

ADDIS ABABA UNIVERSITY
SCHOOL OF COMMERCE

**THE EFFECT OF PROJECT COST MANAGEMENT
PRACTICES ON THE OVERALL PROJECT
SUCCESS:**

**CASE STUDY OF ENTERPRISE RESOURCE PLANNING
PROJECT IMPLEMENTATION IN ETHIO TELECOM**

By Heron Alemseged

Advisor: Seifu Mamo

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**A THESIS SUBMITTED TO THE SCHOOL OF
GRADUATE STUDIES OF ADDIS ABABA UNIVERSITY
IN PARTIAL FULFILMENT OF THE REQUIREMENTS
FOR THE DEGREE OF MASTER OF ARTS IN PROJECT
MANAGEMENT**

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Declaration

I, undersigned, declared that this thesis entitled “The Role of Project Cost Management Practices on the Overall Project Success: Case Study of Enterprise Resource Planning Project Implementation in ethio telecom” is my original work and has not been presented for a degree or master program in any other university or institution and all sources of materials used for this thesis have been duly acknowledged.

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Date: June 2018

Endorsement

This thesis has been submitted for examination with my approval as a university advisor of the candidate.

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Acknowledgment

First and foremost, I would like to thank the Almighty God who gave me the courage to pass various obstacles and come up to the accomplishment of this programme. Next, I would like to thank my advisor Seifu Mamo for his constructive advice and guidance. I am grateful to his invaluable comments, suggestions & for being accessible all the time including on telephone calls.

I would also like to extend my heartfelt appreciation for ethio telecom Enterprise Resource Planning (ERP) phase II project team members and management members, for their kind cooperation in providing me pertinent data, feedback and documents regarding the project costs management practices used in the ERP phase II project implementation. A profound debt has also to be acknowledged to Ato Yirga, Ato Goshime, Ato Ashiraf, Teshale, Wabe and Bezaneh with whom various parts of this work have been discussed.

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Acronyms

ERP: Enterprise Resource Planning
EVM: Earned Value Management
LCC: Life-Cycle Costing
PMBOK: Project Management Body of Knowledge
PERT: Program Evaluation Review Technique
PMEC: Project Management Effectiveness Construct
PMI: Project Management Institute
PSAQ: Project Success Assessment Questionnaire
SPSS: Statistical Package for the Social Sciences
VIF: Variance Inflation factor
WBS: Work Breakdown Structure

Abstract

This paper deals with the role of project cost management practices on the overall success of projects management, a case study of ERP phase II project implementation in ethio telecom. While the project cost management processes are measured by plan cost management, estimate project cost, project budget and project cost controlling, the project success dimension is measured by the impact of the project on operational efficiency, user satisfaction and completion of the project within budget. To this end, multiple linear regression model was employed to investigate the impact of the project cost management components (the independent variables) on project success (the dependent variable). In addition to this, simple statistical description of data, correlation analysis (using the Pearson product-moment correlation coefficient) have been used to assess the different techniques employed by the company to monitor and control the project cost. To supplement the empirical analysis, descriptive analysis has been also undertaken, using the information sourced from interview with key informants, project contract manual and project closure or exit document. Results of the multivariate linear regression indicates the existence of positive and statistically significant relationship between project cost management explained by cost planning, estimation, budgeting and controlling costs and overall success of the ERP phase II project in ethio telecom. This implies that project success can be improved by improving project cost management practices

Key Words: Project, Project cost management; Project cost planning, Cost estimation, Budgeting, Cost controlling, Overall project success

Chapter One

Introduction

1.1 Background of the Study

Project management is about how to apply and manage resources to accomplish a temporary endeavor within a given schedule, budget and quality constraints (Project Management Institute, PMI 2013). Project cost management, which is defined as the processes involved in planning, estimating, budgeting, and controlling costs, is noted in the PMBOK (2013) as one of the most important aspects in project management that require much attention since its mishandling can lead the project into a complete failure. Richman (2002), has also noted that because of the increase of project failure, nowadays, project cost management is becoming one of the most important issues for companies to handle to improve business performance (Richman, 2002, quoted in Hailiang H. and Chaofeng Z., 2013).

According to Mintzer (2002), project cost management is a process of estimating the total budget required to accomplish the whole project by breaking down the project works into component, determining the cost of each component and implementing effective cost controlling systems. While doing this, all the activities needed to be done in the entire scope of the project, the materials and equipment involve as well as the labor factors should have to be taken into account. Similarly, according to the PMBOK, while cost budgeting is the process of collecting the cost estimates and determining the overall costs and baseline, cost controlling is the process of managing and controlling factors that can affect the pre-defined budget (PMI 2013). Furthermore, while preparing the project budget, there are two approaches: the top down or bottom up budgeting. The top down budgeting is the one which start the estimation of the entire project and then allocate funds to the various areas of the project or from the top management to the lower-level managers. On the other hand, bottom up budgeting is the one which start from the team members of the project and the works they need to do taking into consideration other miscellaneous and make the estimation through to the total budget (Mintzer, 2002).

Project cost monitoring and controlling is important management responsibilities, where primarily concerned with monitoring and controlling the cost of resources needed to complete the project (PMI, 1999). With the increase in competition, rapid technological evolution and the need to shorten the time to market (TTM), the focus of management in some cases changes from activities to results. As a result, the focus of project management functions also changes from focusing on assessing inputs and progressive monitoring to the assessment of the contribution of intervention to the project outcomes (Berhanu et al. (2011) and Layer & et al (2002)). Despite the change in management focus due to the aforementioned drivers, the main objective of the project cost monitoring and controlling function is to “ensure that the project is executed in a cost efficient, profitable manner, according to business principles and from the perspective of the entire company” (Artto et al., 2011). Hence, the purpose of this paper is to examine empirically the impact of project cost management practice on the overall project success in ethio telecom.

1.2 Background of the Project

Ethio telecom, previously known as the Ethiopian Telecommunications Corporation, is an integrated telecommunications services provider in Ethiopia, providing all telecommunication services. The introduction of telecommunication in Ethiopia dates back to 1894. Ethiopian Telecommunications Corporation is the oldest public telecommunications operator in Africa.

In 2010, the Ethiopian government has decided to transform the telecommunication infrastructure and services to world class standard, considering the company as a key leverage in the economic and social development of the country. With the ambitious government plan, the company aims to provide next generation network services based on a world class standard information technology services.

As part of the ambitious plan, ethio telecom introduced a full-fledged information technology (IT) solution named the “Enterprise Resource Planning” (ERP) system aimed in creating an automated work environment and thereby ensure operational efficiencies. It is one of the most popular business management systems, providing benefits of real-time capabilities and seamless communication for business in large organizations.

The ERP Phase II project in ethio telecom is an extension of phase I ERP project to use its ERP oracle licenses and implement the remaining human resource, supply chain management (SCM), strategic project management, and Finance business processes. On Phase one, the organization implemented twelve oracle modules in the areas of Finance, HR and Sourcing and Facilities. On second phase of this project the organization contracted with Softpro international to implement eighteen additional modules. Accordingly, ethio telecom entered a contract with Softpro international Ltd and Tech Mahindra to install, configure and implement telecom-based Tier-1 Oracle ERP across the company within 12 months with a total project cost of USD1.4 Million (ethio telecom contract document, 2016).

1.3 Statement of the Problem

From project management point of view, all projects require an application of effective project management principles and methodologies, in order to ensure that they are accomplished within estimated schedule, budget, scope and required qualities. According to PMI (1999), the project management success criteria are described in iron triangle, which consists of budget, schedule and quality. This shows that project management success is determined by those three iron triangle elements. Moreover, one of the important elements to meet project objective is effective project cost management, which involves the processes of planning, estimating, budgeting, financing, managing and controlling costs so that the project can be completed within the approved budget (PMI 2013).

However, literatures revealed that projects, particularly on the telecom and information technology, are hardly completed on budgeted cost, schedule and desired quality and there are many reasons supplement to such overruns depending on the natures of the projects like inappropriate choice of site, changes in design, delayed approval of payments, poor project management, poor planning of projects, inadequately capturing of cost parameters and full of uncertainties (Merid Taye, 2016). As a result, claims and disputes become common phenomena especially on large projects. Likewise, it is a common practice to see projects in the Ethiopian market (projects like the condominium housing, Sugar factories, electric dams etc) that have been experienced an overrun either in all or in part of the four pillars of project management (i.e, cost, quality, schedule and scope).

Even though there is large body of literature on project cost controls tools and techniques and their role on overall project success, these earlier studies on this subject matter in Ethiopia was mainly focused on the construction sector and are mainly descriptive in nature. Furthermore, to the best of the researcher's knowledge, there is hardly any study that has paid attention on assessing project cost management practices and computing their impact on the overall success of project management in the telecom sector. This indicates for the need of more researches on the impact project cost management on the success of projects in the Ethiopian context.

Thus, by investigating the project cost management practice of ERP Phase II project implementation in ethio telecom, as a case study, this research is expected to empirically test the impact of project cost management on the overall success of the project.

1.4 Research Questions

In order to achieve credible conclusion, this research paper aims to answer the following general and specific research questions:

1.4.1 General Research Question

- I. What is the impact of project cost management practice used for the ERP phase II project implementation in ethio telecom on the overall success of project?

1.4.2 Specific Research Question

- i. What kind of techniques were used for project cost management planning, in ethio telecom ERP phase II implementation project?
- ii. What kinds of techniques were used to estimate the total amount of budget needed to complete the ERP phase II project activities and build-up project cost base line, in ethio telecom?
- iii. What project cost controlling and managing techniques were used by the company for the ERP phase II project?

1.5 Objective of the Study

1.5.1 General Objective

The general objective of this research is to examine the impact of project cost management practices on the overall success of the ERP project in ethio telecom.

1.5.2 Specific Objectives

The specific objectives of the research are:

- I. To assess the company's project cost planning being practiced for the implementation of ERP project.
- II. To assess the process in developing project cost estimation and establish cost baseline in the company.
- III. To assess the process of monitoring and controlling the project costs and managing changes to the cost baseline.

1.6 Research Hypotheses

Many previous articles including the PMBOK and unpublished research studies have indicated that the impact of effective project cost management on the overall success of project management is positive and significant. Despite the previous research studies, the following hypothesis has been developed for this case:

H₀: the project cost management in ethio telecom have not impact on the overall success of the ERP phase II project implementation

H₁: the project cost management in ethio telecom have positive and statistical significant impact on the overall success of the ERP phase II project implementation

H₀: there is no relationship between project cost planning during the early phase of the project and overall project success.

H₁: There is a positive and statistically significant relationship between project cost planning and overall project success

H₀: There is no relationship between project cost estimating and overall project success in ethio telecom ERP phase II project.

H₁: There is a positive and statistically significant relationship between project cost estimation and overall project success

H₀: There is no relationship between project budgeting and overall project success in ethio telecom ERP phase II project.

H₁: There is a positive and statistically significant relationship between project cost budgeting and overall project success

H₀: There is no relationship between project cost control and overall project success in ethio telecom ERP phase II project.

H₁: There is a positive and statistically significant relationship between project cost control and overall project success

1.7 Scope and Limitation of the Study

Though ethio telecom have been launching different projects and programs in its different divisions, this study tried to compute the impact of project cost management practice on the overall success of the project management by taking the ERP phase II project implementation in the company as a case study.

Thus, this research study is confined to asses the techniques of project cost planning, cost estimating, budgeting and controlling practices in the ERP phase II project and to assess empirically the impact of these management functions on the overall success of the project. Other factors that could affect the success of overall project management like schedule, quality and scope management are beyond the scope of this study.

Since the research is based on a single case study, the result may not be applicable to all projects run by the company, particularly for the vendor sponsored projects, where the project cost management practice is slightly different. Thus, the results of the research study may not be used to infer to the overall project management practice of the company, yet it can be used as a comparison for similar projects.

1.8 Significance of the Study

Understanding the role of telecommunication infrastructure towards economic and social development, it would be helpful to achieve projects accomplished within schedule, budget and quality. In this regard, it is believed that an effective project cost management is very important in order to provides management with cost related information for making decisions with a view to complete the project with specified the specified constraints.

This study is, therefore, expected to reveal the strength and weaknesses in project cost controlling and monitoring practices in the ERP project implementation and the impact of these management functions on the overall success of the project. Moreover, since existing literatures on cost management are focused on the construction industry, this study which is unique in its nature is expected to add knowledge to the existing literature on project cost management. It is also expected to suggest important recommendations which would be importance for the company, which frequently runs projects ranging from small to big and complex once. Moreover, the study is expected to be used as an input for individuals who are interested in the subject matter to undertake similar studies.

1.9 Organization of the Study

This research paper is organized into five chapters. The first chapter presents the background, statement of the problem, research questions, objective of the study, significance of the study, scope and limitation of the study and brief structure of the study. The second chapter dwells on review of literatures pertinent to the subject matter of the study. Then the third chapter presents the research methodology followed by the analysis and interpretation of data, which is chapter four. Finally, summary, conclusion and recommendations part of the paper is presented in chapter five.

Chapter Two

Review of Related Literature

2.1 Introduction

This part of the paper presents review the general concepts of project cost management and its certain tools and techniques in order to have a better understanding of the subject matter. It also provides definitions of basic terms and review of the Project Management Institution's (PMI) perspective on cost management and other related publications.

2.2 Review of Theoretical Studies

2.2.1 Definitions of Basic Concepts

- I. **Project:** While there are several definitions of projects in the literature, where most of them has noted that project is a temporary endeavor designed to produce a new product, service or result within a specified time, cost, scope and expected quality. According to Tuman (1983), "project is an organization of people dedicated to a specific purpose or objective. Projects generally involve large, expensive, unique, or high risk undertakings which have to be completed by a certain date, for a certain amount of money, with some expected level of performance. At a minimum, all projects need to have well defined objectives and sufficient resources to carry out all the required tasks" (quoted in prabhakar, 2008). The PMBOK (2013) also defines project as a temporary unique process, consisting of a set of coordinated and controlled activities with start and finish dates, undertaken to achieve a specific objective within the constraints of given schedule, cost and resources and specified quality.
- II. **Project Management:** Project management is the work methods that are used to control and manage activities in a project. Project management is becoming a matter of survival for many organizations. Today, organizations do not have the option whether or not to adapt to project management, but on how well project management is implemented (Levi,

2009, quoted in Rawan.K., 2015). According to the Project Management Body of Knowledge (PMBOK, 2013), project management involves the application of knowledge, skills, tools and techniques to project activities in order to meet or exceed stakeholders needs and expectations from a project. Generally, managing a project includes: identifying requirements, establishing clear and achievable objectives, balancing the competing demands for quality, scope, time and cost; adapting specifications, plans, and approach to the different concerns and expectations of the various stakeholder

III. Project Success:

According to the PMBOK, 2013, project success is measured in terms of “completing the project activities within the constraints of scope, time, cost, quality, resources, and risk as approved between the project managers and senior management”

IV. Project Cost Management:

As per PMBOK, 2004, Project cost management includes the processes involved in estimating, budgeting, and controlling costs so that the project can be completed within the approved budget. Primarily, it is concerned with resource costs of schedule activities and is often referred to as life-cycle costing (LCC), which is stated as the process of attaching costs to individual lifecycle stages of the project. It involves acquisition, operating, and disposal costs when evaluating various project alternatives (Ibid).

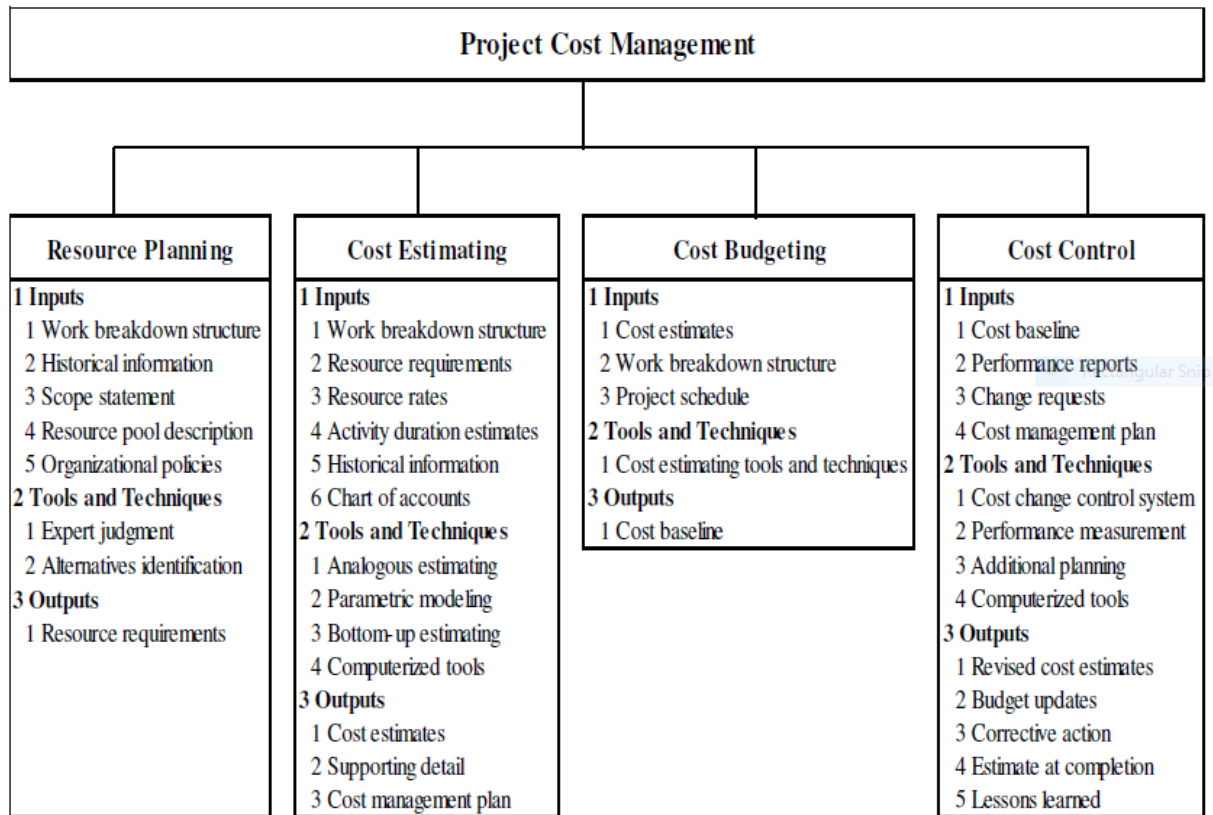
2.3 Project Cost Management

For the purpose of this research, project cost management, as defined above is “the processes involved in planning, estimating, budgeting and controlling costs so that the project can be completed within the approved budget” (PMI, 2013). It is primarily concerned with the determining the cost of the resources needed and cost management to complete the project activities within the approved budget. Project cost management has four components, as shown in

figure 2.1 below, with their inputs to process the activities, the tools and techniques used during the period and the final outputs of the activities. (Ibid)

1. **Resource planning:** determining what resources (people, equipment, materials) and what quantities of each should be used to perform project activities.
2. **Cost estimating:** developing an approximation (estimate) of the costs of the resources needed to complete the project tasks and activities.
3. **Cost budgeting:** allocating the overall cost estimate to individual work items or work packages to establish an authorized cost baseline
4. **Control and manage costs:** monitoring project status, project costs and managing changes to the cost baseline (Ibid);

Figure 2.1: Project Cost Management Overview



Source: Project Management Body of Knowledge (PMI, 2013)

The goal of these functions is to ensure that the project is executed in a cost efficient and effective way¹. The main role of a project manager is to meet the cost, time, scope and expected quality of a project. For example, a report on Standish group IT projects reveal that “only 29% completed on time, 18% failed or terminated and 53% behind schedule and overrun budget” (chery J., 2006) and has noted the importance of effective cost control for overall success of a project.

2.3.1 Project Cost Estimation

This sub- section of the paper will review the elements of estimation and techniques for improving estimates. The main objective of project cost estimation is to develop the required financial resource to complete the project activities within time, cost, scope and quality constraints. According the PMBOK, the inputs for estimation of project cost includes the human resource management plan, scope baseline, project schedule, risk register and project's Scope Statement and Work Breakdown Structure (WBS). On the other hand, the most common methods to develop estimates are by comparing the project to previous efforts, using historical data and statistical models, or bottom-up estimation with each task, expert judgment and project management software.

According to Guo-li, (2010) project cost estimation and budgeting activities are very important and influences all areas in both planning and execution of a project. It is important to keep track of total costs as well as costs for different work packages in a project. Similarly, Antvik & Sjöholm, (2007) has highlighted that a professionally developed budget does not only control the project costs, but also creates good conditions for development of a well-functioning cash flow in the project. The consequence of insufficient cash flow in a project is often connected to large extra costs and delays as there is a high risk for a temporary stop of the whole project activities. Furthermore, according to Adisa Olawale & Sun, (2010), cost estimation should be based on the

¹ The descriptions presented in this section are substantially adopted from the PMBOK 2013

project scope, the WBS and be connected to the project plan. To reach a correct estimation it is important that each activity is estimated based on the conditions of the execution of the specific activity. Since there are several factors that are uncertain in a project, a reserve cost can be assigned to activities with a low level of detailed information or work packages with potential high financial risks (quoted in Par karlsson, 2011).

Ahuja (1994) stated that project cost estimation is a primary part of any project especially the construction industry. The accuracy of estimates from conceptual design through detailed or bid estimates can affect the success or failure of a construction project. He also stated that many failures are the result of inaccurate estimates (quoted in Kwanchai R. 2005). Project cost estimates can be categorized based on conceptual design and design development. In this step, a check estimate is calculated and analyzed to confirm that the design schemes are known at this point. During this stage, the estimates are needed to compare the costs of the initial schemes and to verify the cost of the final design scheme. However, the actual details of systems and materials are not complete (Ibid).

Feathersen (1986), quoted in Kwanchai R. 2005, states that the cost estimates used in project appraisal can be defined as generalized economic costs which are used to study the feasibility of the project.

Theoretically, the price will begin with an estimate cost that is agreed to by the owner and contractor. This estimate will become contract price and is converted to the project control budget that will be used to control the project costs. It is very important to establish a well-organized cost estimate based on the appropriate accounting codes so the project management can convert the project estimate to the project budget (Ibid)

According to an article published by digital check², project cost estimation and controlling the cost in the midst of the project are considered to be the most challenging aspects of project cost management. Accordingly, it has been highlighted that while undertaking the initial project cost estimation, the most important elements to be considered are the work breakdown structure (WBS) along with human resources and procurement planning. There are a number of methods and strategies involved in project cost estimation and planning. The article has highlighted that, though in most cases costs are expressed in monetary values, they can also be measured in other units of measure such as staff hours, materials used, or facilities required. While undertaking the project cost estimation, it is very important to create a detail WBS, where each work package and each activity related to those work packages. It is also believed that for smaller projects cost estimation can be done through a bottom-up approach but for larger projects it is not feasible to go to this detail rather other estimating techniques can be considered for better estimation. The accuracy of project cost estimate can be improved by using “three-point model”, which is derived from “expert judgment and past experience, has come to be known as the program evaluation review technique (PERT) and uses three estimates to determine the approximate range of costs of the project. The range consists of the Most Likely (CM), Optimistic (CO), and Pessimistic (CP) estimates” (Ibid), which will give a weighted average estimation as follows:

$$CE = (C_O + 4C_M + C_P) / 6$$

Project costs can be divided into two main types: direct costs and indirect costs. While direct costs are costs related to labor, transport and materials generated directly by the project, indirect costs are generally linked to the overhead and general administration cost of the project, Pinto (2010).

² This part of the literature review is substantially taken from the articles on project management best practices, which published on digital check website: <https://www.digitalcheck.com/project-cost-management-1/>

Moreover, the treatment of contingency amounts can be one of the routine problems in establishing a project budget in terms of cost accounts (Civil and Environmental Engineering, 2004, cited in Kwanchai R. 2005). In order to identify an appropriate contingency to be added to the base estimate, a risk analysis of uncertainties needs to be performed (Ibid). Thus, an appropriate estimation and budgeting of those activities are very important for the overall success of the project.

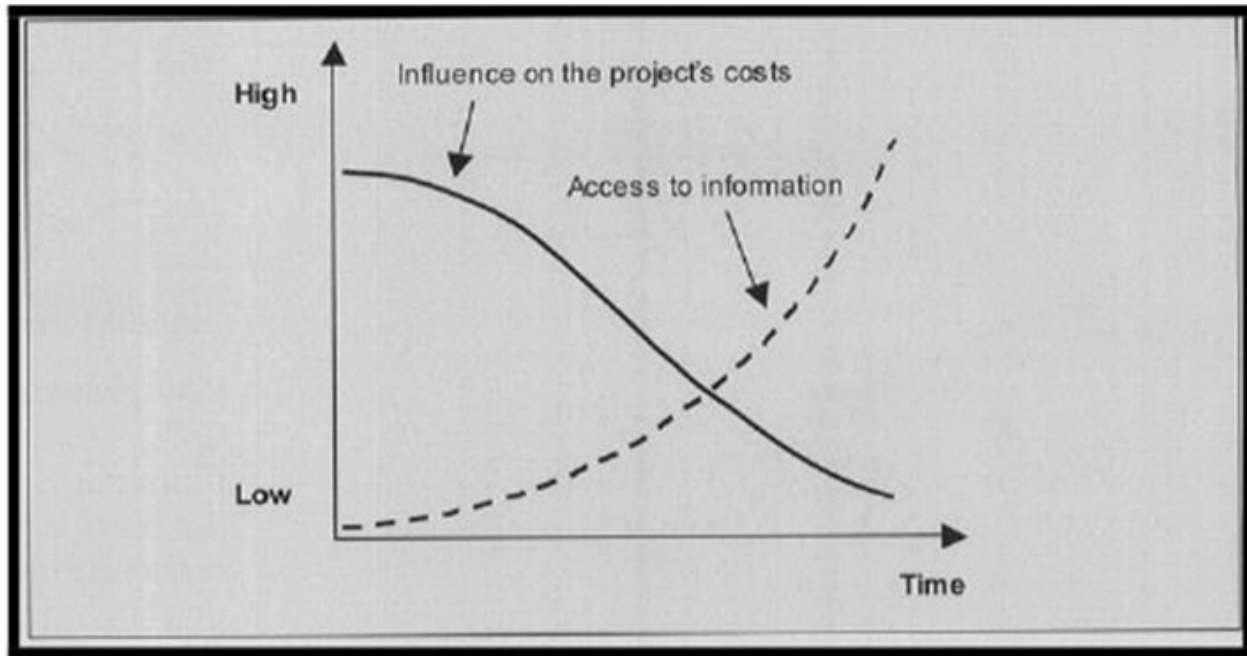
2.3.2 Project Cost Budgeting

According to the PMBOK, cost budgeting is the process of accumulating cost of individual work packages to establish an authorized cost baseline, which will be used as point of reference for for measuring project performance

According to Jason Owen et al (2007), in small projects, the project cost budgeting part could be included in the project cost estimation phase. But for large projects it is important to build up the project budget considering contingency and allowance budgeting as well. Accordingly, the authors have illustrated the following two cost budgeting tools namely, Contingency and Allowance Budgeting and Strategic Budgeting for proper establishment of the budget. These techniques make attempts at improving the budgeting process. While contingency and allowance budgeting attempts are made to develop and communicate a plan for achieving better estimates with all employees, the Strategic Budgeting is simply arbitrarily cutting, like 50 percent on the initial project estimates.

The contingency and allowance are important cost elements to accommodate for risk or unforeseen costs for appropriate establishment of the budget. Overlooking these cost components could impact proper project execution. According to Karslen and Lereim quoted in Jason Owen et al (2007), “the problem budgeters’ face is what is known as the Information /Influence gap” as shown in figure 2.2 below.

Figure 2.2: The Information/Influence gap



Source: Karslen and Lereim cited in Jason Owen et al (2007)

They have also highlighted that, one way to overcome such problem is “to overcome such gaps in project cost management is to develop and communicate the cost build-up process within the organization. The starting point for building the budget starts with clear understanding of budgeting components that includes the base estimates, contingency estimates, allowances and budget reserves” (Ibid).

2.3.3 Project Cost Control

Generally, it is believed that cost management is an extremely important elements of project management to run it successfully. The estimated cost and determined budget, which are considered as the project planning processes, is the baseline of the financial aspects in the project and it should be supplemented with a continuous update and accurate control of the costs that the budget can be used effectively in a project (PMI, 2013). Cost control is the process of comparing actual expenditures to the baseline cost plans to determine variances, evaluate possible alternatives, and take appropriate action. Guo-li, (2010) has highlighted that cost control should not only include comparison of planned value and actual cost of each work package, but also should include analysis of the earned value for the costs spent in the project. A correct performance

analysis of the current financial status is necessary in order to develop forecasts of future, and final, costs of the project. There are several techniques as stated on the PMBOK used to monitor and control the cost of a project. Some of the advanced techniques are: Earned Value Management, total to-Complete Index (TCPI), Forecasting, Variance Analysis, and Performance Reviews, each of which is discussed below.

- I. **The Earned Value Management:** As stated in the PMBOK, the earned value management (EVM) is an analytical method by which one can measure the actual performance of a project. The EVM is used to monitor your project in terms of schedule and cost. Through the EVM, one can be able to understand whether the project is on-budget. If it is not, it implies for the project manager to take corrective action. EVM principles can be extended to forecasting, TCPI, and Variance Analysis. EVM is an input to project performance reviews.
- II. **Forecasting:** the EVM helps to forecast the future performance of a project. The forecast is based on the current actual performance. The forecasting method helps to determine the schedule delay and the corrective action, such as Crashing, required to get the project back on track. In addition,
- III. **The Variance Analysis:** is the comparison of expected project performance to the actual cost performance. This analysis is believed to be helpful for the project manager to understand the causes of variance, if any and preventative and corrective actions are determined based on the variance analysis.
- IV. **Performance reviews:** Performance reviews compare cost performance over time, schedule activities or work packages overrunning and underrunning the budget, and estimated funds needed to complete work in progress

2.4 Review of Empirical Studies

As stated in the theoretical review, a successful project is the project which has accomplished within agreed quality, maintained its schedule, and remained within budgetary costs. Several researches have outlined the issue of poor time and cost performance of construction projects worldwide. In a study of 8,000 projects, J. D. Frame (1997) quoted in Aftab et al (2012), found that 84% of the projects were experinaced an overrun in either of the three performance criteria

(iron triangles). Moreover, according to Flyvbjerg, et al (2003) quoted in Aftab & et al (2012), in a global study on cost overrun issues in transport infrastructure projects covering 258 projects in 20 nations concluded that “9 out of 10 projects face cost overrun.” Aftab & et al (2012), have also identified that time and cost performance is the fundamental criteria for success of any project. In their research study on the, time and cost performance in construction projects in Southern and Central Regions of Peninsular Malaysia, have revealed that 92% of construction projects were overrun and only 8% of project could achieve completion within predefined schedule, budget and quality. The projects have experienced between 5-10% time overrun. Likewise, 89% of the projects were facing the problem of cost overrun with overrun between 5-10% of contract price. Similarly, Akewushola et al (2012), in their study of “Effect of Project Management on Project Success”; have also highlighted the existence of a significant relationship between project cost and acceptability by clients, quality and business success, Project quality and technical success.

Moreover, a recent study in Ethiopia by Solomon Berhanu (2017), on the impact of project cost management practice on the success of the project management in HEINEKEN Brewery Share Company Kilinto Phase 2 Project, has revealed that project cost management, explained in terms of resource planning, cost estimating, cost budget and cost control has significant association with the overall success of the project management.

Derrick C. Nwagbogwu (2011), has investigated the correlation between project management effectiveness and project success, using the Pearson product-moment correlation. The researcher was used a two Likert scale surveys designed to measure the dependent variable of project success and the independent variable of project management effectiveness. Using the Pearson product-moment correlation coefficient to examine the relationship between project management effectiveness from the front-end phase of the project life cycle and project success, Derrick C. Nwagbogwu (2011), has revealed that positive relationship does exist between rational decision making during the early phase of the project and project success.

The Project Success Assessment Questionnaire (PSAQ), which has been used by Sallant and Dillman (1994), Shenhar and Dvir (2007), and Shenhar et al. (2001) to investigate project success, has four main dimensions, namely, project efficiency, impact on customer/user, business and direct

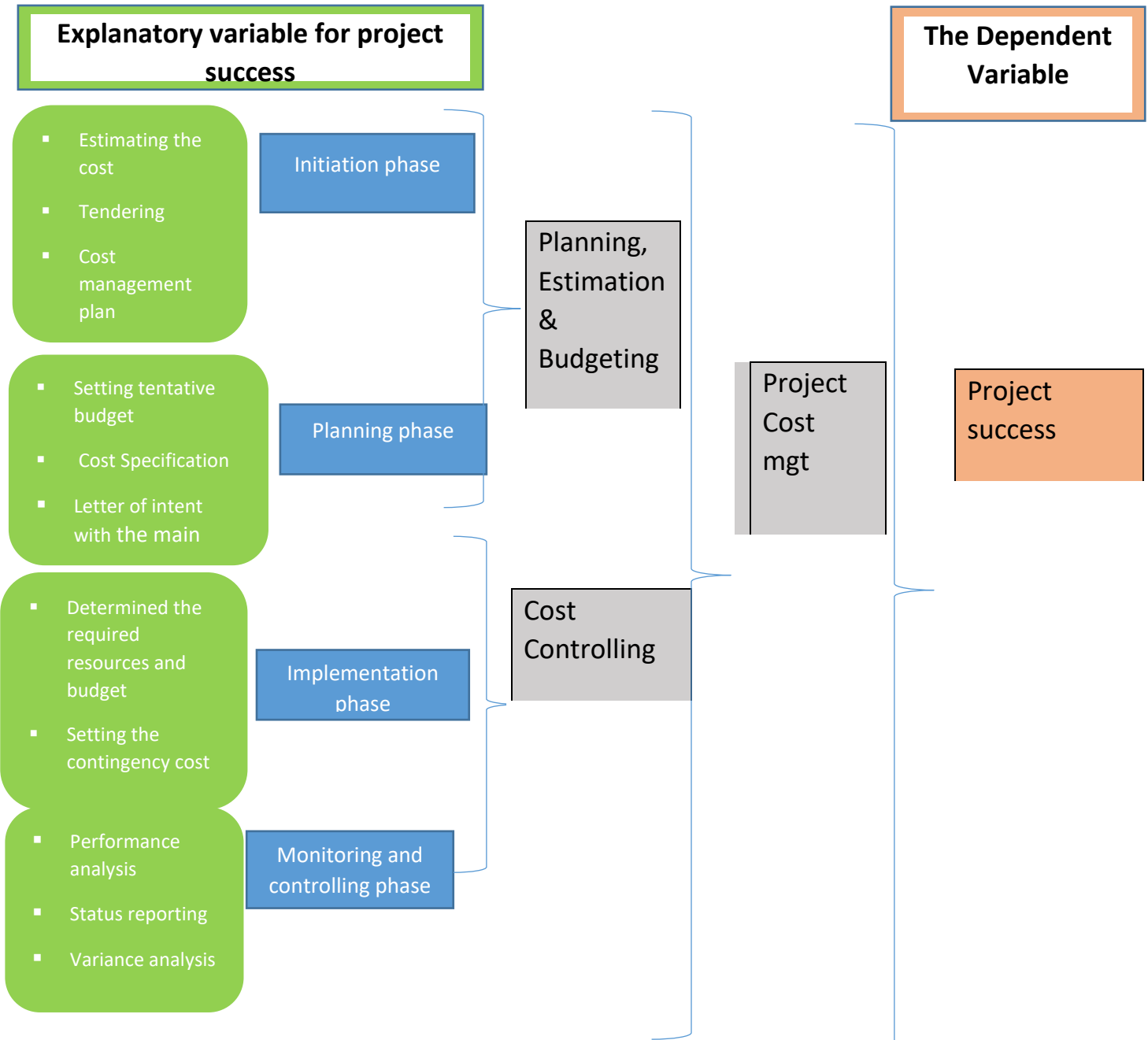
organizational success, and preparation for the future. These four success dimensions are believed to link project management to the end user's satisfaction and to reduce the rate of project failure.

The PMEC has been used by Morrison and Brown (2004) to measure project management effectiveness. The Project Management Effectiveness Construct (PMEC) was designed by Morrison and Brown to assess the multiple dimensions and levels of projects and to integrate various internal and external factors to capture a better view of the processes and capabilities of managing projects. For this study, project management effectiveness was operationally defined as two constructs, rational decision making and goal clarity, as measured by the PMEC (cited in Derrick C. N. (2011))

2.5 Conceptual Framework

On the basis of the review of literature described in the immediate previous sections, the conceptual framework is a combination of the various findings in literature which have been grouped and arranged to a framework which guided this research in an attempt to provide a solution to the research problem. The conceptual framework is illustrated below.

Figure 2.3: Conceptual framework of Cost Management through the project life-cycle



Source: Derived from the theoretical and empirical perspective of project success factors

Chapter Three

Research Design and Methodology

This section of the study presents the research methodology used to assess the impact of project cost management on the overall success of the project. It also describes and justifies the data type and sources, target population, the method used in data collection and methods of data analysis.

3.1 Research Design

The research design adopted for this study is a quantitative survey design and descriptive research approach, where research questions were designed in such a way that they address the impact of project cost management practices on the overall success of a project. While the impact of project cost controlling on the overall success of the project is computed using empirical analysis, the process of project cost planning, cost estimating, budget and monitoring and controlling practice used by ethio telecom in its ERP phase II project is assessed using qualitative data analysis. Data gathered from survey, interview and document review was categorized and described to assess the company's practice in these cost management functions.

3.1.1 Model Specification

To investigate the impact of project cost management practice on the overall success of the project, an extensive review of different methodologies and models have been undertaken. As a result, the following multiple linear regression model is designed for this purpose.

$$Y_i = \beta_0 + \beta_1 X_1 + \beta_2 X_2 + \beta_3 X_3 + \beta_4 X_4 + \ell$$

Where: Y_i is overall success of the ERP Phase II project implementation in ethio telecom, β_0 is intercept, where the regression line crosses the Y axis, X_1 = Cost Estimating, X_2 = Cost Budgeting, X_3 = Cost Control, X_4 = Planning and ℓ = the residual amount.

Using such model, previous studies such as Fredrick Ogolla and Makori Moronge (PhD) (2016) and Solomon Berhanu (2017), have successfully measured the “Determinants of effective monitoring and evaluation of government funded water projects in kenya: a case of nairobi county” published in the Strategic Journal of Business & Change Management and “The Impact of Project

Cost Management on the overall Success of Project Management: The Case of HEINEKEN Brewery Share Company” respectively.

3.2 Sample Population

The study target population are project team members who have been involved in the project planning and implementation of the ERP phase II project in ethio telecom. That is, people who have been directly involved in the ERP phase II project activity such as: project staffs, project managers, project monitoring and controlling managers or officers and project finance team members working in ethio telecom. The total number of employees who have participated in the implementation of ERP system phase II in ethio telecom was 34.

Since the number of staffs involved in the implementation of ERP phase II project in ethio telecom were small and almost all of them are easily reachable to the researcher, which is suitable to facilitate delivery of the questionnaires as well as easy to follow up to increase the response rate for the questionnaire, the researcher purposefully takes the entire population in the study.

3.3 Data Types and Sources

According to Currie (2005), combining several methods in the same single study is important to triangulate the result of each method involved. Relying on a single method can adversely affect the reliability and validity of the results and ultimately affecting the conclusions drawn and the recommendations made. Accordingly, to achieve the research objective, this research study used both primary and secondary data sources. While primary data was collected using questionnaires and in depth interview, secondary data was collected from documents related to the project like project report status, project contract document, project closer or exit reports.

3.4 Method of Data Collection

The methods of data collection used in this research study are questionnaires, and documents reviews.

- **Questionnaires:**

- Questionnaires with Likert scale was formulated and administered to the target population.

- **In-Depth Interview**

In order to strength the findings obtained through survey, an in-depth interview with key informants was also conducted on the process of project budget preparation and controlling. Some informants who have direct relation with the project were selected based on their position, role in the project and availability of information.

Accordingly, discussions on the performances of project panning, project cost estimation, budgeting and project cost monitoring and controlling tools employed in the ERP phase II project have been made with them. The source of key informants and their respective numbers are presented in the table below.

Table 1: Source of Key Informants

S/N	Division/department	No. of key informants
1	Financial Control and Analysis	3
2	Project Manager	1
3	Project team	2

- **Document Review:**

So as to cross-check the results of the questioner and interview, further critical document review on contract manuals, project cost estimation, project status report has been undertaken.

3.5 Method of Data Analysis

This study employed both quantitative and qualitative methods of data analysis. The data that obtained from primary and secondary source was carried-out through coding and classifying analyzed. That is while descriptive analysis was employed to analyze the qualitative data, statistical methods (percentages, frequency, and mean), empirical regression and correlation analysis were used to analyze the quantitative data. To this end, the relationship between the dependent variable (the success of project) and the independent variables (project cost management practices) are analyzed using multiple linear regression model analysis at 10 percent of level of confidence with the help of the statistical software (SPSS) version 20. As mentioned above, to reinforce results of the regression analysis, information obtained through interview and critical document review was also supplemented in the analysis.

3.6 Ethical Consideration

With regards to ethical consideration, the purpose of the study was clearly communicated to the organization and to each respondent. Thus, data was collected with the consents of the organization and individuals who have participated in the survey and interview. Moreover, the data sourced from the organization and individual participants are kept confidential.

3.7 Validity and Reliability

The survey questions were developed based on the conceptual framework of the study designed to address the intended research questions and objectives. In order to ensure, the validity and reliability of the survey questions, an in-depth discussion was made with the advisor on the contents and its structure. In addition to this, the questionnaire was reviewed by three project managers in ethio telecom, as a pilot test.

More interestingly, the reliability or internal consistency of the research questions was evaluated using the Cronbach's alpha test, which is the most common method to measure the reliability or internal consistency of a set of items or scales. Generally, a reliability coefficient of 0.70 or higher is considered acceptable.

As shown in the table below, the overall Cronbach's Alpha results of the survey is 0.817, which is considered as acceptable. That is, the result suggests that the items have relatively high internal consistency.

Table 2: Reliability Statistics

Cronbach's Alpha	N of Items
.817	21

Source: results of the survey

The reliability result for each research questions is presented in annex 3, shows a Cronbach's Alpha value ranges from 0.79 to 0.84, which indicates that each of the independent and dependent variables had acceptable internal consistency.

Chapter Four

Data Analysis and Discussion of Results

4.1 Introduction

This chapter presents results of the empirical regression and interpretations about the impact of project cost management on the overall success of ERP phase II project implemented in ethio telecom. The effectiveness of the project cost management was measured by *plan cost management, estimate project cost, project budget* and *project cost controlling*. On the other hand, the project success dimension aspect of the study was measured by the impact of the project on operational efficiency, user satisfaction, effectiveness of the cost management method and completion of the project within budget. To this end, multiple linear regression model was employed to investigate the impact of the independent variable (project cost management components) on the dependent variable (project success). In addition to this, the correlation between the dependent variable and the independent variables were evaluated using the Pearson product-moment correlation coefficient.

In order to supplement the empirical analysis, a descriptive analysis have been undertaken. For this purpose, a critical document review and interview with key informant was made. Thus, the descriptive analysis of the project is undertaken based on the information sourced from; project contract manual, project closure or exit document and interview with key informants

4.2 Respondents Response Rate

A total of 34 questionnaires was distributed all individuals, who have participated in the ERP phase II project implementation in ethio telecom, out of which 32 questionnaires were filled and collected. Despite frequent reminders, 2 respondents were not able to fill and return the questionnaires. Thus, the response rate is 94%, which is significantly higher than the recommended response rate for analysis (at least 50% of the respondents according to Mugenda (2003)).

4.3 Descriptive and Correlation Analysis

Once again, before the actual empirical regression analysis, a simple bi-variate relationship analysis between the dependent and independent variables is briefly presented below. Unlike the multiple regression analysis, simple correlation analysis attempts to quantify the direction of association between two variables. Thus, an assessment of the correlation matrix between success of the project and all the independent variables are positively related.

As mentioned above, the impact of project cost management on project success was measured by effective project cost planning, project cost estimation, project budgeting and effective project cost controlling. Hence, respondents were asked to rate the effectiveness of these project cost management practices in ERP phase II project implemented in ethio telecom using Liker scale. The Liker scale was designed on a 5 scale; where 1 stands for strongly disagree, 2 for disagree, 3- neutral, 4- agree and 5 stands for strongly agree. A mean score of [0-1.5] indicates that the respondents strongly disagreed, mean result between (1.50 - 2.50] means they disagreed, (2.50 - 3.50] means the respondents were neutral, (3.50-4.50] means they agreed and a mean above 4.50 indicates the respondents strongly agreed.

As shown from the table below, the mean score falls in the ranges of 3.5 to 3.9, which suggests that respondents are agreed on the effectiveness of project cost management method employed by ethio telecom for its ERP phase II project for the successfulness of the project.

Table 3: Descriptive Statistics

	N	Mean	Std. Deviation
Plan	32	3.88	.554
Estimate Cost	32	3.66	.483
Budget	32	3.56	.504
Control cost	32	3.56	.504
Success	32	3.75	.718
Valid N (listwise)	32		

Source: results of the survey

Table 4: The Correlation Matrix

		Correlations				
		Plan	Estimate Cost	Budget	Control cost	Success
Plan	Pearson Correlation	1	.196	.029	.260	.487**
	Sig. (2-tailed)		.282	.875	.150	.005
	N	32	32	32	32	32
Estimate Cost	Pearson Correlation	.196	1	.157	.290	.582**
	Sig. (2-tailed)	.282		.389	.107	.000
	N	32	32	32	32	32
Budget	Pearson Correlation	.029	.157	1	.365*	.401*
	Sig. (2-tailed)	.875	.389		.040	.023
	N	32	32	32	32	32
Control cost	Pearson Correlation	.260	.290	.365*	1	.579**
	Sig. (2-tailed)	.150	.107	.040		.001
	N	32	32	32	32	32
Success	Pearson Correlation	.487**	.582**	.401*	.579**	1
	Sig. (2-tailed)	.005	.000	.023	.001	
	N	32	32	32	32	32

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

* . Correlation is significant at the 0.05 level (2-tailed).

Source: results of the survey

Though the above simple correlational and mean analysis gives an important insight to the simple relationship between the dependent and independent variables, it is still difficult to justify whether the project costs management had an impact on the overall performance. Thus, the subsequent discussions present the empirical estimations of the impact of project cost management on the overall performance of the project.

4.4 Regression Analysis and Discussions of Results

4.4.1 Preliminary Data Analyses

This preliminary analysis presents a briefly multicollinearity tests and residuals autocorrelation test, which are described briefly in the below sub-sections.

4.4.1.1 Multicollinearity Test

It is also paramount important to test for multicollinearity before undertaking the actual regression analysis. Multicollinearity is a phenomenon in which two or more explanatory variable are highly correlated. Most of the time, explanatory variables in a multiple regression model might correlate to each other and one assumption of linear regression is absence of such correlation. One of the indicators or methods to know whether there is multicollinearity problem or not is the variance inflation factor (VIF). The VIF test tells us how much one independent variable depends on other variables. Hence, in the presence of multicollinearity problem, the value of VIF is greater than 10, however, if the result of VIF is less than 10, it implies that multicollinearity is not a problem (Gujarati, 2004). As shown in the table below, the VIF is far below ten, which implies that multicollinearity is not a problem of this model.

Table5: Multicollinearity Test (VIF)

Coefficients ^a			
Model		Collinearity Statistics	
		Tolerance	VIF
1	Plan	.910	1.099
	Estimate Cost	.896	1.116
	Budget	.858	1.165
	Control cost	.768	1.302

a. Dependent Variable: Success

Source: results of the survey

4.4.1.2 Residuals Autocorrelation Test

In the multiple linear regression, another assumption is that the error term should not correlated with its own previous value. In this study the Durbin-Watson (D-W) d-test is used for testing of the residuals autocorrelation.

The basic principle of the D-W d-statistics is that:

- If the calculated d is greater that the upper d value of the table for a given sample size and number of parameters, Autocorrelation is not a problem

- If the calculated d value is, however, less than the lower d value of the table, one needs to worry about autocorrelation problem.
- If the calculated d value is between the upper and lower boundaries of the d value of the table, it is inconclusive region and needs other statistical test to check for serial correlation.

Since the Durbin-Watson d statistic is obtained as 2.475 (table 7 below) and the corresponding tabulated value (for a sample (n) of 32, number of regressors excluding the intercept (k) of 4 and at 10% level of significance) is 0.978 and 1.509 for the lower and upper boundaries of the D-W d-test respectively, which is greater than the upper d-value, residual autocorrelation is also not a problem for this model.

The regression result shown in table 6 below, indicates that project cost management explained by **plan cost management, project cost estimation, budget and control costs** have demonstrated positive and statistically significant relationship with the project success. This empirical evidence suggests that project cost management practices had an important impact on the success of the ERP phase II project implementation in ethio telecom.

Table 6: Results of Multiple Linear Regression

Coefficients ^a						
Model	Unstandardized Coefficients		Standardized Coefficients	T	Sig.	
	B	Std. Error	Beta			
	(Constant)	-2.677	.931		-2.874	.008
1	Plan	.421	.155	.325	2.720	.011
	Estimate Cost	.590	.179	.396	3.295	.003
	Budget	.313	.175	.220	1.788	.085
	Control cost	.427	.185	.299	2.304	.029

a. Dependent Variable: Success

Source: results of the survey

That is, while project cost management measured by cost planning, cost estimation and control costs are positive and statistically significant at 5 percent level of significance, project cost management measured by budget is positive and statistically significant at 10 percent level of significance. That is, at 5% level of significance, project cost plan had a 0.011 level of significance, cost estimation a 0.003 level of significance and cost control had a 0.029 level of

significance, where all factors have a less than 5 percent level of significance. However, project budgeting had 0.085 level of significance which is still valid and statistically acceptable at 10 percent of level of confidence.

As per the result of the multiple regression analysis, in the table above, the equation specified in chapter three $Y_i = \beta_0 + \beta_1X_1 + \beta_2X_2 + \beta_3X_3 + \beta_4X_4 + \epsilon$ becomes: $Y = -2.68 + 0.42X_1 + 0.59X_2 + 0.31X_3 + 0.43X_4$. The regression analysis indicates that the overall success of the project is estimated to increase by 0.42 units for a unit increase in project cost planning. Likewise, a unit increase in the other independent variables (cost estimation, budget and project cost control) would lead to a 0.59, 0.31 and 0.427 increase in the overall success of the ERP phase II project respectively. Taking all other independent variables at zero, Project success of the ERP phase II project is found to be -2.68. From this empirical regression, it can be inferred that project cost estimation contributed most to successfulness of the ERP project implementation in ethio telecom.

Moreover, the regression model gives a high level of goodness of fit with adjusted R-square (R^2) value of about 59.8 percent. This indicates that about 59.8 percent of the variation in the dependent variable (ERP phase II project success) is explained by the variation in the explanatory variables.

Table 7: Goodness of Fit of the Model

Model Summary ^b										
Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Change Statistics					Durbin-Watson
					R Square Change	F Change	df1	df 2	Sig. F Change	
1	.806 ^a	.650	.598	.455	.650	12.534	4	27	.000	2.475

a. Predictors: (Constant), Control_cost, Plan, Estimate_Cost, Budget

b. Dependent Variable: Success

Source: results of the survey

The important thing in the ANOVA regression result, in table 8 below, is the F test, which is the statistical significance of the overall model. Since the calculated F-test is 12.53, which is greater than the F- critical value (3.95) at 5% level of significance, the model employed for the analysis is statistically significant.

Table 8: ANOVA Result for the Regression

ANOVA ^a						
Model	Sum of Squares	df	Mean Square	F	Sig.	
1	Regression	10.400	4	2.600	12.534	.000 ^b
	Residual	5.600	27	.207		
	Total	16.000	31			

a. Dependent Variable: Success

b. Predictors: (Constant), Control cost, Plan, Estimate Cost, Budget

Source: results of the survey

Generally, results of the regression analysis indicate the existence of positive and statistically significant relationship between the success of ERP phase II project in ethio telecom and the project cost management practices. Thus, results of the regression analysis recommend rejecting the null hypothesis, which states none existence of relationship between project cost management practices and overall project success in the ERP project implementation in ethio telecom, and acceptance of the alternative hypothesis. Similarly, the impact of individual variables, Project cost planning, cost estimation, budgeting and controlling have demonstrated a positive and statistically significant impact on the overall success of the project, which suggests rejecting all the null hypothesis and to accept the alternative hypothesis.

4.5 Implementation of the Project Cost Management Practices

In addition to the above empirical evidences, the following findings has been synthesized based on the information collected from the interview with key informants and document review. Thus, while assessing the company's budget construction process and capital budgeting appraisal manual, it has clearly stated that every project needs to be planned thoroughly and get management approval to ensure that project costs are properly estimated and evaluated their business worthiness. In an interview conducted with key informants, the process of planning for ERP phase II project was well designed, where all requirements were tried to capture from all user divisions, lesson from previous similar project (ERP phase I) was taken into consideration and project financing, project scope, stakeholders role and responsibility matrix, communication plan, possible constraints and risk factors etc were identified and documented clearly in the project charter. For this purpose, a consultant was hired, to ensure for the overall project planning and requirement

capturing. In the process of developing the project cost management planning, the company had used expert judgement (both its own staffs and consultants) and meetings, which was characterized by back and forth discussion with the different stakeholders to ensure that all requirements are captured properly. The relatively higher mean score for the project plan cost management, in table 5 above, could justify the standardized processes and procedure that the company has developed for its capital budgeting and budget development.

Similarly, high level cost estimation and budget was also constructed based on the information collected from Oracle's product catalogue for the hardware and software/licenses and previously quoted price for similar project for the integrators. This high-level project cost estimation, however, doesn't mean that the company hasn't given due attention to these cost management practices. According to the information from the interview, since the project was a turn-key project, such high-level cost estimation was mainly used for price negotiation with the potential integrators. For such high-level estimation and budget development, the company had used integrator's previous bid quotation for similar project (i.e, ERP phase I) and expert judgement techniques. With regard to the ERP phase II project cost monitoring and controlling, the company was used manual cost monitoring techniques with the confirmation of project delivery from user divisions. Based on the information collected from the key informants, the project follow-up from the steering committee was not strict enough due to competing priority issues among the project sponsors, which has been resulted in schedule overrun almost by eleven months, partial deliverables of the project modules and additional costs associated with project supervision.

Though the project has delivered most of the modules, which have significant impact on the operational efficiency of the company like the self-service, I-expense, I-recruitment, enterprise asset management and recently project management and project costing modules, some promising modules which were expected to ease further the operational efficiency of the company like Service Procurement, Contract management, asset tracking, oracle time and labor (OTL), performance management, learning management, succession plan and oracle incentive and compensation are not yet operationalized due to limited management support, limited expertise of the integrators on some modules and lack of clear company's policy that supports the implementation of some modules (like incentive and compensation).

Chapter Five

Summary, Conclusion and Recommendations

5.1 Summary

Project management demands that projects to be accomplished within scope, within schedule and within budget or cost. Of these determinants, the project cost management is believed to be the most important aspects in project management that require much attention to ensure that the projects are executed in a cost efficient and profitable manner. Thus, proper project cost management, which involves the processes of planning, estimating, budgeting and controlling costs, particularly at the conceptual phase of a project life cycle, is important aspect.

With this understanding, this research paper makes an effort to o investigate the impact of project cost management practice on project success by taking the ERP phase II project implementation in ethio telecom. While the project cost management practice was measured by plan cost management, estimate project cost, project budget and project cost controlling, the project success aspect of the study was captured by the impact of the project on operational efficiency, user satisfaction, effectiveness of the cost management method. To this end, multi-linear regression model was employed to investigate the impact of the independent variable (project cost management practices) on the dependent variable (project success). Before the actual empirical regression, a preliminary data analysis on the response rate, reliability & validity tests, multicollinearity tests, residuals autocorrelation test, simple bi-variate relationship analysis between the dependent and independent variables were evaluated.

As a result, 34 questionnaires were distributed all individuals, who have participated in the ERP phase II project implementation in ethio telecom, of which 32 questionnaires (94%) were filled and collected. Likewise, the explanatory variables were also checked for any multicollinearity issue using the variance inflation factor (VIF). Thus, the correlation matrix between the dependent variable and the explanatory variables demonstrates a strong and positive relationship. Furthermore, the project cost management components (planning, cost estimation, budgeting and

cost control) have scored a mean value between 3.5 and 3.9, which suggests that respondents agreed on the impact of project cost management on the successfulness of the project.

On the other hand, results of the empirical study reveal that project cost management practice employed by ethio telecom for its ERP phase II project had positive and statistically significant impact on the success of the project. That is, while project cost management measured by cost plan, cost estimation and control costs are positive and statistically significant at 5 percent confidence interval, project cost management measured by budget is positive and statistically significant at 10 percent level of significance. Furthermore, results of the empirical analysis indicates that a unit increase in project cost planning, cost estimation, budget and project cost control would lead to a 0.42, 0.59, 0.31 and 0.427 increase in the overall success of the ERP phase II project respectively. The regression model also gives a high level of goodness of fit with adjusted R-square value of 59.8 percent, which suggests that the variations in the overall success of a project management in ethio telecom ERP phase II project attributed to the combined effect of the explanatory variables and the remaining 40.2 percent of the variation in the dependent variable is explained by other factors.

Thus, results of the empirical analysis direct us to reject the null hypothesis and to accept the alternative hypothesis, which states the existence of positive and statistically significant relationship between project cost management practices and overall project success of the ERP phase II project implementation in ethio telecom.

In addition to the empirical evidences, qualitative analysis based on data collected from interview and document review was also assessed. In the process of developing the project cost planning, the company had used expert judgement (both its own staffs and consultants) and meetings to ensure that all requirements are captured correctly, and proper planning was put in place. Similarly, high level cost estimation and budget was also constructed based on the information collected from Oracle's product shelf and integrator's previous bid quotation for similar project (i.e, ERP phase I) and expert judgement techniques. With regard to the ERP phase II project cost monitoring and controlling, the company was used simple cost monitoring techniques like actual usage versus utilized budget and confirmation of project delivery from user divisions for any disbursement.

5.2 Conclusion

Based on the regression analysis and descriptive data analysis of the research, the following conclusions were drawn on the project cost management practice and their impact on the overall success of the project.

The project planning including the project objectives and goals, project scope, stakeholder analysis, roles and responsibilities, deliverables, project risks and risk mitigations is generally prepared and documented well. However, the way the project costs and budget is administered and determined was poor and the way the overall project followup and cost controlling was ineffectual. Therefore, it can be concluded that the project cost controlling, and monitoring practice was poor and it is one of the major factors that led to significant delay of the project. Furthermore, the limited attention given by the project sponsors or project owners and limited expertise of the integrators has deterred the organization from utilizing all the features of the system and thereby ease its operational activities

Results of the empirical study supported that a positive and statistically significant impact does exist between project cost management explained by cost planning, estimation, budgeting and controlling costs and overall success of the ERP phase II project in ethio telecom. This implies that project success can be improved by improving project cost management practices. It also suggests that project sponsors could impact the success of their project by giving due attention to the project cost monitoring starting from the conceptual phase of a project life cycle. That is, every additional effort in the project cost management is more likely to impact the overall success of the project.

5.3 Recommendation

Considering the above conclusion, this study makes the following recommendations;

- Results of the empirical regression verified that project cost management, explained by project cost plan, cost estimation, determining budget and cost control, is found to be an important determinant of project success in ethio telecom. Hence, project sponsors or owners should consider the need of proper project costs management throughout the

project life cycle and due attention should have to be given to the project cost management activities of the company because mishandling of it, will lead to failure of projects.

- Due to competing priorities among the project sponsors, the project didn't get proper attention and follow-up. Because of this, some of the modules which were promised during the project initiation and which have significant impact on the company's overall operational efficiencies are not yet implemented. Thus, it is highly recommended that project sponsors should have to give due attention for the projects under their supervision either through direct supervision or through delegation.
- It has been observed that considerable number of features of the ERP system, for which payment has made, are not in use. Hence the company should have to give due consideration to benefit from these features and to take lesson in the identification process of requirements for similar future projects.
- This study is focused on one determinant factor of the project success. However, in order to provide comprehensive research finding that can be used to infer to the overall project management, future studies that incorporates other factors like project schedule, scope and quality using such model or the order logit model is recommended.

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Annex 1: Questionnaire

ADDIS ABABA UNIVERSITY
College of Business and Economics
School of Commerce
Department of Project Management
Master of Project Management Program

Dear Sir/Madam;

This questionnaire is designed to collect information on **Project Cost Management practices** employed by ethio telecom while implementing its **ERP phase II** project, *on* which I am conducting a study as a partial fulfillment of my MA programme in Project Management.

Thus, this is kindly requesting you to complete the attached questionnaire, which is intended to assess the project cost management practices used in ERP phase II project and to test empirically the impact of these project cost management practices on the overall success of the project.

I kindly request you to respond to the questions as honestly as possible. Please also note that all the information will remain confidential and the findings of this study will be used for academic purpose only. I would like to express my heartfelt gratitude in advance for your time and cooperation.

For any clarification or question, please contact me through;

- Email: heron.alemseged@ethiotelecom.et
- Telephone: 0911508748

Thank you

Instructions:

Please indicate your level of agreement or disagreement with each of the below statements in reference to the ERP phase II project implemented by ethio telecom. Please Tick (√) where appropriate in the space provided for each question.

S/N	Description of Scales	Scale				
		Strongly disagree	Disagree	Neutral	agree	Strongly agree
Questions Related to Project Cost Planning						
1	While introducing the ERP phase II project in ethio telecom, the company has developed required policies and procedures for planning, managing and controlling project costs					
2	Ethio telecom has used the project scope statement and work breakdown structure (WBS) to plan the required resources and manage.					
3	While introducing the ERP phase II project in ethio telecom, the company has established a project charter					
4	Ethio telecom has attempted to recruit the required number of people from each functional division, while launching its ERP phase II project					
5	Ethio telecom has attempted to avail all required materials and facilities, while launching its ERP phase II project					
Questions Related to Project Cost Estimation						
6	While estimating the required budget for the ERP phase II project, ethio telecom has determined clearly the quantity of resources and the amount of time to complete the project					
7	While developing the required budget for the ERP phase II project, ethio telecom has used information from previously completed similar projects					
8	While estimating the required budget of the project, ethio telecom has developed realistic estimates by taking into account all factors affecting the work activities and duration					
Questions Related to Project Budgeting						
9	For the ERP phase II project, ethio telecom had prepared a cost baseline or time-phased project budget					
10	Contingency costs have been considered along with the total budget of the project					
11	Ethio telecom has maintained a separate cost center for all resources used in the ERP phase II project					

12	The total budget for ERP phase II project was contained a detailed information regarding the quantity & cost of the resources in each project elements by using their distinct account numbers maintained in the chart of accounts					
Questions Related to Project Cost Controlling						
13	Information about the project progress or variance analysis were reported on a regular basis					
14	During the execution of the project, there was regular project follow-up by the project manager					
15	During the execution of the project, there was a regular follow-up on the project status by steering committee to see for any cost variance					
16	The company had taken immediate action in case of cost overrun.					
Questions Related to Project Success						
17	The ERP phase II project implementation was completed within or below budget					
18	Results of the ERP phase II project met the customer's requirements					
19	The customer/user divisions are satisfied with the deliverables of the ERP phase II projects					
20	ERP phase II project has contributed to the company's overall operational performance					
21	In general, the project cost management methods used by ethio telecom for its ERP Phase II project was helpful for the overall success of the project					

The end

Thank you for your kind cooperation!

Annex 1: Interview Checklist with Key Informants

Purpose: This interview is being conducted to assess the process of project cost management practices in ethio telecom ERP phase II project implementation.

1. How was the overall planning of the ERP phase II project? Were the project requirements, scopes, schedule and possible constraints or risks identified and communicated to all stakeholders?
2. What was the process while determining project cost and budgeting?
3. Did the project experienced a cost overrun?
 - a. If yes, what are the main reason for the cost overruns?
 - b. If no, how did you manage it?
4. In your opinion, do you think that the project budget, schedule and quality of deliverables were monitored closely throughout the project's lifecycle?
 - a. If yes, what were the means employed mostly?
 - b. If no, any reason?
5. How was the project budget management practice employed in the company for its ERP phase II project? What method of cost monitoring was used?
6. Did the project deliver the desired objective?
7. Does it meet the needs or expectation of all stakeholders? If not, what are the reasons

Thank you

Annex 3: Reliability Statistics

Item-Total Statistics

	Scale Mean if Item Deleted	Scale Variance if Item Deleted	Corrected Item- Total Correlation	Cronbach's Alpha if Item Deleted
While introducing the ERP phase II project in ethio telecom, the company has developed required policies and procedures for planning, managing and controlling project costs	63.91	50.668	.656	.791
Ethio telecom has used the project scope statement and work breakdown structure (WBS) to plan the required resources and manage.	63.91	51.378	.840	.784
While introducing the ERP phase II project in ethio telecom, the company has established a project charter	63.91	54.410	.404	.809
Ethio telecom has attempted to recruit the required number of people from each functional division, while launching its ERP phase II project	63.41	58.314	.338	.811
Ethio telecom has attempted to avail all required materials and facilities, while launching its ERP phase II project	64.28	55.951	.547	.802
While estimating the required budget for the ERP phase II project, ethio telecom has determined clearly the quantity of resources and the amount of time to complete the project	64.78	51.725	.710	.790
While developing the required budget for the ERP phase II project, ethio telecom has used information from previously completed similar projects	64.53	57.031	.382	.809
While estimating the required budget of the project, ethio telecom has developed realistic estimates by taking into account all factors affecting the work activities and duration	64.91	56.604	.388	.809
For the ERP phase II project, ethio telecom had prepared a cost baseline or time-phased project budget	64.31	58.480	.281	.814
Contingency costs have been considered along with the total budget of the project	64.56	59.480	.237	.815
Ethio telecom has maintained a separate work order for all resources used in the ERP phase II project	64.25	61.290	.013	.829
The total budget for ERP phase II project was contained a detailed information regarding the quantity & cost of the resources in each project elements by using their distinct account numbers maintained in the chart of accounts	64.88	55.532	.484	.804
Information about the project progress or variance analysis were reported on a regular basis	65.22	55.660	.568	.801

During the execution of the project, there was regular project follow-up by the project manager	64.09	51.120	.626	.793
During the execution of the project, there was a regular follow-up on the project status by steering committee to see for any cost variance	64.81	55.964	.531	.803
The company had taken immediate action in case of cost overrun.	65.22	59.338	.340	.812
The ERP phase II project implementation was completed within or below budget	65.09	54.152	.719	.794
Results of the ERP phase II project met the customer's requirements	64.28	66.144	-.330	.845
The customer/user divisions are satisfied with the deliverables of the ERP phase II projects	64.03	64.805	-.270	.836
ERP phase II project has contributed to the company's overall operational performance	63.66	62.233	.000	.819
In general, the project cost management methods used by ethio telecom for its ERP Phase II project was helpful for the overall success of the project	65.09	55.959	.419	.807

Source: results of the survey