

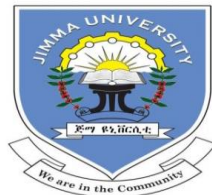
Factors Affecting Project Performance:

A case Study of Jimma Town Cobble Stone Construction Projects

*A Thesis Submitted to the School of Graduate Studies of Jimma University in
Partial Fulfillment of the Requirements for the Award of the Degree of Masters of
Project Management and Finance (MPMF)*

BY

MUSTEFA ABAJEHAD



JIMMA UNIVERSITY

COLLEGE OF BUSINESS AND ECONOMICS

ACCOUNTING AND FINANCE DEPARTMENT

MPFM PROGRAM

JUNE, 2021

JIMMA, ETHIOPIA

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A CASE STUDY OF JIMMA TOWN COBBLE STONE CONSTRUCTION
PROJECTS**

BY:

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UNDER THE GUIDANCE OF

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AND

CO- ADVISOR: BEYENE YOSEF. (MSC)



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CERTIFICATE

This is to certify that the thesis entitles “Factors affecting project performance: a case study of Jimma city cobble stone construction projects” submitted to Jimma University for the award of the Degree of Masters of Arts in Project Management and finance.(MPMF) and is a record of bona fide research work carried out by Mr. *MUSTEFA ABAJEHAD ABAGESA*, under our guidance and supervision.

Therefore, we hereby declare that no part of this thesis has been submitted to any other university or institutions for the award of any degree or diploma.

Main Adviser’s Name

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BEYENE YOSEF. (MSC)

DECLARATION

I hereby declare that this thesis entitled “Factors affecting project performance: a case study of Jimma Town cobble stone construction projects” *in Jimma, Ethiopia*, has been carried out by me under the guidance and supervision of main advisor TesfayeGinbareGutu(Ass.Prof) and Co-Advisor’s BeyeneYosef. (MSC).

The thesis is original and has not been submitted for the award of any degree or diploma to any university or institutions.

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Abstract

The project success depends on its performance. Project performance could be affected with various factors. The main objective of this study was to assess factors affecting the performance of cobble stone road construction projects in Jimma Town. For this study a mixed research approach would be used. For this study, all of the target population was considered; the sample size was 102. Both the primary and secondary data collected were entered into a data base. The primary data which refers to field data was obtained through the use of questionnaire and secondary data through the review of various relevant literatures and document review. Furthermore the researcher was organized and presented findings in terms of tables and charts. Descriptive and explanatory methods were used. To identify main factors affecting project performance of Jimma Town cobble stone project, inferential statistics such as linear regression model were applied. Furthermore, to rank the most important factors affecting the performance of Jimma Town cobblestone projects the relative importance index was used. Environmental related factors leading to influential project performance with a 0.834 mean index score is suggested as the most preferred factor as it interferes with the perceived performance on the cobble road construction projects. This is closely followed by material related factors having a 0.826, and then client related factors having a Relative Importance Index value of 0.819. Furthermore project related factors having an RII of 0.746 is ranked 4th and contractor related factors having an RII of 0.721 is ranked 5th with high to moderate importance. This implies that environmental related factors are the most essential factor for a project to be executed appropriately and performed well. This might be explained by unfavorable soil type around the projects and waste accumulation. Material related factors are also the next leading interfering factors since the existence of insufficient cobble stone production and lack of availability of source material around the town. Relying on the results of the study and the summary of findings, the study concludes that there is a significantly positive relationship between client related factors, consultant related factors, environmental related factors and supervisor related factors with project performance on cobble stone road construction in Jimma Town. Hence, the projects are expected to enhance their performance with intervening the identified factors which interfere.

Key words: Project Performance, Construction Project, Performance Indicator, cobblestone road projects, project delay and quality factors.

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Abbreviations

GDP- Growth Domestic product

GNP- Growth National product

IAMP- Infrastructure Asset Management Plan

JTM- Jimma Town Municipality

PP- project performance

RII- Relative Importance Index

SPSS- Statistical package for social science

WBS- Work breakdown structure

KPI- Key performance Indicator

IPI-Integrated Performance Index

BNQP- Bald ridge National Quality Program

UNRWA- United Nations Relief and Works Agency

VIFs -Variance Inflation Factors

CHAPTER ONE

1. INTRODUCTION

1.1. Background of the Study

Iyer K.C. and Jha K.N., (2016) identified the reasons for the underperformance of Indian construction projects suggesting possible remedial measures. The critical success factors obtained were: project manager's competence; top management's support; monitoring and feedback by project participants; interaction among project participants; and owners' competence. The factors that adversely affected the quality performances of projects were: conflict among project participants; hostile socio-economic environment; harsh climatic condition; PM's ignorance & lack of knowledge; faulty project conceptualization; and aggressive competition during tendering. Analyses also led to the conclusion that the extent of contribution of various success factors varies with the current performance ratings of the project. Project manager's competence and top management support are found to contribute significantly in enhancing the quality performance of a construction project. As in the manufacturing industry, the study establishes that management plays an important role in achieving quality even in construction projects.

According to Enshassi et al(2009) material and equipment cost rarely affect the quality of the construction projects. The rate of material ordered and delivered late to construction sites are also other constraints of the projects' quality. In addition to these factors this study has stated that contractual relationships between consultants and contractors are affecting the quality of the projects. Enshassi, et al., (2009) further stated that the average delay in payment from client to contractor affects the performance of construction project.

According to Mane & Patil(2015)other factors affecting performance of construction projects included project managers' competence, poor monitoring and feedback, lack of on-site project manager, inadequate project team capability, poor planning and control techniques, poor/insufficient information and communication channels, lack of early and continual client/consultant consultation by contractor and insufficient project managers' experience.

Jamaludin et al(2014) identified the factors affecting the cost and quality of construction. They include fraudulent practices and kickbacks; incorrect planning; level of competition; number of competitors; lack of coordination between designers and contractors; poor financial control on site; wastage on site; previous experience of contractor and frequent design changes.

As cited in Abadir H. Yimam (2011), “many projects in developing countries encounter considerable time and cost overruns, fail to realize their intended benefit or even totally terminated and abandoned before or after their completion. Moreover, the development of the construction industry in developing countries generally lags far behind from other industries in those countries and their counter parts in developed nations’. Generally, as Ofori(2006) and Jekale(2004) concluded that, “The construction industry in developing countries failed to meet expectations of governments, clients and society as a whole”. Road Construction programs are now in stage of more rapid expansion in Ethiopia. Therefore the performance in construction is a major concern in the construction industry.

The project performance of project work became an issue of concern to the Government, contractors, consultants, project customers and end-users/clients. Ethiopia is facing various problems among which project performance of road construction is quite serious problem in construction projects (Mamaru D.B. et al, 2017). These problems were observed in Jimma Town cobble stone construction project. Thus, this research study is very important to assess those factors that affect project performance construction projects in cobblestone road construction project in Jimma Town.

1.2. Statement of the problems

Factors affecting project performance are very critical to any construction firm. The failure of any construction project is mainly related to the problems and failure in performance. Construction industry in the global phenomenon faces challenges with regard to problems associated with project performance. Completion of a given project along the three critical dimensions of time, cost and quality, requires detailing all the planning requirements (Adnan Enshassi et al., 2009). Factors like skilled manpower, organization structure and client support have influence on performance of contractors in the road sector as stated by Jekale (2004). Mamarudesselegnet.al. (2017) stated in their research paper, “factors such as time, cost, and project owner satisfaction and safety checklists” were affects performance of construction projects.

Different factors are identified as causes of poor performance in construction industries in different countries. Rwelamina&Savile (1994) identified a lack of management expertise and worker participation, and Tam &Harris (1996) added equipment and quality management of the team as a major cause. Atkinson(2007), Love & Li (2000), and Odeh AM & Battaineh (2002)further identified major causes of performance defects as human error, poor workmanship and contractual relationship underlining on the effect of relationship management on project performance in construction. These studies are conducted in the case of business projects and they fail to include all the key performance indicators. Unlike these business construction projects, condominium projects in Addis Ababa are public projects and they include different stakeholders such as micro and small enterprises, inexperienced contractors and consultants and clients that are not an end-user.

According to Hiwot (2012) most of construction projects in Ethiopia are characterized by time delay, cost overrun and poor quality construction due to poor performance of the contractor and weak stakeholder commitment. Completion of the project is taking more than 200% additional time since the construction is started. End users are waiting more than 10 years to get the houses. Hiwot (2012) further indicated that construction quality defects are observed in completed housing units at condominium houses in Addis Ababa. The households are subject to unexpected maintenance costs and economical issue at large.

Condominium houses now days received less confidence among the owners as to the durability, stability and safety. As it is shown from previous studies (Karim K. and Marosszeky M., 1999; DETR, 2000; Lehtonen Tutu Wegelius, 2001; Samson M and Lema NM, 2002; Kuprenas, 2003; Cheung, 2004; Iyer and Jha, 2005; Navon Ronie, 2005; Ugwu O.O. and Haupt T.C., 2007), that the failure of any project is mainly related to the problems and failure in performance. Moreover, there are many reasons and factors which attribute to this problem. Most of these studies mainly focus on one aspect of performance issues mainly Cost and Time instead of their overall performance. In addition, there very few studies were conducted on Ethiopia context (Merid Taye(2016); Shambel G. (2018); Fetene Nega, (2008); Tadesse Ayalew (2009)) and none on specific non-governmental implemented construction projects. There is a little studies were conducted on the topic in the country to evaluate the performance of cobble stone road constructions, which is the same to Jimma town. Therefore, this study fills the knowledge gap through providing current information on factors affecting the performance of Jimma town cobble stone road construction projects.

The identified studies in the area of the study are conducted selectively on a single performance indicator and very small samples were used. Therefore, this study was intended to identify factors affecting performance of construction projects in the case of cobblestone projects in Jimma Town by including time, cost and quality issues and by using larger sample from cobblestone projects that are currently constructed and under construction. Therefore, this study was focused on identifying factors that affect project performance construction projects in cobblestone road construction project in Jimma Town.

According the study Mamaru D. B. et al(2017) which conducted on Investigation of success factors on Building construction project management system in Addis Ababa, Ethiopia. The result revealed that Decision making effectiveness, project delivery system, timely decision by Owner's representative, contractor's cash flow, leadership skills of project manager, adequacy of fund. The study was focused on building sectors as well as success factors only but this study will focus on road sectors of cobble stone In Jimma Town, hence the study designed to fill this literature and area gaps. Matu J. M.(2016) on his study of Factors influencing performance of contractors in the road construction sectors: A case of selected contractors in Kenya, which were addressed Working capital, skilled manpower, Organization structure, and client support.

The study was focused on performance of contractors of road construction in Kenya. So study was not considered specific issues regarding Cobble stone road sectors. Therefore, it is the current study focus on this specific title to minimize the literature gap with focusing the perceived project performances of time, cost and quality issues.

KEDIR K. B.(2018) conducted similar study on the study area which focused on the independent variables in this study are project-related, client-related, contractor-related, material-related, equipment-related, management-related and external factors. Whereas the current study was addressed project-related, client-related, contractor-related, material-related, supervisor related and environmental related factors. Thus, the current study was incorporated supervisor related and environmental related factors and the study was missed equipment, management and external related factors from the former study. Therefore this study was filled the variable and time gaps which identified on the previous study.

1.3. Research Questions

The proposed study is motivated to fill the gap by answering the following research questions by assessing factors affecting project performance of cobblestone road in JimmaTown road constructions.

1. What are the project-related factors affecting project performance of cobblestone road construction projects in JimmaTown?
2. What are the client-related factors affecting project performances of cobblestone road construction projects in JimmaTown?
3. What are the contractor-related factors affecting project performances of cobblestone road construction projects in JimmaTown?
4. What are the material-related factors affecting project performance in future JimmaTownCobblestone Road Construction Projects?
5. What is the supervisor related factors affecting project performance in future JimmaTownCobblestone Road Construction Projects?
6. What are the environmental factors affecting project performances of cobblestone road construction projects in JimmaTown?

1.4. Research Objectives

1.4.1. General objective

The general objective of this study is to assess factors affecting the project performance of cobblestone road construction project in case of JimmaTown.

1.4.2. Specific Objectives

- a. To assess project related factors affecting project performance of cobblestone road construction projects in JimmaTown.
- b. To evaluate the client-related factors affecting project performance in the JimmaTowncobblestone road construction project.
- c. To identify contractor-related factors affecting project performance of cobblestone road construction projects in JimmaTown.
- d. To determine material-related factors affecting project performance of cobblestone road construction projects in JimmaTown.
- e. To investigate supervisor related factors affecting the project performance of cobblestone road construction in JimmaTown.
- f. To examine environmental-related factors affecting project performance of cobblestone road construction projects in JimmaTown.

1.5. Hypothesis of this study

Based on the above statement of the problems and objectives of the research, the following hypotheses are formulated to test the factors that affecting the project performance of cobblestone road construction project in case of JimmaTown.

- ✓ **Hypothesis 1;** Project -related factors have significant effect on Project Performance.
- ✓ **Hypothesis 2;** Client-related factors have significant effect on Project Performance.
- ✓ **Hypothesis 3;** Contractor-related factors have significant effect on Project Performance.
- ✓ **Hypothesis 4;** Material-related factors have significant effect on Project Performance.
- ✓ **Hypothesis 5;** Supervisor-related factors have significant effect on Project Performance.
- ✓ **Hypothesis 6;** Environmental-related factors have significant effect on Project Performance.

1.6. Scope of the Study

The study was delimited to identify the factors affecting the performance of cobblestone projects in Jimma Town. Although there are different cobblestone projects in Jimma Town, this study delimited to six projects under construction. This is due to the fact that the researcher cannot reach contractors in the other projects which are already completed. Despite the number of data collection instruments, questionnaire was used to cover the larger sample. This study was used contractors, consultants, clients and supervisors as respondents. The study was also delimited to the time frame and budget allocated in this research proposal.

1.7. Significance of the study

The findings of the research work might be expected to contribute sufficient information for cobblestone road constructed contractor, local consultants and client about project performance on road construction in Jimma Town cobblestone projects. The result of this study would be provide an insight for road construction sectors on the factors affecting the road construction performance to take the necessary actions and precautions that threaten the existence as well as future development of road construction projects in general and cobble stone projects in particular. This study would be provides an important input for academic ground for further studies to be undertaken in analyzing the contribution in enhancing the project performance on road construction in Jimma Town cobblestone projects.

1.8. Limitation of the study

One of the limitations of this research was the absence of recent experience in most of the western and European urban areas of Cobblestone road construction because currently they are more developed and they are constructing their streets and roads with very attractive asphalts. Because of this reason very few literatures are written in relation to Cobblestone roads. And also there is a shortage of latest literature reviews for this research in the world in general and in Ethiopia in particular as it is new emerging practice and the other limitation were lack of documentation in Jimma Town infrastructure development department and construction office.

1.9. Organization of the Study

The paper was organized in five chapters i.e. the first chapter includes an introduction section which consists of background of the study, statement of the problem, objectives, hypothesis, significance, scope, and limitation of the study. Chapter two include: review of related literature which has theoretical and empirical review part. Chapter Three: presents research design and methodology the researcher employed to investigate the problem under study. Furthermore, data from respondents also will be presented, analyzed, interpreted and discussed in the fourth chapter. While summary of results, concluding remarks and recommendation was presented in the last chapter

1.10. Definition of Terms

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

Time overruns: is defined as the extension of time beyond planned completion dates.

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

Project: Construction projects constructed between mid-2016 & 2018 GC (2009 & 2010 EC).

Construction: Construction of any building and water projects undertaken by Save the children International, Ethiopia country office.

Owner: Organization for whom the construction project is being undertakes.

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

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

CHAPTER TWO

2. REVIEW OF RELATED LITERATURE

2.1. INTRODUCTION

The aim of this study is to assess and analyzes various factors affecting performance of cobble stone construction project in JimmaTown. So, detail of literatures that are related to this study will be reviewed to achieve the research objective. Some of the key concepts used in the research are highlighted including some theoretical contributions from literature.

A literature review helps in the development of understanding of the previous research that has been done relating to the objectives, aims and helps in the refinement of the ideas to which the research will be built. The Literature review was obtained from Secondary sources; relevant magazines and journals, institutional research publications and reports, financial text books, government publications and projects among others

2.2. Theoretical Literature Review

2.2.1. The Theory of Performance

The Theory of Performance develops and relates six foundational concepts to form a framework that can be used to explain performance as well as performance improvements (Don Elger, 2010). To perform is to produce valued results. A performer can be an individual or a group of people engaging in a collaborative effort. Developing performance is a journey, and level of performance describes location in the journey.

Current level of performance depends holistically on six components: context, level of knowledge, levels of skills, level of identity, personal factors, and fixed factors. Three axioms are proposed for effective performance improvements. These involve a performer's mindset, immersion in an enriching environment, and engagement in reflective practice. Performance advancing through levels where the labels "Level 1," "Level 2," etc. are used to characterize effectiveness of performance.

That is, a person or organization at Level 3 is performing better than a person or organization at Level 2. Performing at a higher level produces results that can be classified into categories:

- (i) quality increases; results or products are more effective in meeting or exceeding the expectations of stakeholders; amount of waste goes down,
- (ii) capability increases; ability to tackle more challenging performances or projects increases,
- (iii) capacity increases; ability to generate more throughput increases,
- (iv) knowledge increases ; depth and breadth of knowledge increases,
- (v) skills increase; abilities to set goals persist, maintain a positive outlook, etc. increase in breadth of application and in effectiveness and
- (vi) Identity and motivation increases; individuals develop more sense of who they are as professionals; organizations develop their essences.

2.2.2 Construction Projects and Performance

Project success is almost the ultimate goal for every project. Success of construction projects depends mainly on success of performance. Many previous researches had been studied on 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.

Thomas (2002) identified the main performance criteria of construction projects as financial stability, progress of work, standard of quality, health and safety, resources, relationship with clients, relationship with consultants, management capabilities, claim and contractual disputes, relationship with subcontractors, reputation and amount of subcontracting. Chan and Kumaraswamy (2002) stated that construction time is increasingly important because it often serves as a crucial benchmarking for assessing the performance of a project and the efficiency of the project organization.

2.2.3 Construction project performance measurement models

Two models developed for measuring construction project performance are integrated performance index (Pillai et al., 2002) and key performance indicator (Construction Industry Task Force, 1998). Integrated Performance Index was developed initially for performance measurement of R&D projects, based on their real-life experiences of working on the management system for the integrated guided missile development program of India. The model identified three project phases and dealt with performance elements such as performance indicators or key factors associated with each phase; the stakeholders; and the performance measurements.

The three project phases identified are the project selection phase, the project execution phase and the implementation phase. The usefulness of the integrated performance index is that it can be applied at all the phases of the project life cycle to rank the project for selection, to compare project performance under the execution phase and to act as an input for the management of future projects. One problem of the model is lack of clarity in the way the mathematical formulae is used to integrate the identified key factors into an integrated performance index. Given this shortcoming, this model is not well received by practitioners.

Key Performance Indicators (KPIs) is the UK construction industry's response to Egan's report (Construction Industry Task Force, 1998) to measure project performances, based on 10 identified parameters. These consist of seven project performance indicators; construction cost, construction time, cost predictability (design and construction), time predictability (design and construction), defects, client satisfaction with the product and client satisfaction with the service; and three company performance indicators namely; safety, profitability and productivity. The strength of this model is that the overall concepts are easily understood and easily implemented by clients, designers, consultants, contractors, sub-contractors and suppliers.

2.2.4 .Performance Measurement Theory

Mbugua et al., (1999) have identified a distinction between performance indicators, performance measures and performance measurement. According to Mbugua et al., 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).

In response to calls for continuous improvement in performance, many performance measurements have emerged in management literature. Some examples include: the financial measures (Kangari et al., 1992), client satisfaction measures (Walker, 1984), employee measures (Abdel-Razek, 1997), project performance measures (Belassi et al., 1996) and industry measures (Egan, 1998). Rene cordero (1990) classifies performance measurement based on the method of measurement and area of measurement.

2.2.5. Project Management and Project Construction Performance

Project management has evolved over the past couple decades as researchers and practitioners have attempted to identify the causes of project failure and the various factors that lead to project success. Traditional project management skills were developed from the requirements of construction and defense industries to plan, control and manage large and complex ‘tangible’ projects (Morris, 1994; Bourne and Walker, 2004). From these arose the so-called “hard” concepts of project success criteria in the form of controlling and managing schedule, cost and scope.

Project Management can also be seen as being about managing change (Cleland, 1995; Bourne and Walker, 2004) and project managers should consider themselves as change agents adding to the Project Management role an additional focus on so-called ‘soft’ aspects of relationship management (Bourne and Walker, 2004). Moreover, according to Bourne and Walker (2004) in most organizations, project managers are accountable for the successful delivery of complete projects.

Increasingly, this success depends on project managers' processing and utilizing skills and competencies. A successful project manager must demonstrate flexibility and competency in many areas, hard and soft skills, introverted and reflective, extroverted and social behavior.

Many of the initiatives for improving the practice and profession of project management have been focused on enhancing techniques and methods associated with skills that included effective management of time, cost and scope. Hendrickson and Au (1989) pointed out that the management of construction projects requires knowledge of modern management as well as an understanding of the design and construction process.

Specifically, project management in construction encompasses a set of objectives which may be accomplished by implementing a series of operations subject to resource constraints.

Subsequently, the functions of project management for construction generally include the following :(Zarina Alias, et al)

- Specification of project objectives and plans including delineation of scope, budgeting, scheduling, setting performance requirements and selecting project participants.
- Maximization of efficient resource utilization through procurement of labor, materials and equipment according to the prescribed schedule and plan.
- Implementation of various operations through proper coordination and control of planning, design, estimating, contracting and construction in the entire process.
- Development of effective communications and mechanisms for resolving conflicts among the various participants.

2.2.6. Project Performance in Construction Project

Projects can be considered as a set of activities that must be completed in accordance to specific objectives which involve the utilization of a company's resources (Bakar, A.H.A. et al. 2011). According to Pinto and Slevin (1989) explained in John M. Nicholas, project success can be described as a complex and often illusory construct, but nonetheless it is of crucial importance to effective project implementation. In general, the performance of construction projects does not meet optimal expectations. One aspect of this is the performance of the participants who are interdependent and make a significant impact on overall project outcomes of these participants, the client is traditionally the owner of the project, the architect or engineer is engaged as the lead designer and a contractor is selected to construct the facilities.

2.3. Empirical Literature Review

As cited in Matu Johnson Mwangi, Bald ridge National Quality Program (BNQP) (2009) defines performance as “outputs and outcomes from processes, products and services that allow assessment and comparison relative to set goals, standards, past results, and other specifications”Matu Johnson Mwangi (2016).

According to research of MamaruDessalegn,et.al (2017) from 68 identified major management success factors; decision making effectiveness, project delivery system, timely decision by owner/owner’s representative, contractor’s cash flow, leadership skills of project manager and adequacy of fund are the most significant success factors.

Another key factor that was identified is quality of the project. According to Muhammad Abas et.al (2015) “quality is one of the important key performance indicators of a construction project which may cause cost overrun and time delays”.

2.3.1. Construction Project Performance Measurement

Performance Measurement can enhance the ability of knowledge so that it provides the improved construction performance, at all levels. As it was explained by AschealewYohannes thesis (2017) “Measurement is a core activity for sector that is focused on delivering results.

Furthermore, he added that performance is measured primarily allow maximizing the results that are meaningful to organizations by adjusting product or service, using the capabilities and funding available”. As research of Jekale W. (2004) indicates, less than 25 percent of road projects were completed within the initial contract period.NavonRonie, (2005) defined performance measurement as a “comparison between the desired and the actual performances”.

He also stated that performance measurement is needed not only to control current projects but also to update the historic database. Such updates enable better planning of future projects in terms of costs, schedules, quality and labor allocation.

The systematic measurement of performance is a significant as it is needed in order to determine areas of improvement. Cited in Saleh Samir Abu Shaban (2008)Brown and Adams (2000) obtained an evaluation framework to measure the efficiency of building project management by using conventional economic analysis tools such as time, cost and quality.

Time performance of the project is monitored according to the work program prepared prior to commencement of the project. Furthermore, the time performance concerns the duration needed to complete the project according to its schedule. Quality performance of the project is a common determinant that is applied to assess the level of performance in construction projects. Quality mines the ability of service or product to perform its specified tasks. In addition, project performance also can be obtained based on the participants' satisfaction levels as it was explained in different literature.

In construction projects lack of quality results in delays, cost overrun and unsafe structure. Many researchers have been carried out both in developed and developing countries to investigate the factors that have a substantial effect on the construction projects performance. According to the study of Helen Ifedolapo Babalola and Oyewale Julius Ojo (2016) the major groups affects project performance of construction projects are ranked as clients related factors, labor and material related factors, contractual relation factors, consultant related factors, contractor related factors, and project related factors as they were ranked by RII.

2.3.2. Contractor and project Performance

In construction industry, the performance of the contractor is very important in maintaining the project quality. Selecting a competent contractor for a job is critical for the successful delivery of a construction project. The owners of the project need to select the contractor so as to perform their activities in good manner. Regarding the performance of contractor, many studies were under taken. Among them as cited in H.I. Babalola and O.J. Ojo (2016), Callistuset al.(2014) concluded that the factors affecting quality performance of construction firms in Ghana based on Consultants and Contractors view are: Fraudulent practices and kickbacks, lack of coordination between designers and contractors, poor monitoring and feedback.

Lack of training on quality for staff, lack of management leadership as well as lack of previous experience of contractor was also identified. Further, H.I. Babalola and O.J. Ojo (2016) concluded their after identifying the most ten top factors that the Contractors and Clients performance of the industry was below expectation.

2.3.3. Project equipment and project performance

Equipment is among the most critical factors that influence the construction projects. It includes tools, machines, or other things that the project participant need for a particular project or activity to be accomplished. Krazner (2005) defined construction equipment as to “heavy-duty vehicles, specially designed for executing construction tasks, most frequently ones involving earthwork operations. They are also known as heavy machines, heavy trucks, construction equipment, engineering equipment, heavy vehicles, or heavy hydraulics”. Productivity of projects can be affected if required equipment, tools and machinery for the specific are not available at the correct cost, quality and time.

As it was stated in research of D. N. Wambui et al (2015) “Selection of the appropriate type and size of construction equipment often affects the required amount of time it is, therefore, essential for site managers to be familiar with the characteristics of the major types of equipment most commonly used in construction. In order to increase job-site productivity, it is beneficial to select equipment with the proper characteristics and a size most suitable for the work conditions at a construction site”. A number of studies have been conducted to examine factors impacting on project performance in developing countries. Faridi & El-Sayegh(2006) reported that shortage of skills of manpower, poor supervision and poor site management, unsuitable leadership; shortage and breakdown of equipment among others contribute to construction delays in the United Arab Emirates.

Hanson et al(2003) examined causes of client dissatisfaction in the South African building industry and found that conflict, poor workmanship and incompetence of contractors to be among the factors which would negatively impact on project performance. Mbachu & Nkando(2007)established that quality and attitude to service is one of the key factors constraining successful project delivery in South Africa. The performance of contractors in Zambia is apparently below expectation; it is not uncommon to learn of local projects that have not been completed or significantly delayed. This poor performance of many local contractors has huge implications in terms of their competitiveness (Zulu & Chileshe, 2008).Enshassi et al(2009) in his thesis on factors affecting the performance of construction projects in the Gaza Strip, found out that the most important factors agreed by the owners, consultants and contractors

were: average delay because of closure and materials shortage, availability of resources as planned through project duration, leadership skills for project manager, escalation of material prices, availability of personals with high experience and qualification and quality of equipment and raw materials in project. (Florence Y. & Bui T.T., 2010) In their study carried out in Vietnam on factors affecting construction project outcomes discovered that major enablers that lead to project success are foreign experts' involvement in the project, government officials inspecting the project and very close supervision when new construction techniques are employed. Amusan and Adebile, (2011) studied factors affecting construction cost performance in Nigerian construction sites.

He discovered from the analysis that factors such as contractor's inexperience, inadequate planning, inflation, incessant variation order, and change in project design were critical to causing cost overrun, while project complexity, shortening of project period and fraudulent practices are also responsible. Iyagba, Odusami and Omirin, (2003) did a research on the relationship between project leadership, team composition and construction project performance in Nigeria. The tests of the hypotheses led to the conclusion that there was significant relationship between the project leader's professional qualification, his leadership style, team composition and overall project performance. No significant relationship was found between the project leader's profession and overall project performance.

Iyer and Jha (2005) did a research on factors affecting cost performance evidence from Indian construction projects and found out that the project manager's competence and top management support are found to contribute significantly in enhancing the quality performance of a construction project. (Nyangilo A.O., 2012) did an assessment of the organization structure and leadership effects on construction projects' performance in Kenya, he found out that lack of appropriate project organization structures, poor management systems and leadership are the major causes of poor project performance. 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 (O.M.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. Mbachu and Nkando (2007) established that quality and attitude to service is one of the key factors constraining successful project delivery in South Africa.Ling et al (2007) remarked that architectural, engineering and construction (AEC) firms may face difficulties managing construction projects performance in China because they are unfamiliar with this new operating environment.

Kim et al (2008) stated that international construction projects performance is affected by more complex and dynamic factors than domestic projects; frequently being exposed to serious external uncertainties such as political, economic, social, and cultural risks, as well as internal risks from within the project. Puspasari (2005) identified 46 possible factors responsible for poor performance of construction contract. He further categorized these factors into eight groups as; factors caused by clients, factors caused by contractors, factors caused by consultants, factors related to subcontractors, factors related to material and labor, contractual relationship factors, project procedures and external environment factors

2.4. Conceptual framework

The Conceptual Framework gives a depiction on how the variables relates to each other. The variable distinct here is the independent and dependent variable.

The independent variables in this study are project-related, client-related, contractor-related, material-related, regulator/customer satisfaction-related, and environmental related factors. The dependent variable is project performance (time, quality, and cost factor).

The conceptual framework is shown in Figure below. The significant project performance factors are covered and arranged into seven groups as follows:

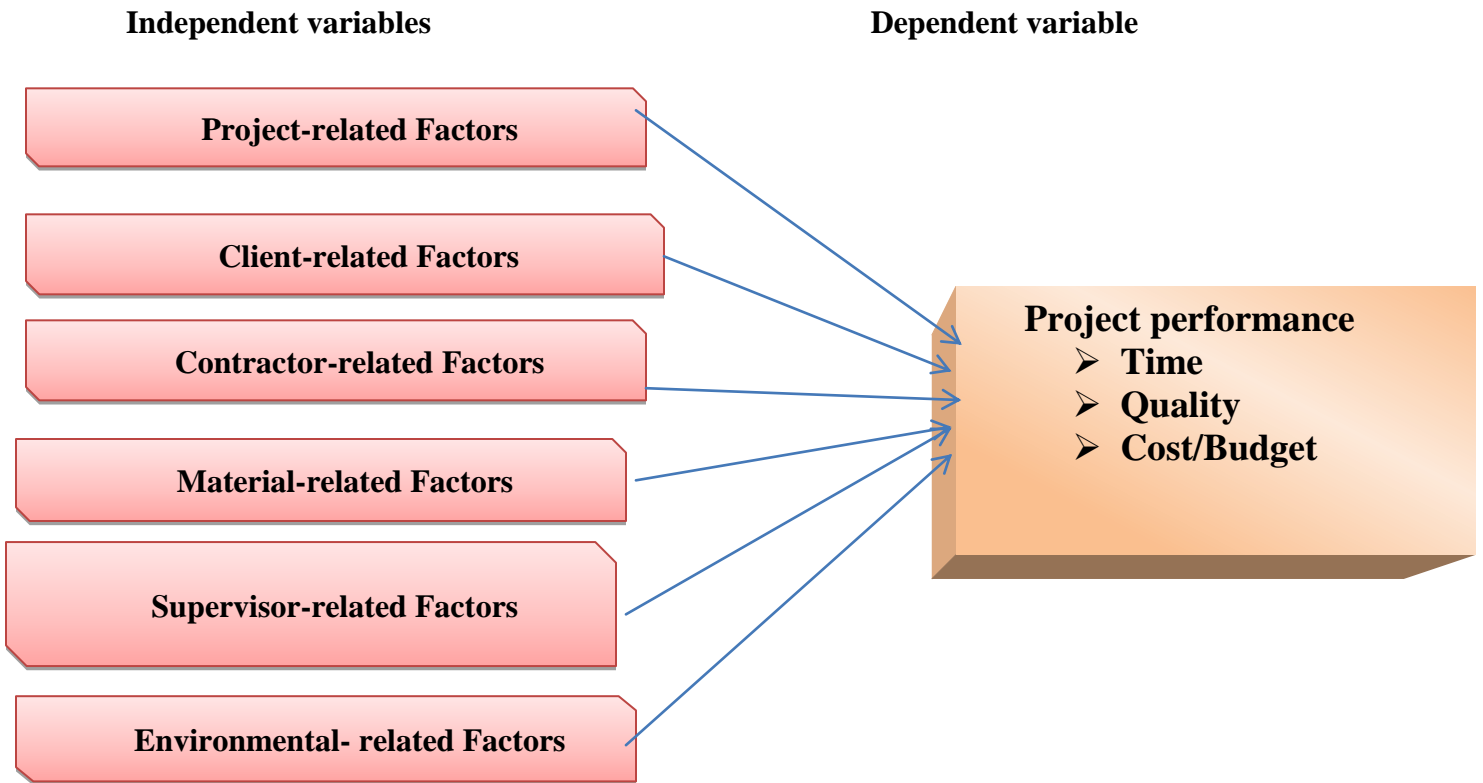


Figure2. 1. Conceptual framework developed by the researcher, 2021

2.5. Synthesis of the review

In citation of previous studies, little attention is being paid to construction performance in Ethiopia and generally on non-governmental organization implemented projects. Based on a literature review of the existing factors affecting performance of construction projects, they can be grouped as project characteristics related factors, labor and material related factors, contractual relationship, project procedures, external environment, clients' related factors and contractors' related factors.

These categories form the basis by which research model developed to measure their effect on construction performance of this study. To determine clients, contactors, consultants as well as professionals in the study area that are working out of the three organizations perceptions towards the relative importance of the key factors affecting the project performance. Therefore, hypothesis of this study will be developed on the above mention main factors.

CHAPTER THREE

3. RESEARCH DESIGN AND METHODOLOGY

3.1. INTRODUCTION

This chapter was come up with the methodology of the study which includes the research design, the targets population, sampling and sampling technique, data collection methods and procedures, data processing and finally data analysis.

Since recent years, JimmaTownis taking initiations to develop main routes with standardized asphalt concrete roads and cobblestones for inner roads. However, the city administration capital investment plan for infrastructure comes up with a high magnitude of cobblestone roads with a severe condition and this initiates this study to be done in Jimma Town cobble stone project.

3.2. Research Design and Approach

The design of the study was descriptive and explanatory research design methods. This research design facilitates a better understanding of the factors interference on the project performance on the study area. For this study mixed research approach was used. Both qualitative and quantitative methods were applied in data collection and analysis. This is because the study primarily was focused on the data collected through questionnaires to give condensed pictures of the data by using SPSS for inferential statistics. And also the study was used qualitative approach for descriptive findings with word impression and textual expression.

Accordingly, the collected data was presented in to two parts; in the first part the study described the relationship between the dependent and independent variables using frequency and percentage. And in the second part the study was triangulate the interdependence between the dependent and independent variables using explanatory research approaches such as, using multiple linear regression model. The Relative Importance Index (RII) was calculated in order to rank the factors.

3.3. Target Population

This study was undertaken in Jimma Town cobblestone road construction projects. The data used for this study was comprises the cobblestone project of the last three years. The source of population for this study was contactors, clients, consultants and regulatory auditors and supervisors those confirm the project was conducted and according to the design from the municipality of the Town.

3.4. Sample size and sampling procedures

A sample design is a definite plan for obtaining a sample from the sampling frame. It refers to the technique or the procedure the researcher would adopt in selecting some sampling units from which inferences about the population is drawn. Sampling is the process of choosing smaller and more manageable number of study units from a defined study population. Thus, attention should be paid to rigorous applicability to wider contexts is seriously undermined (Kothari, 2004). Therefore, this study also goes through all the necessary steps of sampling design. First, the sample frame was determined. Then, from the sample frame, proper size of the sample, which can represent the population, was determined.

Once the sample size is determined, then the researcher was also clearly stated the procedures of selecting participants of the study. The Study was conducted in factors affect project performance case of jimma town cobble stone road construction. There is no a standard rule for the determination of sample size (Mugenda, 2002). Both large and small sample sizes have their own limitations. Too large a sample might become unwieldy and too small a sample might be unrepresentative. What matters in the determination of sample size is representativeness of the sample to a population. Therefore, the correct sample size depends on the purpose of the study and the nature of the population under study.

The population of this study was consisted of all the professionals in the study area who are consultants, clients, contractors and regulatory professionals. Accordingly 102 target populations were identified (Reports from Jimma town Municipality, 2021). To increase the precision and quality of data all professionals were allowed to participate in the questionnaire survey. Thus, in this study, all of the target population was considered; the sample size was 102. Therefore, census was applied to enumerate data from all the target population.

Table 3.1 shows the sample distribution.

C l u s t e r	Target population	P e r c e n t a g e
C l i e n t s / E m p l o y e e s	4 1	4 0
C o n t r a c t o r s	2 9	2 9
C o n s u l t a n t s	7	6
Regulatory professionals	2 5	2 5
	1 0 2	1 0 0

Source: Researcher's field survey, 2021

3.5. Data collection tools and technique Procedure

Questionnaires were the main instruments used. The population for the study comprised of client, consulting firms, contracting firms and professionals in the study area that are working out of the three organizations. The available document sources relevant to the study were reviewed; Primary data was collected through developed semi structured questionnaires whilst review documents were extracted from reports, field work, and desk data study sources. A personal delivery and pickup methods was used to improve the return of the questionnaires from study participants.

Moreover covering letter was attached to each questionnaire to introduce the research objectivity and confidentiality to the study participants. The questionnaire based data collections had an advantage of low cost, free from the bias of the interviewer and respondents have got enough time to respond well to the questions. The data collection procedures were based on primary data collection through comprehensive field surveys and consultation with different stakeholders, owners, contractors and consultant.

3.6. Method of Data analysis and presentation

Descriptive and explanatory method was used. The researcher was organized and presents the finding in terms of tables and charts. To identify main factors affecting project performance of Jimma Town cobble stone project, the inferential statistics was used multivariate linear Regression model. Furthermore, to rank the most important factors affecting the performance of Jimma Town cobblestone projects the relative importance index was used.

The Relative Importance Index (RII) was calculated as follows:

$$RII = \Sigma W / (A) (N)$$

Where; W = Weight given to each factor of poor time and quality performance by Respondents

A = Highest weight

N = Total number of respondents.

3.7. Study Variables and their Measurement

Table 3-2 Variables and their Measurement

S/No	Independent Variables	M e a s u r e m e n t
1	Project - related factors	Hypothesis testing can be conducted through: Either a) Comparison of the realization of the test statistic (t-value) with b) Calculation of the p-value of a test. This is a measure of the cre 1. $p < 0:05$, there is evidence against H_0 . 2. $p < 0:01$, there is strong evidence against H_0 . 3. $p < 0:001$, there is very strong evidence against H_0 .
2	Client Related Factors	
3	Contractor Related Factors	
4	Material Related Factors	
5	Environmental Related Factors	
6	SupervisorRelated Factors	

Source; Own survey (2021)

3.8. Model Specification

Multiple regression models

The effect of independent variables over dependent variable in the study area is explained using the following multiple regression model or equation.

It will be used to predict the value of certain variable based on the other variable. This study used cross sectional data. The intended impact on Project performance by the factors of project related

factor, Supervisory related factor, client related factor, contractor related, material related, and Environmental related factor would be considered using the following model:

$$Y = \alpha + \beta_1x_1 + \beta_2x_2 + \dots + \beta_kx_k + e$$

Where; x is independent variable (factors)

Y is dependent variable (Project performance)

α is constant value

β is coefficient of independent variable to be estimated.

$$Y (PP) = \alpha + \beta_1PR + \beta_2RR + \beta_3CIR + \beta_4CoR + \beta_5MtR + \beta_7ER + e$$

Where:-

PP=Project Performance

PR= Project Related Factors

SR= Supervisor Related factors

CIR= Client Related factors

CoR= Contractor Related Factors

MtR= Material Related factors

ER= Environmental Related Factors

e = model error term

3.9. Validity and Reliability

3.9.1. Validity

To ensure reliability of the research, the research objectives are being stated in a precise and concise manner. Validity of the data collection tool, especially questionnaire was formulated through consultations of at least four expertise' from construction area that have research experience. This can help to identify any significant errors to be corrected. The corrective measure taken can guard not to come up with wrong result.

3.9.2. Reliability

Pilot testing practice is to be taken to check internal consistency of the items. About five civil engineers who are construction office workers were participated in the pilot study for responding to the questionnaire. The pilot responses obtained through the questionnaire were analyzed statistically to see the reliability of items.

Cronbach (coefficient) alpha was used to judge the internal consistency of the items. This can help that to ensure the acceptance of internal consistency of the item.

Table 3.2: Reliability Test

S/No	V a r i a b l e s	N of items	Cronbach's Alpha	Cronbach's Alpha Based on Standardized Items
1	Project - related factors	1	0 . 8 4 3 .	8 4 5
2	Client Related Factors	1	0 . 8 1 7 .	8 1 9
3	Contractor Related Factors	1	0 . 9 2 4 .	9 2 9
4	Material Related Factors	1	0 . 7 8 8 .	7 8 8
5	Environmental Related Factors	6	. 8 7 9 .	8 8 2
6	Supervisor Related Factors	4	. 7 2 8 .	7 3 1
7	Project Performance	3	. 8 2 4 .	8 3 3
	T o t a l	5	3 0 . 8 2 9 0 .	8 3 2

Source; Own survey (2021)

The reliability of the survey variables were initially tested before the hypothesis theory mentioned in previous work was verified. Firstly, in accordance with the work of (Thompson et al, 2017), The Cronbach's α used in this study for the dimensions of each construct is higher than the critical value of 0.7, as proposed by (Nunnally, 1978), indicating that the internal consistency of the scale used in this research is excellent.

3.10. Ethical Consideration

For this study permission letter was forwarded from JU, BECO to Jimma Town municipality and also for the project owner. Then principal investigator was communicated the objective of the study with the project manager and the study participants. After getting consent from the management data collection was started. And was informed to each respondent that the information that was collected and kept confidential.

CHAPTER FOUR

DATA PRESENTATION, ANALYSIS AND INTERPRETATION

This chapter contains the presentation, analysis and interpretations of data. The statistical techniques that were outlined in chapter three were applied to the data, and the results obtained are presented in this chapter. The first part describes the demographic characteristics of respondents in terms of age group, education level, job position, working department, branch employer and service years. In the second part the analysis and interpretation of data gathered through questionnaire were discussed descriptions of the variables with different assumption tests, result of goodness of fit test and result of independent variables effect tests.

Response Rate

The study sought to collect data from 102 respondents which involved with different role on the cobble stone project of Jimma Town but the researcher managed to collect 97 questionnaires. This represents a response rate of 95.1 percent which is very good for analysis. According to Babbie (2004) a response rate of 60 percent is good and that of 95.1 percent is excellent. There's no magic figure on response rates. Higher is better: 60% would be marginal, 70% is reasonable, 80% would be good, and 90% would be excellent. The reason that lower response rates are problematic is, of course, that people who don't respond may well be different from those who do. Low response rates therefore can create sampling bias; the lower the rate, the greater the risk of such bias (Della Mundy, 2002).

4.1. Findings of Demographic Analysis

Before going to the main parts of the study it was logical first to present the demographic status of the study participants. Therefore, here in this section the study was presented the demographic characteristics of respondents in terms of age group, education level, job position, working department, and organization category and service years.

Table 4.1: Demographic Characteristics of Respondents

V a r i a b l e	Variable categories	N	o	Percentage (%)		
Organization category	O w n e r / C l i e n t	3	3	3	4	. 0 2
	C l i e n t c o n s u l t a n t	6		6	.	1 9
	P r i v a t e c o n s u l t a n t	4		4	.	1 2
	G o v e r n m e n t c o n s u l t a n t	3		3	.	0 9
	C o n t r a c t o r s	2	8	2	8	. 8 7
	R e g u l a t o r y	2	3	2	3	. 7 1
	T o t a l	9	7	1	0	0
G e n d e r	M a l e	6	9	7	1	. 1 3
	F e m a l e	2	8	2	8	. 8 7
	T o t a l	9	7	1	0	0
Educational Level	D i p l o m a	2	4	2	4	. 7 4
	B S c	5	8	5	9	. 7 9
	M S c	8		8	.	2 5
	O t h e r s / S p e c i f y	7		7	.	2 2
	T o t a l	9	7	1	0	0
Field of Specialization	C i v i l e n g i n e e r s	3	1	3	1	. 9 6
	S u r v e y o r s	2	9	2	9	. 9 0
	C o n s t r u c t i o n M a n a g e m e n t	1	9	1	9	. 5 9
	H i g h w a y e n g i n e e r s	4		4	.	1 2
	O t h e r s / S p e c i f y	1	4	1	4	. 4 3
	T o t a l	9	7	1	0	0
Position in the project	O f f i c e / s i t e e n g i n e e r	3	7	3	8	. 1 4
	S u p e r v i s o r	1	4	1	4	. 4 3
	P r o j e c t c o o r d i n a t o r	4		4	.	1 2
	P r o j e c t m a n a g e r	3		3	.	0 9
	E x p e r t s	2	4	2	4	. 7 4
	O t h e r s / S p e c i f y	1	5	1	5	. 4 6
	T o t a l	9	7	1	0	0
Work Experience	U p t o 3 y e a r s	1	2	1	2	. 3 7
	3 - 6 y e a r s	1	9	1	9	. 5 9
	6 - 1 0 y e a r s	3	7	3	8	. 1 4
	1 0 - 1 5 y e a r s	2	3	2	3	. 7 1
	≥ 1 5 y e a r s	6		6	.	1 9
	T o t a l	9	7	1	0	0

Source; Own survey (2021)

As it is understandable from the above table 4-1, of the respondents, Larger proportion 31 (34.02 %) were owners (clients) nearly followed by 28 (28.87%) contractors and 23 (23.71%) regulator. This indicated that respondents were involved from various organization categories.

This might be help respondents to indicate the delay factors from different points of views which are necessary to evaluate this study. Concerning respondents' gender majority 69 (71.13 %) was

male. As the project constructed a 6-days-regular service (except Sundays) to its clients the whole year, along with extra/sporadic over time hours during peak season, the less number of female staff may favor it to minimize maternity day-offs impact on the project delay. Regarding respondents education level 66 (68.04 %) have got first degree and above.

This quality capacitated the project to practice on the Town cobble stone road construction, because the majority workforces can understand and adapt new technology/system easily. Hence their answers for the questionnaire could be responsive, too. Concerning respondents Field of Specialization larger proportion 31 (31.96%) were civil engineers which followed by 29 (29.90%) surveyors and 19 (19.59%) construction management. This implies that most of the study participants were professionals and they had been a capacity to evaluate the project itself and its delay factors as well.

Respondents Position in the project the result showed that larger proportion 37(38.14%) were Office/site engineer, followed by 24 (24.74%) experts and 15 (15.46%) were found in other categories. This indicated that respondents with their different level could forward their different suggestion about the delay factors for the project under investigation. This implies that the most of the study participants involved were experts and site engineers. Therefore, they have been providing crucial and valid information as input of this study. Besides, 85 (87.63 %) respondents have more than 3-years' experience on the work. This means the majorities knew the project status and the factors challenged the project well from the scratch, and can evaluate the delay factors for cobble stone road construction project in Jimma Town.

According to Yonnas M. (2016) on his study of assessing the managerial causes of project delay and quality problem and suggests appropriate measures that can be taken to improve project delay and quality problem in future Jimma Town cobblestone road construction projects.

During the case study an investigation of the extent of project delay was done by comparing the elapsed time from original contract period. Review of all the data received from the Six-road construction projects on table 4.1 show that all the projects experienced delays. For these cobblestone road construction projects, an average time overrun was found to be 80.61% of the contract time, the actual delay ranging from 53.33% to 130%.

Similarly, the participants of this study more than 85 % had been experienced for more than three years. In general, the data illustrates that most of the sample respondents have reasonably

adequate and professionally working experiences to carry out responsibility and to provide sufficient information about what is going on in their perspective institutions as well as about the development activities in their area. Besides, having relevant and adequate work experience definitely attracts and contributes a lot for the delivery of quality work to their respective organizations.

4.2. Descriptive Findings of Major factors

The descriptive statistics utilized are based on frequency tables to provide information on the Major factors influencing the cobblestone road project performance in Jimma Town. The findings were presented through tables, summary statistics such as means, standard deviations, minimum and maximum are computed for each delay factors indicated in this study. Furthermore, these major factors ranked according to their relative importance index score. The findings which identified on this study presented as follows;

Mesfin(2016) used a kind of rule of thumb to create equal intervals for a range of five points Likert scale (that ranges from strongly disagree to strongly agree in the survey questionnaire). A calculated mean value that ranges from 1 to 1.80 implies no considerable extent, a mean range from 1.81 to 2.6, from 2.61 to 3.4, from 3.41 to 4.2 and from 4.21 to 5.00 represented respondents' perceptions of somewhat little extent, moderate extent, great extent and very great extent respectively. The 0.8 served as a boundary for each elements of the measurement in the questionnaire. According to this study the average variability of the mean within the scale was 0.78, which is almost 0.8.

	N	Mean	Std.Dev.	R I I	Rank	Importance Level
Project - related factors	9 7	3 . 6 9	1.254	0.746	4	H - M
Client Related Factors	9 7	3 . 7 0	1.308	0.819	3	H
Contractor Related Factors	9 7	3 . 6 8	1.403	0.721	5	H - M
Material Related Factors	9 7	3 . 7 9	1.172	0.826	2	H
Environmental Related Factors	9 7	3 . 8 6	1.299	0.834	1	H
Supervisor Related Factors	9 7	3 . 1 3	1.455	0.516	6	L

Source; Own survey (2021)

Table 4.2. above showed the mean analysis and ranking of factors causing delay of construction of cobble stone road in Jimma Town. The result shows that the mean values of project related Factors (m=3.69), Client/owners Related Factors (m=3.70), contractors Related Factors (m=3.68), Material Related Factors (m=3.79) and Environmental related Factors (m=3.86) which their means were found within the range of 3.41-4.2 which implies that the above indicated factors were the factors which accepted by the respondents with their agreement in general for the delay of the construction of cobble road construction in Jimma Town.

Whereas Supervisor Related Factors (m=3.13) influenced with moderate extent as indication of the respective mean value. Further these factors were ranked according to their relative important index; Groups of Factors influencing the project performance in construction project of cobble road construction in Jimma Town are presented in Table 4.2. above. Environmental related factors leading influential for the project performance with 0.834 mean index score is suggested as the most preferred factor as it interfere the perceived performance on the cobble road construction projects. This is closely followed by material related factors having 0.826, and then client related factors having the RII value of 0.819. Furthermore project related Factors having the RII of 0.746 is ranked 4th and contractor related factors having RII of 0.721 is ranked 5th with high to moderate importance.

This implies that environmental related factors are the most essential factor for a project to be executed appropriately and performed well. This might be explained by the soil type around the projects and waste accumulation. Material related factors also the next leading interfering factors which might explained with material availability and its costs. Environmental and material related factors are the leading factors on this study. Scarcity of good gravels in certain areas demands for concerted efforts and research in utilizing the locally available soils for road building (for example use of stabilizers).

In some areas of Uganda there is lack of adequate and suitable materials such as gravel and aggregates. Transportation of such materials over long distances is a big cost to the projects. This is partly responsible for the poor quality in addition to workmanship problems. In Palestine a similar problem was reported (UNRWA, 2006).

According to Cho (2009), most past studies done on project performance and the characteristics that affect such performance consist of simple presentations of the relationship between project performance and a few characteristics. Cho (2009) asserts that important characteristics like the effects of relevant political, legal and economic systems, market conditions, importance for the project to be completed on time, form of and the division of responsibilities and liabilities, specific location, weather and environmental concerns, level of technological advancement, project life span, value of a project, and quality of a project are all left out.

4.2.1. Project Related Factors

A project consists of a collection of activities. Factors which influence the project can occur in any or all of these activities and these factors in activities can concurrently interfere the project performance. A project related factor is the accumulated effect of the perceived project performance in the individual activities. The findings related projected related factors presented under the table below;

Table 4.3: Descriptive analysis of Project Related Factors			
	N	Mean	Std. Dev.
C o m p l e x i t y o f p r o j e c t	9 7	3.02	1 . 4 4 3
Lack of Sufficient fund to finance project	9 7	3.66	1 . 2 7 4
Lack of proper drainage construction	9 7	3.58	1 . 3 1 4
S i t e c o n d i t i o n p r o b l e m s	9 7	3.70	1 . 2 1 9
Lack of user involvement in defining project scope, tasks, and requirements.	9 7	3.64	1 . 2 1 5
Lack of developing project standard procedures	9 6	3.56	1 . 2 1 2
U n c l e a r p r o j e c t s c o p e d e f i n i t i o n	9 7	3.30	1 . 3 3 2
C h a n g e i n p r o j e c t d e s i g n	9 7	3.35	1 . 1 7 6
Project activities duration poorly estimated	9 7	3.76	1 . 2 7 2
Poor use of computer software in project planning and schedule	9 7	3.70	1 . 2 7 1

Source; Own survey (2021)

Table 4.3. above showed the mean analysis of project related factors for the perceived performance of construction of cobble road in Jimma Town.

The result shows that the mean values of Lack of Sufficient fund to finance project (m=3.66), Lack of proper drainage construction (m=3.58), Site condition problems (m=3.70), Lack of user involvement in defining project scope, tasks, and requirements (m=3.64), Lack of developing project standard procedures (m=3.56), Project activities duration poorly estimated (m=3.76) and Poor use of computer software in project planning and schedule which their means were found within the range of 3.41-4.2 Which implies that the above indicated factors were interfering the perceived project performance to the great extent in cobble stone road construction project in Jimma Town.

Whereas the mean values for the remaining project related factors were Complexity of project (m=3.02), Unclear project scope definition (m=3.30) and Change in project design (m=3.35) which their mean values indicated that they were interfere the project performance to the moderate extent. This implies that Project activities duration poorly estimated, Poor use of computer software in project planning and schedule, Site condition problems, Lack of Sufficient fund to finance project and Lack of user involvement in defining project scope, tasks, and requirements were the major factor which interfere the perceived project performance of cobble stone road construction project in Jimma Town.

According to the United Nations Relief and Works Agency (UNRWA, 2006), there is no exception in Palestine as many local construction projects report poor performance due to: unavailability of materials; excessive amendments of design and drawings; poor coordination among participants, ineffective monitoring and feedback, and lack of project leadership skills and regional conflicts.

4.2.2. Client Related Factors

Client related factors measure owners' involvement in the project with planning & scheduling, project progress follow up, frequent meeting, coordinated communication, project evaluation, interference and so on.

The findings related to client related factors presented as shown below;

Table 4.4: Descriptive analysis of Client Related Factors			
	N	Mean	Std. Dev.
P o o r p l a n n i n g a n d s c h e d u l i n g	9 7	3 . 6 8	1 . 3 0 3
L a c k o f f r e q u e n t m e e t i n g	9 7	3 . 5 8	1 . 3 2 9
L o w l e v e l o f i n f o r m a t i o n c o o r d i n a t i o n	9 7	3 . 7 6	1 . 2 3 1
P o o r m o n i t o r i n g a n d c o n t r o l	9 7	3 . 3 9	1 . 4 2 6
D e l a y i n p r o g r e s s p a y m e n t t o c o n t r a c t o r	9 7	3 . 5 5	1 . 4 9 3
L a c k o f p r o j e c t s o f t w a r e i n p r o j e c t m a n a g e m e n t	9 7	3 . 6 2	1 . 2 8 6
C l i e n t e m p h a s i s o n q u i c k c o n s t r u c t i o n i n s t e a d o f q u a l i t y	9 7	3 . 6 0	1 . 4 0 4
C l i e n t e m p h a s i s o n l o w c o n s t r u c t i o n c o s t	9 7	3 . 4 9	1 . 4 0 0
C l i e n t i n t e r f e r e n c e d u r i n g c o n s t r u c t i o n	9 7	3 . 6 5	1 . 3 2 3
U s i n g c o m p a n y ' s h i s t o r i c a l d a t a i n e s t i m a t i n g a c t i v i t i e s d u r a t i o n a n d c o s t	9 7	3 . 4 8	1 . 4 1 5

Source; Own survey (2021)

According to the information observed above on table 4.4. the mean analysis of client related factors showed that, the mean values for Poor planning and scheduling (m=3.68), Lack of frequent meeting (m=3.58), Low level of information coordination (m=3.76), Delay in progress payment to contractor (m=3.55),

Lack of project software in project management (m=3.62), Client emphasis on quick construction instead of quality (m=3.60), Client emphasis on low construction cost (m=3.49), Client interference during construction (m=3.65) and Using company's historical data in estimating activities duration and cost, which their mean values were found within the range of 3.41-4.2 which implies that the above indicated factors were interfere the perceived project performance to the great extent in cobble stone road construction project in JimmaTown. Whereas Poor monitoring and control (m=3.39) influence the project performance to the moderate extent.

The above findings indicated that all clients related factors interfere the project performance to the great extent except Poor monitoring and control. This implies that client related factors were important factors to be considered for achieving better project performance. The above findings indicated that; Low level of information coordination, Poor planning and scheduling, Client interference during construction, Client emphasis on quick construction instead of quality and Lack of frequent meeting were the major client related factors among the factors interfere to the great extent the project performance of cobble road construction project in Jimma town. In this study client related factors the 3rd factors which affects the cobble road construction project performance in Jimma Town.

Studies indicate that little attention is given to the performance of the clients in the construction industry and there is a paucity of research that allows one to better understand the key roles of clients (Alinaitwe, 2008). Low and Chuan (2006) argue that poor project performance may not necessarily be due to the incompetence of anyone else but the client's actions before, during and after the project. Client's influence is one of the key contributing factors resulting in lack of commitment and contractor's inefficiency in the project (Hemanta D. et al, 2012).

4.2.3 Contractor Related Factors

Contractor related factors which includes cash flow, labor force, cost, approving payment, site preparation, communication and other related issues the findings related contractor related factors presented under the table below;

Table 4.5: Descriptive analysis of Contractor Related Factors			
	N	Mean	Std. Dev.
Poor project cash flow analysis performance	9 7	3 . 6 7	1 . 3 9 0
Shortage of labor force/high labor turnover	9 7	3 . 5 1	1 . 4 5 9
Problem of Cost overrun	9 7	3 . 6 1	1 . 4 0 4
Delay in approving payments of completed works	9 7	3 . 7 2	1 . 2 8 1
Site preparation time	9 7	3 . 5 9	1 . 4 3 4
Lack of communication between the project participants	9 7	3 . 4 5	1 . 4 5 1
Variation in scope	9 7	3 . 8 0	1 . 3 5 9
Start and finish date are poorly approved and fixed	9 7	3 . 6 0	1 . 4 1 9
Project team leader not committed to meet time, quality and cost	9 7	3 . 4 8	1 . 4 6 6
Construction mistakes and detective work	9 7	3 . 5 4	1 . 3 9 2

Source; Own survey (2021)

According to the information displayed on table 4.5. above, the mean analysis of contractor related factors the result showed that the mean values for all contractor related factors were found within the range of 3.41-4.2. This implies that the above indicated factors were interfering the perceived project performance to the great extent in cobble stone road construction project in Jimma Town. The above findings indicated that; Variation in scope, Delay in approving payments of completed works, Poor project cash flow analysis performance, Problem of Cost overrun, Start and finish date are poorly approved and fixed, Site preparation time, and Construction mistakes and detective work were the major contractor related influencing factors which interfere to the great extent the project performance of cobble stone road construction project in Jimma Town.

Furthermore, Shortage of labor force/high labor turnover, Lack of communication between the project participants, and Project team leader not committed to meet time; quality and cost were the factors interferes the project performance to the great extent in this study. These factors were also addressed on other studies. According to the conducted by (Mansfield et al, 1994). “Causes of delay and cost overruns in Nigerian construction projects”. The result showed that financing and payment for completed works, poor contract management, changes in site condition and shortages in materials. contractor’s improper planning, contractor’s poor site management, inadequate contractor experience, inadequate client’s finance and payments for completed work, incompetence of subcontractors, shortage in material, labor supply, equipment availability and failure, lack of communication between parties, and mistakes during the construction stage. Were the top ten important delay factors evaluated in Malaysian construction industry Sambasivan and Soon.

4.2.4. Material Related Factors

Suppliers will perform tests on materials as they are produced. Prior to the material arriving on the Project Site, testing information will be forwarded to the CQM demonstrating the material meets requirements. The CQM will also audit selected suppliers to assure they are following a quality management system and to review the Project requirements with the supplier.

Findings related material related factors were presented as shown below;

Table 4.6: Descriptive analysis of Material Related Factors			
	N	Mean	Std. Dev.
Poor documented process for approval, checking and testing material	9 7	3 . 7 0	1 . 3 6 3
Lack of awareness about importance of material	9 7	3 . 5 6	1 . 4 3 6
Project delay due to shortage of material	9 7	3 . 6 6	1 . 3 3 0
All costs are less considered in material planning (purchase costs, loading and unloading costs, inflation costs)	9 7	3 . 5 4	1 . 3 6 2
Unavailability of material as planned through project duration	9 7	3 . 5 4	1 . 4 4 4
Risk associated with unavailability and cost increase considered in material planning is poor.	9 7	3 . 7 0	1 . 3 1 6
Poor mechanism of material availability used in project	9 7	3 . 5 7	1 . 4 0 6
Lack of project material management system	9 7	3 . 7 6	1 . 3 3 7
Low quality of material selection	9 7	3 . 5 9	1 . 3 9 0
Escalation of material prices	9 7	3 . 4 7	1 . 4 0 8

Source; Own survey (2021)

According to the information displayed on table 4.6. above, the mean analysis of material related factors the result showed that the mean values for all contractor related factors were found within the range of 3.41-4.2 which implies that the above material indicated factors were interfere the perceived project performance to the great extent in cobble stone road construction project in Jimma Town. Thus, material indicated factors were most important to be concerned to achieve the desired project performance of cobble stone road construction project in Jimma Town.

The above findings indicated that; Poor documented process for approval, checking and testing material, Lack of awareness about importance of material, Project delay due to shortage of material, All costs are less considered in material planning (purchase costs, loading and unloading costs, inflation costs), Unavailability of material as planned through project duration, Risk associated with unavailability and cost increase considered in material planning is poor,

Poor mechanism of material availability used in project, Lack of project material management system, Low quality of material selection and Escalation of material prices were material related factors which interfere the project performance to the great extent.

The above findings were supported by other studies, According to M. Abas, S.B. Khattak [2015] on the study of Evolution of factors affecting the quality of construction projects in Pakistan the most Fifty factors that affect the quality was continuous improvement, Communication, Technical Person Availability, ISO certification, procurement unit of contractor, shortage of material/equipment, escalation of material prices, solving, bad weather, bureaucracy and political influence, cash flow, funding, low bid, financial capability of contractor, management team of contractor.

4.2.5. Environmental Related Factors

Environmental issues concerned the soil type, climate, accessibility to heavy machines, noise level, and air condition and so on. The results related to environmental related factors were presented as shown below.

Table 4.7: Descriptive analysis of Environmental Related Factors			
	N	Mean	Std. Dev.
The soil type of the project area	97	3.87	1.204
Air quality	97	3.81	1.318
Noise level	97	3.77	1.342
Wastes around the site	97	4.02	1.250
Climate conditions	97	4.01	1.237
Accessibility for heavy machines and trucks	97	4.00	1.299

Source; Own survey (2021)

Table 4.7. above indicated that the mean analysis for environmental related factors. According to the information indicated on the above tables, the soil type of the project area, Air quality, Noise level, Wastes around the site, Climate conditions and Accessibility for heavy machines and trucks were environmental related factors which influence the project performance to the great extent. The indicated environmental factors could have a potential to affect the project quality to interfere the performance.

Quality is influenced by a number of related factors, all of which would normally add cost and time to some extent as the level of quality increases. These include build ability, innovation, building height, and extent of fit-out, environmental performance, compliance, standard of finish, supervision levels and efficiency (Craig Langston, 2012).

4.2.6. Supervisor Related Factors

In this section the study identified that compliance regarding to regulatory requirements, availability of follow up guidance/checklist and others progress issues. The findings related to supervision related factors presented as shown below;

Table 4.8: Descriptive analysis of Supervisor Related Factors			
	N	Mean	Std. Dev.
Cost of compliance to follows requirements	9 7	2 . 9 8	1 . 4 5 8
Frequently supervised the project progress	9 7	3 . 1 0	1 . 4 3 2
Availability of checklist for supervision	9 7	2 . 9 6	1 . 3 9 9
Follow up on Neighbors' and site conditions problems	9 7	3 . 1 4	1 . 4 9 3

Source; Own survey (2021)

As indicated on the above table the mean analysis for supervisor related factors, the findings showed that the mean values for Cost of compliance to follows requirements (m=2.98), Frequently supervised the project progress (m=3.10), Availability of checklist for supervision (m=2.96) and Follow up on Neighbors' and site conditions problems (m=3.14) which their mean values were found within the range of 2.61-3.40, which means the above indicated factors were influence the project performance to the moderate extent. Thus, supervision issue should have to concern to improve their interference on the project performance on the study area.

4.2.7. Perceived Overall executed cobble stone road construction project performance

Accordingly construction performance can be defined as a means to represent accomplishment through activity or method relationship and their output. According to this study the findings concerning the project performance of cobble stone road construction in Jimma Town. Presented as shown below;

Table 4.9: Perceived Overall executed cobble stone road construction project performance			
	N	Mean	Std. Dev.
Time overrun (Based on the plan Schedule)	9 7	2 . 6 3	1 . 3 4 4
Cost overrun (According to budget allocated)	9 7	2 . 5 2	1 . 3 3 1
Quality issues (According to the standard which attempted to construct)	9 7	2 . 5 8	1 . 2 7 9

Source; Own survey (2021)

Table 4.9. showed above displayed the mean analysis for Perceived Overall executed cobble stone road construction project performance in Jimma Town which is on average 2.58 which indicated that the project was performed at its least performance level. The mean values for Time overrun (Based on the plan Schedule) (m=2.63) which performed with a moderate level, Cost overrun (According to budget allocated) (m=2.52) and Quality issues (According to the standard which attempted to construct) (m=2.58).

This implies that the project performance according to their budget allocated/cost overrun and quality issues/the standard which attempted to construct little performed whereas Time overrun (Based on the plan Schedule) performed moderately. The performance which achieved on this study affected with various factors as indicated above.

4.3. Result of Inferential Statistics

4.3.1. Regression assumption testing (Residual analysis)

The responses data were added together using variable addition tools of the SPSS to form new set of combined variables. These combined (aggregated) results gave the transformed data set from ordinal type to a scale type, which is suitable to apply multiple linear regressions. However, before the application of the regression model, the classical assumption of regression) was tested through residuals (dependent variable) analysis in terms of the following factors:

Normality testing

The purpose of normality testing is to know that all data of independent and dependent variables have normal distribution. For data to be normal, they must have the form of a bell curve, or

Gaussian, distribution, with values dropping off in a particular fashion as they increase or decrease from the mean. Specifically, a normal distribution contains 89.3 % of the data within ± 1 standard deviation from the mean (*Dan Flynn, Student guide to SPSS*). In normality test, the Sig. (p) value is compared to a priori alpha (α) level (level of significance for the statistic) and a determination is made as to reject ($p < \alpha$) or retain ($p > \alpha$) the assumption. In this research, normality testing was done based on Shapiro-Wilks test statistic, in which:

If the asymptotic significance (two tail) (i. e. p-value or the sig. column value in the output table) is *higher* than alpha ($\alpha = 0.05$), then all data have normal distribution and otherwise not. Or in an alternative test, a variable is reasonably close to normality if its skewness and kurtosis have values between -1.0 and $+1.0$.

According to normal Q-Q plots and box plot showed that the data for project related factors, client related factors, contractor related factors, material related factors, environmental related factors, regulator/community related factors and project performance were normally distributed with the value of asymptotic significance (p-value) 0.663 which is higher than alpha ($\alpha = 0.05$). The value of asymptotic significance for project related factors was 0.593, for client related factors was 0.592, for contractor related factors 0.686, for material related factors 0.613, for environmental related factors 0.643, for Supervisor related factors 0.674 and for project performance 0.673.

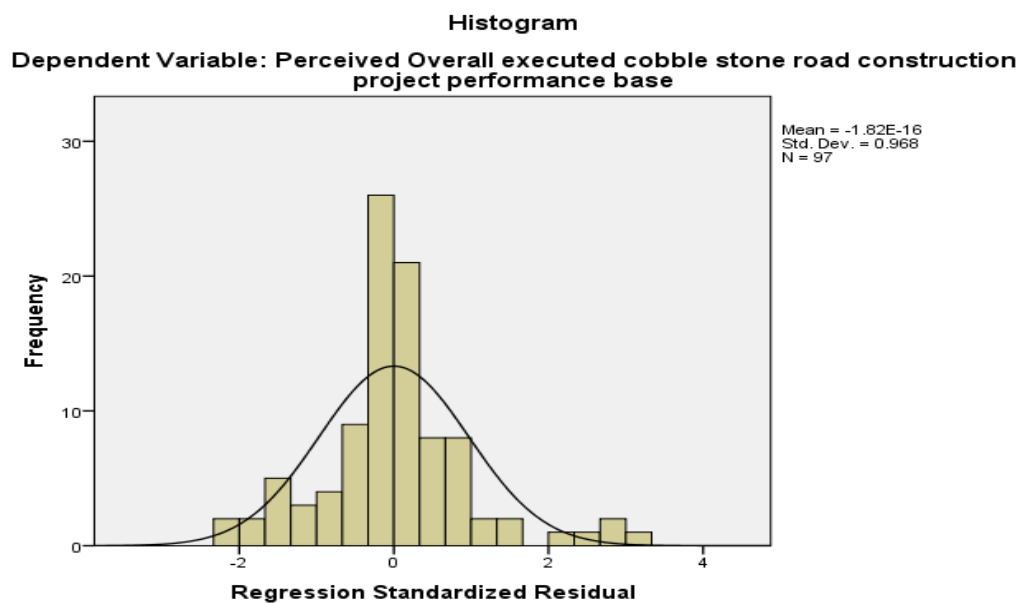


Figure 4.1: Normality graph for the variables

Multi-co linearity Testing

Multi co linearity is a condition in which one or more independent variables are in a linear contribution with other independent variables. (Suyono&Hariyanto, 2012). A useful approach is the examination of the variance inflation factors (VIFs) or the tolerances of the explanatory variables. The tolerance of an explanatory variable is defined as the proportion of variance of the variable in question not explained by a regression on the remaining explanatory variables with smaller values indicating stronger relationships. The VIF of an explanatory variable measures the inflation of the variance of the variable’s regression coefficient relative to a regression where all the explanatory variables are independent. (Sabine L. & Brian S. E., 2004).

The VIFs are inversely related to the tolerances with larger values indicating involvement in more severe relationships (according to a rule of thumb, VIFs above 10 or tolerances below 0.1 are seen as a cause of concern). (Sabine L. & Brian S.E., 2004). Hence, in this research multi-co linearity testing was conducted from variance inflation factor (VIF) in which:

- ❖ If the value of VIF lies between 1 &10 is less than 10 or tolerance more than 0.1, there is no multi-co linearity;
- ❖ If the VIF <1 or >10 or tolerance less than 0.1, then there is multi-co linearity.

Sample characteristics of Multi-co linearity

Table 4.10: Co linearity statistics

V a r i a b l e s	T o l e r a n c e	V	I	F
Project - related factors	. 2 8	8 3	. 4 6	7
Client Related Factors	. 1 7	9 5	. 5 8	4
Contractor Related Factors	. 2 3	1 4	. 3 2	7
Material Related Factors	. 1 3	6 7	. 3 4	2
Environmental Related Factors	. 1 6	0 6	. 2 5	5
Supervisor Related Factors	. 1 9	5 5	. 1 2	4

Dependent variable: Project Performance

Source; Own survey (2021)

According to the information observed above on table 4.10. Output of variance inflation factor (VIF) column in the coefficients table of the regression output shows that VIF for project related factors (3.467), client related factors (5.584), contractor related factors (4.327), material related

factors (7.342), environmental related factors (6.255) and supervisor related factors (5.124), all are smaller than 10.

It means that there is no problem of multi-co linearity between independent variables. This can be further ascertained from the Tolerance column of the same table in which the tolerance for the six independent variables were 0.288, 0.179, 0.231, 0.136, 0.160 and 0.195 respectively all > 0.1 indicating that there is no multi co linearity.

T a b l e 4 . 1 1 : C o r r e l a t i o n s

		PRF	C R F	M R F	ERF	R R F	CoRF	P P
P R F	Pearson Correlation	1	.730**	.816**	.781**	.772**	.754**	.710**
C R F	Pearson Correlation		1	.854**	.821**	.862**	.806**	.848**
M R F	Pearson Correlation			1	.883**	.853**	.801**	.791**
E R F	Pearson Correlation				1	.793**	.851**	.767**
S R F	Pearson Correlation					1	.754**	.942**
CoRF	Pearson Correlation						1	.733**
P P	Pearson Correlation							1

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

Source; Own survey (2021)

The result indicated on the above table shows that the association between independent and dependent variables. Project related factors (PRF), client related Factors (CRF), Material related factors (MRF), environmental related factors (ERF), Supervision related factors (SRF), and contractor’s related factors (CoRF) directly have direct relationship with the project performance (PP).

The association value between PRF and PP is 0.710, and the association value between PP and others predictor variables are; 0.848, 0.791, 0.767, 0.942, and 0.733 which shows high positive relationship exists between independent and dependent variables.

4.3.2. Result of Goodness of fit test

We want to run a regression of current Project performance (Y) on (X) Major influential factors; project related factors (X1), client related factors (X2), contractor related factors (X3), material

related factors (X4), environmental related factors (X5) and supervisor related factors (X6) for project performance in cobble stone road construction in JimmaTown.

Project performance (Y) function of project related factors (X1), client related factors (X2), contractor related factors (X3), material related factors (X4), environmental related factors (X5) and supervisor related factors (X6) or, as relevant text book will have it,

$$Y = \alpha + \beta_1 x_1 + \beta_2 x_2 + \beta_k x_k + e$$

The real question here is that “does this model works?”

How can we know that?

Three ways to answer this question.

Always we have to look at the model fit (“ANOVA”) first. We do not have to make the mistake of looking at the R-square before checking the goodness of fit.

T a b l e 4 . 1 2 : A N O V A ^a						
M o d e l		Sum of Squares	D f	Mean Square	F	S i g .
1	Regression	1 3 8 . 1 9 9	6	2 3 . 0 3 3	133.986	. 0 0 0 ^b
	R e s i d u a l	1 5 . 4 7 2	9 0	. 1 7 2		
	T o t a l	1 5 3 . 6 7 0	9 6			
a. Dependent Variable: Perceived Overall executed cobble stone road construction project performance base						
b. Predictors: (Constant), Supervisor Related Factors, Contractor Related Factors, Project -related factors, Environmental Related Factors, Client Related Factors, Material Related Factors						

Source; Own survey (2021)

Significance of the model (“Did the model explain the deviations in the dependent variable”)

The last column in the above table (ANOVA-table) shows the goodness of fit of the model.

It is p-value or observed significance of the F. **The lower this number, the better the fit.**

Typically, if “Sig” is greater than 0.05, we conclude that our model could not fit the data.

The F is comparing the two models below:

$$1. OP = \beta_0 + \beta_1 * II + \beta_2 * Infl + \beta_3 * SI + \beta_4 * CI + \beta_5 * EI + et,$$

(In formal terms, the F is testing the hypothesis: $\beta_0 = \beta_1 = \beta_2 = \beta_3 = \beta_4 = \beta_5 = 0$) If the F is not significant, then we cannot say that model 1 is any better than model 2. The implication is obvious—the use of the independent variables has not assisted in predicting the dependent variable. If Sig < .01, then the model is significant at 99%, if Sig < .05, then the model is significant at 95%, and if Sig < .1, the model is significant at 90%. Significance implies that we can accept the model. If Sig > .1 then the model was not significant (a relationship could not be found) or "R-square is not significantly different from zero", the model does not work at all.

Note that p-value is the Sig. column value. Test of the goodness of fit of the model in this research showed negative results. From the result of F-test, it is known that the F-statistic **133.986** is higher than the critical value 3.241 (from t-table) and the probability (p-value or the Sig. value) 0.000 is smaller than alpha (0.05).

Therefore, the model is fit. The third confirmatory test is looking at the R^2 value of the model summary which is .899 > 0. As this value gets approach to +1, the better the model will be.

T a b l e 4 . 1 3 : M o d e l S u m m a r y ^b									
Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	C h a n g e S t a t i s t i c s				
					R Square Change	F Change	d f 1	d f 2	Sig. F Change
1	.948 ^a	.899	.893	.415	.899	133.986	6	90	.000
a. Predictors: (Constant), Supervisor Related Factors, Contractor Related Factors, Project - related factors, Environmental Related Factors, Client Related Factors, Material Related Factors									
b. Dependent Variable: Perceived Overall executed cobble stone road construction project performance base									

Source; Own survey (2021)

The results from the regression model summary and analysis of variance above indicate that project related factors, client related factors, contractor related factors, material related factors, environmental related factors and supervisor related factors could significantly contribute towards the R^2 value, which is a statistical measure of how close the data are to the fitted regression line. Based on the R^2 value of 0.899, these six variables could explained 89.9 %

variation in the current project performance. While the remaining 10.1 % variation explained by other influential factors which are not addressed in this study.

If we had to compute it by hand the F value, it would be...
$$F = \frac{R^2/k-1}{1-R^2/(N-k)}$$
Where:

F=F-value that is resulted from the calculation;

R^2 =coefficient of determination;

k=number of variables (# of dependent and independent variables);

N=number of observations (# of sample respondents).

(K-1) = degree of freedom.

Given

$R^2=0.899$from regression summary table

$K-1 = 7 - 1 = 6$ -df1, $1 - R^2 = 1-0.899 = 0.101$ and $N-k = 97- 7 = 90$ =df2

Therefore, $F = 0.899/6 \div 0.101/90$

$= 0.899/6 * 90/0.101 = .1498*90 \div 0.101 = 13.485/.101 = 133.514 = 0.1498*891.0891 = 133.485$

The value is similar, $133.514=133.485$; the difference could be the effect of rounding.

T a b l e 4 . 1 4 : C o e f f i c i e n t s ^a

M o d e l	Unstandardized Coefficients		Standardized Coefficients	T	Sig.	Correlations			Collinearity Statistics	
	B	Std. Error	B e t a			Zero-order	Partial	P a r t	Tolerance	V I F
(C o n s t a n t)	.277	. 1 2 7		2.181	.027					
Project - related factors	-.149	. 0 5 8	- . 1 5 2	-2.569	.005	.825	-.191	-.063	. 2 8 8	3.467
Client Related Factors	.146	. 0 6 9	. 1 6 7	2.115	.037	.842	.061	.020	. 1 7 9	5.584
Contractor Related Factors	.118	. 0 6 5	. 1 1 9	1.185	.048	.836	.251	.084	. 2 3 1	4.327
Material Related Factors	-.197	. 0 9 8	- . 1 8 2	-2.011	.047	.894	-.233	-.078	. 1 3 6	7.342
Environmental Related Factors	.203	. 0 8 1	. 2 0 6	2.506	.007	.869	.186	.061	. 1 6 0	6.255
Supervisor Related Factors	.779	. 0 6 6	. 8 9 6	11.830	.000	.896	.492	.183	. 1 9 5	5.124

a. Dependent Variable: Perceived Overall executed cobble stone road construction project performance base
Source; Own survey (2021)

The regression coefficients are shown in the above table. The intercept, 0.277, is representing the estimated average value of Project Performance when project related factors, client related factors, contractor related factors, material related factors, environmental related factors and supervisor related factors is zero. Thus a project with no project related factors, client related factors, contractor related factors, material related factors, environmental related factors and supervisor related factors will have severe impact on the project Performance of cobble stone road construction in Jimma Town.

The slop of independent variables also exhibits useful predictive information about the implication. The slop of project related factors, client related factors, contractor related factors, material related factors, environmental related factors and supervisor related factors are -0.152, .167, .119, -0.182, 0.106 and .896 respectively means that Project Performance (increases or decreases) by -0.152, .167, .119, -0.182, 0.206 and .896 when project related factors, client related factors, contractor related factors, material related factors, environmental related factors and supervisor related factors respectively increases or decreases by 1.

An examination of these five independent variables indicated that the supervisor related factors represented the strongest interference on project performance as with the standard beta of 0.896

followed by the environmental related factors with beta 0.206, client related factors on project performance as it interacted with independent variables with beta of 0.167, contractor related factors with standard beta 0.119, and project related factors with β of -0.182. Thus the statistical results prove that positive/negative and significant/insignificant linear relationships exist between dependent and independent variables.

Table 4.15: Summary of the Regression output

Variables	F - t e s t a n d T - t e s t						R ²	K	N	Conclusion
	F-statistic	Critical value	Regression coefficient	T	Critical value	p- value				
Goodness of fit testing	133.986	3.241				0.000				Significant
(C o n s t a n t)			0.277	2.181	3.241	.027				Significant
Project - related factors			-0.152	-2.569	3.241	.005	0.899	7	97	Significant
Client Related Factors			0.167	2.115	3.241	.037	0.899	7	97	Significant
Contractor Related Factors			0.119	1.815	3.241	.048	0.899	7	97	Significant
Material Related Factors			-0.182	-2.011	3.241	.047	0.899	7	97	Significant
Environmental Related Factors			0.206	2.506	3.241	0.007	0.899	7	97	Significant
Supervisor Related Factors			0.896	11.830	3.241	.000	0.899	7	97	Significant

Source; Own survey (2021)

Based on the above tables, the regression model will be filled in as follows:

$$Y = 0.277 - 0.152X_1 + 0.167X_2 + 0.119X_3 - 0.182X_4 + 0.206X_5 + 0.896X_6 + \epsilon$$

4.4. Result of hypothesis testing for the influencing project performance of cobble stone

“Hypothesis is a formal statement that presents the expected relationship between an independent and dependent variable.”(Creswell, 1994) **The hypothesis** provides a simple statement of association between Y and X. Nothing is indicated about the association that would allow the researcher to determine which variable, Y or X, would tend to cause the other variable to change

in value. Based the hypothesis drawn for this study the findings which were revealed presented as shown below.

Table 4.16: Hypothesis test Summary

S/No	Hypothesis	p-value	r-coefficients	tested value
1	Ho1:Project -related factors have no significant effect on Project Performance	. 0 0 5 (p<0.05)	- . 1 5 2	Re j e c t e d
2	Ho2:Client-related factors have no significant effect on Project Performance	. 0 3 7 (p<0.05)	. 1 6 7	Re j e c t e d
3	Ho3: Contractor-related factors have no significant effect on Project Performance.	.038 (p>0.05)	. 1 1 9	Re j e c t e d
4	H04: Material-related factors have no significant effect on Project Performance	. 0 4 7 (p<0.05)	- . 1 8 2	re j e c t e d
5	Ho5: Supervisor-related factors have no significant effect on Project Performance.	.000 (p<0.05)	. 8 9 6	re j e c t e d
6	Environmental-related factors have no significant effect on Project Performance.	. 0 0 7 (p<0.05)	. 2 0 6	Re j e c t e d

Source; Own survey (2021)

4.4.1. Influence of Project related factors on the performance of cobble stone road project

Ho1: Project -related factors have no significant effect on Project Performance

Table 4.16.Above showed that there is a negative significant interference of project related factors on project performance, since (Beta= -0.152, t=-2.529, sig. 0.005, p<0.05). Therefore, the null hypothesis is rejected and the alternative hypothesis is accepted, which indicates that Project -related factors have significant effect on Project Performance of cobble stone road construction

in Jimma town at ($\alpha \leq 0.05$). This implies the current project related factors increase by 1 unit it significantly decreases the project performance by .152 units.

This could indicate that the project related factors which found in Jimma Town for cobble stone road construction was unfavorable for the project. Therefore the projects needs to enhance user involvement in defining project scope, tasks, and requirements, using software, developing project standard procedures, briefing project scope definition, allocating Sufficient fund to finance project and so on. According to Navon Ronie (2005) performance measurement is the process of quantifying the efficiency and effectiveness of actions.

To help in this endeavor, a wide variety of KPIs have been identified and used to measure the success of construction projects. These include indicators of client satisfaction, stakeholder engagement, service delivery, investment return, urban renewal, defect minimization, trust, dispute avoidance, innovation, safety and standard.

Three of the most commonly cited KPIs are on-time completion (time), within agreed budget (cost) and non-defective workmanship as specified (quality) Craig Langston, (2012). Thus, project related factors should have to set its standards and requirements to achieve the progress in the project performance.

4.4.2. Influence of Client related factors on the performance of cobble stone road project.

Ho2: Client -related factors have no significant effect on Project Performance

According to the information observed on Table 4.16. above, there is a positive significant interference of client related factors on project performance, since (Beta= 0.167, t=2.115, sig. 0.037, $p < 0.05$).

Therefore, the null hypothesis is rejected and the alternative hypothesis is accepted, which indicates that client -related factors have significant effect on Project Performance of cobble stone road construction in Jimma town at ($\alpha \leq 0.05$). According the finding of this study the poor

practice client related factors had a direct interference on the least project performance achieved. The client related factors which influenced the project performance to the great extents mainly includes; Low level of information coordination, poor planning and scheduling, Client interference during construction and Lack of project software in project management. These practices were had a direct effect for the least project performance achieved on the study area. The causes of project delays fluctuate due to the faults and weaknesses of the client, the consultant and the contractor.

Project delays may happen in the preconstruction phase which means the period beginning from the initial conception of the project to the signing of the contract between the client and the contractor; however, some of them may happen in the construction phase that is the period when actual construction is under way. Project schedules are consistently dynamic and uncertain. Several controllable and uncontrollable factors can adversely affect the project schedule and cause delays. These delays definitely create negative impacts on project performance.

According to the study of Theodore. J.Trauner Jr. et al. (2009)categorized causes of delay into seven groups: causes of construction delay late in by owner such as late in revising and approving design documents, slowness in decision making process, Suspension of work...etc, causes of construction delay by contractor such as difficulties in financing project, poor communication and coordination, ineffective planning and scheduling of project, improper construction methods implement, and...etc: causes of construction delay by consultant such as delays in producing design documents, unclear and inadequate details in drawings, insufficient data collection and survey before design, un-use of advanced engineering design software.

4.4.3. Influence of Contractor related factors on the performance of cobble stone road project in Jimma Town

Ho3:Contractor -related factors have no significant effect on Project Performance

According to the information observed on Table 4.16.Above, there is a positive significant interference of contractor related factors on project performance, since (Beta= 0.119, t=1.815, sig. 0.048, p<0.05). Therefore, the null hypothesis is rejected and the alternative hypothesis is accepted, which indicates that contractor-related factors have significant effect on Project Performance of cobble stone road construction in Jimma town at ($\alpha \leq 0.05$). According the finding

of this study the poor practice contractor related factors had a direct interference on the least project performance achieved.

The contractor related factors which influenced the project performance to the great extents mainly includes; Delay in approving payments of completed works, Variation in scope, Poor project cash flow analysis performance and Problem of Cost overrun. These practices were had a direct effect for the least project performance achieved on the study area.

There are also many study investigation factors that contributing to causes of delays in construction projects. Delays in highway construction in Thailand conducted by Noulmanee A, et al (1999); and concluded that delays can be caused by all parties involved in projects however; main causes come from inadequacy of sub-contractors, organization that lacks of sufficient resources, incomplete and unclear drawings and deficiencies between consultants and contractors.

The study suggested that delay could be minimized by discussions that lead to understanding. Poor planning, poor site management, inadequate supervisory skills of the contractor, delayed payments, material shortage, labor supply, equipment availability and failure, poor communication and rework. Conclusions made from the study that the major causes of delay in road construction projects in Zambia were delayed payments, financial deficiencies on the part of the client or contractor, contract modification, economic problems, material procurement, changes in design drawings, staffing problems, equipment unavailability, poor supervision, construction mistakes, poor coordination on site, changes in specifications, labor disputes, and strikes (Kaliba, C, et al.2009).

4.4.4. Influence of Material related factors on the performance of cobble stone road project in Jimma Town.

Ho4: Material -related factors have no significant effect on Project Performance

Table 4.16.Above showed that there is a negative significant interference of material related factors on project performance, since (Beta= -0.182, t=-2.011, sig. 0.047, p<0.05). Therefore, the null hypothesis is rejected and the alternative hypothesis is accepted, which indicates that Material-related factors have significant effect on Project Performance of cobble stone road construction in Jimma town at ($\alpha \leq 0.05$).

This implies the indicated material related constraints could not contribute directly for the least project performance achieved. In other different studies material related factors had a direct significant effect on the project performances. According to Theodore. J.Trauner Jr. et al. (2009) Construction Delays causes of construction delay by materials such as shortage of construction materials in market, delay in material delivery, late procurement of materials ; causes of construction delay by equipment such as low productivity and efficiency of equipment, lack of high-technology mechanical equipment; causes of construction delay by labors such as low productivity level of labors and shortage of labors and causes of construction delay by external factors such as weather inclement, Effects of subsurface conditions (e.g. soil, high water table, etc.)

Moreover, weather effect on construction activities identified as the major factor of delay in construction industry. Therefore, the effect of material related factors might be different on various studies. This might be due to the availability of material sources on the study area varies place to place.

4.4.5. Influence of Supervisor related factors on the performance of cobble stone road project in Jimma Town.

Ho5:Supervisor -related factors have no significant effect on Project Performance

According to the information observed on Table 4.16.Above, there is a positive significant interference of supervisor related factors on project performance, since (Beta= 0.896, t=11.830, sig. 0.000, p<0.05).

Therefore, the null hypothesis is rejected and the alternative hypothesis is accepted, which indicates that supervisor -related factors have significant effect on Project Performance of cobble stone road construction in Jimma town at ($\alpha \leq 0.05$). To this effect there were contributions of the practices of Cost of compliance to follow requirements, frequent supervision of the project progress, and availability of checklist for the supervision and follow up Neighbors' and site conditions problems.

A study Mailot Sysoulath1, NoppadonJokkaw [2015] Based on the result of the data analysis for factors causes the quality of construction works in Lao PDR, it was found that top most significant factors were ranked by both local and international respondent's perspective, namely,

unskilled labors, improper material usage as the contract, poor experience and competency of project manager on quality planning, lack of quality inspection and control system, low experience and competency of supervisor and according to local respondent's perspective such as condition for selecting the contractor by the owner, lack of timely regulation, low quality drawing and specification, lack of quality assurance system, and poor planning of construction operating procedures and techniques and also international respondent's perspective: lack of technical and professional expertise and resources to perform task, undocumented construction (in case of changing order during construction), low experience and knowledge of designers, and the owner's satisfaction regarding quality of construction works, respectively.

4.4.6. Influence of Environmental related factors on the performance of cobble stone road project in Jimma Town.

H₀₆: Environmental -related factors have no significant effect on Project Performance

Table 4.16. above showed that there is a positive insignificant interference of environmental related factors on project performance, since (Beta= .106, t=2.506 sig. 0.007, p<0.05). Therefore, the null hypothesis is rejected and the alternative hypothesis is accepted, which indicates that environmental -related factors have significant effect on Project Performance of cobble stone road construction in Jimma town at ($\alpha \leq 0.05$). This indicated that environmental related factors had a direct effect on the project performance significantly.

CHAPTER FIVE

5. SUMMARY, CONCLUSIONS AND RECOMMENDATIONS

5.1. Summary of Major findings

According to the collected data from the study population, after the study was processed and analyzed this raw data in order to present relevant result of the study with full of interpretation and discussion. The findings on the result part of the study were sorted with descriptive and

inferential statistics presentation. Therefore, based on the identified result of the study, the researcher could able to summarize the major findings of the study and present as shown below.

- ❖ The study sought to collect data from 102 respondents which involved with different role on the cobble stone project of Jimma Town but the researcher managed to collect 97 questionnaires. This represents a response rate of 95.1 percent which is very good for analysis. According to Babbie (2004) a response rate of 60 percent is good and that of 95.1 percent is very good.
- ❖ Out of the respondents, 69 (71.13 %) were male. As the project constructed a 6-days-regular service (except Sundays) to its clients the whole year, along with extra/sporadic over time hours during peak season, the less number of female staff may favor it to minimize maternity day-offs impact on the project delay.
- ❖ Larger proportion 31 (34.02 %) were owners (clients) nearly followed by 28 (28.87%) contractors and 23 (23.71%) supervisor. Regarding respondents education level 66 (68.04 %) have got first degree and above. This quality capacitated the project to practice on the City cobble stone road construction, because the majority workforces can understand and adapt new technology/system easily. Hence their answers for the questionnaire could be responsive, too.
- ❖ Concerning respondents Field of Specialization larger proportion 31 (31.96%) were civil engineers which followed by 29 (29.90%) surveyors and 19 (19.59%) construction management.
- ❖ Respondents Position in the project the result showed that larger proportion 37(38.14%) were Office/site engineer, followed by 24 (24.74%) experts and 15 (15.46%) were found in other categories.
- ❖ The mean analysis and ranking of factors causing delay of construction of cobble stone road in JimmaTown. The result shows that the mean values of project related Factors (m=3.69), Client/owners Related Factors (m=3.70), contractors Related Factors (m=3.68), Material Related Factors (m=3.79) and Environmental related Factors (m=3.86) which their means were found within the range of 3.41-4.2 which implies that the above indicated factors were influenced factors with great extent in general for the delay of the construction of cobble road construction in Jimma Town.

- ❖ Whereas supervisor Related Factors ($m=3.13$) influenced with moderate extent as indication of the respective mean value. Further these factors were ranked according to their relative important index; Groups of Factors influencing the project performance in construction project of cobble road construction in Jimma Town.
- ❖ Environmental related factors leading influential for the project performance with 0.834 mean index score is suggested as the most preferred factor as it interfere the perceived performance on the cobble road construction projects. This is closely followed by material related factors having 0.826, and then client related factors having the RII value of 0.819.
- ❖ Furthermore project related Factors having the RII of 0.746 is ranked 4th and contractor related factors having RII of 0.721 is ranked 5th with high to moderate importance.
- ❖ The results from the regression model summary and analysis of variance above indicate that project related factors, client related factors, contractor related factors, material related factors, environmental related factors and supervisor related factors could significantly contribute towards the R^2 value, which is a statistical measure of how close the data are to the fitted regression line Based on the R^2 value of 0.899, these six variables could explained 89.9 % variation in the current project performance.
- ❖ While the remaining 10.1 % variation explained by other influential factors which are not addressed in this study.

5.2. Conclusion

Relying on the results of the study and the summary of findings, the study concludes that there is a significantly positive relationship between client related factors, consultant related factors, and Supervisor related factors and project performance cobble stone road construction in Jimma Town. Hence, the projects are expected to enhance their performance with intervening the identified factors which interference. However, project related factors and material related factors had a negative significant effect on the project performance.

An examination of these five independent variables indicated that the supervisor related factors represented the strongest interference on project performance as with the standard beta of 0.896 followed by environmental related factors 0.206, the client related factors on project performance as it interacted with independent variables with beta of 0.167, contractor related factors with standard beta 0.119, project related factors -0.152 and Material related factors with β of -0.182. Thus the statistical results prove that positive/negative and significant/insignificant linear relationships exist between dependent and independent variables.

The project performance according to their budget allocated/cost overrun and quality issues/the standard which attempted to construct little performed whereas Time overrun (Based on the plan Schedule) performed moderately. The performance which achieved on this study affected with various factors as indicated above.

5.3. Recommendations

Based on the findings of the study the researcher could able to forward the following recommendations as a possible solutions to fill the identified gaps on this study in order to be intervene by the concerned bodies.

- ✍ Based on the findings and conclusions, the study recommends that there should be clients, contractors, supervisors, environmental and material related factors had a significant impact on the quality of cobble road construction project. Thus, the project

managers should have to focus on the above indicated factors to improve the project perceived performance

- ✍ In this regard clients & consultants involvement and efficient communication should have a contribution for the project performance. Thus, clients and consultants should be adhered with the project agreement to maintain project specification with the standard and quality measures.
 - ✍ The continues utilization of cobble stone construction materials create depletion of resources and indicated shortage of materials for the ongoing and currently conducted projects. Therefore, environmental/ecological concern should have to pay to use materials/resources in a sustainable manner.
 - ✍ Delayed on the project happened due to processing arranging the cobble stone for the City internal road construction. Therefore, the construction should have to used advanced technology and or sufficient and skilled man power for the stone process for the project in order to concern the time issues of the project.
 - ✍ Based on the findings and conclusions, the study recommends that there should be stakeholder involvement had a significant impact on the quality of the cobble road construction project.
 - ✍ In this regard clients & consultants high to moderate importantly influence factors of the quality of cobble stone road construction projects.
-
- ✍ Participation improves the quality of project management and that of evaluations accuracy of information, increased credibility and acceptance of findings, and better correspondence to the practical concerns of stake holders.
 - ✍ In creating awareness, space and opportunity to the community and other stakeholders to participate fully in preserving, managing and maintaining the roads.

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APPENDIX

QUESTIONNAIRE



JIMMAUNIVERSITY

COLLEGE OF BUSINES AND ECONOMICS

DEPARTMENT OF ACCOUNTING AND FINANCE
PROGRAM THE DEGREE OF MASTERS OF PROJECT MANAGEMENT
AND FINANCE

Dear Respondents,

I am a postgraduate student of the above mentioned institution. I am currently undertaking a research project to assess factors affecting the project performance in Jimma Town cobblestone road construction project. This is kindly to request you to fill the attached questionnaire as honestly which will be collected later.

The information collected will be exclusively used for academic purposes and will be treated with strict confidentiality. At no time will your name or other personal identity appear in this report. The findings of this research can be availed to you upon request. This is not to evaluate or criticize you, so please do not feel pressured to give a specific response and do not feel shy if you do not know the answer to a question. Feel free to answer questions at your own pace. The questionnaire will take approximately 15-20 minutes of your time. Your honest and true opinion will be valuable for this research. Thank you in advance for your assistance.

MustefaAbajehad.

Email-musthad55@gmail .com, Mobile +251-917-80 55 36

PART ONE: Respondents Information.

1. Please fill the box by marking (√) in the space provided.

No.	D e m o g r a p h i c s	C a t e g o r i e s	M a r k	R e m a r k
1	Organization category	O w n e r / C l i e n t		
		C l i e n t c o n s u l t a n t		
		P r i v a t e c o n s u l t a n t		
		G o v e r n m e n t c o n s u l t a n t		
		C o n t r a c t o r s		
		S t a k e h o l d e r s		
		O t h e r s / S p e c i f y		
2	G e n d e r	M a l e		

		F e m a l e		
3	Educational Level	D i p l o m a		
		B S c		
		M S c		
		O t h e r s / S p e c i f y		
4	Field of Specialization	C i v i l e n g i n e e r s		
		S u r v e y o r s		
		Construction Management		
		Highway engineers		
		O t h e r s / S p e c i f y		
5	Position in the project	Office/site engineer		
		S u p e r v i s o r		
		Project coordinator		
		Project manager		
		E x p e r t s		
		O t h e r s / S p e c i f y		
6	Work Experience	U p t o 3 y e a r s		
		3 - 6 y e a r s		
		6 - 1 0 y e a r s		
		1 0 - 1 5 y e a r s		
		≥ 1 5 y e a r s		

PART TWO: Major factors influencing the cobblestone road project performance in Jimma Town.

Instruction: - For the close ended questions, please use the following scale of 1 to 5 Where 5= Very great extent, 4=Great extent, 3= Moderate extent, 2=little extent, 1= No extent. And put a ticking mark (√) on the space provided.

N o	A. Survey Questionnaire to assess Factors Affecting Cobblestone road construction Project performance	S c a l e s				
		5	4	3	2	1
	P r o j e c t - r e l a t e d f a c t o r s					
Item 1	C o m p l e x i t y o f p r o j e c t					

Item 2	Lack of Sufficient fund to finance project					
Item 3	Lack of proper drainage construction					
Item 4	S i t e c o n d i t i o n p r o b l e m s					
Item 5	Lack of user involvement in defining project scope, tasks, and requirements.					
Item 6	Lack of developing project standard procedures					
Item 7	U n c l e a r p r o j e c t s c o p e d e f i n i t i o n					
Item 8	C h a n g e i n p r o j e c t d e s i g n					
Item 9	Project activities duration poorly estimated					
Item 10	Poor use of computer software in project planning and schedule					
	C l i e n t R e l a t e d F a c t o r s					
Item 10	P o o r p l a n n i n g a n d s c h e d u l i n g					
Item 11	L a c k o f f r e q u e n t m e e t i n g					
Item 12	Low level of information coordination					
Item 13	P o o r m o n i t o r i n g a n d c o n t r o l					
Item 14	Delay in progress payment to contractor					
Item 15	Lack of project software in project management					
Item 16	Client emphasis on quick construction instead of quality					
Item 17	Client emphasis on low construction cost					
Item 18	Client interference during construction					
Item 19	Using company's historical data in estimating activities duration and cost					
Item 20	P o o r p l a n n i n g a n d s c h e d u l i n g					
	C o n t r a c t o r R e l a t e d F a c t o r s					
Item 21	Poor project cash flow analysis performance					
Item 22	Shortage of labor force/high labor turnover					
Item 23	P r o b l e m o f C o s t o v e r r u n					
Item 24	Delay in approving payments of completed works					
Item 25	S i t e p r e p a r a t i o n t i m e					
Item 26	Lack of communication between the project participants					
Item 27	V a r i a t i o n i n s c o p e					
Item 28	Start and finish date are poorly approved and fixed					

Item 29	Project team leader not committed to meet time, quality and cost					
Item 30	Construction mistakes and detective work					
	M a t e r i a l R e l a t e d F a c t o r s					
Item 31	Poor documented process for approval, checking and testing material					
Item 32	Lack of awareness about importance of material					
Item 33	Project delay due to shortage of material					
Item 34	All costs are less considered in material planning (purchase costs, loading and unloading costs, inflation costs)					
Item 35	Unavailability of material as planned through project duration					
Item 36	Risk associated with unavailability and cost increase considered in material planning is poor.					
Item 37	Poor mechanism of material availability used in project					
Item 38	Lack of project material management system					
Item 39	Low quality of material selection					
Item 40	Escalation of material prices					
	E n v i r o n m e n t a l R e l a t e d F a c t o r s					
Item 41	The soil type of the project area					
Item 42	A i r q u a l i t y					
Item 43	N o i s e l e v e l					
Item 44	W a s t e s a r o u n d t h e s i t e					
Item 45	C l i m a t e c o n d i t i o n s					
Item 46	Accessibility for heavy machines and trucks					
	S u p e r v i s o r R e l a t e d F a c t o r s					
Item 47	Cost of compliance to follows requirements					
Item 48	Frequently supervised the project progress					
Item 49	Availability of checklist for supervision					
Item 50	Follow up on Neighbors' and site conditions problems					

Part Three: Overall performance of Cobble stone road Construction Projects executed in Jimma Town

Instruction: - For the close ended questions, please use the following scale of 1 to 5 Where 5= Very good performance, 4=Good performance, 3= Moderately Performance, 2=low performance, 1= Poor Performance. And put a ticking mark (√) on the space provided.

N o	Perceived Overall executed cobble stone road construction project performance base	S c a l e s				
		5	4	3	2	1
	P r o j e c t c h a r a c t e r i s t i c s r e l a t e d f a c t o r s					
Item 1	Time overrun (Based on the plan Schedule)					
Item 2	Cost overrun (According to budget allocated)					
Item 3	Quality issues (According to the standard which attempted to construct)					

Thank You In Advance