

**Factors Affecting the Performance of Construction Project under
Oromia Industry and Urban Development Bureau, Ethiopia**



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List of Abbreviations

AHP	Analytical Hierarchical Process
BPM	Building Project Management
CPI	Cost Performance Index
CTP	Construction Time Performance
GDP	Growth Domestic Product
GTP	Growth and Transformation Plan
EPS	Environmental Performance Score
KPIs	Key Performance Indicators
MCDA	Multi Criteria Decision Analysis
MOFED	Ministry of Finance and Economic Development
MUDC	Ministry of Urban Development and Construction
OIADB	Oromia Industry and Urban Development Bureau
PAR	Performance Appraisal and Reporting
PM	Project Management
PMP	Project Management Performance
PPE	Project Performance Evaluation
PPI	Project Performance Indicators
RII	Relative Importance Index
SPI	Schedule Performance Index
SPM	Stakeholder Perspective Measurement
SPSS	statistical package for social science

Abstract

In Oromia the number of building construction projects is increasing from time to time. However, it becomes difficult to complete projects in the allocated cost, time and quality. Taking this into consideration, cost, time, and quality and leadership performance problem is one of the major problems in Oromia industry and urban development Bureau building construction projects. Therefore, this research was carried out to investigate factors that affect cost, time, and quality and leadership style performance during construction projects under Oromia industry and urban development Bureau. Questionnaire surveys together with desk study were used to collect data on time and cost overrun. A total of 30 questionnaires from owner, consultants and contractors were collected and a desk study of 10 completed building construction projects in Oromia industry and urban development were investigated. From the results it was found that 100% of the building construction projects suffered both time and cost performance. The actual rate of cost performance ranges from a minimum of 12% to the maximum of 60% of the contract amount and the actual time performance ranges from a minimum of 7% to the maximum of 170% of the contract time.

Respondents identified 13 factors affecting cost performance, 31 factors affecting time performance, 5 factors affecting quality performance and 3 factors affecting leadership performance for under Oromia industry and urban development Bureau building construction projects case. The extremely significant factors of affecting time performance were delay to furnish and deliver the site (Right of way problem), financial problems and improper planning. Whereas the extremely significant factors affecting cost performance were design changes, fluctuations in the cost of most significant factors affecting quality performance were construction project educated personnel, relevant work experienced personnel, quality of materials and equipment used in the project construction and conformance to specification. The most significant factors affecting the leadership performance were leader's professional education, leader's relevant work experience and training.

CHAPTER ONE: INTRODUCTION

1.1. Background of the Study

Construction industry has complexity in its nature because it contains a large number of parties such as clients, contractors, consultants, stakeholders, shareholders, regulators and others. Construction industry makes significant contributions to the socio-economic development process of a country. Its importance emanates largely from the direct and indirect impact it has on all economic activities. It contributes to the national output and stimulates the growth of other sectors through a complex system of linkages. It is noted that about one-tenth of the global economy is dedicated to constructing and operating homes and offices (UNEP, 1996). UNEP further observes that the industry consumes one-sixth to one half of the world's wood, minerals, water and energy. It contributes to employment and creates income for the population and has multiplier effects on the economy. The construction industry employs large unskilled labor. Throughout the developing world, the majority of employees in the industry are unskilled. Women are also found to be beneficiaries of the employment in the industry. However, the employment in the industry is mainly temporary in nature and once the job is over, the workers are obliged to find other jobs or return to their place of origin.

Similar to all other socio-economic activities, another key contribution of the construction industry is revenue generation to government. The construction industry contributes to economic activity through generation of revenue for government from corporate income taxes of companies, the rental income, sales tax, capital gain tax and employees income tax from those employed in the construction industry, which in turn goes to the financing of public services such as schools and health institutions among others. The construction industry has important contributions to the Ethiopian economy, as demonstrated by its share in the GDP. The sector has registered relatively higher growth as compared to the growth of GDP during this period. Over this period, there has been increased investment on the development and expansion of various infrastructure projects like roads, airports and residential and non-residential housing units. Every government has a vision to improve the living standards and conditions of its citizen and, generally, this is achieved through development programs. It is an accepted assumption

that a development program can be broken down into well-organized development projects and that if project activities are planned and implemented effectively the overall intended objectives and purpose of program will be achieved. Rondinelli (1993) argues that projects have always been used as policy tools to achieve overall development objective: once the role of good policy came to light, the project instrument was reshaped to promote explicit reforms and fashioned to generate development knowledge. Similarly, the project operational manual prepared by MUDC 7 (2011) presented ULGDP as urban development policy tool and it was implemented through existing government structures as follow: Ministry of urban development and construction; Ministry of finance and economic development; the Bureaus of industry and urban development; the Bureaus of finance and economic development; urban local government and municipalities. In the region the industry and urban development Bureau particularly in Oromia had the responsibility to manage the construction project. A review study by the Bureau of industry and urban development (BIUD, 2013) identified the existence of poor project management capacity at regional and local levels, even though there were various technical and other support missions from the government and the donors, project implementation, supervision, monitoring and evaluation at local government level still requires massive intervention. It is unfortunate that the BIUD study did not give reasons for the ineffectiveness of project performance in managing the projects. This research were investigates factors affecting performance in construction project management particularly construction project and draws lessons for future application on similar projects.

Maintaining steady cost projection on construction projects had been until recently an issue of serious concern, both to the client and project contractors. Cost deviation from initial cot plan, had been prevalent on construction sites (Amusan, 2011). Every year, large companies spend large sums on the research and development about the most optimum combination of production or the most optimum function and feature of their products and services. The impact of poor quality on the price of products and organization earnings and the amount of cost should be paid for high quality has raised many important issues affecting cost accounting, quality control, repairs and maintenance, supply chain, production management, stores, safety and health, education

and improvement and so forth (Amin, 2011). One of the most important facets of managing a construction company is leadership. Although the issue of leadership has been widely covered in management or business school, little attention has been given to the study of managerial behavior or style of the leaders in construction projects (Bresnen et al., 1986). Learning from high performance projects is crucial for construction improvement. Therefore, we need to identify outstanding projects or role models. A minimum prerequisite for identifying such projects is the ability to measure the performance. Unfortunately, two issues complicate the measuring task: i) diseconomies or economies of scale and ii) multidimensional inputs and outputs (Myrtveit&Stensrud, 2005). In view of key performance indicators, the construction industry is generally considered to have underperformed compared to other industries. Not only that, the Ethiopian construction industry has been criticized for not performing at the same level in the country. In relation to construction industry, the UK working groups on Key Performance Indicators (KPIs) have identified ten parameters for benchmarking projects, in order to achieve a good performance, in response to Egan's report. These consist of seven project performance indicators, namely: construction cost, construction time, cost predictability, time predictability, defects, client satisfaction with the product and client satisfaction with the service; and three company performance indicators, namely: safety, profitability and productivity (Akintoye&Takim, 2002). Ankrah and Proverbs (2005) showed that despite the inherent benefits of performance measurement in helping identify unnecessary causes of waste so that remedial actions can be taken, performance measurement is not extensively implemented because of the inadequacy of measures, complexity of measurement, time consuming and costly nature of performance measurement, and project-oriented nature of the industry. Where performance measurement is implemented various frameworks are available some targeting project performance whilst others focus on overall business performance.

Construction has emerged among the top performing sectors in the period alongside financial services and transport and communication. Oromia Industry and Urban Development continuously engage in acquiring physical assets in different forms such as commercial buildings for micro small enterprise, residential buildings like condominium,

training workshops, meeting halls, development infrastructure in the urban and office building constructions. These projects involve major capital investments driven by market demand or perceived needs. To remain competitive in either profit or non-profit engagements, you need to focus on procedures that offer competitive advantage and value. You need to understand the needs of the clients and correctly deploy the available resources in meetings the expectations of the client by maintaining a competitive edge over your competitors.

Time and cost overruns on infrastructure development projects during implementation continue to pose great challenges to developing countries (Kigari&wainaina, 2010). Ideally, projects designed and managed by highly trained construction professionals and executed by qualified contractors selected on the basis of their capability should meet the project performance goals. These goals are in terms of the contract period, budget, quality, environmental sustainability and client satisfaction. However, there is evidence that despite the high quality of training of consultants in the building industry in Oromia, Ethiopia and regulation of the industry in major urban areas, construction projects do not always meet their goals. This is manifested under Oromia industry and urban development Bureau construction projects that have cost overrun, delayed completion period and poor quality resulting to collapsed buildings in various parts of the project, high maintenance costs, dissatisfied clients and even buildings which are not functional (Kibuchi&Muchungu, 2012).

1.2.Statement of the problem

Ethiopia as a country has witnessed a substantial increase in the number of stalled projects due to in appropriate project organization structures and ineffective leadership. There is evidence that the performance of the building construction in Oromia, Ethiopia is poor as time, cost and quality performance of projects are to the extent that over 70% of the projects initiated are likely to escalate with time with a magnitude of over 50% and over 50% of the projects likely to escalate in cost with a magnitude of over 20% (OIUD, 2007). (Kibuchi and Muchungu 2012) discovered that despite the high quality of training of consultants in the building industry and regulation of the industry in major urban areas, construction projects do not always meet their goals. This is manifested by myriad

projects that have cost overrun, delayed completion period and poor quality resulting to collapsed buildings in various parts of the country, high maintenance costs, dissatisfied clients and even buildings which are not functional. Previous studies: (Nyangilo, 2012; Lepartobiko, 2012; Samson and Lemma, 2002; Kibuchi&Muchungu, 2012; Takim&Akintoye, 2002; Mhando&Mrema, 2005), indicate that the failure of any project is mainly related to the problems and failure in performance. Generally, past Ethiopian construction industry experiences show that, medium to large size projects have high failure rate. The consequences can be costly and lengthy, with the worst outcomes often leading to undesirable litigation engagements. Developing countries have higher rate of low project performance than developed countries, Lepartobiko (2012).

This research were investigate the factors affecting the performance of construction projects in Oromia industry and urban development Bureau in order to assist owners, consultants and contractors to overcome cost, time, quality and leadership performance problem and to improve performance of their construction projects. Hence, performance of any construction projects can be evaluated according to key performance indicators.

1.3. Research Questions

- 1.To what extent cost factors affect the performance of construction projects in Oromia industry and urban development Bureau?
- 2.To what extent time factors affect the performance of construction projects in Oromia industry and urban development Bureau?
- 3.To what extent quality factors influence the performance of construction projects in Oromia industry and urban Development?
- 4.What is the effect of leadership factors on the performance of construction projects in Oromia industry and urban development?

1.4. Objective of the Study

1.4.1. General Objective

The objective of this research was to investigate the factors affecting the performance of construction projects under the Oromia industry and urban development Bureau.

1.4.2. Specific Objectives

1. To determine the influence of cost factors on the performance of construction projects in Oromia industry and urban development Bureau.
2. To examine the influence of time factors on performance of construction projects in Oromia industry and urban development Bureau.
3. To establish the influence of quality factors on the performance of construction projects in Oromia industry and urban development Bureau.
4. To identify the influence of leadership style on performance of construction projects in Oromia industry and urban development Bureau.
5. To formulate recommendations based on the result obtained.

1.5. Significance/Justification of the Study

Construction industry has complexity in its nature because it contains large number of parties as clients, contractors, consultants, stakeholders, shareholders, regulators and others. Construction projects in the Oromia industry and urban development Bureau suffer from many problems and complex issues in performance because of many reasons and factors. This work is very important to identify and to evaluate the time, cost, quality and leadership style factors affecting the performance of construction projects in the Oromia industry and urban development Bureau. The practices concerning with the KPIs such as time, cost, quality and leadership style in construction project checklists were analyzed in order to know the main practical problems of projects performance regarding factors affecting construction project in Oromia industry and urban development Bureau and then to formulate recommendations to improve performance of building construction projects.

Because of performance problem in the Oromia, Ethiopia as shown previously and because previous studies in the country about this topic do not deal with all aspects of

construction project performance; this study is required and very important to be consider. In this study, it was studied the factors affecting the time and cost performance of construction projects under Oromia industry and urban development Bureau. These factors can be said as key performance indicators. These KPIs can be used to measure performance in construction projects and can then be used for benchmarking purposes. This was a key component of any organization move towards achieving best practice in order to overcome performance problem in the Oromia industry and urban development Bureau.

1.6. Scope of the study

This research was limited to the time, cost, quality and leadership factors affecting the performance of 10 (ten) building construction projects : Oromo cultural center construction project,G+3 office building construction project, Oromia research institute office construction project, Oromo People Democratic Organization (OPDO) office construction project, Fitcha teachers training college construction project, East shewa higher court office construction project , Oromia special zone around Finfinne high court construction project, G+4 office building construction project, Oromia police college construction project and Drivers training center building constructions projects those were constructed in last five years from 2003-2007 E.c under Oromia industry and urban development Bureau at regional level only. Hence, the target respondents were obtain owners, contractors and consultants involved in building construction projects at time bounded under Oromia industry and urban development Bureau. The study was examined the time, cost, quality and leadership factors as independent variable and construction projects performance as dependent variables.

1.7. Description of the Study Area

Oromia industry and urban development Bureau is one of the Oromia regional states Bureau which is located in Addis Ababa around Sar-bet inside the Oromia Bureaus building. It was established in 2008 independently at regional level. The objective of the Bureau is to enable towns in Oromia region to contribute their shares by becoming centers of development and bring about urban-rural economic development linkage. The

Bureau also targets achieving middle-income status for the people of Oromia by making them the owner of political power and the beneficiaries of development.

The Bureau aims at expanding the development and investment in small and micro enterprises in Oromia region, reducing unemployment, modernizing urban centers, making the created stability in industry led by growth in the industry and improving the people's lives by ensuring good governance.

1.8. Operational Definition of Variables

Project: Building construction projects constructed in the last five years from 2003-2007 E.c under Oromia industry and urban development Bureau.

Building: A permanent or temporary construction used for the purpose of Education, office, Hall, Training center under Oromia industry and urban development Bureau;

Construction: means the construction of new building projects under the Oromia industry and urban development Bureau.

Owner: A public organization for whom the construction project is being undertakes.

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

Consultant: The person or entity appointed by the owner to establish and agree all budgets, and implement and manage the necessary cost control on the project.

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

1.6. Limitation of the study

The study was limited by unavailability of documented information about construction projects in the country particularly construction performance written document in Oromia building construction. Therefore, construction overcoming the constraints enabled sufficient data gathered to retrieve the information needed to complete the study.

CHAPTER TWO: LITERATURE REVIEW

2.1. Introduction

This chapter presents a literature review of the research work that was done by various scholars in the field of performance of construction project. This includes theoretical review, conceptual frame work, empirical review and critique of the existing literature relevant to the study, summary and research gaps.

2.2. Theoretical Framework

2.2.1. Building construction projects

A construction in simple words is a process of constructing something by human for one purpose or another. It may be a road, bridge, a dam, a private residence, an airport, a commercial building, office and etc. According to Wikipedia, construction is a process that consists of the building or assembling of infrastructure. Construction is the recruitment and utilization of capital, specialized personnel, materials, and equipment on a specific site in accordance with drawings, specifications, and contract documents prepared to serve the purposes of a client. According to Moavenzdadeh F. (1976), construction contributes to the economic development of any country by satisfying some of the basic objectives of development including output generation, employment creation and income generation and re distribution; it also plays a major role in satisfying basic physical and social needs, including the production of shelter, infrastructure and consumer goods.

Wikipedia, the free encyclopedia, defines building construction as the process of adding structure with walls to real property or construction of buildings. It further discusses that if this buildings are not designed and constructed by professionals they might lead to undesirable results such as structural collapse, cost overrun and disputes.

A project is a temporary endeavor undertaken to create a unique product, service or result (Project Management institute, 2008). According to Hillson D., (2009), all projects are risky and there are three separate reasons for that. The first reason is that all projects share common characteristics which inevitably introduce uncertainty. Some of this common characteristics are projects are unique, complex, involve assumptions and

constraints, performed by people and involve change from a known present to an unknown future. The second reason is that all projects are undertaken to achieve some specific objectives. The final reason is that all projects are affected by the external environment they exist in.

A building construction project, like any other project, also faces different risks throughout the life of the project. According to Nafishah B., (2006), this is due to the uniqueness of every project, the uncertainties introduced by the project stakeholders, statutory or regulatory protocols and other intrinsic and extrinsic constraints. He further discusses that risk can constrain the achievement of key project objectives, time, cost and quality. Inability to achieve the project objectives has great consequence on all project stakeholders involved in the construction. For the client it could mean extra cost and less return on investment, for the consultants it could result in loss of confidence placed in them by the clients, for the contractor it could mean loss of profit and bad reputation etc.

The construction industry is a very important part of any country. It highly contributes to the growth and development of the economy in developing countries like Ethiopia (Jill Wells. 2001; Moavenzdadeh F. 1976). According to these studies, the construction industry plays a major role in developing countries since it constitutes a significant portion of gross national product and employment; at least three-quarters of the world's construction workers are in the less developed countries.

2.2.2. Construction in Ethiopia

Ethiopia is a country located in the Horn of Africa. It is a large country with an area of 1.13 million square kilometers. Ethiopia is home to a large population of inhabitants, according to a report by self help Africa, 2013, these amounts to about 91 million. The average number of inhabitants per km² can be estimated to be around 80 people. According to Alem T. (1999), the majority of the Ethiopian population lives in the rural areas of the country and only a few live in the urban areas.

From the above statements it can be observed that the construction industry is only confined within a small portion of the country since majority of construction is

undertaken in urban areas. The rural area, where majority of the population live, is uncivilized, i.e. there are only small traditional constructions used for habitation of people and cattle and in few places there are small scale school and health center constructions. According to Abraham A., 2007 and Kassim S., 2008, the construction industry is the most important enabler for the overall development specifically for least developing countries like Ethiopia. They also state that the construction industry is among the leading industries in producing employment and it contributes to the national development of any country.

The above discussion is trying to show that construction is very important for countries like Ethiopia. As mentioned earlier, any construction project involves risk and the impact it causes can be very critical in developing countries like Ethiopia. According to Hillson D. (2009), the most important thing that can be done in projects is make sure that the inevitable risk associated with every project is at a level which is acceptable by the organization and is effectively managed. This statement implies that different organizations have different risk acceptance levels and Ethiopia as a country or the organizations involved in construction can only afford to accept small levels of risk due to their low capital. This implies investigation of different factors especially important in developing countries to control cost, time and quality problem that affect the projects performance.

2.2.3. Critical Chain Project Management Theory

Critical Chain Project Management is the Theory of Constraints logistical application for project operations. It is named after the essential element; the longest chain of dependent resourced tasks in the project. The aim of the solution is to protect the duration of the project, and therefore completion date, against the effects of individual task structural and resource dependency, variation, and uncertainty. The outcome is a robust and dependable approach that will allow us to complete projects on-time, every time, and most importantly within at most 75% of the current duration for single projects and considerably less for individual projects within multi-project environments. The shorter duration provides a sterling opportunity in the marketplace to differentiate ourselves from our competitors who deliver poorer outcomes, and late at that, via other project

management methods. It also offers the opportunity to deliver more projects over all, in the same amount of time, and at no increase in operating expense, thus significantly improving the bottom line (Youngman, 2009).

2.2.4. 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. 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 6 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 produce a result goes down; 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.

2.2.5. Performance Measurement Theory

Mbugua et al., (1999) and Love et al., (2000) have identified a distinction between performance indicators, performance measures and performance measurement. According to Mbugua et al., (1999), performance indicators specify the measurable evidence necessary to prove that a planned effort has achieved the desired result. In other

words, when indicators can be measured with some degree of precision and without ambiguity they are called measures. However, when it is not possible to obtain a precise measurement, it is usual to refer to performance indicators. Performance measures are the numerical or quantitative indicators (Sinclair and Zairi, (1995). On the other hand, performance measurement is a systematic way of evaluating the inputs and outputs in manufacturing operations or construction activity and acts as a tool for continuous improvements (Sinclair and Zairi, 1995; Mbugua et al., 1999). 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; Kay 1993; Brown and Lavenrick 1994; and Kaka et al., 1995), client satisfaction measures (Walker, 1984; Bititci, 1994; Kometa, 1995; Harvey and Ashworth, 1997; and Chinyio et al., 1998), employee measures (Bititci, 1994; Shah and Murphy, 1995; and Abdel-Razek, 1997), project performance measures (Belassi and Tukel, 1996) and industry measures (Latham, 1994; Egan, 1998; Construction Productivity Network, 1998; and Construction Industry Board, 1998); as cited in (Mbugua et al., 1999). Cordero (1990) classifies performance measurement based on the method of measurement and area of measurement. The methods of measurement of performance can be in terms of the technical performance, the commercial performance and the overall performance. The areas of measurement are at the planning & design level, the marketing level and manufacturing level etc., and for the overall performance are at the level of a firm or strategic business unit. Furthermore, he proposes a model of performance measurements in terms of outputs and resources to be measured at different levels. Outputs are measured to determine whether they help to accomplish objectives (effectiveness) and resources are measured to determine whether a minimum amount of resources is used in the production of outputs (efficiency). However, in his model, Cordero (1990) failed to reflect the interests of stakeholders, their needs and expectations. If construction organizations are to remain competitive in the long run, they need to develop and better understand their relations with their customers, suppliers, employees, lenders and the wider community, as suggested by Love et al., (2000). Hence, performance measurement has to incorporate the interest of the stakeholders, both economically and morally. In addition, Love et al., (2000) propose a model (Table 2)

known as stakeholder perspective measurement (SPM) that adequately considers relations with customers, suppliers, employees, financiers and the wider community. All of them are critical to a business's viability, both in the short and long term. SPM considers the three common perspectives of the firm: As a stakeholder entity, reflecting the interest of customers and shareholders (measures of product/service performance); as a goal-orientated, profit centre (measures of financial performance); and as a system that engages in resources garnering, conversion and exchange with the environment (measures of competitive ability, productivity and quality).

2.2.6. Implication of Time and Cost Overrun

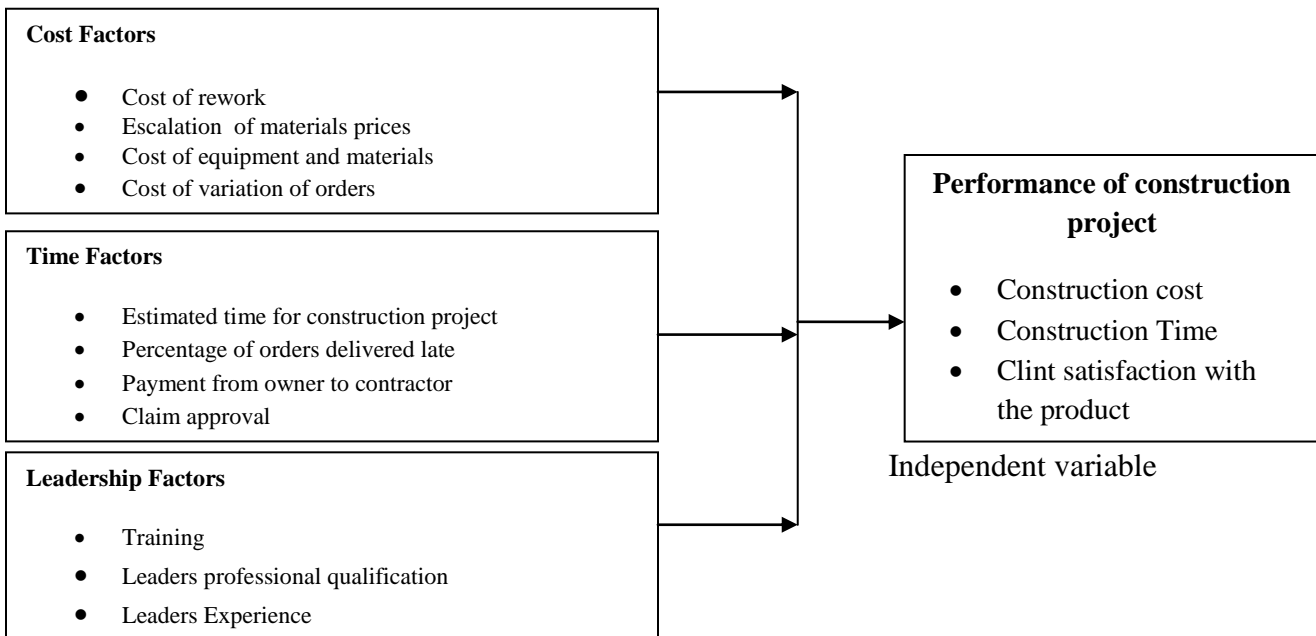
Time and cost overrun have an implication and affection to the construction project performance and to the client or project owner. Time and cost certainty is known to be the top priorities of construction clients (Davenport, 1997). Although affected by many internal and external factors, construction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

Client satisfaction is an important determinant of contractor performance evaluation and comparison (Sidwel, 1988) and it is the driving force for continuous improvement of contractor performance (Ahmed and Kangari, 1995). Companies differentiate themselves from competitors and maintain a competitive edge by providing and keeping clients satisfied (Torbica and Stroh, 2001). Client long term interest to the performance of contractor is in the work performed. It must conform to the specifications established for the project. Low cost and speedy construction should be achieved because it has significant implication to the client's interest about the way of contractor work in the project performance (Xiao and Proverbs, 2001). Besides that, delays (time overrun) and cost overrun are costly and often result in disputes and claims, impair the feasibility for project owners, and retard the development of the construction industry (Odeh, A. M and Battaineh, H. T, 2002). Fetene (2008) categorized some of the major causes of cost

overrun under faults of the clients, consultants, contractors, government and others. Morris (1990) considered inadequate project preparation as the most important factor that underlie cost overrun, which often lead to scope changes during implementation. The inadequacies cover deficiencies in demand forecasts, ground surveys and technology choice. Murali and Yau (2006) in their research identified contract- related factors such as change orders, mistakes and discrepancies in the contract document as the major causes of cost overrun. Dolo and Young (2009) reported among these three categories, the five most significant sources of cost overruns as perceived by the consultants, clients and contractors which are extent of completion of pre-contract design, escalation of material prices, mistakes and discrepancies in contract documentation, client initiated variations and shortage of materials.

2.2. Conceptual Framework

A conceptual framework is defined as a set of broad ideas and principles taken from relevant fields of enquiry and used to structure a subsequent presentation (Ramey & Reichel, 1987). The conceptual framework in this study was used to show various variables that affect the performance of construction projects.



Dependent Variable

Figure 1: Conceptual Frame Work (Elger, 2008)

2.2.1. Construction Projects and Performance

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

Cheung et al (2004) identified project performance categories such as people, cost, time, quality, safety and health, environment, client satisfaction, and communication.

It is obtained by Navon (2005) that a control system is an important element to identify factors affecting construction project effort. For each of the project goals, one or more Project Performance Indicators (PPI) is needed. Pheng and Chuan (2006) obtained that human factors played an important role in determining the performance of a project. Ugwu and Haupt (2007) remarked that both early contractor involvement (ECI) and early supplier involvement (ESI) would minimize constructability-related performance problems including costs associated with delays, claims, wastages and rework, etc. Ling et al (2007) obtained that the most important of practices relating to scope management are controlling the quality of the contract document, quality of response to perceived variations and extent of changes to the contract. It was recommended for foreign firms to adopt some of the project management practices highlighted to help them to achieve better project performance in China.

2.2.1. Factors Affecting Cost and Time Performance

Chan and Kumaraswamy (2002) remarked that studies in various countries appear to have contributed significantly to the body of knowledge relating to time performance in construction projects. Iyer and Jha (2005) remarked that project performance in term of cost is studied since 1960s. These studies range from theoretical work based on experience of researcher on one end to structured research work on the other end. Moreover, Pheng and Chuan (2006) stated that there have been many past studies on project performance according to cost and time factors. Chan and Kumaraswamy (1996) stated that a number of unexpected problems and changes from original design arise during the construction phase, leading to problems in cost and time performance. It is found that poor site management, unforeseen ground conditions and low speed of decision making involving all project teams are the three most significant factors causing delays and problems of time performance in local building works. Okuwoga (1998) stated that cost and time performance has been identified as general problems in the construction industry worldwide. Dissanayaka and Kumaraswamy (1999) remarked that project complexity, client type, experience of team and communication are highly correlated with the time performance; whilst project complexity, client characteristics and contractor characteristics are highly correlated with the cost performance. Reichelt and Lyneis (1999) obtained that project schedule and budget performance are controlled by the dynamic feedback process.

Those processes include the rework cycle, feedback loops creating changes in productivity and quality, and effects between work phases.

Chan (2001) identified that the best predictor of average construction time performance of public sector projects. This relationship can serve as a convenient tool for both project managers and clients to predict the average time required for delivery of a construction project. Kuprenas (2003) stated that process of a design team meeting frequency and the process of written reporting of design phase progress were found to be statistically significant in reducing design phase costs. Otherwise, the use of project manager training and a project management based organizational structure were found to be processes that do not create a statistically significant in reducing design phase costs.

Iyer and Jha (2005) remarked that the factors affecting cost performance are: project manager's competence; top management support; project manager's coordinating and leadership skill; monitoring and feedback by the participants; decision making; coordination among project participants; owners' competence; social condition, economical condition and climatic condition. Coordination among project participants was as the most significant of all the factors having maximum influence on cost performance of projects. Love et al (2005) examined project time-cost performance relationships by using project scope factors for 161 construction projects that were completed in various Australian States. It is noticed that gross floor area and the number of floors in a building are key determinants of time performance in projects.

Furthermore, the results indicate that cost is a poor predictor of time performance. Chan and Kumaraswamy (2002) proposed specific technological and managerial strategies to increase speed of construction and so to upgrade the construction time performance. It is remarked that effective communication, fast information transfer between project participants, the better selection and training of managers, and detailed construction programs with advanced available software can help to accelerate the performance. Jouini et al (2004) stated that managing speed in engineering, procurement and construction projects is a key factor in the competition between innovative firms. It is found that customers can consider time as a resource and, in that case, they will encourage the contractor to improve the time performance.

2.2.2. Cost Factors

Curt (2005) argued that the cost management system tracks current spending and commitments and predicts ultimate cost outcome. Yafiah (2013) indicate that procurement selection criteria of cost, time, quality, project characteristics and external environmental factors have effects on project performance. Fetene (2008) found that the most common effects of cost overrun were delay, supplementary agreement, adversarial relations among stakeholders, and budget shortfall of project owners which guides efforts to improve the performance of the construction industry in the future. Aftab, Rahman, Abdullah and Azis (2010) stated that fluctuation in price of material, cash flow and financial difficulties faced by contractors, shortage of site workers, lack of

communication between parties, incorrect planning and scheduling by contractors are most severe factors while frequent design changes and owner interference are least affecting factors on construction cost performance. Amusan (2011) discovered from the analysis that factors such as contractor's in experience, 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. Baloyi and Bekker (2011) discovered that the increase in material cost is the single largest contributor to cost overruns for both global and local projects. Mrema and Mhando (2005) found that in most cases, malignancy of clients to assume roles of their consultants through making decisions and changes that affect the design and the project cost has undermined the efforts to attain the intended goals. Shaban (2008) stated that the most important factors affecting the performance of construction projects agreed by the owners, consultants and contractors were: average delay because of closures 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.

2.2.3. Time Factors

Time is money to owners, builders, and users of the constructed facility. From the owner's perspective there is lost revenue by not receiving return on investment, cash flow crunch, potential alienation and loss of clients/tenants, extended interest payments, and negative marketing impacts. From the users' perspective, there are financial implications similar to owners (Bob & Muir, 2005). Aje, Odusami and Ogunsemi (2009) showed that contractors' management capability has significant impact on cost and time performance of building projects. Wiguna and Scott (2005) showed the critical risks affecting both project time and cost perceived by the building contractors were similar. They were: high inflation/increased material price, design change by owner, defective design, weather conditions, delayed payments on contracts and defective construction work. With respect to time delays the most significant contributing factor for global projects was late delay in payments while for the stadia projects design-related factors caused the most delays

(Baloyi& Bakker, 2011, Iyagba , 2010) identified the factors that contribute substantial detrimental effect to project performance, thus affecting the integrity of the construction industry.

2.2.4. Quality Factors

Curt, (2005) stated that the quality management system monitors and analyzes quality of the constructed project and predicts quality problems and issues. Typical quality measures include: (i) Quality control tests: number performed, frequency and percentage passed/failed, number of non-conformance issues, number of change requests and root causes, cost of rework, number of exceptions at turnover and cost of quality (ii) Quality Assurance Cost (cost of resources): quality assurance cost as a percentage of construction cost, cost of quality and Cost of quality as percentage of construction cost. Lepartobiko (2012) stated that quality can be assured by identifying and eliminating the factors that cause poor project performance. Jha&Jha (2006) found that the project manager's competence and top management support are found to contribute significantly in enhancing the quality performance of a construction project. Lack of contractor experienced topped the quality related cause of project failure. Ling and Bui (2010) 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. A factor which leads to poor performance is the lack of accurate data on soil, weather, and traffic conditions.

2.2.5. Leadership Factors

There was significant relationship between the project leader's professional qualification, his leadership style, team composition and overall project performance (Odusami, Iyagba&Omirin, 2003). Leadership must be raised from among the Hispanic workers to aid in effectively coordinating work activities by providing the communication link between management and work crews. This provides the opportunity for upward mobility and gives motivated individuals the chance to advance professionally (Bob &Muir, 2005). Lack of appropriate project organization structures, poor management systems and leadership are the major causes of poor project performance (Nyangilo, 2012). Nyangilo argued that the project leaders are endowed

with technical skill but lack the other basic project management skills of dealing with the human, culture and environmental sides of the project. Various statistical configurations have also been identified, indicating possible weaknesses within the team dynamic that may be addressed in an effort to achieve improved project performance (Langford & Tennant, 2005). Kamalesh, Rizwan and Syed (2002) collected data through selected project managers and construction professionals working in managerial capacity in South Florida, it was found that the leadership style exhibited is both high task and high employee relationship; which is the selling type. They found that there is no significant difference in the leadership orientation of well experienced managers and less experienced managers. Gbadura and Oke (2010) recommend democratic and transformational leadership styles for Nigerian quantity surveyors in discharging their duties as construction projects managers.

2.2.6. Project Success and Project Performance

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

Nitithamyong et al (2004) remarked that the success of construction projects depends up on technology, process, people, procurement, legal issues, and knowledge management which must be considered equally.

Pheng and Chuan (2006) defined project success as the completion of a project within acceptable time, cost and quality and achieving client's satisfaction. Project success can be achieved through the good performance of indicators of the project.

So, success refers to project success and performance refers to performance of indicators such as project managers. Wang and Huang (2006) stated that Project success has been widely discussed in the project management literature. The focus of most studies of

project success is on dimensions of project success (how to measure it) and factors influencing project success. Wang and Huang (2006) studied that how the engineers evaluate project success and to what extent key project stakeholders' performance correlates with project success. It is obtained that project owners play the most important role in determining project success, and project management organizations' performance as the single point of project responsibility has significant correlations with project success criteria. Lam et al (2007) stated that the allocation of risk among the contracting parties in a construction contract is an important decision leading to the project success.

2.2.7. Performance of Construction Projects

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

2.2.8. Performance Indicators

The UK working groups on Key Performance Indicators (KPIs) have identified 10 parameters for benchmarking projects in order to achieve a good performance in response to Egan's report (1998). However, most of these indicators, such as construction cost, construction time, defects, client satisfaction with the product and service, profitability and productivity, promote result-orientated thinking, whereas predictability of design cost

and time, and predictability of construction cost and time, and safety can be regarded as process-orientated thinking. There are no suggestions for performance indicators in benchmarking projects at the project selection phase i.e., analysis stage, when the client and end-user's requirements need statements and the delivery strategy are determined. In addition, the perspective of the 'project' and 'supplier' is not clearly indicated. None of the measures mentioned in this section could identify the performance of suppliers in a project environment. According to Dvir et al., (unpublished paper, 2002), the output of the requirements at the analysis stage will most likely determine the output of the entire development process. They indicate that the origination and initiation phase, in which major decisions are made, such as decisions on the project's objectives and planning the project's execution, has the most influence on the project's success. The issue is much more serious when the kind of activities that should be undertaken depends on the outcome of earlier activities. It is therefore important to identify parameters (performance indicators) for benchmarking projects at the project selection phase in order to achieve good project performance. Posten (1985), who found that 55% of all defects in R&D projects occur during requirement analysis and specification, earlier documented this position, whereas 43% of all defects are not found until after the testing stage. It is not surprising that the same situation is applicable to construction projects.

2.3. Empirical Review

Shaban (2008) 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. Bui and Ling, (2010) in the study that was 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. A factor which leads to poor performance is the lack of accurate data on soil, weather, and

traffic conditions. Amusan, (2011) studied factors affecting construction cost performance in Nigerian construction sites. It was 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. Fetene, (2008) did a study on causes and effects of cost overrun on public building construction projects in Ethiopia. From the results it was found that 67 out of 70 public building construction projects suffered cost overrun. The rate of cost overrun ranges from a minimum of 0% to the maximum of 126% of the contract amount for individual projects. Iyer and Jha (2006) 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, (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. Gbadura and Oke, (2010) examined project management leadership styles of Nigerian quantity surveyors, on the general note, Nigerian quantity surveyors were found to be autocratic using Jerrell/Slevin measuring instrument while in the opinion of Nigerian construction professionals; they are more of task oriented in discharging their duties as construction project managers. Iyagba, OdusamiandOmirin, (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.

2.4. Critique of the Existing Literature Relevant to the Study

Nyangilo (2012) did a research on an assessment of the organization structure and leadership effects on construction projects' performance in Kenya. Lepartobiko (2012) studied the factors that influence success in large construction projects. Kigari and

Wainaina, (2014) studied emerging trends in economics and management sciences time and cost overruns in power projects in Kenya by closely relating the factors to the various variables. Based on local studies that have been done in Kenya; Auma (2014) Factors Affecting the Performance of Construction Projects in Kenya; Fetene, (2008) did a study on causes and effects of cost overrun on public building construction projects in Ethiopia. But all of them did not focus on key performance indicators of construction projects in Oromia Industry and urban development Bureau, Ethiopia. From these studies there is no a guideline for the contractors who want to correct their previous mistakes and improve on their current situation. Therefore, this research focused on key performance indicators of construction projects under Oromia Industry and Urban Development Bureau which were used as a benchmarking for the owners, consultants and contractors.

2.5. Research Gaps

Fetene (2008) studied the causes and effects of cost overrun on public building construction project in Ethiopia; Siraw (2014) did studied the analysis of factors contributing to time overruns on building construction projects under Addis Ababa city Administration; Tekalign (2014) studied the role of project planning on project performance in Ethiopia. From these studies that have been done on cost overruns on construction projects, there is a need for future studies to focus on the following areas: The effects of construction project manager's skills on projects performance. Find out between public and private construction projects, which one has got higher performance level. It is also recommended to develop performance measurement framework and modeling system in order to measure performance of construction organizations and projects. In addition, it is recommended to study and evaluate the most important factors affecting the performance of construction projects.

2.6. Summary

According to previous studies, it could be said that the performance measurement is a process that include factors as Key Performance Indicators (KPIs) such as time, cost, quality, client satisfaction; leadership style and safety in order to enable measurement of current construction projects performance and to achieve significant performance improvements of future projects. It was obtained that there were many fields and topics

which are related to performance such as, construction management, information technology, factors affecting performance of managers, measurement of project performance, key performance indicator and benchmarking. The key performance indicators are used to evaluate performance of construction projects. These indicators can then be used for benchmarking purposes, and will be as a key component of any organization to move towards achieving best practice and to overcome performance problem under the Oromia Industry and Urban development Bureau.

CHAPTER THREE: - RESEARCH DESIGN AND METHODOLOGY

3.1.Introduction

In this chapter the details of all information regarding the methods that will be used to carry out the research, the type of research design that should use, the target population, the sample size, sampling techniques, the procedure that will be used to obtain samples and the research instrument and method of data collection will discuss. It also indicated how data will be analyzed and presented.

3.2.Research Design

This research will investigate the performance of building construction projects constructed in last five years from 2003-2007 E.C and the research questions are orient to investigate the factors affecting the performance of building construction projects in Oromia Industry and Urban Development Bureau. The researcher was used descriptive type of research method, because it tried to describe the actual rate of performance indicators and the variables or factors affecting construction performance under Oromia Industry and Urban Development Bureau. The research will obtain both qualitative and quantitative in nature.

The data was collected from both primary and secondary sources of data. The primary data has obtained through questionnaire from Owners, Contractors and Consultants of those construction projects stated under Oromia industry and urban development Bureau in last five years. The secondary data has obtained from review of documents that mostly completed projects, in which contract documents, project reports, correspondence letters and payment certificates investigation thoroughly which were very important in

identifying the recurrent problems related to performance problem under the Oromia industry and urban development Bureau construction projects.

3.3. Population

The research were consists of the total 10 building construction projects under Oromia industry and urban development Bureau in last five years from 2003-2007 E.c. Therefore, the targeted populations were all of the owners, contractors and consultants of each building construction projects are the population of the study. The total population size of the study was 30 (10 owners, 10 contractors and 10 consultants). The researcher was distributing questionnaire for owner, contractor and consultants of building construction projects.

3.3.1. Sample Design

Sample design of the study is a census sampling method, because a census study occurs if the entire population is very small or it is reasonable to include the entire population.

In the case of this research population it does not mean that all members (employees) of building construction projects are possible respondents for the questionnaire. Rather the researcher was distributed the questionnaire for the total representative of owners, contractors and consultants in the selected construction projects. As the data from Oromia industry and urban development Bureau there are 10 building constructions constructed in last five years. The researcher was selecting the owner, contractor and consultants of the total 10 construction projects as a respondent of the research.

3.3.2. Unit of analysis

In terms of unit of analysis, this research focuses only on building construction projects under Oromia industry and urban development Bureau which were completed within the last five years (from 2003-2007 E.C).

3.4. Samples and Sampling Techniques

The process taking a total number of population as a respondents from entire population such that the selected group contains elements representative of the characteristics found in the entire group is known as census sampling (Kombo&Orodho, 2002). The researcher was use census sampling technique for each total number of building construction

projects in last five years owners, consultants and contractors were taken as respondents. Because of census, the entire population is very small as well as it is reasonable to include the entire population and to gather data from all member of the population directly involved in building construction projects under Oromia industry and urban development Bureau. The researcher believed that these were the only respondents who know about performance factor indicators for the building construction projects as they were exposure in the construction process of the understudied projects.

3.4.1. Instruments

To gather concrete data, all relevant and available data/documents were assessed and analyzed. These are project completion reports to disclose the fact that whether building constructions are completed as per the agreement/plan or not.

Contractors, owners and consultants have been approached for their view on factors affecting performance of construction projects by using closed ended questionnaires in the form of likertscale.

3.4.2. Data Collection Method

Data collection methods were both qualitative and quantitative. Qualitative because, document review those are completion reports of building construction projects in the reviewed to disclose the extent of building project affected in performance. Quantitative because the researcher was prepared and distribute questionnaire for all respondent (Questionnaires was distributed to contractors, owner and consultants of the building construction projects). The researcher hoped that, these sources were enough and relevant to investigate the most common and frequent factors affecting building construction projects under Oromia industry and urban development Bureau.

Questionnaires were used to gather data because the information could be collected from a large sample and diverse regions, confidentiality were upheld and saved on time. The study used the data sources to produce the following basic documents: respondents' documents and archival documents. The respondents' documents were collected by using questionnaires from contractors, consultants and owners. Archival documents were from completed projects, in which contract documents, project reports, correspondence letters

and payment certificates were investigate thoroughly which are very important in identifying the factors affecting the performance of construction projects.

3.5.Data Analysis/Treatment of Data

The analysis part were combined is based on all groups of respondents (contractors, consultants and owners) in order to obtain significant results. The data were analyzed by calculating the relative important index model to rank the hypothesized factors based on their importance and frequency which is derived from the views of the respondents of the three groups. The spearman rank correlation coefficient is used to test the hypothesis of this research. . al. (1994) and Sambas van and Soon (2007) used the RII method to determine the relative importance of the various factors of affecting construction projects. The same method is adopted in this study.

RIIs for each factor is calculated as shown below:

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

Where:

RII = relative importance index

W = weighting given to each factor by respondents (ranging from 1 to 5)

A = highest weight (i.e. 5 in this case); and

N = total number of respondents.

The RII values have a range of 0 to 1 (0 not inclusive); the higher the RII is the more important factors indicators affecting the performance of construction projects. The RIIs is ranked, and the results are shown by using tables and/or graphs.

3.6.Ethical issues

Ethics is one of the major considerations in research. The researcher of this study is also subject to the following ethical considerations.

The research work was started after getting the willingness of the stated organizations.

Respondents were clearly communicated about the objective of the research before they are asked to give their answer.

There was no any physical or psychological damage to them because of the research. Respondents were not asked about their name, race, religion, etc.

3.7. Structure of the Research Design

This research will consist of five main chapters as following:

Chapter one, provide a background on factors affecting the construction projects, statement of the problem, research objectives, research hypothesis and research questions that the study looked forward to answer, purpose of the study, and significance of the study, limitations and scope of the study. Chapter two, outline the various schools of thought (literature review) on factors affecting construction projects.

The discussions are based on the research objectives. Chapter three outlined the research design and methodology that will be used for purposes of completing the study. It also described research design, target population, sample, and sampling procedure and data collection instruments, pilot testing of the instruments, data collection procedures and data analysis techniques, ethical considerations and operational definition of the variables. Chapter four, cover data analysis and presentation of results, Chapter five, consists the summary of major findings, discussions of the findings in comparison with the literature review, conclusions and recommendations of the study.

CHAPTER FOUR: RESULTS AND DISCUSSION

4.1.Introduction

This chapter describes the results and discussion of questionnaire survey and document review concerning cost, time, quality and leadership factors affecting the performance of building construction projects under Oromia industry and urban development Bureau from contractors, consultants and owners view points. Finally, the effects of cost, time, quality and leadership factor indicators in construction performance on the various stakeholders, on the construction industry and on the national economy in general were dealt.

4.2.Results of desk study

During the discussion of desk study ten building construction projects were selected and evaluated on the basis of their estimated completion time and cost versus actual completion time and cost before identifying the factors affecting time and cost performance. The researcher was calculated the rate of time and cost overrun.

The rate of time overrun ranges from a minimum of 7% to the maximum of 170% of the contract time performance and cost performance problem (overrun) ranges from a minimum of 12% to the maximum of 60% of the contract amount for individual projects.

Based on the result found in desk study; name of selected building construction projects, contractors name, contract time, contract amount, actual completion time, actual completion cost, rate of time overrun and rate of cost overrun of selected building are described as shown in Table 4.1 and 4.2.

Table 4.1: Contract amount and actual completed amount of some building construction projects under Oromia industry and urban development Bureau;

No	Name of Oromia IUDB Building Construction Projects	Contractor name	Contract Amount (Eth. Birr)	Actual Completed Cost (Eth. Birr)	Rate of Cost Over run (%)
1	Oromo Culture Center	Afrotsion construction	168,704,566	202,793,445	20%
2	G+3 office Building	Afrotsion construction	52,177,229.65	68,000,000	30.32%
3	Oromia Research Institute office	Afrotsion construction	48,397,255.66	60,000,000	24%
4	OPDO office building Project	Afrotsion construction	40,927,163.88	65,400,277	60%
5	Fiche Teachers Training College	SAMKET Engineering	84,665,000	95,000,000	12%
6	East Shewa Higher Court	GirmaAsefa B.C	26,243,809.73	41,608,708.13	58.5%
7	High Court Special Oromia Zone around Finfinne	BE & DZ Construction plc	26,212,034.06	37,655,693.29	43.66%
8	G+4 office building	AlemayehuBayera B.C	31,893,718.99	36,289,426.45	13.78%
9	Oromia Police College office building	BereketEndashaw B.C	40,367,951.20	45,897,573	13.69%
10	Drivers Training Center office building	Shade construction	29,150,586.16	37,637,986.86	29%

Source: Oromia Industry and Urban Development Bureau (Projects' Progress and completion report 2015)

Table 4.2: Contract time and actual completed time of some building construction projects under Oromia industry and urban development Bureau;

No	Name of Oromia IUDB Building Construction Projects	Contractor name	Contract Time (days)	Actual Completed Time (days)	Rate of Time Overrun (%)
1	Oromo Culture Center	Afrotsion construction	980	2200	124%
2	G+3 office Building	Afrotsion construction	540	1460	170%
3	Oromia Research Institute office	Afrotsion construction	750	980	30.66%
4	OPDO office Project	Afrotsion construction	760	1200	57.89%
5	Fiche Teachers Training College	SAMKET Engineering	750	1350	80%
6	East Shewa Higher Court office construction project	GirmaAsefa B.C	540	891	65%
7	Higher Court Special Oromia Zone around Finfinne office construction project	BE & DZ Construction plc	540	918	70%
8	Oromia G+4 office Building Construction	AlemayehuBayera B.C	560	600	7%
9	Oromia Police College office building	BereketEndashaw B.C	640	910	42%
10	Drivers Training Center office building	Shade construction	548	1278	133%

Source:Oromia Industry and Urban Development Bureau (Projects' Progress and completion report, 2015)

Tables 4.1 and 4.2 clearly show that, the rate of time and cost overrun has significantly high in Oromia industry and urban development Bureau building construction projects. From the projects' completion report it was found that the main reasons for time and cost overruns are design change and contractors' financial problem.

As we can understand from the above table, all projects were completed beyond their planned completion period. The adverse effect of time overrun on the projects stated on the table is directly reflected on the respective costs of projects. All of the above projects have consumed more than the planned cost. As it is clearly presented on the table, there is a significant difference between the plan and the actual performance of projects in terms of time and cost requirements. As the researcher reviewed above, Project efficiency is measured by its actual performance compared with what was planned in terms of time, cost and quality requirements (golden triangles). If any project failed to meet its planned requirement in terms of time, cost and quality that project will be assumed as inefficient. The selected construction projects are completed beyond their plan in terms of time and cost; we can argue that all those projects are inefficient in terms of time and cost.

It is possible to assume different causes/factors for the inefficiency of the above projects in terms of their time and cost requirement. The researcher assumed/hypothesized different factors which can contribute essentially for time and cost overrun on building construction projects as it is presented above and prepared it with a likert scale questionnaire format to distribute to the respondents. The respondents were engineers who were directly involving for the accomplishment of the building projects understudied. The engineers (respondents) were selected by using a census sampling technique which enables to meet respondents who knows the area under study very well. The aim was to understand factors/causes affecting construction performance on the views of contractors, consultants and owner under Oromia industry and urban development Bureau. The results of this study are presented and discussed in five different categories in a way which enables to understand the views of contractors, consultants and owner about the factors affecting cost and timeperformance onbuilding construction projects in Oromiaindustry and urban development Bureau.

4.3. Part One: General Information

4.3.1. Type of respondents organization

Table 4.3 shows the frequency and percent of each type of respondent's organization:

In this study, 33.33 % (10) contractors, 33.33 % (10) owners, 33.33% (10) consultants participated in the questionnaire. The general response rate for contractors, owners and consultants was 100 % and the total number of respondents for the three parties was 30 respondents. It implies that the owner, consultant and contractor respondents were taken from each construction projects it is sufficient to find out the perceptives of the relative importance of project performance indicators.

Table 4.3:Type of respondent's organization

Name of Respondents	Questionnaire Distributed	Questionnaire Returned	Response Rate
Contractor	10	10	100%
Owner	10	10	100%
Consultant	10	10	100%
Total	30	30	100%

Sources: field survey, 2016

4.3.3. Respondents Designation

Table 4.4 shows that 50 % (5) of contracting companies respondents were head of organization, 30% (3) were projects managers and 20 % (2) were site engineers. It has been found that 60 % (6) of owners respondents were site engineers and 40 % (4) were officeengineers. It has been founded that 40 % (4) of the consultants companies respondents were head of organization, 40 % (4) were siteengineers and 20 % (2) were project manager. Totally out of 30 respondents for the three parties, 30 % (9) of the respondents were Head of organization, 16.66 % (5) were projects managers and 40 % (12) were site engineers and 13.33% (4) of the respondents were office engineers. This shows that except site supervisor everybody in the construction firm had the opportunity to respond to the questionnaire.

Table 4.4: Respondents Designation

Respondents Designation	Contractor		Owner		Consultant	
	Frequency	%	Frequency	%	Frequency	%
Head of Organization	5	50	0	0	4	40
Project Manager	3	30	0	0	2	20
Site engineer	2	20	6	60	4	40
Office engineer	0	0	4	40	0	0
Site supervisor	0	0	0	0	0	0
Other	0	0	0	0	0	0
Total	10	100%	10	100%	10	100%

Sources: field survey, 2016

4.3.4. Experience of respondents

Table 4.5 shows that 6.67% (2) of the respondents have experience between 1 to 4 years at construction works and 16.67% (5) of the respondents experience between 5 to 8 years, 36.67% (11) of respondents have experience from 9 to 12 years, and 40% (12) who have experience more than 12 years. 93% of respondents have more than 5-12 years relevant working experience. This shows that most of the respondents are capable to provide relevant data on factors affecting construction performance.

Table 4.5: Experience of respondents (years)

Experience of respondents	Contractor		Owner		Consultant		Total
	Frequency	%	Frequency	%	Frequency	%	
<1 years	0	0	0	0	0	0	0
1-4 years	1	10	1	10	0	0	2
5-8 years	2	20	2	20	1	10	5
9-12 years	3	30	4	40	4	40	11
>12 years	4	40	3	30	5	50	12
Total	10	100	10	100	10	100	30

4.4. Factors affecting cost of construction projects under Oromia industry and urban development Bureau.

Table 4.6 shows the rank of all factors influencing cost of overruns that have been investigated in this research from contractor, consultant and owner view points. A total of 13 factors which influence cost performance in Oromia Industry and Urban Development have been studied and discussed. The rank was based on relative importance index of the factors.

Table 4.6: Factors influencing cost of construction projects

Factors affecting cost of construction	Contractor		Consultant		Owner		Weighted Average	
	RII	Rank	RII	Rank	RII	Rank	RII	Rank
Lack of cost planning/monitoring during pre and post contract stages	0.86	4	0.86	4	0.90	3	0.87	3
Design changes	0.94	1	0.92	1	0.94	1	0.93	1
Inadequate review for drawings and contract documents.	0.90	2	0.88	2	0.90	3	0.89	4
Uncertainty by the supervising team in dealing with the contractor's queries resulting in delays.	0.84	5	0.78	7	0.86	5	0.82	6
Unpredictable weather conditions	0.64	13	0.68	13	0.66	13	0.66	13
Delays in issuing information to the contractor during construction stage	0.80	7	0.86	4	0.84	6	0.83	5
Contractual claims, such as, extension of time with cost	0.82	6	0.76	8	0.86	5	0.81	7
Some tendering maneuvers by contractors, such as front-loading of rates	0.66	12	0.72	11	0.70	12	0.69	12
Fluctuations in the cost of materials	0.88	3	0.88	2	0.94	1	0.90	2
Additional work at owner's request	0.74	10	0.82	6	0.76	9	0.77	9
Technical incompetence, poor organizational structure, and failures of the enterprise	0.80	7	0.74	9	0.86	5	0.80	8
Project materials monopoly by some suppliers	0.76	9	0.74	9	0.76	9	0.75	10

Lack of experience of technical consultants,	0.72	11	0.70	12	0.72	11	0.71	11
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Sources: field survey, 2016

4.4.1. Contractors view

Table 4.6 shows that contractors ranked "design changes" in the first position with mean score of 0.94. There are many possible reasons for design changes. Some of possible reasons are; the owner may need additional work, the quality of material may need change, the alignment may need change due to different reasons or omission of some work may be needed due to financial reason. Design changes in particular and contract change or modification in general is one of the important reasons that cause delay. As any modification in the technical specification, bill of quantities or replace any work with another one, it would lead to disputes between the contractor's and owners teams. Change order refers to changes that are generated by unanticipated causes, for example, scope changes from the owner, incomplete/in consistent drawings, designer or defect, omissions of site conditions, and changes in codes and regulations. To solve these disputes and develop new agreements, it takes additional time that affects the project schedule and hence affects the total duration of the project. Therefore design change would significantly affect the cost performance of the project.

"Inadequate review for drawings and contract documents" was ranked as the second major factor of cost overruns by contractors with a RII of 0.90. The third cause of cost performance was "Fluctuations in the cost of materials" with a RII of 0.88. Fluctuation in prices has a significant impact on cost performance. Often the contractor estimates prices of the tender according to the present prices at local markets. It's known that the tendering phase and awarding is an early phase of the project, even the awarding process takes long time, so there is a chance of price fluctuation. In case of high prices, the contractor would face the problem of cost performance at the execution phase.

The contractors ranked unpredictable weather conditions as the least factor that affects cost performance with a mean score of 0.64.

4.4.2. Consultants view

The first important factors that affect cost performance according to consultants were "design changes" with a RII of 0.92. "Inadequate review for drawings and contract documents" and

“Fluctuation in the cost of materials” was the second factors affecting cost performance ranked by consultant with a RII of 0.88. Consultants consider "lack of cost planning/monitoring during pre contract stages" and “delays in issuing information to the contractor during construction stage” ranked by consultants as the fourth factors to affect cost performance with a RII of 0.86. Any information should be given to contractor on time; delay in giving information will incur additional costs to contractor.

Table4.6 shows that consultants ranked “unpredictable weather conditions” as the least factor that affect cost performance with a RII of 0.68. As discussed earlier since most of the projects are in Addis Ababa and around it has good climatic conditions, so it isn't exposed to any hurricanes or great leaps in temperature or snow fall, therefore the weather condition does not have a significant impact on execution of construction project andto make any damages of these projects.

4.4.3. Owners view

"Design changes" and “fluctuations in the cost of materials” were the first factors to affect cost performance with a RII of 0.94. Design changes are considered as one of major factor for increasing the cost of project. As any modification in the design will affect the budget allocated for the project, the volume of required materials, type of required materials and needed labor. Sometimes, design changes cause the rework of already completed items, which means theincrease of project duration and to loose of materials. Thus the factors affecting cost performance will be present at this case.

"Inadequate review for drawings and contract documents" and “lack of cost planning/monitoring during pre contract stages” was ranked as the third factors affecting cost performance with a RII of 0.90. The fifth factor ranked by owners was "indecision by the supervising team in dealing with the contractor’s queries resulting in delays" and “contractual claims, such as, extension of time with cost claims ”with a RII of 0.86. Table 4.6 shows that owners ranked the "unpredictable weather conditions" as the lastfactorwith a RII of 0.66.

Generally, results indicated that the factor "design change" has been ranked in the first position by contractors, consultants and owners. This result indicates the high importance of managing design change to complete the project planned. The design change problem creates disputes

between the planned cost and actual completion cost of project, and will be affected even more. This agreement of opinions between contractors, consultants and owners proves the importance of these factors in projects cost overrun. This implies that owners would not give attention to future since they prepare project design. The factor of "inadequate review for drawings and contract documents" has been ranked in the second position by the contractors and consultants while the owner ranked in third position. This result indicates the high importance of inadequate review for drawings and contract documents for the progress of project. Any review for drawings and contract documents problem for the contractors were cause many problems such as slow progress, extra cost and work decline in productivity and quality. Also the contractors were not review for drawings and contract document. More over the problem of contract document also affects cost performance. From the results obtained at this thesis, and compare it with the results and analysis of previous literatures, it's found that there are a real similarity of the important factors that influencing cost performance. But fluctuation in the cost of material is a major problem.

4.5.Factors influencing time construction projects under Oromia industry and urban development Bureau.

This part consists of results and discussion of factors that affect time performance. These factors include: project related factors, contractors’ responsibility factors, consultants’ responsibility factors, owners responsibilities factors and external factors indicators.

Table 4.7: Factors affecting time of construction projects

Factors affecting time performance	Contractor		Consultant		Owner		Weighted average	
	RII	Rank	RII	Rank	RII	Rank	RII	Rank
Discrepancies between contract documents	0.62	16	0.72	13	0.74	14	0.69	13
Delay to furnish and deliver the site (right of way problem)	0.94	1	0.88	2	0.92	1	0.91	1
Poor communication and coordination	0.58	20	0.60	24	0.66	22	0.61	10
Finance and payments of completed work.	0.54	22	0.66	18	0.66	22	0.62	18

Owner interference	0.50	26	0.56	28	0.58	29	0.54	24
Slow decision-making by owners.	0.60	18	0.68	16	0.70	16	0.66	14
Unrealistic imposed contract duration	0.78	6	0.78	8	0.84	5	0.80	6
Design change by owners	0.74	8	0.80	7	0.78	8	0.77	7
Financial problems	0.88	2	0.92	1	0.88	2	0.89	2
Subcontractor	0.54	22	0.66	18	0.70	16	0.63	17
Site management	0.80	5	0.86	3	0.86	4	0.84	4
Construction methods	0.74	8	0.76	10	0.76	11	0.75	8
Improper planning	0.860	3	0.84	4	0.88	2	0.86	3
Mistakes during construction	0.52	24	0.50	31	0.64	25	0.55	23
Inadequate contractor experience	0.52	24	0.62	23	0.68	20	0.60	20
Quality of material	0.62	16	0.66	18	0.66	22	0.64	16
Shortage of material	0.72	10	0.74	11	0.76	11	0.57	21
Labor supply problem	0.48	29	0.58	27	0.62	26	0.56	22
Labor productivity	0.66	14	0.74	11	0.78	8	0.73	10
Absence of consultant's site staff	0.70	12	0.70	14	0.72	15	0.70	12
Lack of experience on the part of the consultant	0.56	21	0.70	14	0.70	16	0.65	15
Contract management problem	0.76	7	0.82	5	0.82	6	0.80	6
Preparation and approval of drawing	0.50	26	0.60	24	0.58	29	0.56	22
Quality assurance/control	0.72	10	0.68	16	0.76	11	0.72	11
Waiting time for approval of tests and inspections	0.60	18	0.64	21	0.68	20	0.64	16
Equipment availability and failure	0.68	13	0.78	8	0.78	8	0.74	9
Major disputes and negotiations.	0.46	30	0.52	30	0.60	27	0.52	26
Lack of communication between the parties	0.44	31	0.60	24	0.56	31	0.53	25
Weather condition	0.82	4	0.82	5	0.80	7	0.81	5
Regulatory changes	0.50	26	0.54	29	0.60	27	0.54	24
Unforeseen ground condition	0.64	15	0.64	21	0.70	16	0.66	14

Sources: field survey, 2016

4.5.1. Contractors view

Table 4.7 shows that the contractors ranked "delay to deliver the site (right of way problem)" in the first position with a RII of 0.940. This indicates how right of way problem affect the project time. If there is a right of way problem in construction project it will lead to a significant delay in a project. As observed from desk study some projects delay for years only due to right of way problem. This result is in line with the results of Tadesse (2009).

The second important factor ranked by contractors was "financial problems" with a RII of 0.88. This is a strong indication that financial problem will cause time performance. This result coincides with the results of Tadesse (2009). The suitable description for this consensus is that cash is very necessary for contractor to construct the project within specified time. Any shortage of cash for the contractor will cause many problems such as slow progress and work decline in productivity. Also the contractors will not be able to purchase the needed equipment for work. The owner pays advance payment before the project starts. So the financial problem is due to contractor's mismanagement. Improper planning is ranked by contractor as the third important factor that can affect time performance with a RII of 0.86. Proper planning is important for accomplishing the project successfully. If the contractors fail to plan their work properly it will affect the project completion time and it will be a big loss for contractor and end users.

The respondents from contractors ranked "weather condition" in the fourth with RII of 0.840. It is known that July and August are the rain period and most building projects are taking this in to consideration. But sometimes the rain might extend up to October or might start early in June. This will affect the project completion time significantly. Building construction can be constructed in the rainy season by using shades. But the shading should be done properly so as to avoid water entering to sites that affect optimum moisture content. Site management problem is ranked as the fifth important factor that can affect time performance with a RII of 0.800. Poor management factor many constrains at the projects, such as poor following up of progress, incorrect distribution of works, un commitment of employees at the site, poor monitoring of project etc. These factors above contribute to delay the project.

4.5.2. Consultants view

Table 4.7 shows that the consultants ranked contractors financial problems with a RII of 0.920 as the first factor that causes delay. This indicates the high importance of cash for the progress of project. Any shortage of cash for the contractor will cause many problems such as slow progress and work decline in productivity. Also the contractors will not be able to purchase the needed equipment for work. More over the problem of cash also expanded to traders and suppliers, which in turn leads to slow the work, then to occurrence of project's delay.

The second factor that affect time performance was "delay to deliver the site (right of way problem)" with a RII of 0.880. This directly delays site hand over. Domestic contractors tolerate delayed hand over of construction sites but foreign contractors do not tolerate delayed hand over of construction sites by employers; foreign contractors claim to be compensated for idle hours of man power and equipments due to the delay. These are due to cultural differences between domestic contractors and foreign contractors; domestic contractors which suffered from delayed payments and late site hand over, say that such tolerance is to avoid adversarial relationship with the stakeholders on that project and hence to create conducive working environment [Fetene, 2008]. The third important factor ranked by consultants was Site management problem with a RII of 0.86. Poor management cause many constrains at the projects, such as poor following up of progress, incorrect distribution of works, un commitment of employees at the site, poor monitoring of project etc. These factors contribute to delay the project.

The fourth important factor ranked by consultants was "improper planning" with a RII of 0.84. This result shows the importance of planning and time scheduling to deliver the project on time. When the activities execution is without priorities of tasks and without knowledge of critical path activities, it certainly causes the delay of project.

The respondents from consultants ranked "weather condition" in the fifth with RII of 0.82. It is known that July and August are the rain period and most building projects are taking this in to consideration. But sometimes the rain might extend up to October or might start early in June. This will affect the project completion time significantly. Building construction can be

constructed in the rainy season by using shades. But the shading should be done properly so as to avoid water entering to sites that affect optimum moisture content.

4.5.3. Owners view

Table 4.7 shows that owners ranked delay to deliver the site (right of way problem) as the first factor that affect time performance with a RII of 0.92. Late hand over of construction sites, sometimes may happen and substantially increase the cost of construction projects. In most international projects in Ethiopia late site hand over is a common form of claim source for compensation for contractors (Girmay, 2003). But site hand over problem still a major reason for time performance problem according to contractors and owners while consultants ranked second. The second important factor was improper planning and financial problems with a RII of 0.88. The first result is the same with the contractor, which support the importance of this factor. This result shows the importance of planning to deliver the project on time. When the activities execution is without priorities of tasks, it certainly causes the delay of the project. The fourth important factor was poor site management with a RII of 0.86. This result is in full conformity with the consultants and owners but in the case of contractor, the value of the relative importance index is lower.

The fifth factors ranked by owner were "unrealistically imposed contract duration" with a RII of 0.84. This is a strong indication of the importance of proper estimation of project duration. Sometimes the project duration determined roughly, therefore the project may be delayed. One of the important obligations of consultant is to determine the duration of project according to the volume of activities. The seventh important factor ranked by owner was "Weather condition" with RII of 0.80.

In the summary of each view together, results indicated that the factor "delay to deliver the site (right of way problem)" has been ranked in the first position by contractors and owners while it gets the second rank by consultant. This result indicates the high importance of delivering the site on time to complete the project on time. The right of way problem creates disputes between the parties of project, and then the time of completion will be affected even more. This agreement of opinions between contractors and owners proves the importance of these factors in projects delay. The factor of "financial problems" has been ranked in the second position by the contractors and owners while the consultants ranked in the first position. This result indicates the

high importance of cash for the progress of project. Any shortage of cash for the contractors were cause many problems such as slow progress and work decline in productivity. Also the contractors were not purchase the needed equipment for work. More over the problem of cash also expanded to traders and suppliers, which in turn leads to slow the work, then to occurrence of project's delay. Shortage of cash is created either by improper use of advance payment of contractor or delay in payment by owner. From the results obtained at this thesis, and compare it with the results and analysis of previous literatures, it's found that there are a real similarity of the important factors that influencing time and cost performance. But right of way problem is a major problem in Ethiopia and not that much significant in other country. Because literatures that are done out of Ethiopia not included right of way problem as a major factor for time performance.

4.6. Factors Influencing Quality of Construction Projects in Oromia Industry and Urban Development Bureau.

Table 4.8 shows the rank of all factors influencing quality performance that have been investigated in this research from contractor, consultant and owner viewpoints. A total of 5 key factor indicators which influence quality performance in Oromia industry and urban development have been studied and discussed. The rank was based on relative importance index of the factors.

Table 4.8: Factors Affecting quality performance of Construction Projects

Factors affecting quality performance	Contractor		Consultant		Owner		Weighted average	
	RII	Ran k	RII	Ran k	RII	Ran k	RII	Ran k
Educated personnel	0.873	1	0.880	1	0.866	2	0.873	1
Experienced personnel	0.873	1	0.880	1	0.866	2	0.873	1
Quality of materials and equipment used in the project construction	0.866	2	0.866	2	0.846	3	0.859	2
Conformance to specifications	0.826	3	0.826	3	0.913	1	0.855	3
Quality assurance training and follow	0.786	4	0.786	4	0.820	4	0.797	4

up

4.6.1. Contractors view

Availability of personnel with high experience and qualification/education has been ranked by the contractor's respondents in the first position with RII equal 0.873. This factor is the most important one for contractors because availability of personnel with high experience and qualification assist contractors to implement their projects with a successful and suitable performance. In Oromia industry and urban development, the majority of site managers are civil engineers with good work experience but little training or education in management. Samson and Lema (2002), Cheung et al (2004) and Iyer and Jha (2005) are in line with result as this factor is very important to contractors because it affects strongly on quality performance of construction projects.

Quality of equipments and raw materials in project has been ranked by the contractor's respondents in the second position with RII equal 0.866. Contractors must implement their projects according to required and agreed quality because owners and consultants usually want materials used in supervised project according to specification and agreement. Based on Cheung et al (2004) and Iyer and Jha (2005), this factor affects the quality performance and the degree of owners and consultants satisfaction.

Conformance to specification has been ranked by the contractor's respondents in the third position with RII equal 0.826. This factor is significant for contractors as it is related to consultants and owners satisfaction. Iyer and Jha (2005) are in agreement with our result as this factor is significant for contractors because this factor is related to consultants and clients satisfaction.

Quality assurance assessment system in organization has been ranked by the contractor's respondents in the fourth position with RII equal 0.786. Quality assessment system in organization is rarely achieved or implemented for contractors in the Oromia industry and urban development.

Ugwu and Haupt (2007) are in agreement with our result as this factor is not important to contractors because of absence of quality assurance assessment systems in South African construction projects. However, Samson and Lema (2002) and Iyer and Jha (2005) are not in line

with our result as this factor is significant for contractors performance in Tanzania and India construction projects. This might be due to different location and different managerial properties.

4.6.2. Consultants view

Availability of personals with high experience and education has been ranked by the consultant's respondents in the first position with RII equal 0.880. This factor is the most important one for consultants because availability of personals with high experience and qualification assist consultants to supervise the project with a good professionalism and also this assist them to satisfy the owner with a successful performance of project. This result is in agreement with Cheung et al (2004) and Iyer and Jha (2005) as this factor affects strongly on project performance because it affects strongly the degree of owners satisfaction which is one of the main responsibilities of consultants.

Quality of equipments and raw materials in project has been ranked by the consultant's respondents in the second position with RII equal 0.866. Consultants usually want materials used in supervised project with a good quality and according to specification. Based on Cheung et al (2004) and Iyer and Jha (2005), this factor affects the project performance and the degree of owners satisfaction which is one of the main responsibilities of consultants.

Conformance to specification has been ranked by the consultant's respondents in the third position with RII equal 0.826. This factor is an important to client representative satisfaction because it is mainly related to owner satisfaction. Iyer and Jha (2005) are in agreement with our result as this factor is significant for client representative because this factor is strongly related to client satisfaction.

Quality training/meeting and follow up has been ranked by the consultant's respondents in the fourth position with RII equal 0.786. Quality training/meeting is rarely achieved or implemented in construction projects in the Oromia industry and urban development Bureau. However, this result is not in agreement with Samson and Lema (2002) as this factor affects strongly on quality performance of construction projects.

4.6.3. Owners view

Conformance to specification has been ranked by the owner's respondents in the first position with RII equal 0.913. This factor is the most important one for owners because this factor is an important to owner's satisfaction. The owner usually seeks to implement project according to specification. Iyer and Jha (2005) are in agreement with our result as this factor is significant for owners because this factor is strongly related to client satisfaction.

Availability of personals with high experience and education has been ranked by the owner's respondents in the second position with RII equal 0.866. Availability of personal with high experienced and qualified in project planning and implementation to sustain cost, time and quality professional which satisfy the owner.

This result is related to Cheung et al (2004) and Iyer and Jha (2005) results as this factor affects strongly on project performance because it affects strongly the degree of owner's satisfaction.

Quality of equipments and raw materials in project has been ranked by the owner's respondents in the third position with RII equal 0.846. The owners usually want materials used in their project with a good quality and according to specification. In Oromia industry and urban development Bureau, most of available materials are with little variation in quality and produced by a limited number of producers. Based on Cheung et al (2004) and Iyer and Jha (2005), this factor affects the project performance and the degree of owners satisfaction. Quality assurance and follow up system in organization has been ranked by the owner's respondents in the fourth position with RII equal 0.82. Quality assessment system in organization is rarely achieved or implemented through construction projects in the construction projects.

This result is in line with Iyer and Jha (2005) and Ugwu and Haupt (2007) this factor is not significant to owners because of absence of practical quality assessment system in Indian and South African construction projects. However, Samson and Lema (2002) are not in line with result as this factor affects on contractors performance.

To conclude each view together, personnel with high experience and qualification/education have been ranked by the contractor's and consultant's respondents in the first position with RII 0.873 and 0.880 respectively and at second position by owners. This factor is the most important one for contractors because availability of personals with high experience and qualification assist

contractors to implement their projects with a successful and suitable performance. In Oromia Industry and Urban development, the majority of site managers are civil engineers with good work experience but little training or education in management. Samson and Lema (2002), Cheung et al (2004) and Iyer and Jha (2005) in line with this factor is very important to contractors because it affects strongly on quality performance of construction projects. There are many effects of quality problem in cost performance and owner's satisfaction.

4.7.Factors Influencing Leadership of Construction Projects in Oromia Industry and Urban Development Bureau.

Table 4.9 shows the rank of the study sought to determine the influence of leadership style on performance of construction project. This was done by asking the respondent on basis they used to select the leaders, whether the type of personality determines the style of leadership adopted by the leader and how efficient the staffs performed their cores.

Table 4.9: Factor affecting leadership style

Leadership style factors	Contractor		Consultant		Owner		Weighted average	
	RII	Rank	RII	Rank	RII	Rank	RII	Rank
Training	0.86	3	0.88	3	0.80	3	0.84	3
Leader's professional education	0.92	1	0.90	1	0.88	1	0.90	1
Leaders relevant work Experience	0.92	1	0.90	1	0.88	1	0.90	1

4.7.1. Contractors View

Leaders with professional education and with relevant work experience has been ranked by the contractor's respondents in the first position with RII equal 0.92. This factor is the most important one for contractors because availability of professional leaders with high experience assist contractors to implement their projects with a successful and suitable performance Odusami, Iyagba&Omirin (2003) argued that there was significant relationship between the project leader's professional education with relevant work experience and his leadership style, team composition and overall project performance.

The respondent was asked to give its significance on the influence of staff training on the performance of construction project. It is ranked in third position by the contractors with a RII of 0.86. As argued by Nyangilo that the project leaders are endowed with technical skill but lack the other basic project management skills of dealing with the human, culture and environmental sides of the project. Therefore contractors should always ensure that their staffs have the required skills as this influence their performance.

4.7.2. Consultants View

Leaders with professional education and with relevant work experience has been ranked by the contractors as contractor's respondents in the first position with RII equal 0.90. This factor is the most important one for consultants because availability of professional leaders with high experience assist consultants to implement their projects with a successful and suitable performance Odusami, Iyagba&Omirin (2003) argued that there was significant relationship between the project leader's professional education with relevant work experience and his leadership style, team composition and overall project performance.

The respondent was asked to give its significance on the influence of staff training on the performance of construction project. It is ranked in third position by the consultants with a RII of 0.88. As argued by Nyangilo that the project leaders are endowed with technical skill but lack the other basic project management skills of dealing with the human, culture and environmental sides of the project. Therefore consultants should always ensure that their staffs have the required skills as this influence their performance.

4.7.3. Owners View

Leaders with professional education and with relevant work experience has been ranked by the owners as consultants and contractor's respondents in the first position with RII equal 0.88. This factor is the most important one for owners because availability of professional leaders with high experience assist owners also to implement their projects with a successful and suitable performance Odusami, Iyagba&Omirin (2003) argued that there was significant relationship between the project leader's professional education with relevant work experience and his leadership style, team composition and overall project performance.

The respondent was asked to give its significance on the influence of staff training on the performance of construction project. It is ranked in third position by the contractors with a RII of 0.88. As argued by Nyangilo that the project leaders are endowed with technical skill but lack the other basic project management skills of dealing with the human, culture and environmental sides of the project. Therefore contractors should always ensure that their staffs have the required skills as this influence their performance.

4.8. The Practices Concerning the Performance of Construction Projects

Table 4.10: Does your company take construction materials for laboratory testing?

Response	Percent % (Frequency)					
	Owner		Consultant		Contractor	
Yes	0	0%	0	0%	0	0%
No	10	100%	10	100%	10	100%

As table 4.10 above all of the respondents were not take construction materials to central laboratory for testing before using them; they simply use visual material inspection at every construction work events. This implies that whether the supplied the required quality or not no guarantee at all. Quality measures at a given purpose, approved construction materials are critical for quality performance.

Table 4:11: How often do you conduct a quality training session for your personnel?

Response	Percent % (Frequency)					
	Owner		Consultant		Contractor	
Monthly	0	0%	0	0%	0	0%
Quarterly	0	0%	0	0%	0	0%
Semi-annually	2	20%	3	30%	3	30%
yearly	3	30%	2	20%	4	40%
none	5	50%	5	50%	3	50%

Table 4.11 shows that 20% and 30% owners conduct training semi-annually and yearly respectively. 50% of owners were no training session conducted for their employees. 30% and 20% consultants were conducted quality training session semi-annually and annually respectively. 50% of consultant's were none training session conducted for the employees. 30% and 40% contractors often meet semi-annually and yearly for discussion respectively. 50% of owners were none training session conducted for the employees in the stated time. Monthly meeting assist them for monitoring, updating and controlling the progress through project implementation. In addition, they can solve problems, evaluate current performance, and improve future works. Respondents are rarely meets monthly or quarterly. Monthly meeting are required in the case of sensitive and very important works. Quarterly meeting is not effective for monitoring or updating processes. Navon (2005) stated that a controlling and updating is an important element to identify factors affecting construction project performance.

CHAPTER FIVE: CONCLUSIONS AND RECOMMENDATIONS

5.1. Introduction

This chapter presents the summary of research findings, conclusions, recommendations and suggestions for further research.

5.2. Summary of the Major Findings

Based on the results of the analysis of desk study and respondents' responses the following conclusions are drawn.

5.2.1. The influence of cost factors

All of the building projects investigated in the research suffered in cost performance in their execution. For these building construction projects, the actual contracted costs were overrun ranges from 12% to 60% (10.33 to 24.47 million) birr of the contract amount. The most common factor affecting the cost performance of construction projects were design change, fluctuation in the cost of materials and inadequate review for drawings and contract document.

5.2.2. The influence of time factors

All of the building construction projects, the contract time performance were affected ranges from 7% to 170% (40 to 920 Days) of the actual contracted time.

From the results of this thesis 31 factors affecting time performance causes were examined by the respondents. The common factors were affected time performances are delay to deliver the site (right of way problem), financial problems of contractors, improper planning, and site management.

5.2.3. The influence of quality factors

Quality factor that affect the performance of construction project it was found out that most of the contractors were not took the materials for construction to a central laboratory for testing. Since respondents strongly agreed that qualification and experience of personnel, quality of equipment and material used, conformance to specification and that quality assurance and follow up has influence the performance of construction projects.

5.2.4. Leadership style factors

Most contractors selected leaders based on experience and level of education. Most of the respondent agreed that actually poor personnel's training session and less leader's professional qualification has influence on performance.

5.3. Conclusion

The key factors that affect the performance of construction projects are cost, time, quality, and leadership style. The contractor should see into it that takes into consideration the cost of design change when planning for the project as failure to which cost of project may escalate. Fluctuations of material cost increase the cost of project. The contractor should predict the inflation and accounted for by the owners. Inadequate review for drawings and contract

documents were increasing the cost of construction project. Time management is an important factor that the contractor should ensure that it is well planned for. Delivering orders late to the site should be avoided. Financial problem of contractor should minimize to determine how fast the project will be executed. When financial capabilities are approved on time, it leads to some activity lagging behind that must be approved. Owners should ensure that they pay their contractors on time to motivate them regarding work faster. The owner requires to value the money he has spent in the project, therefore the contractor should ensure that he selects qualified and experienced personnel, use materials and equipment of good quality, ensures that his/her personnel always conforms to specification and that he conduct quality training and follow up. Training the personnel on new skills is important and the contractor should select leaders based on their qualifications.

5.2. Recommendations

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

Contractors are recommended to use advance payment properly to avoid the financial problems. It is advised to conduct breakeven analysis from time to time. Contractors are recommended to have a proper planning and good site management system in the different activities of the project so as to avoid any mistakes that may lead to rework of activities, resulting in time and cost performance problem. Contractors are advised to setup stores for required construction materials, and especially that are scarce or that are in limited quantity in the markets to avoid time and cost performance problem. Contractors use proper planning and scheduling, they are continuing processes during construction and match with the resources and time to develop the work to avoid cost overrun/performance problem and disputes. To perform site management and supervision accordingly administrative and technical personnel should be assigned as soon as project is awarded to make arrangements to achieve completion within specified time with the required quality, and estimated cost.

Contractors should ensure that they take all the necessary precautions so as to avoid construction cost overrun. They should also ensure that time estimated for the project is not superseded and they should make sure that their projects satisfy the owner needs. The contractors should be very keen in bidding for the project so that they quote the exact cost and not low cost to enable they win the bid. When there is variation on the project, the

contractor should ensure that the concern part has accounted for it. Contractors should be in control on the work to reduce cases of rework and should buy materials in bulky at the start of the project to avoid effect of escalation of prices. Before the contractor starts the project, he should ensure that he has estimated the time for the project with very minimal variations as this will help solve the problem of under estimating the project duration. Contractors should avoid improper planning and sight management problem. They should agree with the owner that incase of delay due to late sight delivery and late payments from the owner, the owner should be responsible. Contractors should use qualified and experienced staffs, use good quality of materials and equipment and ensure that the project conforms to the specification. Leaders and personnel should be trained on new skills to improve on their performance.

The owners should give attention on the right of way problem. Before the construction starts the owner has to fulfill all the necessary requirements for delivering the site. Failure to deliver the site will affect time and cost performance. The owners should determine the required duration of project and impose realistic duration to avoid time and cost overruns. Owner recommended having technical personnel who is able to manage the different stages of any project and to follow the performance percentages, and also able to compare the actual performance with the planned one. The owner recommended minimizing design change as much as possible in order to avoid any factors affecting time and cost performance.

The communication and coordination between the stake holders also have to be improved to minimize cost, time and quality performance problem.

Consultants are advised to continuous coordination and direct communication with contractors and owners, which will eliminate design discrepancies and errors as well as omissions in design and also provide an opportunity to review the contract documents thoroughly. This would help in eliminating change orders or variations due to discrepancy in contract documents. Consultants are advised to hire qualified technical personnel to manage the project in a good way, so he would be able to overcome any technical or management problems that happen. It is also advised for consultant to have high qualification to give suitable instruction in a suitable time and to be able to answer any question stated by contractor to avoid time and cost performance problem. They have to review and approve design documents, shop drawings, and the payments of contractor to avoid any factors

affecting cost performance at the project. Consultants are advised to adopt efficient information distribution systems to guard against communication gaps respond as quickly as possible to contractor and owner questions and requests for clarification to avoid associated delays and confusions which consequentially will affect time, cost and quality performance. Government must create a climate of economic stability that is sufficient to inspire investors, especially in the production of construction materials to be produced from local materials and production of enough quantity and quality of construction materials in the local market, this will help to reduce excessive price fluctuations associated with imported construction materials. Government should give capacity building for professionals and firms on the construction sector so as to develop the performance of the professionals. In addition, government has to initiate intellectuals to do researches regarding factors affecting the performance of construction projects. Government should create opportunities for local contractors and consultants to work with international contractors and consultants to share experiences and adopt new technologies.

5.3.SUGGESTIONS FOR FUTURE WORK

- A study should find out between public and private construction projects, which one has got higher performance level.
- Performance indicators during construction
- Causes and effects of cost, time and quality performance problem;

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Appendix A: Questionnaire for Owner, Contractor and Consultants under Oromia Industry and Urban Development

Introduction

This questionnaire is prepared to obtain information from key informants with structured questions. The information is required for the academic research entitled “Factors affecting the performance of Building Construction Projects in Oromia Industry and urban development Bureau”, which is being conducted as partial fulfillment of MBA in Project Management. The main objective of this research has to identify the significance of time factors, cost factors, quality factors and leadership factors affects the performance of building construction and to make recommendations based on the findings. The questionnaire consists of five sections and general comments. Section 1 general information, Section 2 contains cost factor indicators, Section 3 contains time factor indicators, Section 4 quality management factor indicators and Section 5 leadership style factor indicators in Building construction projects under Oromia Industry and Urban Development Bureau. Your response, in this regard, is highly valuable and contributory to the outcome of the research. All feedback will be kept strictly confidential, and utilized for this academic research only.

Thank you,

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Instructions: This research is conducted for academic purposes, so please try to fill it carefully and truthfully. For each of the questions, please tick [√] in the provided box the most suitable answer using the given scale. Please also answer all the questions to enhance the objectivity of the research.

SECTION 1: GENERAL ORGANIZATION INFORMATION

1. Name of organization: -----

2. Respondent organization/company type:

Owner Contractor Consultant

3. Respondents designation:

Head of organization Project Manager Site Engineer Office Engineer

Site Supervisor Other _____

4. Relevant working experience (Years): <1Yr 1-4Yrs 5-8Yrs 9-12Yrs
 >12Yrs

SECTION 2: FACTORS INFLUENCING COST OF CONSTRUCTION PROJECTS IN OROMIA INDUSTRY AND URBAN DEVELOPMENT BUREAU.

Please indicate the significance of each factor by ticking (√) the appropriate boxes. Add any remarks relating to each factor on the last column e.g. as to the reasons, the critical factors or the solutions.

E.S. = extremely significant (5);

V.S. = Very significant (4);

M.S. = moderately significant (3);

S.S. = slightly significant (2);

N.S. = not significant (1);

	2.1. Cost Factor	E.S	V.S	M.S	S.S	N.S	Remarks
		(5)	(4)	(3)	(2)	(1)	
1	Lack of cost planning/monitoring during pre and post contract stages						
2	Design changes						
3	Inadequate review for drawings and contract documents.						
4	Uncertainty by the supervising team in dealing with the contractor's queries resulting in delays.						
5	Unpredictable weather conditions						
6	Delays in issuing information to the contractor during construction stage						
7	Contractual claims, such as, extension of time with cost claims.						
8	Some tendering maneuvers by contractors, such as front-loading of rates						
9	Fluctuations in the cost of materials						
10	Additional work at owner's request						
11	Technical incompetence, poor organizational structure, and failures of the enterprise						
12	Project materials monopoly by some suppliers						
13	Lack of experience of technical consultants,						

**SECTION 3: FACTORS AFFECTING TIME OF CONSTRUCTION PROJECTS
IN OROMIA INDUSTRY AND URBAN DEVELOPMENT BUREAU.**

No	Time Factors	E.S (5)	V.S (4)	M.S (3)	S.S (2)	N.S (1)	Remarks
1	Project Related						
1.1	Discrepancies between contract documents						
2	Owner						
2.1	Delay to furnish and deliver the site (Right of way problem)						
2.2	Poor communication and coordination						
2.3	Finance and payments of completed work.						
2.4	Owner interference						
2.5	Slow decision-making by owners.						
2.6	Unrealistic imposed contract duration						
2.7	Design change by owners						
3	Contractor						
3.1	Financial problems						
3.2	Subcontractor						
3.3	Site management						
3.4	Construction methods						
3.5	Improper planning						
3.6	Mistakes during construction						
3.7	Inadequate contractor experience						
3.8	Quality of material						
3.9	Shortage of material						
3.10	Labor supply problem						

3.11	Labor productivity						
4	Consultant						
4.1	Absence of consultant's site staff						
4.2	Lack of experience on the part of the consultant						
4.3	Contract management problem						
	Time Factors	E.S (5)	V.S (4)	M.S (3)	S.S (2)	N.S (1)	Remarks
4.4	Preparation and approval of drawing						
4.5	Quality assurance/control						
4.6	Waiting time for approval of tests and inspections						
5	External factors						
5.1	Equipment availability and failure						
5.2	Major disputes and negotiations.						
5.3	Lack of communication between the parties						
5.4	Weather condition						
5.5	Regulatory changes						
5.6	Unforeseen ground condition						

SECTION 4: FACTORS INFLUENCING QUALITY OF CONSTRUCTION PROJECTS IN OROMIA INDUSTRY AND URBAN DEVELOPMENT BUREAU.

	Quality Factor	E.S (5)	V.S (4)	M.S (3)	S.S (2)	N.S (1)	Remarks
1	Educated personnel						
2	Experienced personnel						
3	Quality of materials and equipment used in the project construction						
4	Conformance to specifications						
5	Quality assurance training and follow up						

4.1.The quality management practice

4.1.1. Does your quality controller always take your materials for construction to central laboratory for testing before using them? Yes No

If your answer is No, in question no 1.1 above which other precautions do you always take on site to ensure quality of the materials?

.....

4.1.2. How often do you conduct a quality training session for your employees?

Monthly Quarterly Semi-quarterly yearly none

SECTION 5: FACTORS INFLUENCING LEADERSHIP OF CONSTRUCTION PROJECTS IN OROMIA INDUSTRY AND URBAN DEVELOPMENT BUREAU.

	Leadership Factor	E.S	V.S	M.S	S.S	N.S	Remarks
		(5)	(4)	(3)	(2)	(1)	
1	Training						
2	Leader’s professional education						
3	Leaders relevant work Experience						
4							

5. Leadership style practices

5.1. How do you select leaders to execute the construction projects?

- Based on relevant work experience
- Based on level of education
- Based on both education and experience
- none

5.2.How does management of the project relate to its subordinates?

- Democratic
- Laissez-faire
- Autocratic
- Other-----

5.3. How efficient does the workers perform their obligations?

- Very fast
- Fast
- Moderately
- Sluggish
- Very sluggish

6. If you have any additional comments and ideas regarding factors affecting the performance of construction projects please write here
