FACTORS AFFECTINGPROJECT COST AND TIME OVERRUN: IN THE CASE OF ADDIS ABABA UNIVERSITY BUILDING PROJECTS

BY

TADELE MULUGETA

ADVISOR: MENGISTU BOGALE (PhD)

ADDIS ABABA UNIVERSITY

SCHOOL OF COMMERCE

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DEPARTMENT OF BUSINESS ADMININSTRATIONA AND INFORMATION SYSTEM (BAIS)

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Approved Board Committee:

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Examiner	**Signature**
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Examiner	**Signature**
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Advisor	**Signature**

Statement of declaration

I, Tadele Mulugeta, declare that this research entitled “factors affectingproject cost and time overrun: in the case of Addis Ababa University building projects “is the outcome of my own effort and study. All sources of materials used for the study have been duly acknowledged. This study has not been presented for a degree in any university.

Tadele Mulugeta

Signature: _____

Date: _____

Advisor: Dr.MengstuBogale

Signature: _____

Date: _____

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Fist of all, I would like to express gratitude to the Almighty God for letting undertake this work. In addition to this,I found it is very important to express my gratefulness to my advisor Dr.Mengstu Bogale for his frequent follow up and invaluable comments all along through the project work. I would also like to thank Ethio-Telecom management that has permitted me to make a study in its projects. Last but not the least, I don't want to miss expressing my pleasure and gratefulness to the project manager and team members of the projects for dedicating their time in answering the questions presented regarding the topic of the study which is the foremost reason that enabled me to finalize the study.

challenge My deepest respect and gratitude also goes to every member of my family who were by my side in each

Contents

Abstract

This study tried to assess the effect of some dominat time and cost overrun factors in Addis Ababa University building constrcuction Projects.The researcher used descriptive research method. A questionnaire with items of 24 was distributed and then collected with a response rate of 100% and the respondents were interviewed to to get further informationon on the specified factors.Moreover,

The actual project document showed that there were average 46% of time overrun and 25% of cost overrun within the projects.

The findings indicate that the major causes for project time overrun were improper planning and poor scope definition that had significant consequence of design change to implement the project. The other critical factor for the cause was poor communication in which the project stakeholders couldn't work harmonically to effectively achieve the projects goals. Factors such as wner's interference and slow decision were also played very significant role in wasting the project time. The contractors' and consultants' experiences as well as equipment availability and failure played moderately significant whereas factors like contract management and quality assurance or control had very significant contribution to the overall project time overrun.

Similarly, the researcher reviewed the above mentioned six project documents to assess their cost and find if there were variations between the planned and actual costs. The average cost overrun of the total projects was found to be 25%. The planned cost of each project was in millions of birrs and an average of 25% increase from each project indicated so big monetary escalations. As the respondents' responses, the major causes for the project cost were the factors described in the above table. Change in foreign rate, contractual claims, additional work at owner's request, design change, quality of materials, cost under estimation and insufficient funds were very significant factors that increase the project cost. Factors like poor schedule management and cost infliation were extremely significant to cause the overrun. Whereas factors like delays between design and procurement phases, tendering maneuvers and decision delay by supervisors were moderately significant in causing project cost so that the sum of the factors contribute to the overall project cost overrun in the project. Future research may investigate in detail including out.

CHAPTER ONE: INTRODUCTION

1.1 Background of the study

The construction industry has a great impact on the economy of all countries (Leibing, 2001). It is one of the sectors that provide crucial ingredients for the development of an economy. According to Chitkara (2004), the construction industry in many countries Accounts for 6-9 % of the Gross Domestic Product (GDP); and according to Bhimaraya (2001), it reaches up to 10 % of the GDP of most countries.

In Ethiopia its percentage ofGDP amounts to 3%, considerably lower than the sub-Saharan average of 6% (MoWUD, 2006). The construction industry is a vital element of the economy and has a significant effect on the efficiency and productivity of other industry sectors. One cannot think of Widespread investment in manufacturing, agriculture, or service sectors unless theConstruction results of infrastructure facilities are in place. In some of the developingcountries, the growth rate of construction activity outs tips that of population and of GDP (Chitkara, 2004).

Cost, time, and quality are used to measure the project performance and success. Generally, the Success of a project is defined by accomplishing it within specified cost, time and quality.However, the construction industry is full of projects that are completed with significant time and cost overruns (Amhel et al., 2010). According to Faridi l (2006) delays have an adverseimpact on project success in terms of time, cost, quality and safety.

The effects of constructionDelays are not confined to the construction industry only, but influence the overall economy of a country. For the purpose of this research, time overrun is defined as the time difference between the Actual completion time and the estimated completion time, agreed by and between the client and the contractor during signing of the contract. And cost overrun is the cost difference betweenthe Actual completion cost and the estimated completion cost.Industry is the highest recipient of government budget in terms of government development program.

Consequently, public construction projects consume an averageAnnual rate of nearly 60% accordingto MoWUD (2006), and 58.2% according to Wubishet (2004) of the government's budgetPublic construction projects in Ethiopia are parts of the country's development initiative. It shared considerableamount of the country's scarce financial resources. In Ethiopia, theConstruction industry is the highest recipient of government budget in terms of

governmentDevelopment program. Consequently, public construction projects consume an averageAnnual rate of nearly 60%, according to MoWUD (2006), and 58.2% according toWubishet (2004) of the government's capital budgetCost overruns, delays and other problems tend to be proportionally monumental (Gould, 2002).

1.2 Statement of the problem

Cost is one of the primary measures of a project's success. This is true for public buildings in developing countries because public building construction projects are executed with very scarce financial resources. The common criteria for project success as mentioned in most literature on construction projects are generally considered to be cost, quality and time. Completion of a project is considered as the most important factors of successful projects, which help to decrease problems for all parties and give new chances to construct other related projects. It also helps to increase the profits and development of construction industry.

The accomplishment of the first 6 AAU building constaction projects reveal that the resulted in cost and time overruns have also ascertained that the projects were not completed on time, within budget, and desired quality (Becker and Behailu ,2006) causing loss of project's profit, increasing cost and leading to technical and managerial problems between project's parties. Project cost and time schedule are affected by different factors and if these factors are not monitored and controlled properly, they cause time and cost overruns that impact the completion of the project. Cost overrun was considered another big problem which hindered project's progress, since it decreased the contractor profit leading to huge losses leaving the project in a big trouble.

Construction problems exert a huge financial pressure on government, and they can hold back or impair planned economic development (Li-Yin, 2006). Hence, identification of the root causes of the challenges and pointing the possible way out in consultation with stakeholders are critical factor. In doing so, it intends to identify underlying causes for cost a nd time variations of construction projects. Moreover,This study addressed the cost andof time overrun in the case of AAU building constraction projects.The initiation for the study of this research was largely due to personal observation and low Performance of the building construction projects in terms of cost and time. Forwarding recommendations to minimize or to avoid cost overrun and frequency

of its occurrence and hence to reduce its consequential effects on AAU building construction projects.

1.3 Research questions

In order to achieve a practical and credible conclusion the study tried to answer the following questions

- What are the factors of project cost and time overrun in Addis Ababa University building construction projects?
- What are the effects of time delay and cost overrun in Addis Ababa University building costraction projects?
- What are the external factors that significantly contribute to the occurrence of cost and time overrun on AAU building projects?

1.4 Objectives

1.4.1 General Objective

The objective of this research was to assessa the factors project cost and time overrun case in the of case Addis Ababa University building projects.

1.4.2 Specific objective

- To identify factors influencing project cost and time overruns in building construction projects in AddisAbabaUniversity.
- To identify and asses the reasons for cost overrun in AAU.building projects.

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- To identify and asses the reasons for time delay in AAU.building costraction projects.

1.5 Significance of the study

The study might help AddisAbabaUniversity management to make good decisions and be aware of the Challenges that hamper the building construction projects. And it will provide formulate information for AddisAbabaUniversity management project office about key Challenges that exist in building projects. In addition to this, the study may help some researchers as resource for those who will be interested to make further research on similar subject matter. Finally, this paper will be published in international scientifc journal

1.6 Scope of the study

The scope of the research study explained how the study was focuse specific area (Addis Ababa University building projects). This research study was limited to selected AddisAbabaUniversity building constrauction projects. This study would also incorporate all staffs of the university building construction project engineers.

1.7 Limitations of the study

A limitation of a research study identifies potential gaps or problems in the research. The researcher was faced the following bottlenecks during the research process.The first and most important one is time constraint. The time given to do this study was very short and this made the data collection process difficult.Also lack of cooperation from respondents to complete the questionnaire. Insufficient time, business of repodants and lack of comprensive data were also limiting factors.

1.9 Organization of study

The research was organize in such a way that to include all relevant titles in body. In general Chapter one dealt with problems and its approaches, Chapter two dealt withEmpirical and theoretical review of related literatures on building constructionprojects, Chapter three is methodology ChapterFour is about the analysis of the data collected, and the fourth chapter summary of Major findings, conclusion and recommendation

CHAPTER TWO: LITERATURE REVIEW

2.1.Introduction;

-Cost Overrun is defined as the amount, by which actual costs exceed the baseline or approved costs (Wideman,2002).

-It is the difference between the original cost and the actual cost when the project is completed (Avots, 1983).

- cost overrun is defined as the difference between the final cost of a Construction project at completion and the contract amount, agreed upon between the client and the contractor during the

signing of the contractCost overrun can be defined as when the project objectives are not achieved within estimated budget (Avots, 1983). Cost overrun is the excess of actual cost over budget.

- Cost overrun is the ratio of contract amount to the original contract award amount.

This calculation can be converted to a percentage for case of comparisonprojects is those which are delivered safely to the required qualitystandards, on time, and within budget. Awareness of the source of overruns enables quantitySurveyors to identify potential problem areas and to provide advice on how to avoidthem and/or how best to mitigate their negative effects.

-In construction, delay could be defined as the time over run either beyond completion date specified in a contract, or beyond the date that the parties agreed upon for delivery of a project. It is a project

This study investigates the mainCauses of cost overruns during the construction phase1 of traditionally procured medium-sized building construction projects.The common definition of an overrun in most studies is a change in cost or schedule relative to the final estimate provided when the approval or godecision‖ was made until construction is completed and the facility is operational. This definition means that a project is not necessarily considered on time and on budget just because it was built within the contracted price and schedule. Rather a project is considered on time and on budget only if it is built to the final estimate at the time when the project was approved, which is typically before a construction contract is signed. (Matti Siemiatycki, 2015)

It is a project slipping over its planned schedule and is considered as common problem in construction projects. To the owner, delay means loss of revenue through lack of production facilities and rent-able space or a dependence on present facilities. In some cases, to the contractor, delay means higher overhead costs because of longer work period, higher material costs through inflation, and due to labor cost increases.

Cost overrun is the amount by which actual costs exceed the baseline or approved costs. It is defined as the positive difference between the final or actual cost of a construction project at completion and the contract amount agreed by the client and the contractor during signing of the contract (Jemal Mustefa, 2015) Abubeker

2.2 Construction Industry in Ethiopia

According to Fetene Nega (2008)Ethiopia has a rich history of munificent construction endeavors.. The ruined palace of Queen Sheba at Yeha,,the Obelisks of Axum the rock-hewn churches of Lalibela,, and the Castles of Gondar are few examples of the expertise's With the advent of modern Civilizationespecially during the late 19th and early 20th century here have been some significant

developments in this regard. Even though the development of the construction in the Ethiopia is slow, it plays a key role in the development of the national economy. the role the construction industry plays in socio-economic development is significant It provides the basis upon which other sectors can grow by constructing the physical facilities required for the production and distribution of goods and services

The constructions' industry has a signified multiplier effect on the economy as a whole (MoWUD, 2006) According to MoWUD (2006), the inter relationship between the construction industry and The broader economy largely emanates from three of the industry's characteristics namely::

The public sector is its major client.

It has large size, ability to produce investment or capital goods which contribute significantly to national GDP

It's a major source of employment directly and indirectly by its multiplier effect.

Public construction projects in Ethiopia are parts of the country's development initiative.itShared considerable amount of the country's scarce financial resources In Ethiopia, the Construction industry is the highest recipient of government budget in terms of government development program. Consequently, public construction projects consume an average annual rate of nearly 60% (MoWUD ,2006), and 58 .2% (Wubishet ,2004) of the government's budget.

Cost overruns, delays and other problems tend to be proportionally monumental (Gould, et al, 2002). Cost is oneof the primary measures of a project's success. This is true for public buildings in developing countries because, public building construction projects are executed with very scarce financial resources.

The common criteria for project success by most literature on construction projects are generally considered to be cost, quality and time. A building project is considered successful if it is completed within the stated budget, on Schedule, conform to user expectations, meet specifications, and achieve quality of workmanship and with minimized construction aggravation (Songer and Mollenaar, 1997)

2.3 Importance of Cost Estimation

Estimating project costs are important for a number of reasons:

- They provide a standard against which actual expenditures incurred during the course of a project can be compared, and serve as the basis for cost control.
- They are the chief means for assessing project feasibility. A comparison of the cost estimates with the estimates of revenues will enable the project organization to determine if the project is worthwhile to undertake.
- Along with project returns, they facilitate decisions relating to project financing and funding.
- They provide the mechanism for managing cash flow during the course of the project.

- They give the project manager a framework for allocating scarce resources as the project progresses.
- They provide the mechanism for revising project activity duration.

To a great extent, project success hinges on accurate cost estimation. While a number of factors can contribute to cost overruns, one of the main culprits is project acceleration. This is mainly because the relationship between cost and time is not always linear. When a project crashes, relevant costs combine in a nonlinear fashion and cause a vicious cycle where they increase several times more than what was originally anticipated. This phenomenon underscores the importance of developing methods for accurate cost estimation that take into account uncertainties, the ‘‘portfolio effect,’’ and the various dynamics of project crashing.

2,4 Problems of Cost Estimation

Most project managers would agree that cost overruns are the causes of more frustration and anguish than almost any other factor. Clearly, this is the case with innovative development projects, as the very nature of innovation makes it nearly impossible to accurately predict costs. However, even in relatively routine projects (such as many found in the construction industry), initial cost estimates are often completely off target from the final outcome.

Unfortunately, industry data suggest that overruns are the norm, rather than the exception. The most significant reasons are the following, which will be explained with little detail next:

- Low initial cost estimates
- Unanticipated technical difficulties
- Lack of or poor scope definition
- Specification changes
- Extenal factors

Low initial cost estimates are often the result of underestimating the magnitude and complexity of the task to be undertaken. The obvious reason for this is that the evaluation of project task performance and duration is often done in isolation, without considering the impact of surrounding activities. In addition, we incorrectly assume that everything will go as planned, and fail to anticipate problems that may unexpectedly surface in the future.

Other factors that lead to low initial cost estimates are corporate attitudes to internal expenditures, as well as business or political gamesmanship. For example, project managers may

feel that presenting an initial low cost estimate will increase their chances of gaining board level approval for their project, making it more likely to win in a competitive situation. Another common, erroneous view is that if a low initial budget is set, a lower overall project cost will result than if a higher and more reasonable figure is fixed.

The unfortunate effect of these factors is that they lead to the approval of projects that have no sound basis. The problem of low initial estimates can be overcome as uncertainty is reduced and as project managers become more knowledgeable and gain confidence in the cost estimation process. Because estimation is ultimately part of the entire cost management cycle, the more familiar a project manager becomes with the cycle as a whole, the more accurate his or her initial cost estimates will be.

Unanticipated technical difficulties: Technical difficulties are the second important cause of cost overruns. The roots of this problem usually rest in poor initial design, but this is not always the case. When these issues surface, there is no other recourse than incurring additional costs, because meeting technical specifications is fundamental to product performance and acceptability.

Lack of or poor scope definition: Poor scope definition leads to the creation of projects that have no clear direction, features, goals, or even purpose. It is important to recognize that when the initial steps of developing a comprehensive scope statement and work breakdown structure are done poorly, they effectively turn any attempt to reasonably estimate project costs into an exercise in futility. Examples of this problem exist in many of the pure research and development programs undertaken by private and public organizations. Many times, scientists and research engineers become fixated on the study of a task for its own sake, losing sight of the larger picture or goals under which the research was taken.

Specification changes: often referred to as ‘‘scope creep,’’ make initial cost estimates nearly meaningless, and are often the primary culprits for overruns. Requests for specification changes while the project is underway sometimes originate internally within the project organization, but more often than not, the sources for these requests are external. A number of factors can necessitate specification changes during the project development process, including dynamic changes in the market, newly perceived requirements from customers, and new legislative mandates related to the product. For example, requests for additional features, significant

modifications, and updated processes are quite common (and frequent) in information technology projects, particularly after project activities based on the original scope are initiated. Regardless of the reasons, the undesirable consequence of specification changes is that initial skill levels, labor cost estimation is not an easy task. It must factor in salaries or hourly rates, pension and health benefits, other overhead, and an estimate of time involvement cost Iestmate have to be revised beause some of the project work already completed must be changed.

External factors: such as inflation, interest rates, environmental issues, and currency exchange rate fluctuations can also escalate actual project costs, particularly in the case of projects where technical problems and other difficulties lead to an increase in project duration. In the case of multinational public sector projects, delays due to politics among the nations involved can result in significant increases in actual project costs incurred. In addition to the above factors, there are other, ‘‘softer’’ issues associated with understating or overstating resource requirements. First, many managers fail to realize that estimates, Consequently, the actual cost incurred for an activity may vary from the original cost estimate by a significant percentage (plus or minus). Second, inaccuracies in cost estimation typically occur at the time of project initiation, and their impact is most significant if the profitability of the project is in doubt. Estimates become progressively more accurate as we progress through the project life cycle.

Generaly the factors that are related to external factors are;

- Delay in obtaining permits from municipality
- Lack of materials on the market;
- Lack of equipment and tools on the market;
- Poor weather conditions; poor site conditions (location, ground, etc.);
- Poor economic conditions (currency, inflation rate, etc

Sources and Categories of Project Costs Initial cost estimation begins during project proposal development. At this stage, all relevant costs that are likely to be incurred in the project should be identified and included in the initial projectproposal. To develop the initial cost estimates, we need to know the various sources of project costs. These include:

- Cost of labor

- This involves hiring costs and wages for the various human resources associated with the project
- Cost of materials
- This is the cost of raw materials, supplies, and other equipments needed to complete project tasks. The actual costs incurred for materials depend on the nature of the project; for example, material costs for software development projects can be quite small, whereas in construction projects they are very large.

2.5 Cost of equipment and facilities

Many ‘‘off-site’’ projects, such as mining or construction of large buildings, require project team members to rent facilities and equipment. In these cases, the rental costs are legitimate costs that can be charged against the project. Other relevant sources of project costs can include travel costs of team members, as well as costs associated with subcontractors or consultants.

Project costs can be classified as direct or indirect, recurring or nonrecurring, fixed or variable, and normal or expedited.

Direct costs: can be directly charged against the project; for example, the costs of personnel who are directly involved in the project, or the costs of materials directly used for project work.

Indirect costs: include overhead, as well as selling and administrative expenses. Examples of overhead costs include costs associated with taxes, insurance, utilities, and so forth. Costs associated withselling and administrative expenses stem from salaries, commissions, advertising, etc. Tracking and allocating indirect costs to specific projects is considerably more difficult than allocating direct costs. Consequently, among project organizations there is a wide variation in the approaches employed to estimate and allocate indirect costs.

- ***Recurring costs:***such as labor and materials, are repeatedly incurred throughout the project life cycle.
- ***Recurring costs***: such as labor and materials, are repeatedly incurred throughout the project life cycle.
- **Variable costs**: on the other hand, vary directly with usage. They are typically associated with labor and materials.
- **Normal costs:** are incurred when project tasks are completed according to the original planned duration.

Expedited costs or Crash costs are unplanned costs incurred as a result of steps taken to ccelerate project completion. For example, costs associated with using additional overtime or hiring additional workers specifically to hasten project completion can be regarded as expedited costs. While all of the above are viable approaches to classifying project costs, it should be emphasized that many of these costs belong to multiple classifications; for example, labor costs can be regarded as direct, recurring, variable, and normal costs.

2.6 Cost Estimating Methods

At times, estimating project costs seems to resemble an art form as much as a science. There are two important project laws at work regarding cost estimation:

- First, the better we define the project's various costs in the beginning, the less chance there is of making serious estimating errors.
- Second, the more accurate our initial cost estimates, the greater the likelihood of preparing a project budget that accurately reflects the true budget for the project and the greater our chances of completing the project within budget estimates.

One key is to cost out the project on a disaggregated basis; that is, to first break the project down by deliverables and work packages as a method for estimating task-level costs. These estimates can then be aggregated into an overall project budget. For example, rather than attempting to create a cost estimate for completing a deliverable comprising four work packages, it is typically

2.7 Time-phased Budgets

To achieve effective cost control, time phasing of project work is absolutely critical. Time-phased budgets allocate costs across both project activities and the anticipated time in which the budget is to various phases. Consequently, the time-phased budget is an excellent project control mechanism, because it allows the project manager to determine, during various stages of the project life cycle, how much of the budget monies have actually been expended. This figure can then be compared with the budgeted amount. A time-phased budget also enables the project team to compare the schedule baseline with the budget baseline, which facilitates the identification of milestones for both schedule performance and project expenditures be expended. In essence, time-phased budgets consolidate the project budget and the project schedule.

Various phases, consequently, the time-phased budget is an excellent project control mechanism, because it allows the project manager to determine, during various stages of the project life cycle, how much of the budget monies have actually been expended. This figure can then be compared with the budgeted amount. A time-phased budget also enables the project team to compare the schedule baseline with the budget baseline, which facilitates the identification of milestones for both schedule performance and project expenditures.

2.8 Causes of Cost Overruns

Arditi (1985) showed that the causes ofconstruction cost overruns were attributed to inflationary pressures, increases in material prices and workmen swages, difficulties in obtaining construction materials, construction delays, deficiencies in cost estimates prepared by the consultants and the unexpected sub-soil conditions. Mansfield, Ugwu and Doran (1994) found out that cost overruns were attributed to problems in finance and payments arrangements, poor contract management practices, material shortages, changes in site conditions, design changes, mistakes and discrepancies in contract documents, mistakes during constructions, price fluctuations, inaccurate estimating,delays, additional works, shortening of construction periods, and fraudulent practices and kickbacks. According to Robert (2007), project owners identified five reasons for project cost overruns.

They were incomplete drawings, poor pre-planning processes, Frimpong (2003) also found out that in Ghana, in addition to all factors mentioned above, construction cost overruns are also caused by problems with the payment of agencies' fees.Studies have shown that, the size of a building project influences the rate of cost overrun. Large projects are generally more complex and in such complex projects, some items are fraught to be missed out ormay be forgotten during the planning and design phases.

Hence, the complexity may increase the rate of cost overrun. The factors that could increase construction costs are numerous. Chan and Park(2005) stated that the cost of a building project is affected by a large number of factors. This is so because construction is amultidisciplinary industry and its work involve many parties such as the project owner and various professionals, contractors and suppliers. Thus a building project cost does not only depend on a single factor but on a cluster of variables that are related to the characteristics of the project, the construction team as well as the market conditions.

2.9 Effects of Time Overrun

Effects of schedule overruns are the consequences that will occur when the causes of these schedule overruns are not identified and worked on effectively. The study of Pourrostam and Ismail (2011) identifies and ranks the effects of construction delays as follows: time overrun, cost overrun, dispute, arbitration, litigation, and total abandonment of projects. These findings are in general agreement with other studies as carried out by Aibinu and Jagboro (2012) and Motaleb and Kishk (2010).

According to Wickwire (2003) and Bramble (1990), types of schedule impacts are classified into five major groups. Namely:

- **Delays:**
- **Disruptions:** A disruption can be defined as an impact that alters the contractor‘s planned work sequence or flow of work expected at the time of bidding, which results in increased difficulty, cost, and/or time (Bramble, 1990 and Wickwire, 2003). When this occurs, the contractor cannot perform work in the manner anticipated during bid preparation, thus resulting in a schedule impact. Damages associated with disruption are likely to be increased labor costs due to inefficiency, the activation/deactivation of increased manpower, and additional equipment costs (Wickwire , 2003).
- **Changes:** Another major type of potential schedule impact involves changes. When a contractor takes on any type of work that deviates from the original contract, or from the scope of work or plan of action reasonably anticipated under the contract, that results in an increase in performance time, the contractor may seek an adjustment (Bramble et al., 1990). Before determining the impact of the change on the schedule, the change must be identified as truly being a change from the original contract or merely a situation that should have been anticipated by the terms of the original agreement (Bramble ., 1990).

- **Suspensions:** A suspension of work is a written directive by the owner to stop all work on the project, either because the contractor has failed to perform in accordance with contract documents, or at the owner‘s convenience (Wickwire, 2003). Work will not continue until the owner has raised the suspension of work. A cost and time adjustment shall be made for any suspension of work ordered by the owner, as long as the contractor was not responsible for the suspension of Work. As opposed to a pure delay, when an

owner issues a suspension of work, the contractor is also entitled to equitable adjustment for profit (Wickwire et al., 2003).

- **Termination: t**ermination is a permanent stoppage of work of all or a portion of the contract and the contract is terminated. For a party to possess the right for termination, a termination clause must be specifically included in the contract. Most contracts allow the owner the right to terminate the contract, while some contracts grant the contractor this right. There are two categories of termination, the first type being default termination, which gives the owner the right to terminate the contract when the contractor‘s performance is either 1. far behind a reasonable time schedule or 2.results in work that fails to meet contract quality requirements or 3.when the contractor becomes financially insolvent. (Bartholomew, 2002). The second type of termination, convenience termination, allows the owner to terminate the contract for its convenience, based on specific needs of the owner. For example, if the owner is unable to fund the remainder of the project and there is a termination for convenience clause in the contract, the owner is allowed to terminate the contract.

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2.10 Causes, Effects and Control for Project Cost Overrun

Causes for Cost Overrun

In recent times, it is extremely rare that a project is completed within its set budget. Proper planning is the key to a successful project, but there are few problems that are usually beyond the realm of planning. It‘s true that we can avoid certain problems through planning and proper execution but you can never predict exactly what would happen once you start a project.

Here are few of the some very common reasons that lead to budget overrun and how they could be avoided.

- **Under financing:** It is a situation in which inadequate amount of budget is allocated to a project at the start will obviously lead to either budget overrun or failure. Assuming that a project will be a success, not allotting enough budgets is downright wishful thinking.
- **Unfeasible Cost Estimates:** Cost estimation is an important process in a project and one common reason for budget overrun. If the cost is calculated on the basis of a hunch, or by inexperienced or unqualified personnel, then the project is unexpectedly going to facebudget overruns. This might look fine at the earlier stages of a project, but often look unrealistic at latter stages.

- **Underestimating the Project Complexity:** Large projects are usually at risk of overrunning its budget because the larger the project, the bigger the complications that may arise during its execution.
- **Prolonged Project Schedule:** If the project is on schedule that does not necessarily mean that the project budget is also being met. On the other hand, if project schedule is extended, that automatically translates into more time and money that needs to be put into the project. Project extension means staff and resources would be required for more time.
- **Lack of Backup Plan:** If you do not have a backup plan for any problem that might arise, then even the smallest delay in the schedule will cause an overrun.
- **Lack of Resource Planning:** If you fail to effectively plan the resources that are available to you, then this would obviously lead to a budget overrun. One of the most common mistakes that cause overrun is the failure to estimate the resources that would be utilized during the project. They could be underestimated,. On the other hand, they could be overestimated and would lead to blockage of resources that could have been effectively utilized elsewhere.

2.11 Reasons for cost overruns in different stage of the project

In execution phase:

- Escalation in labor cost/in effective utilization of labor
- Material price escalation beyond projection
- Inadequate availability of skilled resource
- Location and connectivity of project site
- Incremental financial cost (volatility of foreign exchange and borrowing cost)
- Design change/iterations
- Weak procurement planning
- Weak contract administration and claim management
- Wrong/poor selection of technology/equipment

In pre execution phase:

- Scope creep
- Ineffective detailed project report, original estimate, and budgeting of project

- Acquisition of land at market price
- High cost of environmental safeguard
- Poor selection of consultant
- Wrong/poor selection of technology/equipment

Angelo and Reina (2002) stated that cost overrun is a major problem in both developed and developing countries. Several studies of major projects show that cost overruns are common. The causes of cost overrun in construction projects are varied, some are not only hard to predict but also difficult to manage (Morris and Hough, 1991).

2.12 Project Time and Cost Overrun in Ethiopia

Ethiopian construction industry is also incorporated these problems significantly such as poor quality, cost and time overrun. In Ethiopia, a study conducted by Nega, (2008) on predominant factors for cost overrun in construction projects are identified the following major cost overrun factors. These are inflation or increase in the cost of construction materials, poor planning and coordination, change orders due to enhancement required by clients, and excess quantity during construction.

There are enormous Public and private Projects in Ethiopia that incorporate these problems, for example, construction of buildings, roads and bridges. Research has pointed to the necessity of new methodology and approaches for the construction sector worldwide in order to overcome a well- known problem related to the performance of projects such as accomplishment rates, time, quality related issues and cost overruns.

In Ethiopia, it is very rare case that private and public construction project is completed on the time agreed upon, the specified cost and quality level. There are a lot of construction projects in Ethiopia, which are characterized by low performance. resources in the construction industry of developing country- both human and material; up to 30% of construction costs are due to poor performance

Further , study conducted by Zinabu Tebeje and Getachew Teka (2015), found out that the construction projects in Ethiopia have had problem with construction cost overruns that has mainly caused by schedule delay, delayed payments, poor supervision, construction mistakes,

poor coordination and communication, design and specification problems, reworks, material and equipment shortage, labor supply and inflation

2.13 .Factors That Affect Building Project Costs

No two infrastructure projects will cost the same amount of money no matter how similar they are. Apart from the basic technical factors, the wide range of economic and institutional conditions in different locations wil lit self lead to variations. Nevertheless, the fundamental project costs are based on the actual cost of the land, materials, equipments and labour in the region where the project is being carried out. These basic costs will vary depending on the factors discussed below:

The Project Specification: The specification defines the physical attributes of a project. For buildings, the required function and expected occupancy rate will lead to a specification of total floor space and floor plate size, room height, internal and external aesthetics, floor loadings, heating and lighting requirements. The more detailed the specification and the larger the project, the more expensive it will be.

Location Of the Building Project: The location of a project affects its cost through institutional and geographical realities. Institutional factors can affect the initial project cost in a number of ways. Consents procedures may be more difficult, thus affecting the time it will take to implement the project successfully. Where major projects are likely to be opposed one nvironmental grounds, more costs may have to allow for environmental mitigation measures. In geographical terms, building material costs, land costs and design standards vary widely across Ghana because of the varying distances from suppliers and the general market conditions.

Timescale: Generally, the longer a project takes to complete, the greater the project cost will be. Project timescales are dependent on the specification of the project. There is a general notion that, the larger a project is, the longer it will take to complete. This is not always the case because when additional resources are used, the project implementation can be accelerated. In some instances, work on a building project may take a lot longer than expected because, its phasing is dependent upon the other or linking projects or public finance programmers.

Site Characteristics: A site can be affected by soil and drainage conditions which can restrict access and can affect the original cost estimates.The amount of excavation and foundation activities required is particularly affected by poor ground achieved unless a soil survey is conducted.

Inaccurate or Poor Estimating of Original Cost:(Peters and Madauss, 2008) stated that the biggest factor that contributes to cost overruns of budget is inaccurate estimation of original or initial cost of the project. This is due to technical problems on how to estimate project costs and also insufficient project information at the early stages of the project.

Inflation of project costs: Inflation of materials, equipments and labour costs may vary geographically within the country and contracts between sub-contractors and suppliers may involve different inflation protection terms as agreed with the client.As inflation increases, interest rates also increases and the project costs will also increase.

Fluctuation in price of raw materials: In most cases where it is difficult to estimate the material cost accurately, price fluctuation gives rise to cost overruns. Fluctuation may also be associated with high changes in prices of materials especially in developing countries.

Unforeseen site conditions: Nega(20080 found out that actual site condition of a project are not usually determined until excavation is completed. It is sometimes possible that site condition are overlooked by initial review, or conditions have changed due to change in weather or subsoil conditions which sometimes will require fundamental redesign of the project with its attendant high costs.

Insufficient funds: Long .(2008) pointed out that, whenever there is insufficient funds to cover all the expenses during construction, most projects are delayed. Clients sometimes do not have enough funds to complete their projects and more often than not, do not pay contractors on time as agreed in the contract agreement.

Construction cost under-estimation: In other to get the project approved for construction, some parties to the contract deliberately under estimate the cost of the project only to be faced with the actual costs as construction proceeds. This negative practice affects the project cost, thus high cost overruns.

Change in foreign exchange rates: The change in foreign exchange rate is particularly relevant if materials or other elements of the construction project are being purchased from foreign countries. If the foreign exchange rate changes beyond the expected level, then the cost of the

CHAPTER THREE: RESEARCH METHODOLOGY

This chapter deals with background of the organization and research methodology of the study: research design, source & type of data, targeted population, sample size and sampling techniques, data collection methods and data analysis

3.1 Backgound of the organizetion

Addis Ababa University (AAU), PUBLIC INSTITUTION which was established in 1950 as the University College of Addis Ababa (UCAA), is the oldest and the largest higher learning and

research institution in Ethiopia. Since its inception, the University has been the leading center in teaching-learning, research and community services.

Beginning with enrollment capacity of 33 students in 1950, AAU now has 48,673 students (33,940 undergraduate, 13,000 Master's and 1733 PhD students) and 6043 staff (2,408 academics and 3,635 support staff). In its 14 campuses, the University runs 70 undergraduate and 293 graduate programs (72 PhD and 221 Masters), and various specializations in Health Sciences

In recent years, the University has been undertaking various reform schemes in order to cope with and respond to the fast-changing national and international educational dynamics. At present the University has 10 colleges, 4 institutes that run both teaching and research, and 6 research institutes that predominantly conduct research. Within these academic units, there are 55 departments, 12 centers, 12 schools, and 2 teaching hospitals. The University has the following academic units..

The University is led by a President who is assisted by four Vice Presidents and one Executive Director: Academic Vice President, Vice President for Research and Technology Transfer, Vice President for Administration and Student Services, Vice President for Institutional Development and the Executive Director of the College of Health Sciences (with the rank of Vice President

3.2 Research Design

Research design is a blue-print or roadmap for data collection, measurement and analysis (Kothari, 2004). This Research design is the overall strategy of the study in order to integrate different component of the study in coherent and logical manner to properly address research problems.

In this study both quantitative and qualitative research methods (mixed approach) were employed. According to Creswell (2014) mixed research is a method of inquiry involving collecting both quantitative and qualitative data, integrating the two forms of data

The study used primary data which was collected through questionnaire and interview to get perception on causes of time and costoverrun. The data collected was analyzed using both descriptive l method. Information obtained from interviews was used to reinforce the implication of the questionnaire result.

3.3Target Population

Target population is defined as all the members of Addis Ababba university buiding construction project teams. The people (client) had responsibility of managing the construction project. The total number of population was found to be 9 and the researcher designed a questionnaire and to all to get the required information. Moreover, the researcher made an interview with each person to get additiona information for the specific study.

3.2 Source of Data

Both primary and secondary data was used for the study. According to Currie (2005), combining several methods in the same single study is important to triangulate theresult of each method involved. Relying on a single method can adversely affect the reliabilityand validity of the results and ultimately affecting the conclusions drawn and therecommendations made. Most of the information was obtained through interviews, questionnairesdocumen and referring company's official document.

3.2.1 Primary Data

The decision to collect primary data for a research is influenced by the kind of research one is carrying out. The need for primary information is far more frequently related to the practical,rather than the academic aspects of study. You carry out primary research when the data you need is not available from published sources (Currie, 2005).

Primary data is data that's collected for specific research problem at hand using procedures that fit the research problem best. On every occasion that primary data is collected new data is addedto the existing stock of knowledge (Hox & Boeije, 2005).The primary data was original and relevant to the topic of the research study so the degree ofaccuracy is very high, it is current and it gave a better realistic view to the researcher about thetopic under consideration. The primary data was conducted using questionnaires and interview.

3.2.2 Secondary Data

Secondary data is the data that have been already collected by and readily available from other sources. The researcher used company's official document as source ofdata. These sources were used as a supplement to the primary data that was collected by the researcher as making conclusion and recommendation based solely on secondary data was insufficient and inadequate.

3.3 Data Collection Techniques

The researcher used both interview and questionnaire as primary data sources and Unvesity project related report as secondarydata source.

3.4 Data Analysis Techniques

Data analysis is the systematic organization and synthesis of the research data; it also involves categorizing, ordering, manipulating and summarizing the data and describing them in meaningful terms (Brink 1996). Data was collected, analyzed and presented in such a way that helped the researcher answer the research questions and met the objective of the study from which conclusions andrecommendations were drawn.

The analysis was based on the statement of the problem, research objective and researchquestions. This study was quantitative in nature; therefore the collected quantitative data was coded, analyzed and interpreted. The data from the closed ended questionswere coded and entered to SPSS version 24. so as to analyze and summarize the data descriptively using tables, percentages and frequency.

The open ended questions from the questionnaire and the interview questions were categorized by manually by the researcher in ageneralizable format. Finally, all the data has been presented to the reader in a readable format by further explaining the case using discussions. After which conclusion was made about the particular case and recommendation were delivered by the researcher.

3.5 Ethical Considerations

Ethical considerations are very important in any research. As a result the consent of the participant was sought first and the researcher did not in any way forcefully influence the decision of the respondents by cohesion or other means to deliver the information against their wishes. Moreover, data and information collected from the participants were treated as private and confidential documents and was used for the purpose of the study only.

FOUR: Results and Discussion

4.1 Introduction CHAPTER

This chapter presents the result of the data obtained from the respondents using **questionnaire** and **interview**. The results were presented by using descriptive statistics. To analyze the collected dataSPSS Statistics version 20 was used.

The questionnaire was developed using Linkert scale; where 1. represents not significant (NS), 2 represents slightly significant (ss),3 represnets moderatly significant (ms),4 represents verysignificant(vs) And 5 represents Extermlysignificant.(ES)

Among the 9 questionnaires that was distributed to the project team members 9 questionnaires were filled and collected.Descriptive statistics is used to analyze the questionnaires that were collected. The collected Questionnaires were inserted in to SPSS version in order to make an analysis of the data, which enabled to present using frequency and percentage. For further understanding of the subject matter unstructured interview was conducted with the target population. The questionnaire and the interview questions used are attached to this research pape runder appendix section

4.1 Response Rate

The primary data that was collected through questionnaire consisted of 36 close ended and open ended items and was distributed to 9 individuals who are project personnel participating in the projects. All the questionnaires were filled properly and returned to the reasearcher that has 100% response rate and the collected data was analyzed, interpreted and presented in the below tables. The measurement was reliable with the average Cronbach alpha test of of 0.746. Moreover, the respondents were required to make an interview and the data collected through the interview was used to strengthen the questionnaire responses.

4.3Respondents' general information

This part is mainly provides general information about the respondents in terms of age, gender, eductional qualification and work experience.

Table 0:1: Respondents' general information

Variable		Frequency	Percent
Gender	Male	9	100.0
Age	20-29 yrs	4	44.4
	30-39 yrs	5	55.6
	Total	9	100.0
Education	Degree	6	66.7
	Post graduate	3	33.3
	Total	9	100.0
Work Exprience	Below 2 Yrs	1	11.1
	2-5 yrs	4	44.4
	3-10 yrs	3	33.3
	Above 15 yrs	1	11.1
	Total	9	100.0
Project Exprience	1-2 yrs	1	11.1
	2-3 yrs	4	44.4
	Above 3 yrs	4	44.4
	Total	9	100.0

Source: Own survey 2018

The information collected from respondents involved their gender,age, academic qualifications working experience and roject experience. According to the table above, the results shows that 100.0% of the respondents were male. Regarding the age, the research findings indicated that 44.4.0% of the respondents were in the age of 20-29- years; 55% of the respondents were in age of 30-39years. Regarding to eduacational qualification, research responses indicated that 66.7% of the respondents had degree level of academic qualification while the rest 33.7% of the respondents have acquired master's level of academic qualification. The work experiences of the respondent shows that 11.2.% of the respondents have below2 yrs, 44.4% of them in between 2 and 5 yrs, 33.3% have 6-10 years of experience while the rest 11.1% has above 15 years of work experience. And with regard to project experience, 11.1% of the respondents have between 1 and 2 years, 44.4% and 44.4% of the respondents have project experience of 2-3 years and above 3 years respectively.

4.2 Time overrun related responses

The respondents were provided 13 times overrun related questions and their responses are shown in the table below. The respondent's number for each item is depicted using count and percent.count represents head count of individuals whereas the percent shows the ratio of individuals from hundred.

Table 0:2: Time overrunn responses

	Not Significant		Slightly Significant		Moderately Significant		Very Significant		Extrmely significant	
	Count	percent	Count	percent	Count	percent	Count	percent	Count	percent
Improper planning	0	0.0%	0	0.0%	5	55.6%	1	11.1%	3	33.3%
Design Error	0	0.0%	0	0.0%	4	44.4%	5	55.6%	0	0.0%
poor scope definition	0	0.0%	0	0.0%	0	0.0%	5	55.6%	4	44.4%
poor communication	0	0.0%	0	0.0%	0	0.0%	5	55.6%	4	44.4%
owner interference	0	0.0%	0	0.0%	3	33.3%	6	66.7%	0	0.0%
slow decision making by owners	0	0.0%	0	0.0%	1	11.1%	5	55.6%	3	33.3%
inaduquate contractor exprience	0	0.0%	4	44.4%	2	22.2%	1	11.1%	2	22.2%

absence of consultant's staff on site	0	0.0%	2	22.2%	1	11.1%	1	11.1%	5	55.6%
consultant's lack of exprience	0	0.0%	2	22.2%	4	44.4%	2	22.2%	1	11.1%
contract management	0	0.0%	0	0.0%	1	11.1%	7	77.8%	1	11.1%
quality assurance or control	0	0.0%	0	0.0%	3	33.3%	6	66.7%	0	0.0%
insufficient funds	0	0.0%	0	0.0%	1	11.1%	4	44.4%	4	44.4%
Equipment availability and failure	0	0.0%	0	0.0%	6	66.7%	3	33.3%	0	0.0%

Source: own survey, 2018

As shown in the table above, respondents provided their perception if the mentioned factors had effect during the building construction projects in Addis Ababa University.

For the first factor menitioned on the time overrun related factor that is improper planning, 55.6% of the respondents replied with moderately significant, 11.1% of them said very significant where the rest 33.3% said that it was very significant.this implies that there was planning proplems during the construction. Regarding for Design change factor, 44.4% and 55.6% of the respondents replied with moderately significant andvery significant respectively. This implies that majority of the respondents perceived it as very significant.for another factor that is poor scope definition, 55.6% and 44.4% of the respondents replied with very significant and extremely significant respectively.majority of the respondents thought that design change was very significant in the project. For the case of poor communication factor, 55.6% and 44.4% of the respondents replied with very significant and extremely significant respectively. This implies that poor communication was one critical factor within the project. Regarding the interference of the client, 33.3% and 66.7% of the respondents replied with moderately significant andvery significant respectively.

This implies that majority of the respondents believed that the client interfered the project so that this delay caused delays. For factor of slow decision making by owners, 11.1% of the respondents said that it was moderately significant where the rest 55.6% and 33.3% of the respondent said that it was very significant and extremely significant respectively.this implies that majority of the respondents believed slow decision by the owner was very significant.for inadequate contractor experience, 44.4% of the respondents said that it was slight significant where the rest 22.2%, 11.1% and 22.2% of the respondents said that it was moderately significant, very significant and extremely significant respectively. This implies that contractors

experience was not very significant factor for the project. For the case of absence of consultant's staff on site, 22.2% of the respondents replied with slightly significant, 11.1% of them said moderately significant while the rest 11.1% and 55.5% of them replied with very significant and extremely significant respectively. This implies that majority of the respondents believed that absence of consultant's staff on site was extremely significant.

For the case of consultant's lack of experience, 22.2%, 33.3%, 22.2% and 22.2% of the respondents replied with slightly significant, moderately significant, very significant and extremely significant respectively. Although the responses of the respondents have different feelings, it can be summarized as moderately significant as majority respondents's perception. For another issue which is contract management, 11.1%, 77.7% and 11.1% of the respondents replied as moderately significant, very significant and extremely significant respectively. This implies that majority of the respondents perceived it as very significant. For the case of quality assurance or control, 33.3% of the respondents said it was moderately significant while the rest 66.7% of them replied with very significant that quality assurance or control was a factor within the project. Regarding to insufficient funds, 11.1%, 44.4% and 44.4% of the respondents replied with moderately significant, very significant and extremely significant respectively. This implies that majority of the respondents believed that insufficient fund was very significant for timeoverrun in the project.The last but no the least factor provided to the respondents were Equipment availability and failure and 66.7% of them replied with moderately significant while the rest 33.3% of them replied with very significant, this implies that majority of the respondents said that equipment availability and failure factor was moderately significant.

As per the interview result, the above enlisted factors were considered to be significant in causing time overrun in the project.most of the respondents said that poor planning was a major factor that causes the impact.since the plan was not good, a lot of time was wasted to amend the plan and this caused many conflicts within the project stakeholders too. Some of the causes for poor planning included lack of consultant's desired experiences, poor communication and lack of scope definition. The scope was not defined in detail in such a way that activities were not explicitly explained with regard to their resource and time requirements and their squenses. The consultant was found missing to fulfill these gaps on time so that additional time was required to amend the defects when detected and this case demanded additional time.

Some times, the owner was not able to give decision on time. Some decision makers had kept the paper on their table for a while and this had significant impact on the overall project time. In some cases, the project owner tried to continue its work without aknowlogement and this cost it to considerable time and cost when the owner's decision didn't accord that.therefore, additional time and costs were incurred due to decision delay. The absence of consultant's staff at the project site was very determinant factor in which the contractors couldn't get immediate response for what they requested. They had to go to the consultant's office to get some conformation needed to their work.This wasted time was not small especially when it happened many times.

The contract management was a very headache while carrying out the projects. The contractors and the consultants usually missed to completely understand the exact requirement of the client. Some times there happened conflicts between the contractor and the consultants in which the contractor didn't understand the contract. There was a problem in documenting the contract clearly and completely and the undocumented contract isuses created disputes that need time to resolve while the project was on pending until resolution was reached among the parties.

4.3 Cost overrun related responses

Table 0:3: cost overrun related responses

	Not Significant		Slightly Significant		Moderately Significant		Very Significant		Extrmely significant	
	Count	percent	Count	percent	Count	percent	Count	percent	Count	percent
Design change	0	0.0%	0	0.0%	4	44.4%	4	44.4%	1	11.1%
Decision delay by supervisors	0	0.0%	2	22.2%	3	33.3%	2	22.2%	2	22.2%
contractual claims	0	0.0%	2	22.2%	2	22.2%	5	55.6%	0	0.0%
tendering maneuvers	0	0.0%	3	33.3%	6	66.7%	0	0.0%	0	0.0%
additional work at owners request	0	0.0%	3	33.3%	1	11.1%	5	55.6%	0	0.0%
poor schedule management	0	0.0%	0	0.0%	3	33.3%	1	11.1%	5	55.6%
delays between design and procurement phases	0	0.0%	1	11.1%	5	55.6%	3	33.3%	0	0.0%
cost under estimatio	0	0.0%	0	0.0%	2	22.2%	4	44.4%	3	33.3%
Cost inflation	0	0.0%	0	0.0%	2	22.2%	2	22.2%	5	55.6%

Change in foreign exchange rate	0	0.0%	0	0.0%	4	44.4%	5	55.6%	0	0.0%
quality of materials	0	0.0%	0	0.0%	3	33.3%	4	44.4%	2	22.2%

Source: own survey, 2018.

The table above represents the response of individuals for cost overrun related factors. As mentioned above in the table of time overrun related responses, the respondents' size for the specific response was mentioned in terms of head count and percent.

For factor of design change, 44.4% of the respondents replied with moderately significant and the rest 44.4% and 11.1% of the respondents replied with very significant and extremely significant respectively. This implies that majority of the respondents thought it was very significant. For the case of decision delay by supervisors, 22.2%, 33.3%, 22.2% and 22.2% of the respondents replied with slightly significant, moderately significant, very significant and extremely significant respectively. The responses fall along the alteranatives but it can considered as moderately significant.for contractual claims, %, 22.2% and 22.2%of the respondents replied with slightly significant and moderately significant while the rest 55.6% of them said that it was very significant. This implies that majority of the respondents thought contractual claims as very significant factor for cost overrun in the project.while considering tendering maneuvers, 33.3% and 66.7% of the respondents though it as slightly significant and moderately significant respectively.

This implies that majority of the respondents believed it as moderately significant.for additional work at owner's request, 33.3%, 11.1% and 55.6% of the respondents replied with slightly significant, moderately significant and very significant respectively.this implies that majority of the respondents thought additional work at owner's request was very significant for cost overrun in the project. poor schedule management has direct impact on time overrun and timeoverun causes cost overrun and the responses of the respondents for poor schedule management indicates that 33.3%, 11.1% and 55.6% of the respondents replied with , moderately significant, very significant and extremely significant respectively.this implies that majority of the respondents believed that poor schedule management was the cause of cost overrun.regarding to delays between design and procurement phases, 11.1%,55.6% and 33.3% of the respondents replied with slightly significant, moderately significant and very significant.

This implies that majority of the respondents believed that delays between design and procurement phases caused the cost overrun. For issue that is cost under estimation, 22.2%, 44.4% and 33.3% of the respondents replied with moderately significant, very significant and extremely significant respectively.this implies that cost under estimation was a cause of cost overrun. Regarding to Cost inflation, 22.2%, 22.2% and 55.6% of the respondents replied with moderately significant, very significant and extremely significant respectively.

This implies that majority of the respondents believed that cost inflation was the extremely significant to affect cost overrun in the project. For issue that is Change in foreign exchange rate, 44.4% and 55.6% of the respondents replied with moderately significant and very significant respectively. This implies that majority of the respondents thought change in foreign exchange rate was very significant in the project cost overrun.

The last factor included in the cost overrun related question was regarding to quality of materials and for this 33.3%, 44.4% and 22.2% of the respondent replied with moderately significant, very significant and extremely significant respectively. This implies that majority of the respondent thought that quality of materials was very significant to cause cost overrun in the project.

The information gathered through interview also indicates that almost all of the above mentioned factors play significant role in increasing the project cost and then cause cost overrun.majority of the respondents said that cost inflation and poor schedule management were the most critical factor in causing the project cost overrun.the cost for qualitative materials showed abrupt increase during the project time and the contractor requested these claims to the owner so that the total project cost was increased.according to the information obtained, in many of the project sites the design under contract was not complete and hence the owner requested to the contractor to add up the remaining part and this cases caused unexpected cost increase in the total project cost.

Most of the materials needed for the building construction projects were imported from abroad; the rate of foreign exchange was not constant but variable along the project time but the change was only an increase in which the value of the local currency decreased. In addition to this, the original cost estimate didn’t consider the upcoming cost variation factors and then as time went on unexpected and mandatory cost increases had happened in the project.

CHAPTER FIVE: FINDINGS, CONCLUSIONS AND RECOMMENDATIONS

5.1 Introduction

This chapter presents the summaries of the findings, conclusions derived from the analysis and the recommendations that are suggested.The findings are result of the questionnaires and interviews. Moreover, the researcher went through different project documents to get more information and conformation of the respondents.

5.2 Summary of the findings

As mentioned earlier, the data collecting methods were questionnaire, interviews and secondary data that are project related documents. The questionnaire's response was analyzed using SPSS statistics software and the found result was enriched using interviews and project documents. The results analysed in chapter four are summarized as below.

With regard to time overrun factors, compiled result of the collected data from the respondent indicates the following.

- Majority of the respondents believed that poor planning was moderately significant in the project's time overrun. According to the interview response, Some of the causes for poor planning included lack of consultant's desired experiences, poor communication and lack of scope definition
- Majority of the respondents said that design change had very significant role in the time overrun of the project. Amending a design required another time so that the project will take more time to complete.
- Majority of the respondents replied that poor scope definition was very significant in contributing time overrun of the project. There were problems in preparation of work breakdown structure and activities sequencing and resources requirement was not usually set properly.
- Majority of the respondent thought that poor communication was very significant factor for time overrun of the project. There were frequent problems especially between the consultant and the client.
- Majority of the respondents replied that owner interference was very significant. In some projects the owner made visits to the project sites and when the owner found things out of

its expectation, there were some conflicts between the project stakeholders that consumed time to resolve them.

- Majority of the respondents perceived that slow decision making by owners was very significant to cause time overrun within the project. Decision making was as immediate as an issue came but it needed some meeting arrangement and to give a decision and periodic and extensive meeting were boring especially to the contractors since they need to wait for some time until getting the conformation of their request.
- Majority of the respondents considered inadequate contractor experience as moderately significant to project time overrun. Some contractors missed to undertake the project at their best and they had problems at using resources effectively.
- Majority of the respondents believed absence of consultant's staff on site as extremely significant in causing project time overrun. Frequently, the contractor complained that there were not accessible persons on site that could give immediate response for requests. The contractor needed to go head office to get what it needed.
- Consultant's lack of experience was though as moderately significant by majority of the respondents. Some consultants showed weaknesses in regular follow ups and managing the contract.
- Majority of the respondents believed that contract management was very significant for time overrun cause. There were problems in documenting the contact and managing them accordingly.
- Majority of the respondents thought that quality assurance or control was very significant at project time overrun. There were situations in which quality assurance by the consultant took considerable amount of time. This issue is related with the experience of the consultants too.
- Majority of the respondents believed insufficient funds as very significant. Usually, the client got the money from ministry of finance and there were delays in releasing money while undertaking the project. If the contractor didn't get money on time, the contractor waiting for some time idle.
- Majority of the respondents thought equipment availability and failure as moderately significant at causing project time overrun. Sometimes, the project time was extended when there were failure at critical machines or if some of the materials needed for construction couldn't obtain locally or if they were scarce.

With regard to cost overrun factors, the following results were summarized as follow.

- Majority of the respondents thought that design change was very significant for cost overrun of the project. Later modification of the design as per the requirement and consumed extra cost for resource assignment and redesigning process.
- Decision delay by supervisors was considered as moderately significant factor by majority of the respondents for project overrun cause. Supervisors were responsible for day to day follow ups but when the supervisors were reluctant to give immediate decision and that delayed decision caused proportional cost increase.
- Majority of the respondents believed that contractual claims were very significant to cause cost overrun.
- Majority of the respondent thought tendering maneuvers were moderately significant in causing project cost overrun in the project.
- Majority of the respondents thought that additional work at owners request was very significant for cost overrun.as it is mentioned above, for any additional work it requested additional cost.
- Majority of the respondents believed that poor schedule management was extremely significant for project cost overrun. Almost all of the projects faced cost overrun due to poor schedule management. Poor time schedule management was directly related with cost increase within the project.
- Majority of the respondents thought that delay between design and procurement phases was moderately significant in causing project cost overrun. The cause of this factor was that the procurement was done considerable time later from the period of project design process and hence there was gap of material cost between the time of design and time of procurement.
- Cost under estimation was considered as very significant factor. Usually the cost estimation was made without considering future changes and when the project started, continuous negotiations was held to update the cost which was higher than the original estimated cost.
- Majority of the respondents thought that Change in foreign exchange rate was very significant to contribute project cost overrun in the projects. As described above, the materials needed for construction were imported from abroad and the scarcity and expensiveness of foreign currency had direct impact on increasing the project cost.

- Insufficient fund was considered as very significant factor to cause project overrun cost. Most of the money required for the construction was obtained from ministry of finance and there were situations in which the client waited to get approval of the money disposal and this gap caused cost overrun within the project.
- Majority of the respondents thought that quality of materials was very significant in increasing project cost. During the project time there was abrupt increment of the critical construction materials due to various causes such as foreign currency, demand increment and supply decrement.

5.3 Conclusion

The objective of this research was to assess project cost time overrun factors in AAU building construction projects. According to the collected data and project related documents of the organization there were huge time and cost overruns in the projects. The researcher reviewed the project document to assess if there were variation of time and cost between the planned time and cost with regard to the actual completion time and cost respectively. It was possible to access six project documents to and the researcher tried to calculate the time and cost so as to assess whether there were time and cost overruns or not. All of the projects had faced with project time overruns and the average time overruns of the six projects was found to have about 46% increment against the planned time.

According to the respondents response described above, the major causes for project time overrun were improper planning and poor scopd definition that had significant consequence of design chage to implement the project. The other critical factor for the cause was poor communication in which the project stakeholders couldn't work harmonically to effectively achieve the projects goals. Factors such as sowner's interference and slow decision were also played very significant role in wasting the project time. The contractors' and consultants' experiences as well as equipment availability and failure played moderately significant whereas factors like contract management and quality assurance or control had very significant contribution to the overall project time overrun.

Simillarly, the researcher reviewed the above mentioned six project documents to assess their cost and find if there were variations between the planned and actual costs. The average cost overrun of the total projects was found to be 25%. The planned cost of each project was in

millions of birr and an average of 25% increase from each project indicated so big monetary escalations. As the respondents' responses, the major causes for the project cost were the factors described in the above table. Change in foreign rate, contractual claims, additional work at owner's request, design change, quality of materials, cost under estimation and insufficient funds were very significant factors that increase the project cost. Factors like poor schedule management and cost infliation were extremely significant to cause the overrun. Whereas factors like delays between design and procurement phases, tendering maneuvers and decision delay by supervisors were moderately significant in causing project cost so that the sum of the factors contribute to the overall project cost overrun in the project.

5.4 Recommendation

The results found from the respondents and reviewed from the project document indiacted that there the projects were faced with noticeable level of cost and time overruns. The projects were characterized with poor project management practices in general because the factors used for this study include variables across the project management knowledge areas.

More specifically, the project office must give serious attention to factors such as poor schedule management,poor time management,weak follow up consration, cost inflation, insufficient fuds(minitryof finance was no tpay timely fore conractor sa percontrat agreement) , absence of consultant's staff on site and poor communication that extremely contribute to the effects of time and cost overruns. But since the total effect of the enlisted factors both for time and cost overrun studies cause the overall raise in time and cost, all of them need to be curiously monitored and controlled in order to achieve the overall goal of the project.

In general further study should be undertaken on this area within the organization in order to enhance the conclusion and improve the project management practices.

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Appendix

Addis Ababa University College of Business and Economics School of Commerce Masters of Art in Project Management

QUESTIONNAIRE

Dear Participants,

My name is Tadele mulugeta, I am a graduate student at Addis Ababa University School of Commerce and currently I am conducting a research for the completion of my masters in project management. This research work is Factors Affecting project cost and time overruns the case Addis Ababa University building construction projects.

I kindly request you to participate in this research study by completing the attached questionnaire. In order to ensure that all information will remain confidential please do not include your name anywhere in the questionnaire. I also sincerely request you to respond to the questions as honestly as possible and return the completed questionnaires. Knowing that your time is valuable please, take few minutes of your time to complete the questionnaire.

In case of any question please contact me via TadeleMulugeta250@.gmail.com‘‘or **“0911641443”**

Thank you in advance for your committed co-operation!

General Instruction and information:

- Section I includes demographic of general information.
- Section 11 includes close and open ended questions
- Please indicate the significance of each factor by circling the appropriate Section open ended question where it allows you to elaborate the practice in your own words.
- Please attempt to answer all the question relating to each factor on the last column e.g. as to the reasons, the critical factors or the solutions.

Section I: General Information

1. Gender: male ☐ female ☐

2. Age (in year):20-29 ☐ 30-39 ☐ 40-49 ☐ 50-59☐ Above 60 ☐

3. Level of education: Diploma ☐ Degree ☐ Postgraduate ☐

   Others, please specify: _____

4. Years of work experience (in years):Below 2☐ 2-5☐6-10☐ 11-15 ☐

   Above 15 ☐

5. For how many years have you worked on the project?

   Below 1 ☐ 1-2 ☐ 2-3 ☐ above 3 ☐

Section II: close-ended questions

Please encircle the number for the five point scale question that best describes how you perceive cost overrun AAU building projects is applied;

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)

TIME OVERRUN

S/No.	Factors	E.S(5)	V.S(4)	M.S(3)	S.S(2)	N.S(1)
1	Improper planning	5	4	3	2	1
2	Error in original design	5	4	3	2	1
3	Lack poor scope	5	4	3	2	1
4	Poor communication and coordination	5	4	3	2	1
5	Owner interference	5	4	3	2	1
6	Slow decion making by owner	5	4	3	2	1
7	Change in foreign exchange rate	5	4	3	2	1
8	Owner(client) interference	5	4	3	2	1
9	Slow decision-making by owners(client)	5	4	3	2	1
10	Inadequate contractor experience	5	4	3	2	1
12	Absence of consultant's site staff	5	4	3	2	1
13	Contract management	5	4	3	2	1

14	Quality assurance/control	5	4	3	2	1
15	Insufficient fund	5	4	3	2	1

If you have comments regarding time overrun kindly request to write here

_____

_____

_____

_____

_____

_____

COST OVERRUN

S/No.	Factors	ES(5)	VS(4)	M.S(3)	S.S(2)	N.S(1)
16	Design changes	5	4	3	2	1
17	Decion delays by supervion	5	4	3	2	1
18	Contractualclaims	5	4	3	2	1
19	Tendering maneuvers	5	4	3	2	1
20	Additiona workat work request	5	4	3	2	1
21	Poor schedule management	5	4	3	2	1
22	Delays between design and procurement phases	5	4	3	2	1
23	Cost under estimation	5	4	3	2	1
24	Cost inflation	5	4	3	2	1
25	Change forien exchange rate	5	4	3	2	1
26	Insuffient fund	5	4	3	2	1

27	Quality of material	5	4	3	2	1
28		5	4	3	2	1

If you have comments regarding cost overrun, kindly request you to write here

_____
_____
_____
_____
_____

The end, Thank you!