is critical to implementation success in so far as it compels regular comparison of performance against targets, a search for the causes of deviation, a commitment to check adverse variances. Monitoring triggers off an effort to search for solutions to the identified threats to the project success. Chandra (2008), has identified one significant factor, among others, that undermines effective project monitoring and evaluation which tends to ultimately impact on the level of implementation success. The key factor is project characteristics which encompass the project's large size, complex undertakings involving many organizations and people rendering it difficult to keep track of physical performance and expenditure on hundreds or even thousands of activities relating to the project. This also poses the challenge of coordination and communication difficulties where several organizations and people are involved in the same project.

The key things to be planned, monitored and evaluated are time (schedule), cost (budget) and scope (performance) to ensure project implementation. The prescribed public sector procurement plan format as already discussed above exhibits the first two as very prominent features. It is useful to perceive the control process as a closed-loop system, with revised plans and schedules following corrective actions. This helps in project implementation in organization. The planning-monitoring-controlling cycle is continuously in process until the project is implemented and completed Meredith and Mantel (2012). Monitoring tracks system from a simple checklist to sophisticated dashboard style approaches for identifying variances from the original plan which helps in project implementation. They advance the argument that as part of the planning process, a project team should agree on the appropriate approach for monitoring key performance indicators (KPIs) during the life of the project

### **2.2.2.3. Stakeholder Management Related Factors**

Construction projects have many Stakeholders whose composition is often large and include: the owners and users of facilities, project managers, project architects and engineers, designers, shareholders, local authorities, legal authorities, employees, subcontractors, suppliers, process and service providers, competitors, banks, insurance companies, media, community representatives, neighbors, general public, government establishments, visitors, customers, regional development agencies, the natural environment, the press, pressure groups, civic institutions, and the list is almost endless Newcombe (2003). According to

Newcome, project stakeholders are groups or individuals who have a stake in, or expectation of, the project's performance. The number of stakeholders involved or interested in the project normally increases the complexity and uncertainty of the situation. Each stakeholder usually has different interests and priorities that can create conflict or disagreements with the project Karlsen (2008). Their influence may have an impact on the course of a project at some stage and some of stakeholders' influence may impact the project more often than others. Thus, when diverse stakeholders are present in a construction, the project must to set up a plan for managing them in order to succeed.

#### **A. Classification of stakeholder**

##### **Internal and external stakeholder:**

Stakeholders can be divided into internal and external, internal stakeholders being those directly involved in an organization's decision-making process (e.g. owners, customers, suppliers, employees) and external stakeholders being those affected by the organization's activities in a significant way (e.g. neighbors, local community, general public, local authorities). In construction, there has been a strong emphasis on the internal stakeholder relationship such as procurement and site management, while the external stakeholder relationships to some extent have been considered a task for public officials via the rules and legislation that concern facility development Atkin and Skitmore (2008). Newcombe (2003), and Smith and Love (2004) used a similar classification of inside and outside stakeholders and direct and indirect stakeholders.

##### **Primary and secondary stakeholder:**

Carroll and Buchholtz, (2006) classify stakeholders as primary and secondary and state that primary stakeholders are a group of people whose continued participation in the project is important for the survival of the project organization in that the organization cannot survive when they do not participate in the project work whereas secondary stakeholders are those who influence or are influenced by the organization. This class of stakeholders may be able to influence the organization or the organization may influence them. Primary stakeholders could be contractors who provide services (e.g. contractors, subcontractors, consultants) or those in direct relationship with an organization; as opposed to secondary stakeholders who have no contracted responsibility or formal involvement in the organization but are in an indirect or secondary relationship with an organization (Smith and Love, 2004; Carroll and Buchholtz, 2006). Mitchell et al. (1997) proposed an approach for classifying stakeholder's concern by combining various attributes such as power, legitimacy and urgency. They

categorize organization stakeholders as internal and external and their relationship with the organization. Stakeholders and their levels of influence vary according to the nature of the project, their investments and interests in the project.

One of the common negative effects is when Stakeholders form a coalition to try to stop a project and important for project team to be aware of what are the essentials for managing them.

## **B. Classification of Project Stakeholder**

There are a number of reasons why it is necessary to classify stakeholders: namely, to provides a strong sense of stakeholder impact on projects when considering the other alternative concurrence of attributes, to determine the silence of stakeholders, to develop appropriate responses to manage them Nguyen, et al. (2009) and Newcombe, (2003), to assess how each stakeholder group is likely to enforce its expectation on the project; whether these groups have the means to do so based on the power they possess; and the likely impact of stakeholder expectations on project strategy. The classification is done by analyzing who external and internal stakeholders are and dividing them into public, private, supply side and demand side as shown on figure 2. On the public side of External Stakeholders are the regulatory agencies, local governments, and national government and public agencies. While on the private side are the external stakeholders includes local residents, local landowners, environmentalists, conservationists, archeologists, and other external stakeholders. Internal stakeholders are mainly those who are working in directly with the project and are divided into supply side and demand side. On the supply side are those who are directly involved in the execution of the project and include architects, engineers, principle contractors, trade contractors, materials and suppliers. On the demand side are the client for whom the project is being constructed, client's employees, line managers, organization's customers and suppliers.

### **2.2.2.4. Quality Management Related Factors**

#### **Definition of quality**

Quality can be defined as meeting the legal, aesthetic and functional requirements of a project. Requirements may be simple or complex, or they may be stated in terms of the end result required or as a detailed description of what is to be done. But, however expressed, quality is obtained if the stated requirements are adequate, and if the completed project

conforms to the requirements Ardit and Gunayadin (1997). In the construction industry, quality can be defined as meeting the requirements of the designer, constructor and regulatory agencies as well as the owner. According to an American Society of Civil Engineers study Ferguson and Clayto (1998) quality can be characterized as follows.

- Meeting the requirements of the owner as to functional adequacy; completion on time and within budget; lifecycle costs; and operation and maintenance.
- Meeting the requirements of the design professional as to provision of well-defined scope of work; budget to assemble and use a qualified, trained and experienced staff; budget to obtain adequate field information prior to design; provisions for timely decisions by owner and design professional; and contract to perform necessary work at a fair fee with adequate time allowance.
- Meeting the requirements of the constructor as to provision of contract plans, specifications, and other documents prepared in sufficient detail to permit the constructor to prepare priced proposal or competitive bid; timely decisions by the owner and design professional on authorization and processing of change orders; fair and timely interpretation of contract requirements from field design and inspection staff; and contract for performance of work on a reasonable schedule which permits a reasonable profit.

**2. Quality Planning Process in Construction Projects** Many organizations currently invest in quality improvement programmes. However, the literature has revealed that many companies felt that the quality improvement programmes had fallen short of their expectations and that these programmes were not generating the anticipated improvements Lam (1997). The key reason for this gap between quality improvement expectations and the realization of benefits is the absence of an effective quality planning process before its implementation Juran and Godfrey (2000). Thus, quality planning is identified as the most significant phase in a corporate quality management process requiring more attention. Quality planning is a disciplined process to ensure that a structured sequence of activities is completed. These activities will ensure that an organization can provide a quality product on time, at the lowest cost and to the customer's specific specifications. Juran (1988) sees quality planning as part of the quality trilogy of quality planning, control and improvement. Juran (1988) pointed out that quality planning as road map, the key elements of implementing company-wide strategic quality planning are identifying the customers and their needs, establishing optimal quality goals, creating measurements of quality, planning processes

capable of meeting quality goals under operating conditions and producing continuing results in an improved market share. Many other quality planning methodologies have been developed. In particular, the quality planning process is emphasized in quality management approaches, such as total quality management (TQM) and the International Standardization of Organizations (ISO). However, Srinidhi (1998) argued that many firms that independently practice various quality management methods fail because these methods are not aligned with the strategic planning of the organization. According to Ford and Evans (2000), the initial emphasis of strategic quality planning on planning for quality through projects resembled the approach of Juran (1988). Leonard and McAdam (2002) further emphasize that organizations need to integrate quality planning and strategic planning to avoid conflict between the two plans because the quality plan will likely to lose out and could result in several disruptive effects, such as a further emphasis on quality measurements, tension between financial and quality goals and non-involvement of employees and customers in strategic planning Farhan (1999). Thus, the current research on quality planning highlights the importance of strategic quality planning.

The construction industry is viewed as industry with a poor emphasis on quality compared to other sectors, such as the manufacturing and service sectors. In addition to criticisms of the final product, the industry's processes, people and materials are under tremendous pressure to provide a higher quality of construction, as described in the previous section. Despite the perceived importance of the topic and the value of the quality planning process, very little empirical research has been undertaken on quality planning, and the Strategic Quality Process (SQP) in particular, in the construction sector Lam (1997). Studies that directly focus on the quality planning process of Sri Lankan contractors were not found. An undergraduate study by Kumara (1997) has explored the suitability of ISO for Sri Lankan contractors, but information on current practices is still unavailable. This research gap triggered this study, and the next section sets forth the research method adopted for the empirical investigation.

**3. Quality Assurance in Construction Projects** According to the American Manual of Professional Practice for Quality (AMPPQ) in the Constructed Project, "Quality Assurance (QA) is a program covering activities necessary to provide quality in the work to meet the project requirements. QA involves establishing project related policies, procedures, standards, training, guidelines, and system necessary to produce quality. The design professional and constructor are responsible for developing an appropriate program for each project. QA provides protection against quality problems through early warnings of trouble

ahead. Such early warnings play an important role in the prevention of both internal and external problems". On the other hand, Quality Control (QC) is the specific implementation of the QA program and related activities. Effective QC reduces the possibility of changes, mistakes and omissions, which in turn result in fewer conflicts and disputes. According to O'Brien (1989) one way in which more attention will be given to quality control is development of a project quality control plan. Presently, testing and inspection requirements are scattered throughout the contract specifications. To develop a firm plan, the testing and inspection requirements can be combined into a new division of the specifications. This would emphasize quality control and provide an organized location in which all quality control issues are identified to the bidders. As a part of a quality control plan, the manner in which the construction manager will apply quality control procedures should be described to the bidders. This will permit them to assign appropriate costs to the testing procedures.

#### **4. Quality Control in Construction Projects**

Quality control is a process by which entities review the quality of all factors involved in production. ISO 9000 defines quality control as "A part of quality management focused on fulfilling quality requirements". Controls include product inspection, where every product is examined visually, and often using a stereo microscope for fine detail before the product is sold into the external market. Inspectors will be provided with lists and descriptions of unacceptable product defects such as cracks or surface blemishes for example. Quality control emphasizes testing of products to uncover defects and reporting to management who make the decision to allow or deny product release, whereas quality assurance attempts to improve and stabilize production (and associated processes) to avoid, or at least minimize, issues which led to the defect(s) in the first place Liang Shilian (2004). Quality Control of Production factors was divided as the following:

- The contents of human control include the overall quality of organization and individual's knowledge, ability, physical condition, psychological state, quality consciousness, behavior, concept of organizational discipline, and professional ethics.
- Materials (including raw materials, finished products, semi-finished products, components and parts) are material conditions of construction, and material quality is one of necessary conditions to ensure construction quality.
- Construction machinery and equipment are essential facilities for the modern construction,

reflecting the construction power of the enterprise, and having a direct impact on the project progress and quality. Actually, the quality control is to make the type and performance parameters of construction machinery and equipment match the conditions, technology and other factors of the construction site. Construction methods are reflected in the concentration of technical solution, process, testing methods, and arrangements of construction procedures for construction adopted by construction contractors. Creating a good environment will play an important role in guaranteeing the quality and safety of construction projects, achieving civilized construction, and setting social image of Construction Corporation. Control of construction environment includes not only the understanding, restriction, transformation and usage of natural environment, but also activities of creating working environment and environment management Cheng Hu (2004).

Liang Shilian (2004) had adopted a kind of scientific management procedure and method to do quality control of construction, named PDCA Cycle, which is composed of 4 stages of P (plan), D (do), C (check), A (action). PDCA Cycle is ongoing. The quality goals can be realized and some problems can be solved in each cycle, so that the quality can be improved.

**5. Construction Quality Problems** Construction quality problems are generally divided into defects, common problems, and quality accidents. Construction quality defects refer to the phenomenon that technical indicators of construction fall short of the allowance of technical standards. Quality accidents refer to the quality damage with larger loss and influence of the safety of construction structures, functions and form, in the procedure of construction or after delivery for use Phillips (2008). The forms of construction quality problems were different and varied, but the reasons can be mainly summarized in the following aspects: (1) Problems concerning the construction procedures and regulations (2) Problems of design and calculation. (3) Substandard materials and products. (4) Out of control of construction and management. (5) The influence of natural conditions and, (6) Improper use of facilities.

**6. Quality and Management (Leadership) commitment** The Business Roundtable construction industry cost effectiveness study concluded that the primary causes for the decline of construction productivity directly or indirectly involved poor management practices The Business Roundtable (1983). Since quality is part of productivity, the first step for management is to recognize that there is a problem. The success of a TQM program first of all depends on management practices. TQM is a culture and philosophy that must permeate an organization as the method of management Burati (1992). It can thrive only under a senior management that establishes TQM as a top priority. This commitment must be

coupled with a thorough understanding of TQM. Only if supported by this commitment and understanding, can senior management lead the company toward the realization of higher quality in its undertakings. The prominent method of management practiced in the United States today, including the construction industry, is management by control, not by participation. Forced by international competitive pressures and increasing demands for quality products and services, industries are reevaluating the effectiveness of management by control. According to Joiner and Scholtes (1986), in this style of management, the emphasis is on the organizational chart and the key control points within the structure. All managers, beginning at the top, are given certain goals for the next year. They, in turn, set goals and impose controls on each of their subordinates. In construction terms, cost, schedule, and possibly quality goals are established for each project. Project managers are rewarded on the basis of meeting these goals. This method has been somewhat successful. It is simple, logical, and consistent but there are problems when the work gets displaced by the controls themselves Burati (1992). Also, competition to meet short-term goals can lead to internal conflict, adversarial relationships, reduced communication, and accusations

**7. Supplier Involvement and Quality** The ability to produce a quality product largely depends on the relationship among the parties involved in the process; the supplier, the processor, and the customer. The quality of any stage in a process is contingent upon the quality of the previous stages. The quality of the project built by the constructor is directly related to the quality of the plans and the specifications prepared by the designer, the quality of the equipment and materials supplied by the vendors, and the quality of work performed by the subcontractors. Close and long-term relationships with these suppliers to the construction process are required if the constructor is to achieve the best economy and quality Oberlender (1993). Traditionally, in the construction industry, contractors, subcontractors, and vendors are all pitted against one another to compete on the basis of low-bid contracts. Yet, the fourth of Deming (1986) recommendations for reaching a high level of quality stresses those companies must end the practice of awarding business on the basis of price tag alone. According to Peters (1987) successful projects in the future are likely to be decided based on quality, life-cycle costs (not initial cost), and supplier responsiveness, which can only be achieved through partnership relationships; these relationships will involve fewer suppliers, and they are expected to be based on mutual trust. This is already being proven true in certain areas of the industrial construction market. Long-term partnering agreements have been formed between a number of owners and contractors. Some owners are requiring their contractors to have formal TQM programs, and both owners and contractors are requiring



their vendors to implement TQM if they wish to be considered for future work Joiner (1986).

**8. Quality and Employee Training** The importance is recognized by every quality expert. Under TQM, quality becomes everyone's responsibility and the training must be targeted for every level of the company. There should be customized training plans for management, engineers, technicians, home and field office staff, support personnel and field labor Smith (1988). It can be argued that the transient construction work force is quite different from the relatively stable manufacturing work force. This transient nature may make it more difficult to train workers, particularly craft labor, for the construction industry Burati et al. (1992). However, there are many aspects, such as training and awareness that are similar between the safety consciousness of construction firms and the implementation of TQM concepts. Many US construction companies that had safety forced upon them with the formation of the Occupational Safety and Health Administration have proven the cost effectiveness of their safety programs and now use their safety records as a marketing tool. Some of the same techniques used to install safety awareness in craft labor may be adaptable to instill similar quality awareness. It is easy to envision using a good quality performance record as a strong marketing tool. If TQM concepts become widely accepted throughout the construction Oberlender (1993) industry, workers switching from one company to another should require less TQM training since all workers would have received basic quality awareness in their previous employment Burati et al., (1992). The training effort may include instruction in the basics of TQM, cause-and-effect analysis, team problem solving, interpersonal communication and interaction, rudimentary statistical methods and cost of quality measurement. A study of TQM in more than 200 companies found that skills in human interaction, leadership, and initiative are instrumental to the success of any quality improvement effort. The demands on these interpersonal skills increase as the complexity and sophistication of the technical systems increase. The training effort follows a specific plan, and its implementation and effectiveness are carefully tracked. It is initiated in a limited number of pilot teams. The success stories of the pilot teams are then used to fuel the training effort. Follow-up training is essential, and is part of the overall training plan and a job requirement for each individual. The training of employees in the design phase was found to be not very important, in the construction phase moderately important, and in the operation phase very important by the respondents in Gunaydin's (1997) study of TQM in US construction projects Gunaydin (1997). It follows that operation and maintenance crews working in constructed facilities should be the main recipient of training efforts, Findings are parallel to ISO 9001 which emphasizes the importance of training and underlines that

activities demanding acquired skills should be identified and the necessary training provided  
Doyle (1994).

### **2.2.3. Project Success and Project Performance**

Al-Momani (2000) stated that the success of any project is related to two important features, which are service quality in construction delivered by contractors and the project owner's expectations. Managing the construction so that all the participants perceive equity of benefits can be crucial to project success. It is obtained that the complete lack of attention devoted to owner's satisfaction contributes to poor performance. Declining market shares, low efficiency and productivity, and the rapid.

### **2.2.4. Performance of Construction Projects**

To perform is to take a complex series of actions that integrate skills and knowledge to produce a valuable result Elger (2008). Project performance has been defined as the degree of achievement of certain effort or undertaking which relates to the prescribed goals or objectives that form the project parameters Ahmad, Ismail, Nasid, Rosli, Wan and Zainab (2009). The key requirements of suitable performance measures and measurement frameworks are identified as including, having a few but relevant measures, being linked with critical project objectives, providing accurate information, and comprising financial and non-financial measures Ankrah and Proverbs (2005). There are many potential measures of performance for evaluating the success of a construction project. All address performance in three key areas: scope, schedule and budget Alvarado, Silverman and Wilson (2005). Akintoye and Takim (2002) discovered seven project performance indicators, namely: 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. Namely: safety, profitability and productivity.

### **2.2.5. Performance Indicators**

The UK working groups on Key Performance Indicators (KPIs) have identified 10 parameters for benchmarking projects in order to achieve a good performance in response to Egan's report (1998). However, most of these indicators, such as construction cost, construction time, defects, client satisfaction with the product and service, profitability and productivity, promote result-orientated thinking, whereas predictability of design cost and time, and predictability of construction cost and time, and safety can be regarded as process-orientated thinking. There are no suggestions for performance indicators in benchmarking projects at the

project selection phase i.e., analysis stage, when the client and end-user's requirements need statements and the delivery strategy are determined. According to Dvir et al., (unpublished paper, 2002), the output of the requirements at the analysis stage will most likely determine the output of the entire development process. They indicate that the origination and initiation phase, in which major decisions are made, such as decisions on the project's objectives and planning the project's execution, has the most influence on the project's success. The issue is much more serious when the kind of activities that should be undertaken depends on the outcome of earlier activities. It is therefore important to identify parameters (performance indicators) for benchmarking projects at the project selection phase in order to achieve good project performance. Posten (1985), who found that 55% of all defects in research and development projects occur during requirement analysis and specification, earlier documented this position, whereas 43% of all defects are not found until after the testing stage. It is not surprising that the same situation is applicable to construction projects.

#### **2.2.6. Research Gaps**

Biyadgign (2017) studied assessment of construction performance challenges in selected university building construction projects located in southern Ethiopia. Mekdes (2017) studied factors affecting road project implementation. Ephrem, Tabish and Kumar (2017) studied Ephrem, Tabish and Kumar (2017) studied critical factors affecting no dispute performance of Ethiopia public construction projects. Abera and Fekadu (2016) assessed also factors affecting the performance of construction projects in oromia region. Gabremedhin sebsibe factors affecting the performance of construction projects: the case of defence construction enterprise finally, Samson and Lema (2002) investigated the development of construction contractors' performance measurement framework. According to previous studies, it can be said that the performance measurement is a process include factors as Key Performance Indicators (KPIs) such as time, cost, quality, client satisfaction; productivity and safety in order to enable measurement of current organizational project performance and to achieve significant performance improvements of future projects. It was obtained that there were many fields and topics which are related to performance such as, construction project and performance, factors affecting performance of construction projects such as resource, stakeholder, quality and procurement management related factors. It was also able to review measurement of project performance and key performance indicator the key performance indicators are used to evaluate performance of construction projects. These indicators can then be used for benchmarking purposes, and would be used be as a key component of any

organization to move towards achieving best practice and to overcome performance problem in Arsi zone public building construction projects. Based on previous studies and literature review, the most important indicators which were studied in this research are time performance, cost performance, and quality performance (measured in construction defect and client satisfaction). Furthermore, this paper made an attempt to identify factors that affect the performance of public building construction projects from resource, stakeholder, procurement, and quality management perspectives and determine level of project performance and also there is geographical gap.

### **3 Conceptual Framework**

The conceptual framework in this study will be used to show various variables that affect the performance of construction projects.

In this study, the variables have been selected based on alternative theories and previous empirical studies related to factors affecting performance public building construction projects. In accordance with the theory and empirical studies, the independent and dependent variables of the study have been identified in order to investigate.

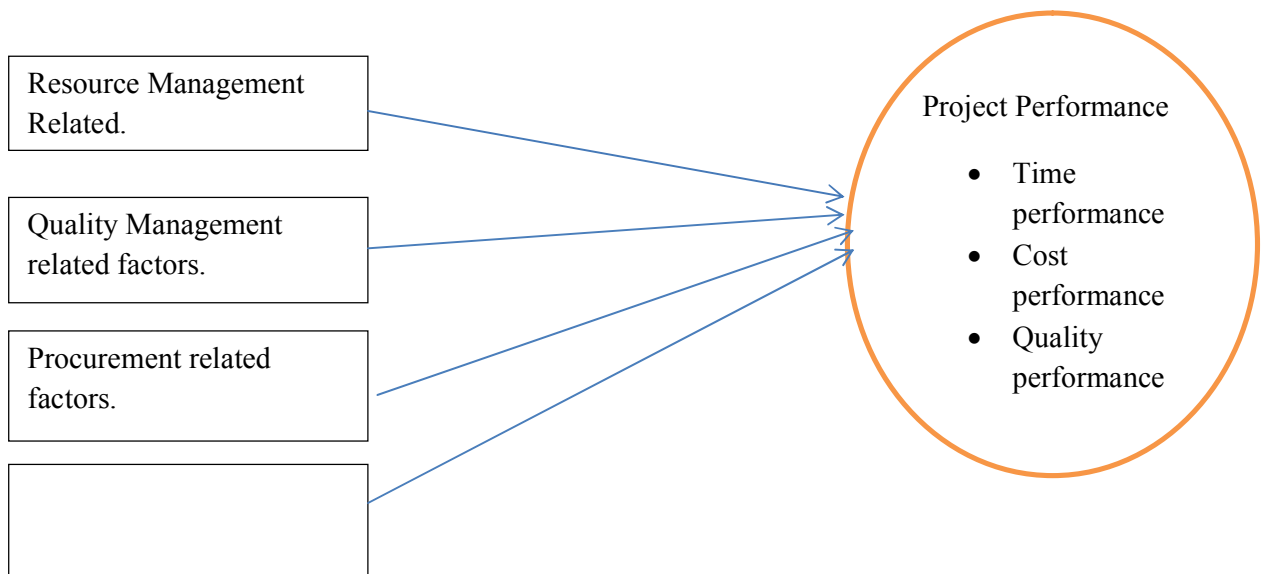
The dependent variable (Project Performance) considered in this study is measured by using variables including:

- Cost (budget) Performance
- Time (schedule) Performance
- Quality Performance

The independent variables considered for this study are variables that are used as a determinant.

Resource Management Related Factors, Procurement Management Related Factors, Stakeholder Management Related Factors, Quality Management Related Factors.

**Figure 2.1. Conceptual frame work**



Source: (Puspasari, 2005)

### **2.3.1. Research Hypothesis**

H1. Resource management related factors have statistically significant effect on the performance of construction projects.

H2. Procurement management related factors have statistically significant effect on the performance of construction projects.

H3. Stakeholder management related factors have statistically significant effect on the performance of construction projects.

H4. Quality management related factors have statistically significant effect on the performance of public building construction projects.

## **CHAPTER THREE**

### **3. RESEARCH METHODOLOGY**

#### **3.1. Introduction**

This chapter outlines the methodology used in the research study. It describes the type of research design that was used, target population, sample size and sampling procedure, Research instruments, a description of tools used in collecting the data, the measurement of variables and the techniques used in analysing the collected data reliability of data collection instruments, data analysis techniques and ethical considerations.

#### **3.2. Research Design and Approach**

##### **3.2.1. Research Approach**

The researcher adopted quantitative approach to research. Quantitative research involves the collection of data so that information can be quantified and subjected to statistical treatment in order to support or refute “alternate knowledge claims” Creswell (2003).

##### **3.2.2. Research Design**

According to Kerlinger (1986) research design is the plan and structure of investigation conceived so as to obtain answers to research questions or test the research hypothesis. The plan represents the overall strategy used in collecting and analysing data in order to test research hypothesis.

In this study, explanatory and descriptive research method were used. The study employed explanatory research design to see the effect of perceived factors affecting performance of public building construction projects. Additionally the researcher also adopted descriptive research method to describe the actual performance indicators and the variables or factors affecting construction project performance of public building construction projects in Arsi zone.

#### **3.3. Data Sources**

This study contains both primary data and secondary data sources. Primary data collected from project managers, site engineer's office engineer's consultant, regulatory bodies and clients. The secondary data were obtained from the organization project and construction report papers.

#### **3.4. Target Population**

The population of the study comprises the stakeholders involved in construction projects; as owners (Arsi zone Construction management office engineers & related program managers)

and contractors who were involved in construction projects during study time considered. For this study, projects completed from 2010-2014EC (Specifically 2013& 2014 EC) are taken based on data availability in the construction management unit and on getting contractors involved. There are a total of 20 individuals administering construction projects on the owner side and 130 from the contractor side, which totals 150population.

### 3.5. Sampling size determination

Yamane (1967) provides a simplified formula to calculate sample sizes.

$$n = \frac{N}{1 + N(e)^2}$$

Where

- n is the sample size,
- N is the population size,
- e is the level of precision.

$$n = \frac{150}{1 + 150(0.05)^2} = 109$$

$$1 + 150(0.05)^2$$

Given the total population of 150 and 95% level of significance (5% level of precision) the sample size is assumed to be 109(72%) of the target population.

### Sampling Techniques

Stratified random sampling technique was used as the appropriate sampling method to get proportional representative sample from each strata. Proportional stratified sampling technique was applied in order to select sample from each category of respondents.

Table 3.1 Stratified sample

|                      | Contractors | Owner | Total |
|----------------------|-------------|-------|-------|
| Available population | 180         | 30    | 210   |
| Specific strata      | 130         | 20    | 150   |

### 3.7. Data Collection tool

#### 3.7.1. Questionnaire

Questionnaires were distributed to top, middle, and lower level managers, and senior office and office engineers as well as to project managers who are located in Arsi zone. The research evidence were be gathered by using close-ended questionnaires. In order to be able to select the appropriate method of analysis, the level of measurement must be understood. For each of measurement, there are /is an appropriate method/s that can be applied and not others. Hence, the questionnaires was structured based on those used by Iyoha and Faboyede (2011), and Sharif (2010).

With regard to the close- ended questions, the respondents was asked to indicate their level of agreement on a five-point Likertscale with the following gratings. On this scale a score of 5 or 4 indicates that the item is perceived to be essential while a score of 3 or 2 indicates that the item is perceived to be fairly important, but not essential, while a score of 1 indicates that the item could be disregarded for being unimportant. Similar scales have been used by Courtis (1992) and Iyoha and Faboyede (2011) and is found suitable. With respect to the open-ended questionnaires the respondents were asked to provide open ended responses to the questions that require opinion and if they have opinions they feel the researcher find useful.

### **3.8. Method of Data Analysis**

The component part of descriptive statistics such as Mean and Standard Deviation used while analysing the different factors that affects the performance of the project. In addition to the above, the study uses graphs, tables and other components which are also vital to analyse the collected data. Furthermore, the relationship between the dependent variable, project performance and the independent variables such as project resource management related factor, procurement management related factors, and quality management related factors, are expressed as a linear combination of the independent variables plus an error term. Following Greene (2003), the multiple linear regression models is specified as:

$$Y = \beta_0 + \beta_1 X_1 + \beta_2 X_2 + \beta_3 X_3 + \beta_4 X_4 + \epsilon$$

Where:

Y= Project Performance

$\beta_0$ - Constant term

X<sub>1</sub>= Resource Management Related Factor



X2= Stakeholder Management Related Factor

X3= Procurement Management Related Factors

X4= Quality Management Related Factors

Where the  $\beta$ S are coefficients of independent variables,

Xs are column vectors for the independent variables in this case; resource management related factor, stakeholder management related factor, procurement management related factors, and quality management related factors, while  $\epsilon$  is a vector of errors of prediction. The error was assumed to be normally distributed with an expected value of zero and a common variance. To do so, the researcher will use SPSS is the most suitable for descriptive statistics and quantitative analysis.

### 3.9. Reliability of the Instruments

This section presents test of reliability of questionnaire according to the pilot study. The reliability of an instrument is the degree of consistency which measures the attribute; it is supposed to be measuring Polit and Hunger (1985). The less variation an instrument produces in repeated measurements of an attribute, the higher its reliability. Reliability can be equated with the stability, consistency, or dependability of a measuring tool. The test is repeated to the same sample of people on two occasions and then compares the scores obtained by computing a reliability coefficient Polit and Hunger (1985). Cronbach's coefficient alpha George and Mallery (2003) is designed as a measure of internal consistency, that is, do all items within the instrument measure the same thing? Cronbach's alpha was used here to measure the reliability of the questionnaire between each field.

The following table shows alpha for each field of the questionnaire and the entire questionnaire. For the fields, values of Cronbach's Alpha were in the range from 0.60 and 0.92. This range is considered high; the result ensures the reliability of each field of the questionnaire. Cronbach's Alpha equals 0.814 for the entire questionnaire which indicates a good reliability of the entire questionnaire. Thereby, it can be said that it is proved that the questionnaire is valid, reliable, and ready for distribution for the population sample.

Table 3.2 Cronbach's alpha for questioner.

| S.n | Factors | Cronbach's alpha value |
|-----|---------|------------------------|
|-----|---------|------------------------|

|   |   |      |
|---|---|------|
| 1 | Resource management related factors     | .876 |
| 2 | Stake holder management related factors | .866 |
| 3 | Procurement management factors          | .705 |
| 4 | Quality management related factors      | .821 |
| 5 | Project performance                     | .804 |
|   | Over all                                | .814 |

### **3.10. Validity of the instrument.**

Validity is the degree to which the sample of the test item represent the content that is designed to measure. Creswell (2003) notes that validity is considering if one can draw consequential and valuable inference from scores on the instrument. The research adopted content validity which refers to the extent to which a measuring instrument provides adequate coverage of the topic under study. To ensure content validity, the instruments were reviewed to enabling the content to address the purpose and avoided ambiguity. This ensured that all respondents understood the content on the questionnaire.

### **3.11. Ethical considerations.**

Ethics is one of the major considerations in research. The study is subject to the following ethical considerations. The research work was started after getting the willingness of the stated organization. Respondents clearly communicated about the objective of the research before they are asked to give their answer. There was no physical or psychological damage to the respondents because of the research.

## CHAPTER FOUR

### 4. RESULTS AND DISCUSSION

In this chapter, results have been presented and discussed to address the research questions and objectives.

#### 4.1. Demographic characteristics

##### 4.1.1 Respondent representation

There were 109 questionnaire was distributed and 100 was returned so the overall response rate is 91.7% which is sufficient to find out the perceptives of the relative importance of project performance indicators.

Table 4.1 . Frequency of respondent's position.

| Position of respondents | Frequency | Percentage % |
|-------------------------|-----------|--------------|
| Project manager         | 17        | 17%          |
| Top manager             | 12        | 12%          |
| Middle manager          | 17        | 17%          |
| Lower manager           | 11        | 11%          |
| Site engineer           | 21        | 21%          |
| Office engineer         | 14        | 14%          |
| Others                  | 8         | 8%           |
| Total                   | 100       | 100%         |

Source: Own survey 2022

There were 109 questioner was distributed to respondents from all of them 100 responses was collected it is 91.7% of distributed questioners which assumed to be sufficient for further analysis

Table 4.2. Education level and work experience of respondents.

| Education level of respondents | Frequency | Percentage |
|--------------------------------|-----------|------------|
|                                |           |            |
| Diploma                        | 5         | 5%(100)    |
| First degree                   | 73        | 73%(100)   |
| Second degree                  | 22        | 22%(100)   |
| Total                          | 100       | 100%(100)  |

| Work experience of respondents |           |            |
|--------------------------------|-----------|------------|
|                                | Frequency | Percentage |
| <6                             | 18        | 18%(100)   |
| 6-11                           | 40        | 40%(100)   |
| 11-15                          | 33        | 33%(100)   |
| >15                            | 9         | 9%(100)    |
| Total                          | 100       | 100%(100)  |

*Source:Data survey2022*

The above table shows the respondents educational level and work experience of respondent. In the case of work experience, most of the respondents were between the range of 6 and 10 years which indicated that most of respondents were assumed to be young. In terms of the third moderating factor under examination, various studies (Smola and Sutton, 2002 and Mellahi and Guermat, 2004, for example) have examined the impact of age on managerial decision making. Research suggests the existence of a relationship between age and decision making. For example, studies by Czaja et al. (1995) found age to be a determinant on articulation of judgements made on task difficulty; studies by Obst et al. (2011) found age to be related to risk judgement

## **4.2 Descriptive analysis of Factors Affecting the Performance of Construction Projects**

### **4.2.1. Perception on the Performance of Construction Projects.**

Success of construction projects depends mainly on success of performance. Many previous researches had been studied performance of construction projects. Dissanayaka and Kumaraswamy (1999) remarked that one of the principle reasons for the construction industry's poor performance has been attributed to the inappropriateness of the chosen procurement system.

The respondents' level perception towards the performance of construction projects is presented in the following table.

Table 4.3 Overall performances of construction projects

| S.N | Project performance  | N   | Mean | S.D  |
|-----|--|-----|------|------|
| 1   | They do not complete projects within the contract schedule (time). | 100 | 4.00 | .778 |

|                     |   |     |      |      |
|---------------------|---|-----|------|------|
| 2                   | The do not completes projects as per the contract cost.         | 100 | 3.90 | .960 |
| 3                   | Project is completed with defect.                               | 100 | 3.11 | .952 |
| 4                   | There is unsatisfied client and user with construction product. | 100 | 3.32 | .963 |
| 5                   | Projects are transferred with defects.                          | 100 | 3.01 | .835 |
| Over all mean score |   | 100 | 3.47 | .897 |

Source survey data 2022

Mean score 1.00-.80 is strongly disagree, 1.81-3.60 is disagree 2.61-3.20 is neutral ,3.21-4.20 is agree , 4.21-5.00 is strongly agree. (Moidunny(2009))

Table 4.3 shows that most respondents (mean =4.00 and SD=0.778) agree that the projects is unable to completed within the contract schedule. Likewise, most of the respondents (mean= 3.9 and SD= 0.96) agreed on the view that the projects do not completed as per the contracted cost. There is also an agreement among respondents as there is transfer of projects to clients with defects and as there is dissatisfaction among the client and user with the completed projects. Overall, most Respondents agreed that the performance of projects in terms of time, cost, and quality (which is measured defect and client satisfaction) is poor. The research by Freeman and Beale (1992) and Riggs (1992) contributes to the measurement of project success from the tangible and non-tangible aspects, where the tangible ones are in terms of cost and time, whereas the non- tangible may include customer satisfaction, the performance of the project manager, weather conditions and other attributes.

#### **4.2.2. Perceived resource management related factors.**

Project resources provide the means for accomplishing the work objectives Padila and Car (1991). Construction resources management is the most important factor contributing to cost success Meepol and Ogunlana (2006). Construction resources management has a high and significant relationship with cost performance for successful projects Meepol and Ogunlana (2006). As cited by Zujo,Pusic and Vejzovic (2010) in a multiannual research conducted in Croatia from 1996 till 1998 as part of the scientific project Construction Project Risk and Resource Management, the occurrence of price overrun was observed in no less than 81% of the projects.

Table 4.4 Resource management related factors

| S.N | Resource management related factors.   | N   | Mean | SD    |
|-----|--|-----|------|-------|
| 1   | There is material wastage in project site                                      | 100 | 3.75 | .783  |
| 2   | There is price escalation of construction material in the market.              | 100 | 4.13 | .677  |
| 3   | There is unavailability of construction material in the market.                | 100 | 4.36 | .718  |
| 4   | There is break down and failure of construction equipment.                     | 100 | 3.90 | .718  |
| 5   | There is unavailability of construction equipment and spare parts              | 100 | 3.72 | .726  |
| 6   | There is no early amendment of equipment.                                      | 100 | 3.19 | .720  |
| 7   | High cost of reparation.   | 100 | 3.52 | .810  |
| 8   | There is lack of highly qualified personnel.                                   | 100 | 2.74 | .981  |
| 9   | There is lack of highly experienced personnel                                  | 100 | 3.04 | 1.024 |
| 10  | Project team have no adequate skill and knowledge of supervision.              | 100 | 2.85 | 1.009 |
| 11  | There is lack of adequate health and safety for employees at the project site. | 100 | 3.72 | 1.026 |
| 12  | There is lack of effectiveness of labors in the project.                       | 100 | 3.79 | .998  |
| 13  | There is fluctuation of currency.  | 100 | 4.06 | .528  |
| 14  | There is payment delay by project.   | 100 | 4.10 | .772  |
|     | Total  | 100 | 3.63 | 0.82  |

*Source: Data survey 2022*

Mean score 1.00-.80 is strongly disagree, 1.81-3.60 is disagree 2.61-3.20 is neutral ,3.21-4.20 is agree, 4.21-5.00 is strongly agree. (Moidunny(2009))  
 There is unavailability of construction material in the market was ranked first by respondents with mean= 4.36 and SD =0.718. The unavailability of construction material in the market need to be assessed in order to enhance the understanding of their needs. price escalation of construction material in the market was ranked second by respondent with mean = 4.13 and SD =0.667. Lack of Stakeholders identification in the enterprise was ranked third by

respondent with mean = 3.86 and SD =0.84. This factor is important as it answers the questions of “who are the project stakeholders that affect the performance of projects. This helps the project manager to manage individuals or groups of stakeholders accordingly, and this is in line with Prisca (2017). Lack of proper and frequent communication and engagement with stakeholders in the enterprise was ranked forth by respondents to affect the performance of projects. This is a very important critical success factor for projects as communication is essential for maintaining the support and commitment of all stakeholders. This result is in line with Prisca et al (2007), which states that communication needs to be effective, regular and well planned if, project to be success.

#### 4.2.3 Perceived Quality Management Related Factors

Quality can be defined as meeting the legal, aesthetic and functional requirements of a project. Requirements may be simple or complex, or they may be stated in terms of the end result required or as a detailed description of what is to be done. But, however expressed, quality is obtained if the stated requirements are adequate, and if the completed project conforms to the requirements Ardit and Gunayadin (1997).

Table 4.5 Quality management related factors.

| S.N   | Quality management related factors   | N   | Mean | SD   |
|-------|--|-----|------|------|
| 1     | There is lack of an effective project quality planning system                              | 100 | 3.18 | .925 |
| 2     | There is lack of an effective project quality assurance system                             | 100 | 3.03 | .969 |
| 3     | There is lack of an effective project quality controlling system                           | 100 | 3.83 | 0.98 |
| 4     | There is lack of an involvement of suppliers to enhance projects quality performance.      | 100 | 3.52 | .835 |
| 5     | Do not provide adequate training for workers to enhance the quality of project performance | 100 | 3.20 | 1.05 |
| Total |  | 100 | 3.21 | 0.96 |

*Source survey data 2022*

Mean score 1.00-.80 is strongly disagree, 1.81-3.60 is disagree 2.61-3.20 is neutral ,3.21-4.20 is agree , 4.21-5.00 is strongly agree. (Moidunny(2009))

Lack of an effective quality controlling system in the projects was ranked first by respondents with mean= 3.8 and SD =0.98 that affect the performance of projects. This mainly is the role of quality management for a construction company is not an isolated activity, but intertwined with all the operational and managerial processes of the construction project. This result is in agreement with Mane and Patil (2015) which states the quality management system has to provide the environment within which related tools, techniques and procedures can be deployed effectively leading to operational success for a construction project. There is lack of an involvement of suppliers to enhance projects quality performance by respondents with mean= 3.52 and SD =0.835 that affect the performance of projects. This result is in line with Low et al. (2004) commented that top management commitment is one of the elements that would reflect quality management performance measures in construction firms. Chin et al. (2003) found that top management commitment is the most critical factor for the successful implementation of ISO 9000.

#### 4.2.4. Perceived Procurement Management Related Factors

Procurement planning plays a major role in successful project implementation Frese (2013) contends that procurement planning requires excellent forward planning, which includes detailed planning of the process implementation stages and milestones, task timeliness, fallback positions and re-planning.

Table 4.6 Procurement related factors.

| S.N | Procurement related factors                                  | N   | Mean | S.D  |
|-----|--|-----|------|------|
| 1   | There is lack of Procurement planning.                       | 100 | 4.95 | .710 |
| 2   | There is lack of ensuring agreement with terms.              | 100 | 4.76 | .690 |
| 3   | There is lack of an effective procurement control mechanism. | 100 | 4.84 | .702 |
|     |  | 100 | 4.85 | .700 |

**Source: survey data 2022**

Mean score 1.00-.80 is strongly disagree, 1.81-3.60 is disagree 2.61-3.20 is neutral ,3.21-4.20 is agree , 4.21-5.00 is strongly agree. (Moidunny(2009))

Table shows procurement management related factors that affect the performance of projects. Lack of procurement related factors was ranked first by respondents with mean =4.95 and SD



= 0.71. The lack of an effective and efficient procurement planning affect the overall performance of the projects. The result is in line with Gerald, (2014) who states effective planning of procurement creates value for stakeholders while improving performance of the project. Lack of an effective and efficient procurement control mechanism and lack of ensuring agreement with terms in the projects was ranked as second and third factors relating to procurement management related factors with mean =4.84 and 4.76 and SD= 0.69 and 0.702 respectively

#### 4.2.5 Perceived Stakeholder Management Related Factors

In the stakeholder theory, the idea is that stakeholders“ who have stakes“ interact with the organization and thus make its operation possible. Blair (1998) et al. It’s a theory that explains how organizations function with respect to various constituencies with whom they are inextricably embedded

*Table 4.7 Stakeholder management related factors.*

| S.N | Stakeholder management related factors  | N   | Mean | SD    |
|-----|---|-----|------|-------|
| 1   | There is Lack of proper identification of its Stakeholders.                   | 100 | 3.73 | .92   |
| 2   | Lack of understanding area of Stakeholders’ interests                         | 100 | 3.21 | 1.11  |
| 3   | Lack of assessing Attributes (power, urgency, and proximity) of Stakeholders  | 100 | 3.77 | .96   |
| 4   | There is lack of Stakeholders involvement in Decision Making process          | 100 | 3.75 | .81   |
| 5   | Lack do not maintain alignment among stakeholder.                             | 100 | 3.27 | .90   |
| 6   | Lack of communication with and engaging stakeholders properly and frequently. | 100 | 3.62 | .92   |
|     | Total   | 100 | 3.55 | 0.933 |

Source survey data 2022

Mean score 1.00-.80 is strongly disagree, 1.81-3.60 is disagree 2.61-3.20 is neutral ,3.21-4.20 is agree , 4.21-5.00 is strongly agree. (Moidunny(2009))

Lack of assessment of stakeholders“ attribute (power, urgency, and proximity) by the enterprise was ranked first by respondents with mean= 3.77 and SD =096. The power, urgency, legitimacy and proximity of stakeholders need to be assessed in order to enhance the

understanding of their needs. The result is in line with Sheng and Wei (1996) that quality of a construction project is largely dependent on the attitudes of different stakeholders such as client, contractor and consultant. Lack of Stakeholders Involvement in Decision Making process was ranked second by respondent with mean = 3.75 and SD =0.92. This result is in line with Kolltveit and Grønhaug (2004) that suggests Effective and efficient involvement of project participants will better assist in improving the total quality of a constructed project and will significantly leads to greater project value. Lack of Stakeholders identification was ranked third by respondent with mean = 3.73 and SD =0.92. This factor is important as it answers the questions of “who are the project stakeholders that affect the performance of projects. This helps the project manager to manage individuals or groups of stakeholders accordingly, and this is in line with Prisca (2017). Lack of proper and frequent communication and engagement with stakeholders was ranked forth by respondents to affect the performance of projects.

This is a very important critical success factor for projects as communication is essential for maintaining the support and commitment of all stakeholders. This result is in line with Prisca et al (2007), which states that communication needs to be effective, regular and well planned if, project to be success.

#### 4.3. Correlation

The study findings were subjected to correlation analysis to determine the relationship between independent and dependent variable. The table shows the correlation between independent variable (resource, procurement, stakeholder, and quality management related factors and) and dependent variable (performance of projects). Pearson correlation coefficient is a measure of linear dependence between two variables: independent and dependent variable. The researcher correlated the factors influencing projects against projects performance. The results are provided in table 4.8

**Table 4.8. Correlation.**

|                        |                        | Resource<br>managemen<br>t. | Quality<br>management. | Procurement<br>management | Stakeholder<br>management. |
|------------------------|------------------------|-----------------------------|------------------------|---------------------------|----------------------------|
| Project<br>performance | Pearson<br>Correlation | .641                        | .581                   | .409                      | .703                       |
|                        | Sig (2-tailed)         | .016                        | .000                   | .037                      | .000                       |

|  |   |     |     |     |     |
|--|---|-----|-----|-----|-----|
|  | N | 100 | 100 | 100 | 100 |
| Correlation is significant at the 0.05 level (2-tailed). |   |     |     |     |     |
| Correlation is significant at the 0.01 level (2-tailed). |   |     |     |     |     |

***Source survey data2022***

Correlation analysis results between resource, stakeholder, procurement and quality management related factors and project performance attained a positive correlation coefficient of 0.641, 0.703, 0.409, and 0.581 with a p-value of 0.016, 0.000, 0.037, and 0.00 respectively. This was an indication that the result was significant at  $\alpha= 5\%$ , and if resource, stakeholder, procurement and quality management is improved, it would improve projects performance in terms of time, cost, quality.

**4.4 .Multiple Regression analysis.**

Multiple regression analysis is a major statistical tool for predicting the unknown value of a variable from the known value of variables (Saunders, 2009). The goal of multiple regressions is to enable a researcher to assess the relationship between a dependent (predicted) variable and several independent (predictor) variables.

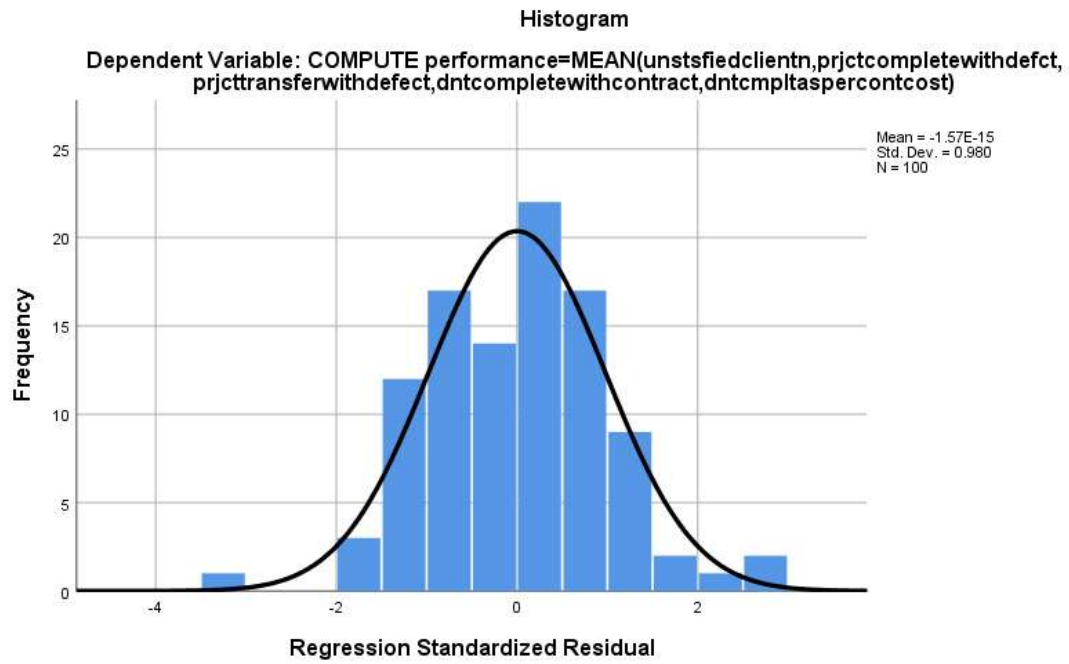
**4.4.1 Tests of Regression Model.**

Before using multiple regression analysis, the researcher has conducted basic assumption tests for the model. These are normality of the distribution, linearity of the relationship between the independent and dependent variables and multi co linearity tests. Each test is explained below.

**A. Normality Distribution (Histogram) Test**

Multiple regressions require the independent variables to be normally distributed. If the underlying distribution of the data is normal, the points will fall along a straight line. Stragglers at either end of the normal probability plot indicate outliers. The histogram in the figure (4.1) shows that the data were normality distributed, since the residuals do not affect the normal distribution and errors are independent.

Figure(4.1) Normal distribution.

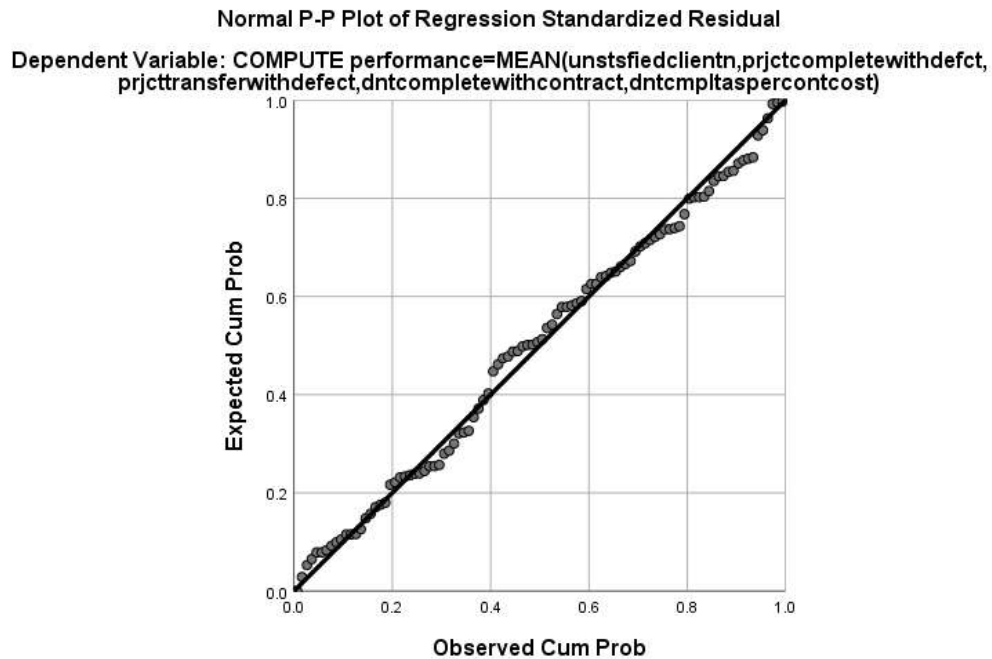


Source ; survey data 2022

**B. Linearity of the Relationship Test**

The second assumption for computing multiple regressions is test of the linearity of the relationships between independent and dependent variables is linear relationship. The Scatter plot in Figure (4.2) shows that the relationship between independent and dependent variables is linear relationship.

**Figure (4.2) Linearity Test chart**



Source ;survey data2022

### C. Multi-co linearity Test

Multi-co linearity refers to the situation in which the independent/predictor variables are highly correlated. In order to check if there is multi-co linearity among the variables, tolerance & varianceinflation factor (VIF) values were examined. According to Pallant (2005), tolerance is an indicator of how much of the variability of the specified independent variable is not explained by another independent variable in the model and if its value is less than 0.01, it indicates that the multiple correlation with other variables is high, implying possibility of multi-collinearity. Whereas, VIF is the inverse of tolerance value (1 divided by tolerance). If VIF value is above 10, it signals chance of multi-collinearity.

### Durbin-Watson test:-

Durbin-Watson test used to ensure independence of errors. If Durbin- Watson test value is about 2 the model does not violate this assumption. While, VIF (Variance Inflation Factor) and tolerance are used to test multicollinearity. If VIF is less than 10 and tolerance is more than 0.05, the multicollinearity model does not violate this assumption. Table (4.9) shows that Durbin Watson value is ( $d=1.910$ ), which is around two which means that the residuals are not correlated with each other; therefore, the independence of errors is not violated. Accordingly, the result in table (4.9) shows that there is no possibility of multi-collinearity among the variables in the model since all the tolerance values are above 0.01 and the

corresponding VIF values are below 10. Therefore, for the current data multi-collinearity is not an issue

Table 4.9: Multi collinearity test

| Model |             | Collineratiy statistics |        | Durbin –Watson |
|-------|-------------|-------------------------|--------|----------------|
|       |             | Tolerance               | VIF    |                |
| 1     | (Constant)  |                         |        | 1.910          |
|       | Resource    | 0.681                   | 1.469  |                |
|       | Quality     | 0.807                   | 1.240  |                |
|       | Procurement | 0.731                   | 1.367  |                |
|       | Stakeholder | 0.708                   | 1..412 |                |

Dependent Variable:-Project Performance

*Source: Own Survey, 2022*

The assumption of autocorrelation is that the covariance between the error terms over time is zero. It is assumed that the errors are uncorrelated with one another. To confirm either there is auto correlation or not the Durbin Watson test (DW) rule for autocorrelation was applied in this study and the alternative hypothesis being there is no autocorrelation. The regression result of DW as shown in table 4.9 above was 1.910DW test result fall in the non-rejection region.

#### 4.5Regression Result

The results of linear regression analysis are given in the following table (Table 4.10). The model summary shows that the regression model can explain 44.7 % of the variance in the dependent variable.

Table 4.10. Result of multiple regression analysis.

| Model            | Parameter coefficient | Standardized Beta value | Unstandardized beta value | standard error | t-value | Significance level (p) |
|------------------|-----------------------|-------------------------|---------------------------|----------------|---------|------------------------|
| Constant         | 1.95                  |                         |                           | 0.584          | 3.351   | 0.001                  |
| Resource Related | 0.21                  | 0.21                    | 0.21                      | 0.197          | 0.106   | 0.016                  |

|                                     |       |       |                      |       |       |       |
|-------------------------------------|-------|-------|----------------------|-------|-------|-------|
| factors.                            |       |       |                      |       |       |       |
| Stakeholder Related factors.        | 0.320 | 0.320 | 0.321                | 0.109 | 2.924 | 0.004 |
| Procurement Related factors.        | 0.390 | 0.039 | 0.056                | 0.076 | 0.515 | 0.608 |
| Quality Related factors.            | 0.228 | 0.228 | 0.227                | 0.093 | 0.276 | 0.016 |
| F statistics                        |       |       | (4,100)=(6.696,0.00) |       |       |       |
| R                                   |       |       | 0.669                |       |       |       |
| R <sup>2</sup> (R <sup>2</sup> adj) |       |       | 0.447(0.487)         |       |       |       |

Source ; survey data 2022

As shown in above Table 4.10 the coefficients of the regression for stakeholder management related factors (0.004,  $p < 0.05$ ), quality management related factors (0.016,  $p < 0.05$ ), and resource management related factors (0.016,  $p < 0.05$ ) are positively and significantly influence project cost performance. This implies the alternative hypothesis that there is significant and positive relationship between resource, stakeholder, and quality management related factors and project cost performance is accepted. On other hand, procurement management related factors was found positive but not significant factor influencing the cost performance of project. This implies the alternative hypothesis that there is significant and positive relationship between procurement management related factors and project cost performance is rejected. Also the coefficients of the regression for resource management related factors (0.016,  $p < 0.05$ ) and stakeholder management related factors (0.004,  $p < 0.05$ ) are positively and significantly influence project time performance. This implies the alternative hypothesis that there is significant and positive relationship between resources and stakeholder management related factors and project time performance is accepted.

On other hand, procurement management related factor was found positive but not significant factor influencing the time performance of project. This implies the alternative hypothesis that there is significant and positive relationship between procurement management related factors and project cost performance is rejected. Furthermore, the coefficients of the regression for resource management related factors (0.016,  $p < 0.05$ ), stakeholder

management related factors (0.004,  $p < 0.05$ ), and quality management related factors (0.000,  $p < 0.05$ ) are positively and significantly influence project quality performance. This implies the alternative hypothesis that there is significant and positive relationship between resource, stakeholder, and quality management related factors and project quality performance is accepted. On other hand, procurement management related factors was found positive but not significant factor influencing the cost performance of project. This implies the alternative hypothesis that there is significant and positive relationship between procurement management related factors and project cost performance is rejected.

As has been reported in the study of Johor state of Malaysia by Memon, Rahman, Asmi, Aziz, & Ravish (2011), it was observed that Construction resourcesmanagement has a high and significant relationship with cost performance forsuccessful projects. Furthermore, Enshassi (2009) found that resource related factors such as increment of construction materials prices, shortage of cash, delay in payment; fluctuations in the cost of construction materials, and resources constraint of funds were among factors affecting construction performance. From the regression analysis, it is noticed that one of the influential factors for project performance is stakeholder management related factors. This finding is in line with the study by Mbiti (2017) that statistically significant relationship between Stakeholder management and Effective Implementation of project in Kenya. The study result contradicts the findings of Aputo (2018) who established that procurement planning and contract management have an effect on Project Performance. Likewise, there is exist a positive but statistically insignificant (0.608,  $p > 0.05$  relationship between stakeholdermanagement related factors and project performance. The result is in line with the findings of Leong, Zakuan, Mat Saman, Ariff, & Tan (2014)) indicate that client satisfaction and time variance have positive and significant relationship with quality management system while other project performance indicators such as cost do not show significant results.

Table 4.11 Hypothesis summary.

| Hypothesis                             | Level of significance | p-value | Decision.  |
|--|-----------------------|---------|------------|
| Resource management related factors    | 0.016                 | 0.002   | Accepted . |
| Stakeholder management related factors | 0.004                 | 0.001   | Accepted.  |



|  |       |       |           |
|--|-------|-------|-----------|
| Procurement management related factors | 0.608 | 0.88  | Rejected. |
| Quality management related factors     | 0.016 | 0.000 | Accepted. |

Source survey data 2022

From the table 4.11 The Independent Variable That are Significant are listed above are Resource management related factors, Stakeholder management and Quality management related factors and also their P-Value are Less than 0.01 ( $P < 0.01$ ) therefore they are Significant and The Independent Variable Procurement management related factors are Not Significant that mean  $p > 0.01$  therefore Have no Effect on Dependent Variable.

## CHAPTER FIVE

### 5. SUMMARY, CONCLUSION AND RECOMMENDATIONS.

#### 5.1. Introduction.

This chapter concentrates on the analysis and interpretation given in chapter four. A lot of findings emerged from the study following the presentation of data. Therefore, summary of findings, conclusion and recommendations is based on the objectives of this study as well as the recommendations of the researcher.

#### 5.2. Summary of Major Findings

The study was based on the factors affecting the performance of public building construction projects in Arsi zone. It sought to investigate whether resource management, procurement management, stakeholder management, and quality management related factors influence projects performance. Based on the objectives of the research stated, the following summaries were made in relation to the findings:

- ❖ The survey revealed that the major resource management related factors that affect the performance of the projects are cash flow and financial difficulties, price escalation of construction material in the market. Material wastage on projects, breakdown and failure of construction equipment, changes in material types and specifications during construction, and unavailability of construction material in the market
- ❖ The survey revealed that the major procurement management related factors that affect the performance of the projects are lack of an effective and efficient Procurement planning, procurement control mechanism in construction projects..
- ❖ Most of respondents agreed that the major stakeholder management related factors that affect the performance of the project are lack of stakeholder attribute assessment, lack of Stakeholders involvement in decision making process, lack of stakeholder identification, and lack of stakeholder communication and engagement.
- ❖ Most of respondents agreed that among quality management related factor that affect the performance of projects, lack of quality management system and lack of management commitment and leadership towards quality were the two most important factors that affect the performance of projects

- ❖ The regression result reveals resource, stakeholder, and procurement related factors are positively and significantly influence the project cost performance. Also, regression result reveals resource and stakeholder management factors are positively and significantly influence the project time performance .On other hand, resource, stakeholder, and quality related factors are positively and significantly influence the project quality performance.

### **5.3. Conclusion**

Based on the objectives of the research stated, the following conclusions were made in relation to the findings:

This research was conducted in Arsi zone public building construction projects working across Arsi zone with the prime intent of examine factors affecting the performance of its construction projects and see their level of the performance of construction projects. Based on the objectives and findings of the study, the following conclusions are drawn. There are many factors were identified and listed under four groups. These groups are resource management related factors, stakeholder management related factors, procurement management related factors, and quality management related factors This results are in line with many previous studies.

The regression result reveals resource, stakeholder, and quality related factors are positively and significantly influence the project cost performance but procurement management related factors were found positive but not significant factor influencing the cost performance of project. Also, regression result reveals resource and stakeholder management factors are positively and significantly influence the project time performance but quality and procurement management related factors were found positive but not significant factor influencing the time performance of project. On other hand, resource, stakeholder, and quality related factors are positively and significantly influence the project quality performance but procurement management related factors was found positive but not significant factor influencing the quality performance of project.

#### 5.4. Recommendations

Based on the research findings, the following recommendations should be put into practice for the who aims at performing better in construction projects.

- ❖ Procurement management practices have increasingly played an important role in project performance. It is necessary for construction implementing organization (owner) to evaluate the volume of works and local condition to estimate proper time before tendering and entering into contract. When the available time is small, especially during emergency projects, larger works need to be broken into possible separate unique projects and be tendered. Adequate planning before and during implementation time, on-time request of interim payments and taking consideration for possible change of material price during tendering time will help contractors from the small risk of escalated material prices, -improve financial liquidity and the profit of contractors. Bigger contractors may be invited for critical construction projects that won't be separated into smaller projects. This will help in balancing quality & available time.
- ❖ Resource should be managed in all dimension. Having skilled workers available in all sides at both office and site will solve associated problems on proper construction management, quality of work, cost control and time management. This along with sufficient supply of materials on time and in quantity will improve project performance. To attract skilled workers, the contractors need to have some form of incentives to workers to avoid using available unskilled labors. Solution to have reduced payment waiting time from the owner side needs an immediate action. Working on online/softcopy approval system may be one solution. Contractors need to conduct site visits to reduce risk associated with physical environment especially on material & labour availability and their quality. Proper construction planning and management to ensure the delivery of a project on schedule and within budget is only possible by having technically capable skilled staffs. Contractors need to work on that Project leaders need to have early & continuous involvement in the project to get on time information about their sites, to work on problems, adjusting plan to meet actual site conditions and others faced during actual implementation.

- ❖ Project Stakeholders are people who are subjected to, part of, or have decision making over the project and it is significant to identify and effectively manage them in order to avoid project delays or failures. Considerations on the ongoing external environment especially political instability, through different assistances (flexible schedule, technical assistance) to contractors will improve the performance of works. Effective and continuous assistance to contractors will help them in their planning and project management effort. Availability of meeting before bid submission date may help contractors to get valuable information on their price setting and understand scope of works.
- ❖ Quality management is critically required for a construction company to sustain in current construction market which is highly challenging and competitive and it has to provide the environment within which related tools, techniques and procedures can be deployed effectively leading to operational success for a company. Taking in this into account, the enterprise should adopt appropriate quality management system to enhance its project performance. Likewise, Management commitment to quality and to continuous quality improvement is very important in each phase of the building process. Management must participate in the implementation process and be fully committed to it if quality management practice is to succeed.

### **5.5 Limitations and Suggestion for Future Research**

- ❖ The outcome of the study is solely dependent on the individual responses of the respondents that participated in the study. This study employed the cross sectional data and it is difficult to determine the time series link across variables and specific project cases. Hence, the research result may differ if it is conducted in another time and in another project. The limitation of sample projects implied that the finding cannot be generalized across all construction projects. Therefore, the researchers propose to conduct a research on different construction project's performance with emphasizing project performance indicator variables. This research was also not considered projects based on their type and size of its performance. But the size and the type of projects can have a greater impact on the overall project performance of a construction projects. In addition other performance parameters other than cost, time, quality, were not getting covered in this research. So In addition to the above, the researcher recommends that further research is conducted on other dimension of

project performance indicator and specific case measurement weighting factor in accordance with project size and type.

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## APPENDIX -1

### 7.1 survey questioner.

HARAMBEE UNIVERSITY

SCHOOL OF GRADUATE STUDIES.

Survey questionnaire to be filled by Respondents.

**Dear Respondent,**

I am currently working on a research study on factors affecting the performance of public building construction projects in the case of Arsi zone, in fulfilment for my MA in Project Management.

This research is aimed to investigate factors affecting the performance of public Building construction projects in Arsi zone projects completed from 2010-2014 EC (Specifically 2013 & 2014 EC) are taken based on data availability in the construction management unit and on getting contractors involved. To successfully undertake this research, it is mandatory to look into the issues from different perspectives by involving professionals who have experience in the construction projects in Arsi zone. I would like to confirm you that your response will be kept strictly confidential and it will be used exclusively for the purpose of this research. Besides, your quick response is vitally important in order to finalize the research timely and I would appreciate if you return the completed questionnaire within a week of your receipt of the same.

Regards.

For any enquiry, my address is,

Tel:- 0941-743579

E-mail: [amanmekiya2010@gmail.com](mailto:amanmekiya2010@gmail.com)

## Part one: General information.

### 1. Position.

- |                   |                          |                     |                          |
|-------------------|--------------------------|---------------------|--------------------------|
| Project manager   | <input type="checkbox"/> | Lower level manager | <input type="checkbox"/> |
| Top level manager | <input type="checkbox"/> | Site engineer       | <input type="checkbox"/> |
| Middle level man  | <input type="checkbox"/> | office engineer     | <input type="checkbox"/> |

### 2. Age in years.

- |       |                          |       |                          |
|-------|--------------------------|-------|--------------------------|
| 20-30 | <input type="checkbox"/> | 41-50 | <input type="checkbox"/> |
| 31-40 | <input type="checkbox"/> | >50   | <input type="checkbox"/> |

### 3. Level of education.

- |              |                          |               |                          |
|--------------|--------------------------|---------------|--------------------------|
| Diploma      | <input type="checkbox"/> | Second degree | <input type="checkbox"/> |
| First degree | <input type="checkbox"/> |               |                          |

### 4. Work experience

- |           |                          |            |                          |
|-----------|--------------------------|------------|--------------------------|
| <5 year   | <input type="checkbox"/> | 11-15 year | <input type="checkbox"/> |
| 6-10 year | <input type="checkbox"/> | >15year    | <input type="checkbox"/> |

### 5. Sex of respondents

- |      |                          |        |                          |
|------|--------------------------|--------|--------------------------|
| Male | <input type="checkbox"/> | female | <input type="checkbox"/> |
|------|--------------------------|--------|--------------------------|

**Part Two : Factors Affecting the Performance of public building Construction Projects.**

1. What is your level of perception towards statements for factors affecting the performance of construction project? Write using a scale of 1 to 5.

Where.

1 = Strongly Disagree 2= Disagree.

3= Neutral.

4= Agree. 5 = Strongly Agree.

| S.N  | Factors description   | 5 | 4 | 3. | 2 | 1 |
|------|---|---|---|----|---|---|
| 1    | <b>Resource management related factors</b>                                      |   |   |    |   |   |
|      | <b>1. Construction materials</b>  |   |   |    |   |   |
| 1.1  | There is material wastage on projects.  |   |   |    |   |   |
| 1.2  | There is unavailability of construction material in the market.                 |   |   |    |   |   |
| 1.3  | There are changes in material types and specifications during construction.     |   |   |    |   |   |
| 1.4  | There is price escalation of construction material in the market.               |   |   |    |   |   |
| 1.5  | There is unavailability of quality material.                                    |   |   |    |   |   |
|      | <b>2. Construction equipment</b>  |   |   |    |   |   |
| 1.6  | There is breakdown and failure of construction equipment.                       |   |   |    |   |   |
| 1.7  | There is unavailability of construction equipment and spare parts.              |   |   |    |   |   |
| 1.8  | There is no early amendment of equipment.                                       |   |   |    |   |   |
| 1.9  | High cost of reparation.  |   |   |    |   |   |
|      | <b>Human resource management.</b>   |   |   |    |   |   |
| 1.10 | There is lack of highly qualified personnel.                                    |   |   |    |   |   |
| 1.11 | There is lack of highly experienced personnel.                                  |   |   |    |   |   |
| 1.12 | Project teams have no adequate skill and knowledge of Supervision.              |   |   |    |   |   |
| 1.13 | There is lack of adequate Health and safety for employees at the projects site. |   |   |    |   |   |
| 1.14 | There is lack of effectiveness of   |   |   |    |   |   |

|      |   |  |  |  |  |  |
|------|---|--|--|--|--|--|
|      | labours in the projects.  |  |  |  |  |  |
| 1.15 | Sufficient training is given to employees when needed.                        |  |  |  |  |  |
|      | <b>Financial management.</b>  |  |  |  |  |  |
| 1.16 | There is Fluctuation of currency.   |  |  |  |  |  |
| 1.17 | There is payment delay by project owner.                                      |  |  |  |  |  |
| 1.18 | Improper Choosing among finance alternatives.                                 |  |  |  |  |  |
| 2    | <b>Procurement management related factors.</b>                                |  |  |  |  |  |
| 2.1  | There is lack of Procurement planning.  |  |  |  |  |  |
| 2.2  | There is lack of ensuring agreement with terms.                               |  |  |  |  |  |
| 2.3  | There is lack of an effective procurement control mechanism.                  |  |  |  |  |  |
| 3    | <b>Stakeholder Management Related Factor</b>                                  |  |  |  |  |  |
| 3.1  | There is Lack of proper identification of its Stakeholders.                   |  |  |  |  |  |
| 3.2  | Lack of understanding area of Stakeholders' interests.                        |  |  |  |  |  |
| 3.3  | Lack of assessing Attributes (power, urgency, and proximity) of Stakeholders. |  |  |  |  |  |
| 3.4  | Lack of Evaluating the Stakeholder Acceptability.                             |  |  |  |  |  |
| 3.5  | Lack of Formulation of appropriate Strategies to manage Stakeholders.         |  |  |  |  |  |
| 3.6  | There is lack of Stakeholders involvement in Decision Making process.         |  |  |  |  |  |
| 3.7  | Lack do not maintain alignment among stakeholder.                             |  |  |  |  |  |
| 3.8  | Lack of communication with and engaging stakeholders properly and frequently. |  |  |  |  |  |
| 4    | <b>Project Quality Management Related Factor</b>                              |  |  |  |  |  |
| 4.1  | There is lack of an effective project quality planning system                 |  |  |  |  |  |
| 4.2  | There is lack of an effective project quality assurance system.               |  |  |  |  |  |
| 4.3  | There is lack of an effective project quality controlling system.             |  |  |  |  |  |
| 4.4  | Poor management and leadership towards quality.                               |  |  |  |  |  |

|     |   |  |  |  |  |  |
|-----|---|--|--|--|--|--|
| 4.5 | There is lack of an involvement of suppliersto enhance projects quality performance.      |  |  |  |  |  |
| 4.6 | Do not provide adequatetraining for workers to enhance the qualityof project performance. |  |  |  |  |  |

**Part three: Performance of public building Construction Projects**

| S.n      | Performance Description                                       | 5 | 4 | 3 | 2 | 1 |
|----------|---|---|---|---|---|---|
| <b>1</b> | <b>Quality Performance</b>                                    |   |   |   |   |   |
| 1.11     | There is unsatisfied client and userwith constructionproduct. |   |   |   |   |   |
| 1.12     | There is Projects completed with defects.                     |   |   |   |   |   |
| 1.13     | Projects are transferred with defects.                        |   |   |   |   |   |
| <b>2</b> | <b>Time Performance</b>                                       |   |   |   |   |   |
| 2.1      | Projects do not complete within the contractschedule.         |   |   |   |   |   |
| <b>3</b> | <b>Cost Performance</b>                                       |   |   |   |   |   |
| 3.1      | Projects do not complete as per the contract cost.            |   |   |   |   |   |

**Part Four: General Question.**



1. What were major problems you faced during the time of planning and implementation of projects? \_\_\_\_\_  
\_\_\_\_\_.

2. What do you recommend to curb the problems which are faced so far? \_\_\_\_\_  
\_\_\_\_\_.