ADDIS ABABA UNIVERSITY SCHOOL OF COMMERCE

Project Management Master's Program

Factors Affecting Effective Project Cost Management:

The Case of Nashcon Construction PLC

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Declaration

I hereby declare that this project paper entitled "***FACTORS AFFECTING PROJECT COST MANAGEMENT: The Case study of Nashcon Construction PLC***" is my original work. This work has not been submitted for a degree to any other university, and that all sources of material used for the paper have been duly acknowledged.

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Sirgute-Silassie Azanaw

Endorsement

This thesis entitled “Factors Affecting Effective Project Cost Management” a case study in Nashcon Construction PLC has been submitted to Addis Ababa University School of Commerce, Department of Project Management, with my guidance and approval as a university advisor.

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Acronyms

BMI: Business Monitor International Research

LCC: Life Cycle Costing

PLC: Private Limited Company

WBS: Work Breakdown Structure

PMBOK: Project Management Body Knowledge

PMI: Project Management Institute

SPSS: Statistical Package for the Social Sciences

APM: Association for Project Management

MSP: Microsoft Project

Abstract

A project is successful only if it is completed within the approved time, quality and budget. Studies show that most projects in Ethiopia are not completed on time because of cost and schedule overrun due to lack of proper project cost management. Managers in the construction industry therefore need to focus on project cost management in order to attain project success.

This research is done on a company called Nashcon Construction PLC. The main objective of the research is to improve the company's Project Cost Management process by identifying factors which affect the effectiveness of the process most.

The researcher employed a mixed research approach to investigate the problem under study. Both quantitative and qualitative data was collected through questionnaire and interview from personnel's in Nashcon Construction PLC. The study concepts were developed through literature survey that enables to find out the variables. Furthermore, In order to obtain more insight on the cases, the study used review of document in the company and also an in-depth interview was conducted to assess the current status of the company's project cost management implementation.

The research result shows that though Nashcon Construction PLC is implementing the three cost management components (Cost Estimation, Cost Budgeting, and Cost Controlling) currently, its cost management system is poor and needs improvement. After data analysis it was discovered that the company's cost management process is affected more by factors related to Cost Budgeting this shows that the company has of poor cost budgeting system. Furthermore poor scope definition, not updating budget after variation of changes, inaccurate cost budgeting, incomplete design, poor WBS design, material price fluctuation, allowance of numerous variation during project implementation, inaccurate/impractical schedule, poor allocation of costs, failure to site investigation, change in schedule and construction methods, not having a risk register are identified as factors which affect the cost management process of Nashcon Construction PLC.

Finally, based on the analysis of the results, recommendations have been proposed to improve the current project cost management of the company.

CHAPTER ONE

INTRODUCTION

1.1. Back ground

1.1.1. Back ground of the Study

The construction industry in Ethiopia is playing an important role in the countries annual growth as well as economic development. The government of Ethiopia has been paying a big attention to the industry by allocating billions of dollars for the construction of new housing systems, road constructions, rail ways, and massive power generator schemes across the country. Compared to other African countries, Ethiopia has shown a significant growth in the construction sector for the last five years. The data taken from BMI research in 2015 shows that the annual construction growth rate in Ethiopia is 11.6%, Tanzania 9.5%, Kenya 9%, Uganda 9% and Nigeria 5.8%. (Barnes, 2015)

However in many developing countries including Ethiopia, despite the construction industry's significant contribution to the economy, the industry remains generally low. According to (Azhar, 2008) many projects in developing countries encounter considerable time and cost overruns, fail to realize their intended benefit or even totally terminated and abandoned before or after their completion.

In a properly managed projects success rate is high. If efficient project cost management tool is implemented throughout the project life cycle of a construction project, there is high probability that it will be completed in the given schedule of time and cost. (Pinto J.K., 1988) Thus, effective project cost management implementation could improve the success of a project and could bring a high impact on the construction industry.

Contractors should give more focus on identifying which cost control tool governs their management system for without these systems, projects proceed aimlessly with very little

oversight, without a clear understanding of status, and without a well-thought-out action plan to bring the project back on track in the event of obvious disruptions.

Achieving project completion within the estimated cost is fundamental criteria for success of any project. Hence cost management is one of major components of project management and important tool to control and improve cost performance of projects. Project cost management helps in keeping the project within its defined budget. Poor cost management often result in cost overrun of project.

This paper discusses the concept of project cost management, importance of cost management in construction projects, and the three principal project cost management components: cost estimation, budgeting, and cost control.

The main aim of this paper is to identify the major factors which affect the effective implementation of cost management process in a construction company called Nashcon Construction PLC. Based on a listing of causal factors derived from literature study and field study the questionnaire survey is conducted. Through careful data analysis the most important factors are identified and based on the result recommendations are given to improve the company's cost management process.

1.1.2. Back Ground of Nashcon Construction PLC

Nashcon construction PLC is a Construction Company founded in 2010G.C in Addis Ababa Ethiopia. So far it has undertaken different projects and has interacted with different clients both local and international. The company has been engaged in constructing different governmental and private infrastructures.

The company is lead by two major management teams: Financial management team (administration, accountants, cashiers, store keepers, purchasers…) and Technical management team (Office Engineering team, project managers, site team leaders…). Both the financial and technical management teams are lead by the owner and General Manager of the company and work together for the success of the company.

Currently the company has seven under construction projects and is involved in many consulting and supervision activities.

Though Nashcon is trying its best to work for its Client's satisfaction, finishing projects within the planned schedule of time and cost has been its greatest struggle.

The company's assessment on the existing projects shows that the company's cost management system is not effective and there is a great time and cost overrun in all the current construction projects.

Therefore, this study tries to identify which factors affect most the company's cost management in order to strengthen the current system as well as to come up with other new improved and effective cost management systems.

1.2. Statement of the Problem

In order to keep the development and sustainability of the construction industry, the construction sector should be competitive and productive in the market.

Many projects start with good ideas, huge investments and great efforts. However, most of them do not achieve much success.

From a project management perspective, it has been argued that a successful project should fulfill the following criteria (Kerzner, 2009): (1) completed within the as-planned time and cost; (2) implemented at the specified levels of project performance; (3) delivered according to project stakeholder needs and expectations; and (4) completed within the defined and agreed scope.

Moreover, to be successful at overall project management there should be balance between managing cost, time and quality (PMI, 1999). The lack of a cost management system can affect profits and business processes of the projects and implementing appropriate cost control help us to improve the project success. As a result, managing the project cost will affect project success or failure.

This research is a case study on a construction company Nashcon construction PLC. Though Nashcon Construction PLC has a good reputation for completing projects to the satisfaction of Client's quality wise, recently, it encountered bad reputation in completing the project on time. Most of the projects which are currently under construction have faced time and cost overrun. Recent management meeting minutes show that all current projects are behind schedule. According to the management team, project delays of the company are caused by:

- Continues revision of designs and vague and unclear design and work orders;
- Delay in purchasing project materials on time due to shortage in cash flow and price fluctuation;
- Costs exceed due to no proper planning, inaccurate cost estimation and improper budgeting;
- Poor communication between project management and project team or subcontractors;
- Poor manpower and material utilization management on sites,

The company is therefore struggling to complete the projects on time with the agreed financial budget.

This study is thus intended to improve the current project management system of Nashcon for a better performance in the construction industry. The study will evaluate the existing traditional method of project cost management of the company through questioners and interviews. Mmore over the study will try to identify the strength and weakness of the company's cost management system using the principals and project cost control tools (Cost estimation, Budgeting and Project evaluation and control). Based on data analysis researcher will suggest solutions and alternative options to improve the system.

1.3. Research Questions

This project work tries to answer the following general and specific research questions

General Research question

What are the major factors which affect implementation of effective project cost management of Nashcon Construction PLC?

Specific Research questions

- ✓ Which principal component of cost management influences the cost management of Nashcon construction PLC most?
- ✓ Which factors affect the cost estimation process of the cost management system most?
- ✓ Which factors affect the budgeting process of the cost management system most?
- ✓ Which factors influence the cost controlling process of the cost management system most?

1.4. Objective of the Study

General Objective

The general objective of this study is to identify the critical factor affecting the cost management process of Nashcon Construction.

Specific Objectives

- ✓ To study the extent of implementation of cost management process of Nashcon Construction PLC.
- ✓ To identify the critical factors affecting cost management process (cost estimation, cost budgeting, cost control) of Nashcon Construction PLC.
- ✓ To statically examine the impact of factors affecting cost management process and develop analysis based on the factors identified.

1.5. Significance of the Study

Studies show that most projects are affected constantly with cost overrun and escalation in spite of following the cost management process. This in turn results in project delay, Client dissatisfaction and a loss on the contractor's side.

This study will focus on project cost management implementation in the company called Nashcon Construction. It is intended to improve the company's project cost management system and to reduce the ongoing current project cost overrun and delays. The research study explores vital factors affecting effective implementation of cost management in construction. Interpretation of these factors is helpful for the construction professionals who work on the different phases of construction in order to successfully deliver the project. The principle goal of the research study is to provide crucial information about factors influencing cost management process to the project management teams who qualify the project's success. So this research is focused mainly on exploring the affiliated factors that are prone to affect the project's success.

In addition, it is a fact that the construction sector is becoming a major part of the country's development. Therefore improving its efficiency and effectiveness will have a great impact on the country's economy. The researcher believes that this paper will provide some insight for further researches on project based cost management of the construction industry.

1.6. Scope of the Study

There are many factors that could lead to project failure, scope creep, cost overrun and project delay. Among them are those factors that affect the success of overall project management such as time, cost and quality. Nevertheless, this paper focuses only on cost management of projects.

A broader view of project cost management is often referred to as life-cycle costing. Life cycle costing (LCC) is the process of attaching costs to individual lifecycle stages of the project. Life cycle costing involves acquisition, operating, and disposal costs when evaluating various project alternatives. LCC is therefore concerned with the overall life cycle of the project. This case study however does not include LCC of a project cost management. But the paper tries to emphasize the impact of cost management on projects by defining its most important elements: planning, estimating, budgeting and controlling.

Due to lack of proper cost management system most companies fail to achieve successful project completion resulting in significant amount of cost overrun. This study focuses on assessing cost management practices in construction projects. However, this study was limited to a company called Nashcon construction PLC.

This assessment of project cost control in the company intends to improve the existing traditional cost control system. The existing system has limitation in measuring the current actual performance as well as proactively warns if the future trend suggests cost and/or time deviations.

Although the study will focus only on a single company, as much as possible, the researcher tried to include all the necessary facts and data by gathering the information through different techniques to increase its credibility to be used as a reference for further researches.

Moreover, though the study focuses on Nashcon construction PLC, it can also be used as a source for other further researches on project cost management.

1.7. Organization of the Study

This study is organized in five chapters. The first chapter is the introduction which includes the background to the study, problem statement, research questions, research objectives, scope and limitation of the study, significance and organization of the study.

Chapter two discusses relevant literatures from the perspectives of scholars in this area of study.

Chapter three constitutes of the methodology employed in the study. It includes the research design, source of data, sample and sampling technique, data collection techniques, data analysis.

The fourth chapter of this work includes analysis, presentations and interpretations of the collected data.

The final chapter, chapter five provides summary of major findings, the conclusion of the study and suggests possible remedial recommendations.

1.8. Definition of Key Terms

Operational definition for Key terms in this Project Work is expressed as follows:

Project: Project Management Institute (PMI) defines a project as follows: A project is temporary endeavor undertaken to create a unique product or service (Gardiner, 2005).

Project delay in construction: delay could be defined as the time overrun 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 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: it is the amount by which the actual cost exceeds the budgeted, estimated, original, or target cost. It is the excess of actual cost over planned budget, it's the additional amount of money required to deliver the project. (Avots, 1983).

Project management: according to Atkinson R. Project management is about how to apply a large numbers of resources to accomplish a unique, complex, one-time task within time, cost and quality constraints. (Atkinson, R., 1999)

Project Cost Management: Project cost management includes the processes required to ensure that the project is completed within an approved budget. More specifically, it includes the processes involved in estimating, budgeting, and controlling costs so that the project can be completed within the approved budget.

Construction cost estimating: is the process of forecasting the cost of building a physical structure. Contractors and clients both concern about the financial impact of cost overruns and failing to complete a construction project.

Cost budgeting: covers the understanding of what costs will be incurred, when and why, and clearly follows on from the estimating activities and the award of the project.

Cost control: includes examining and understanding the reasons for both positive and negative cost variances. Cost control typically uses detailed plans and schedules which were devised at the early stage of the project life cycle.

Work Breakdown Structure (WBS) – A deliverable-oriented grouping of project elements that organizes and defines the total work scope of the project. Each descending level represents an increasingly detailed definition of the project work.

CHAPTER TWO

LITERATURE REVIEW

2.1. Introduction

This literature review part of the research creates conceptual understanding on the theory and experience related to research problem proposed. Therefore few most related concepts and theories including project management, Project cost management; its components (cost estimation, budgeting and cost controlling) will be discussed here. The chapter also discusses factors which influence the cost estimation, budgeting and controlling process.

2.2. Project Management

According to (PMI, 1999), Project management is the application of knowledge, skills, tools and techniques to project activities to meet project requirements. The term project management is sometimes used to describe an organizational approach to the management of ongoing operations. This approach, more properly called **management** by projects, treats many aspects of ongoing operations as projects in order to apply project management to them.

On the other hand the Association for Project Management defined project management as the application of processes, methods, knowledge, skills and experience to achieve the project objectives (APM, 2012).

Kerzner (2009) stated that, project management is the planning, organizing, directing, and controlling of company resources for a relatively short-term objective that has been established to complete specific goals and objectives.

As per (Kliem, R.L. & Ludin, I.S, 1999) Project management is the tools, techniques, and processes for defining, planning, organizing, controlling, and leading a project as it completes its tasks and delivers the results.

2.3. Project Cost Management

Cost is one of the main considerations throughout a project's lifecycle and can be regarded as significant parameter of a project and the driving force of project achievement. Project cost management includes the processes required to ensure that the project is completed within an approved budget. It is the process of ensuring that a project is completed within the approved budget and that cost variances are proactively managed throughout the project.

According to PMBOK Project cost management includes the processes required to ensure that the project is completed within an approved budget. More specifically, it includes the processes involved in estimating, budgeting, and controlling costs so that the project can be completed within the approved budget. Project managers must make sure their projects are well defined, have accurate time and cost estimates and have a realistic budget that they were involved in approving. Costs are usually measured in monetary units like dollars

(Shwalbe, 2014) said that project cost management includes the processes required to ensure that a project team completes a project within an approved budget.

Abeselom (2008) stated that construction projects cost management is a process which complements the broad functions of estimating and tendering, scheduling, cost control and financial control. Accordingly, contractors need to have a cost management system which spans from the tendering up to the completion stage which integrates estimating, tendering, budgeting and controlling.

According Karim Eldash (2012) Construction cost management is the entire process, which ensures that the contract amount is within the cost limit of client's approved budget.

Project cost management involves defining the cost of the project and then making sure that it is delivered within the approved budget. It includes three principal components: 1. cost estimation, 3. budgeting, and 4. control.

These processes interact with each other and with the processes in the other knowledge areas as well. Each process may involve effort from one or more individuals or groups of individuals based on the needs of the project. Each process generally occurs at least once in every project phase. Although the processes are presented here as discrete elements with well-defined interfaces, in practice they may overlap and interact in ways not detailed here. Project cost management is primarily concerned with the cost of the resources needed to complete project activities. However, project cost management should also consider the effect of project decisions on the cost of using the project product. For example, limiting the number of design reviews may reduce the cost of the project at the expense of an increase in the customer's operating costs. (PMBOK, 1999).

Estimation of construction cost involves identification quantification and valuation of the various direct and indirect cost components. The budget which is prepared based on these cost components will be the baseline for the cost controlling process. Accordingly, contractors' cost management system should consider and integrate these tasks.

As Abeselom (2008) noted, contractors, on receipt of work tender, prepare cost estimates and based on the estimates, they quote the estimated price of the works and then agrees for executing the work followed by drawing up their plan of work based on the quantities and costs reflected in the bill of quantities (BOQ) which forecasts the contractors' commitment for resources, input costs and the profits which they expect. Once construction commences, contractors attempt to accomplish the work in a way that keep the cost of carrying out the work, with in the money that will be reimbursed to them as a result of valuation of completed works. These processes comprise the tasks which most contractors are involved and which need systematic approach.

2.3.1. Project Cost Estimation

Project cost estimation is the process of developing an approximation (estimate) of the costs of the resources needed to complete project activities including: labor, equipment, materials, services and any contingency costs. In approximating cost, the estimator considers the causes

of variation of the final estimate for purposes of better project management. It involves identifying and considering various costing alternatives. (PMBOK, 1999)

(Stephen D. Scuette & Roger W. Liska, 1994) State that estimating is the fundamental process of answering the question "How much is the project expected to cost?" The financial commitment to a construction project is very large, and inaccurate project estimates can have a detrimental effect on all parties.

According to (Pico, 2014) cost estimation is defined according to the preliminary working drawings, plans or possible blueprints.

(Akintoye, 2000) defines cost estimation as a technical function that is conducted in order to predict the total cost of the project in a given item with the use of the maximum available information and resources related to the project.

(Forbatok, 2014) stated that estimating costs involves developing an approximation or estimate of the costs of the resources needed to complete a project. Project managers must take cost estimates seriously if they want to complete projects within budget constraints. After developing a good resource requirements list, project managers and their project teams must develop several estimates of the costs for these resources.

Cost estimates prepared in the early stages of a project allow a client to evaluate most economical tenders, secure funding or perform a cost-benefit analysis. These estimates also often become the basis for cost control during project delivery (Dominic Ahiaga-Dagbui, Simon D Smith, Peter ED Love and Frn Ackermann, 2015).

According to (PM4DEV, 2015) there are three types of estimates:
Rough Estimate- Project managers develop the first budget estimate used before or during the project initiation phase to get a quick estimate of what the costs of the project should be and to see if there is an interest in the organization or donor. It provides a rough idea of the project budget. Estimates are based on high-level objectives and it provides a quick view of

the project deliverables. Most rough estimates, depending on the project, have a range of variance from – 25% to +75%. The project manager shouldn't invest too much time in creating these initial estimates. Rough estimates are simply used to have a good look at the project's initial perceived costs, and should not be used as a definitive estimate or an estimate for RFP purposes.

Budgetary Estimate- is used to allocate money into an organization's budget. Many organizations develop budgets at least two years into the future. Budgetary estimates are made one to two years prior to project completion. The accuracy of budgetary estimates is typically -10 percent to +25 percent, meaning the actual costs could be 10 percent less or 25 percent more than the budgetary estimate.

Definitive Estimate- is the most accurate of the estimate types, but takes the most time to create. The definitive estimate makes use of the work breakdown structure; which is a deliverables oriented decomposition of the project scope. This type of estimate is usually made during the planning phase of the project to get detailed information on all the project costs. The definitive estimate is used to for estimating final project costs and used for making purchase decisions where the actual costs are required before making payments. The definitive estimate is used throughout the project life cycle and updates as soon as new information is made available. The accuracy of this estimate is normally -5 percent to +10 percent, meaning the actual costs could be percent less or 10 percent more than the definitive estimate.

2.3.2. Project Cost Budgeting

Budgeting refers to the process of aggregating the estimated costs of individual activities or work packages to establish an authorized cost baseline. Cost estimates can be aggregated by work packages in accordance with the work breakdown structure (WBS). The work package cost estimates are then aggregated for the higher component levels of the WBS (work breakdown structure) and ultimately for the entire project.

Budgets serve a vital role in the management of projects. They function as a control mechanism that sets the standard against which future expenditures will be monitored. With timely data collection and reporting, they enable the project team to identify and report current problems, and to anticipate future ones. And when done properly, they relate the use of resources with the achievement of corporate goals. (PMBOK, 1999)

Determining the budget involves allocating the overall cost estimate to individual work items to establish a baseline for measuring performance. It involves allocating the project cost estimate to individual material resources or work items over time. These material resources or work items are based on the activities in the work breakdown structure for the project. The main goal of the cost budgeting process is to produce a cost baseline for measuring project performance and to determine project funding requirements.

According to (Weetman P, 2003) budget is a financial evaluation of the future courses of action set out in a business plan. It is a detailed plan which sets out in terms of money, the plans for income and expenditure in respect of a future period of time.

The budgetary process fits into the overall planning process, it evaluates the financial consequences of the plan and provides financial feedback so that plans can be monitored and revised (Marsh C., 2009).

There are two key reasons the budget of your project is important. First, the approved budget is what drives **project funding**. It will tell stakeholders how much money is needed and when it is needed. Your ability to get people, equipment, and materials when they are needed is dependent on the funding provided as a result of your budget. The second reason budgeting is important for your project is because it provides the basis for **project cost control**. By measuring the project's actual cost against the approved budget, it can be determine if the project is progressing according to the plan or if corrective action is needed. This is accomplished using a cost baseline. (Sunidjijo, 2015)

Budget management consists of a series of tasks and steps designed to help manage the costs of the project, the steps are: Defining the Budget, Executing the Budget, Controlling the Budget and Updating the Budget

According to (Martinez, 2014) there are six pieces of information that you will need to prepare your budget...

Activity cost estimates: are the individual cost estimates for each activity or work package that your project will complete. For each activity, the cost estimate generally includes direct labor, materials, equipment, services, facilities, and information technology.

The basis of estimates: documents supporting details about the activity cost estimates. For example, how the estimates were made, assumptions and constraints, and the confidence level of each estimate.

The scope baseline: will let you know if there are any funding constraints that may be mandated by your organization, contracts, or other groups such as government agencies.

The project schedule: will be used to determine the cost budget over time. For a specified calendar period, you can combine the activity costs that are planned for that period to determine the time-phased budget.

Resource calendars: will let you know which resources are assigned to the project and when they are assigned. Using each rate for each resource and combining with the project schedule you can then determine resource costs over time.

Contracts for products or services: will be used to determine their costs and can then be included to the project budget.

As per (PM4DEV, 2015) Budgeting serves as a control mechanism where actual costs can be compared with and measured against the budget. The budget is often a fairly set parameter in the execution of the project. When a schedule begins to slip, cost is proportionally affected. When project costs begin to escalate, the project manager should revisit the Project Plan to determine whether then scope, budget, or schedule needs adjusting. To develop the budget, the applicable cost factors associated with project tasks are identified. The development of costs for each task should be simple and direct and consist of labor, material, and other direct costs.

Change in budgeting could result in: low client satisfaction, high cost of project, delay of the project, possible lower quality and additional draw on scarce public resources, reduced support/confidence of community and elected officials or client.

2.3.3. Project Cost Controlling

Project cost management is control and is viewed as the process of monitoring the status of the project to update the project budget and managing changes to the cost baseline. It involves taking the cost baseline and performance data about what has actually been done in order to determine the work accomplished against the amount spent. (PMBOK, 1999)

Controlling costs involves controlling changes to the project budget. Controlling project costs includes monitoring cost performance, ensuring that only appropriate project changes are included in a revised cost baseline, and informing project stakeholders of authorized changes to the project that will affect costs. Performance review meetings can be a powerful tool for helping to control project costs. People often perform better when they know they must report on their progress. Another very important tool for cost control is performance measurement.

According to (Amanuel Girma Yismalet & Dixit Patel, 2018) Contractors' cost controlling scheme gives much attention to the material cost component. But attention should also be given to labor and equipment costs for they could affect the project as much as the material component.

In cost controlling practices, an efficient project cost control system is one which generates information that can improve the productivity of resources, track and identify activities that suffer inefficiency and which provides feedback to subsequent estimating, apart from indicating profitability only.

According to Shanmuganathan and Baskar (2016), cost management techniques like cost flow forecasting, cost planning & control and estimate having highest relative importance is the important one to control the cost. Also, as (George Otim, Fiona Nakacwa & Michael

Kyakula, 2017) discussed, the most common cost controlling techniques used by contractors are schedules, budget, work inspections, site meetings, cost reports, monitoring of cost, and performance evaluation, while others did not have well defined control techniques.

2.4. Factors Affecting Project Cost Management

Cost control is an essential element to insure the success of project. Currently, even though various cost control systems are followed by many contractors, cost overruns are evidently frequent problems in the construction industry. (Lichtenberg, 2015) Stated that Project Management (PM) and Cost Engineering (CE) have made tremendous advances during many decades. Nevertheless, we still witness all too frequent severe budget overruns and delays. This in fact shows that contractors should follow effective implementation of cost management process in order to succeed in their business.

According to (Godey J., 1994) cost management is a strategic process that focuses on the customer and on profitability. He also stated that Effective cost management is a process consisting of six steps including: Understanding of what causes the cost and revenue structure of the business, Understand and reduce inter-functional complexity, Provide the tools to manage costs, Involve employees in decisions, Increase effectiveness and continuously improve costs, Measure decisions against the strategic business plan.

The ineffective cost management process will influence the performance of the overall project ultimately. Construction cost estimating is the process of forecasting the cost of building a physical structure. Contractors and clients both concern about the financial impact of cost overruns and failing to complete a construction project. Cost budgeting covers the understanding of what costs will be incurred, when and why, and clearly follows on from the estimating activities and the award of the project. Cost control includes examining and understanding the reasons for both positive and negative cost variances. As all the three processes are interrelated, any deviation in any process affects the final cost of the project.

This part of the literature review tries to provide schematic assessment of different factors which influence the cost controlling systems in terms of cost estimation, budgeting and cost controlling processes.

2.4.1. Estimation Related Factors

Cost estimating is prediction of costs and resources needed to complete the project tasks and activities. The accuracy of such estimate has a serious effect on the time of completion of the project and on the expected profit of the construction contractor. Hence, cost estimators (surveyors, Engineers) should be aware of the factors which influence the accuracy of cost estimation.

Some of the factors which influence cost estimation as identified from different literature reviews include: complexity of project design, incomplete design at the time of tender, poor communication and coordination between project participants, escalation of material prices, unfavorable contract clauses, inaccurate site investigation, non availability of drawing/design on time, unrealistic time schedule imposed in contract, non availability of accurate cost data, poor management knowledge of professionals, lack of understanding of variables to consider in cost analysis, lack of technical know-how, non availability of labour cost data base, lack of professional training, poor scope definition, method used in determining contingencies, unstable prices of construction materials, frequent changes in inflation, unwillingness to give out information, unstable market condition, regulatory approval requirements, project location consideration, discrepancies in contract documentation, accuracy in estimation of direct and indirect cost, co-ordination between client and consultant.

According to Mohammed Hiyassat, Ghaleb Jalil Sweis, Rateb Jalil Sweis, (2018) the top ten factors affecting the accuracy of cost estimate are clear and detail drawings and specification, pricing experience of construction projects, perception of estimation importance, equipment (cost/availability/performance), project complexity, clear scope definition, accuracy and reliability of cost information, site constraints (access, storage, services), material availability,

financial capabilities of the client, and availability of database of bids on similar project (historical data).

Akintola Akintoye (2000) Stated that the main factors relevant to cost estimating practice are complexity of the project, scale and scope of construction, market conditions, method of construction, site constraints, client's financial position, build ability and location of the project.

Asal (2014) identified twelve factors as the most important factors. These factors were: economic instability, quality of firm's project planning and management, relevant experience of estimating team, availability of management and finance plans, ability of estimating team, labor and equipment required, estimating method, project location, periodical payments, accuracy of bidding documents provided by client, competent and leadership of project manager and impact of project schedule (expected delay).

Skitmore and Wilcok (1994) in their research concluded that the main factor determining the rating method (i.e. the method of preparing the unit rates for bill of quantities items) was the item quantity, although this varied in importance between the work sections investigated (ground work, in situ concrete and masonry).

Loannov (1988) emphasized the importance of geologic uncertainty which has a significant effect on project cost. He wrote "Site investigation can reduce this uncertainty and decrease costs by reducing the contingency amounts included in bids".

2.4.2. Budgeting Related Factors

The ability to predict, develop and manage budget is an important skill for every manager in an institution. Therefore, every management level in an organization holds some degree of responsibility towards budget management.

Currently, there are various methodological approaches to budgeting and their application is dependent on goals to be achieved and management techniques. Accordingly there are various

factors which influence the process of budgeting. Some of these factors include: poor WBS definition, inaccurate activity cost estimate, unavailability of supporting details of estimated cost, inaccurate/ impractical schedule, schedule variance, lack of experience in the type of project, incorrect planning and scheduling by contractors, underestimation of project duration, lack of experience of consultant in construction projects, practice of assigning contract to lowest bidder, unavailability of resource calendars, not having a risk register to foresee respective costs, inadequacy of the details of cost related items in agreement , allocation of direct, indirect and joint cost, not implementing project management tools and techniques (primavera, MSP, EVA), not updating budget after variation or changes, less contingency allowance, ineffective frequency of project budget updates, company policies and procedures of cost related items and co-ordination between client and consultant.

Kira Gulpenk , Natalia Tumashik , Yulia Filiasova (2016) stated external factors which influence the process of budgeting as Competition, scientific and technological progress, international relations, macro- and microeconomics, a political situation and the social segment are among such factors. In addition, modern conditions affecting the internals factors are identified as: industrial; technological and organizational; human resources; automation and corporate information systems.

Project size, project simultaneousity and similarity, frequency of the budgeting control system and systematic and documented project risk management application are identified as main factors which affect staying in the budget of an IT project. Barbara Gładysz, Dorota Kuchta (2015)

Mwasi Roselyne Mkanjala in his study established that inflation, inflationary levels, taxation and product pricing affected budget preparation more over the he further established the challenges in budget preparation as lack of Budget preparation skills, lack of training, rigid and non-adaptable budgetary planning and control systems and failure to respond to environmental changes

As Offei-Nyako et al. (2016) identifies, there exist diverse factors which cause the variances between the contract sum and the final accounts. This phenomenon has been a major focus in the contemporary society to organization managers. These factors are identified as price fluctuation, market demand fluctuation, changes in scope of work, and changes in design.

JanHaas, 2014 (The budgeting process), classified the mission, fiscal policies, compensation goals and policies, pricing policies, management style, accountability, debt policies as internal factors which affect the project budgeting and sources of support, government regulation, competition for workers and Inflation as external factors affecting the budgeting process.

2.4.3. Cost Control Related Factors

The aim of project control is to ensure the projects is completed as per the schedule, within the contractual budget according to the quality required. It is a complex task undertaken by project managers in practice, which involves constantly measuring progress; evaluating plans; and taking corrective actions when required (Kerzner, 2003).

In order to achieve a project success, the project manger should follow a proper cost controlling and monitoring system throughout the project cycle. Implementing the proper project control system requires avoiding factors affecting the process.

From various collective literature reviews the following are identified as factors which are related to cost control process: allowance of numerous variations during project implementation, change in schedule, change in construction methods, weak regulation and control, conflict between project participants, lack of proper training and experience of project manager., rework at site, contractor experience in similar project, level of construction and site complexity, often changing subcontractors, poor site management and supervision, change in design / scope, communication errors, force majeure, unpredictable weather conditions., risk and uncertainty associated with project, low productivity of labour, high cost of labour, problems associated with overtime, accidents at site, unqualified/ inexperienced labour, implementation of management information systems in cost updating, co-ordination between client and contractor, not

implementing project, management tools like primavera P6 for monitoring and control, improper/ no maintenance of records for all types of communications and delay in progress payments .

Yakubu Adisa Olawale et al (2010) concluded that the top five factors inhibiting time and cost control in construction practice in the UK were revealed as design changes; risks and uncertainties, inaccurate evaluation of project time/duration, complexity of works, and non-performance of subcontractors. Design change is the single most important factor considered by practitioners as hindering the ability to control not only time but also cost of construction projects.

Akinsola et al (1997) identified and quantitatively examined factors influencing the magnitude and frequency of variations in building projects. These factors include: client characteristics, especially lack of prior experience and knowledge of construction project organization and the production processes; project characteristics, such as type, size, complexity and duration of the project; and project organization factors, such as; design duration, percentage of design completed before tender, procurement and contract type, adequacy of information provided, and number of sub-contractors.

Bubshait and Al-Juwairah (2002) measured and evaluated 42 main factors influencing the construction cost in Saudi Arabia. In identifying their degree of importance by using the severity index for contractors, consultants, owners and a combination of respondents, the study concluded that material cost, incorrect planning, inexperience in managing contracts, and poor financial control on-site are factors that contribute to high construction costs.

Summary of related studies

Mansfield et al (1994) carried out a questionnaire survey amongst 50 contractor, consultant and client organizations in Nigeria and found out that the most important variables causing construction delays and cost overruns are poor contract management, financing and payment of

completed works, changes in site conditions, shortage of materials, imported materials and plant items, design changes, subcontractors and nominated suppliers.

Kumaraswamy and Chan (1998) conducted a more extensive study in Hong Kong using 400 questionnaires after which follow up interviews were held. The study revealed the top ten causes of construction delays from the contractors' point of view as delays in design information, long waiting time for approval of drawings, poor site management and supervision, mistakes and discrepancies in design documents, etc.

According to Divakar K. & Jebin Britto JD. (2018) critical factors affecting effective implementation of cost management process are: Poor scope definition, Inaccurate activity cost estimate, Poor WBS definition, Change in schedule, Unrealistic time schedule imposed in contract, Ineffective frequency of project budget updates, Lack of proper training and experience of project manager, Not implementing project management tools like primavera p6 for monitoring and control.

Al-Momani (2000) examined 130 public projects in Jordan and concluded that the main causes of delays and cost overruns include changes initiated by designers, client requirement, weather, site conditions, late deliveries, economic conditions, etc.

2.5. Conceptual Frame Work

Cost management is a vital part of project management and targeted to achieve satisfactory project cost performance through efficient project planning and execution within the budgeted cost. A change in one of the cost management components (Estimation, Budgeting, Controlling) could result in a change in the overall cost management of the project. Therefore factors which affect one of the three components will affect the project management process.

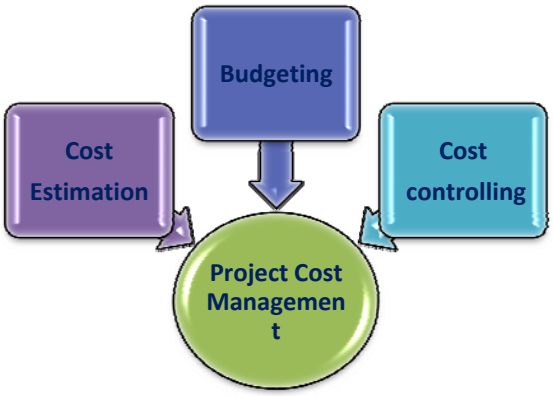


Fig. 2 Components of project cost management

The aim of this paper is to identify factors which affect the effective implementation of project cost management in Nashcon Construction. In order to achieve that, questioners based on various numbers of factors which influence the cost management process were developed, distributed, collected and analyzed in order to evaluate the current cost management status of the company. Finally, based on the data analysis conclusion and recommendations are given for further improvement of the cost management process by confronting the factors which hinder the process most.

CHAPTER THREE

RESEARCH METHODOLOGY

3.1. Introduction

This section will concentrate on the overall research methodology. Therefore research strategy, research design, research type, data type and sources, population and sample size, data collection instrument, method of data presentation, analysis and interpretation, ethical consideration and measurement of reliability and validity test will be discussed in here briefly.

3.2. Research Strategy

Research approaches are plans and the procedures for research that span the steps from broad assumptions to detailed methods of data collection, analysis, and interpretation. Generally there are three research approaches: (a) qualitative, (b) quantitative, and (c) mixed methods.

Qualitative research: is aim to capture opinions and experience that could not be quantified or measured. These methods are focused on obtaining the most correct representation of the qualitative variation, whilst reflecting sensitivity, and collecting much information from few individuals to reflect the depth of the selection, as well as presenting specific or different opinions within a small group. The methods are flexible and could be either an interview without any prescribed response options, or unstructured observations.

Quantitative research: is present data in the form of measurable units and give basis for different kinds of statistical analysis. It is an approach for testing objective theories by examining the relationship among variables. These variables, in turn, can be measured, typically on instruments, so that numbered data can be analyzed using statistical procedures. The final written report has a set structure consisting of introduction, literature and theory, methods, results, and discussion. Like qualitative researchers, those who engage in this form of inquiry have

assumptions about testing theories deductively, building in protections against bias, controlling for alternative explanations, and being able to generalize and replicate the findings.

Mixed methods research: is an approach to inquiry involving collecting both quantitative and qualitative data, integrating the two forms of data, and using distinct designs that may involve philosophical assumptions and theoretical frameworks. The core assumption of this form of inquiry is that the combination of qualitative and quantitative approaches provides a more complete understanding of a research problem than either approach

According to (Creswell, 2003) a mixed methods design is useful to capture the best of both quantitative and qualitative approaches. Both qualitative and Quantitative approaches have their own limitations and strengths. Thus in order to illuminate/minimize the limitations arising from a single method, this paper used a mixed method research approach.

3.2.1. The Quantitative Research Approach

This method was conducted via a structured questionnaire survey developed on factors which have the potential to affect the effective implementation of cost management process in Nashcon Construction PLC. The questionnaires were prepared with a closed type of questions using Likert scale.

3.2.2. The Qualitative Research Approach

In order to obtain more insight than outlined in the questionnaire, in a less structured and more flexible approach a qualitative approach was used. The reasons for using the interview in addition to the questionnaire survey were: to triangulate data obtained from the questionnaire survey; to enhance, expand and create depth to the results of the questionnaire survey by investigating and elaborating on some of the issues highlighted; and to explore the experiences of the sample population in relation to the topical issues revealed after analysis of the data obtained from the questionnaire survey.

Using this approach an interview was conducted on selected few respondents who have better experience in the construction company as well as in the construction industry as a whole.

However, qualitative method has a limitation because of the difficulty in generalizing findings to a large group as limited number of participants was involved in this approach.

3.3. Research Design

Lavrakas (2008) believes that, research design is an overall strategy or plan used to in a research process to provide analysis of explicit testable study research question of a researcher's interest.

According to Poilt and Hungler, (1985) "Research design" refers to the plan or organization of scientific investigation, designing of a research study involves the development of a plan or strategy that will guide the collection and analyses of data.

The aim of this research is to identify major potential factors affecting the Cost Management Process of Nashcon Construction PLC. The study further elaborates which factors influence most the Estimation, Budgeting and Controlling stages.

For the questionnaire survey, research questions were designed and developed from the previous literature reviews. As mentioned in chapter two, there are various factors related to cost estimation, budgeting and controlling processes. After thorough examination of the factors which affect the cost management components, **12** most frequently potential factors identified by the former researchers were selected for each component. This was achieved in two ways: The first approach is by collecting redundant, overlapping and similar factors in to a single factor (for example: in factors related to Estimation, factors listed as luck of technical know-how, luck of professional training, poor knowledge of management are compressed as poor experience and luck of training). The second approach is by focusing on the most identified factors which affect Estimation, Budgeting and Controlling (Thus, after the literature review and analysis, 36 most critical factors which influence the cost management process were short listed).

For the qualitative approach, interview questions were prepared to evaluate the current status of the cost management system of Nashcon Construction PLC. For the interview highly experienced professionals who are in management position and who have direct exposure to the cost management process were selected.

3.4. Research Type

According to (Kothari, 1990) descriptive research studies are those studies which are concerned with describing the characteristics of a particular individual, or of a group. Descriptive research presents a picture of the specific details of a situation, social setting, or relationship. The three major purpose of descriptive research, are describing, explaining and validating the findings.

Shields, Patricia and Rangarjan, (2013) stated that Exploratory research is research conducted for a problem that has not been studied more clearly, intended to establish priorities, develop operational definitions and improve the final research design. Exploratory research helps determine the best research design, data-collection method and selection of subjects.

This research is thus descriptive and exploratory research for it describes and identifies the potential factors which affect effective cost management and explains the validation of findings based on proper data collection and analysis. The research also further more investigates/explores to find out which factors has the most potential effect on the cost management process of the company.

3.5. Data Type and Source of Data

Information for this research was gathered through questionnaires, interviews, related books, journals, reports etc… 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. Therefore for this paper both primary and secondary sources of information were gathered.

3.5.1. Primary Data

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 added to the existing stock of knowledge (Hox & Boeije, 2005).

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 current and gives a better realistic view to the researcher, therefore if conducted properly with a relevant original topic of the research study, degree of accuracy is high

The primary source of information was obtained by administration of questionnaires and interviews to gather information from various department staffs in Nashcon Construction PLC with the knowledge. Personals for the questionnaire were selected based on their experience and exposure to the activities of Cost management, Cost estimation, Budgeting and Cost Controlling in the company.

3.5.2. Secondary Data

Secondary data is the data that have been already collected by and readily available from other sources.

The secondary source of data was also obtained from the records of the existing cost management system, from the available and related materials such as reports from the office under study, minutes collected during various meetings and other documents related to project cost management systems of Nashcon Construction PLC. Moreover the researcher used different related textbooks, journals, dissertations as secondary source of data.

3.6. Sampling and Sampling Techniques

3.6.1. The Population

Mugenda and Mugenda (2003) defined population as the sum total of set of elements, individual, or events sharing a common visible trait. Tull and Hawkins (2008) conquers with Cooper and Schindlers (2008) stated that population can be termed as a set of the whole characteristics where reliable deduction can be made by a researcher.

Therefore population can be defined as the largest section in which verifiable relevant observation least sets called sample are taken from

The target population being studied here are professional staff of Nashcon Construction PLC. For both the interview and the questionnaire personnel which have a direct exposure and involvement in the Cost Management process of the company were selected.

3.6.2. Sampling Technique

A sample is "a smaller (but hopefully representative) collection of units from a population used to determine truths about that population" (Fields, 2005). The sampling technique to be used depends on the type, nature and purpose of the study.

Non probability sampling is often associated with case study research design and qualitative research. With regards to the latter, case studies tend to focus on small samples and are intended to examine a real life phenomenon, not to make statistical inferences in relation to the wider population (Yin, 2003). A sample of participants or cases does not need to be representative, or random, but a clear rationale is needed for the inclusion of some cases or individuals rather than others.

Purposive or judgmental sampling is a strategy in which particular settings persons or events are selected deliberately in order to provide important information that cannot be obtained from other choices (Maxwell, 1996). It is where the researcher includes cases or participants in the sample because they believe that they warrant inclusion.

Thus for this particular study, Non-Probability sampling technique is used. This technique provides a range of alternative techniques to select samples based on the researcher's subjective judgment. More over this sampling method allowed the researcher to focus on the particular subject matter only. In addition, for the population Purposive or Judgmental sampling method was used; this enabled the researcher to choose the relevant sample population which has direct exposure to the research topic.

3.6.3. Sampling Size

Sample size can be termed as a total sum of a sampling unit accessible and in a position to be incorporated in sample under study (Mugenda and Mugenda, 2003).

The researcher tried to select a population of staff members which have direct involvement on the project cost management of the company. Therefore the population of the study for the questionnaires consists of Five (5) of the core Managerial staffs (Admin head, General Manager, Head site Supervisor, Head Office Engineer, Ass. Technical Manager) who manage the overall project activities in Nashcon construction, Thirteen (13) Core project Engineering team members (Design team, Quantity surveyors, Project Managers, Formans, Team leaders, and other team members involved in different existing under construction projects), Eight (8) of the Administration and Finance team members (Site Administrators, Accountants, Cashiers, Purchasers) and Four (4) other employees (store keeper, assistant professional, data collector, Head of transportation and material delivery). Therefore the total number of population of the study will be Thirty (30). The same Five (5) Managerial staffs for the quantitative stage of the research were used for the qualitative stage through interview.

During the questionnaire distribution, the objective, relevance and impact of the research on the current working environment was explained by the researcher briefly. More over a succinct explanation were provided on topics of Cost Management, Cost Estimation, Cost Budgeting and Cost Controlling so that the professionals could have a better understanding to answer the questionnaires fairly and accurately.

3.7. Data Collection Instruments

Rouse (2017) states that information can be collected and measured from a variety of sources logically through a questionnaire. As cited by Saunders, Lewis & Thornhill (2007), Tashakkori & Teddlie (2003) argue that multiple methods of data collection are useful for they provide better opportunity to answer the research questions and allow you to better evaluate the extent to which your research findings can be trusted and inferences made from them.

Primary data collection method was gathered through administration of questionnaires and interview to gather information from various department staffs in Nashcon Construction PLC with the knowledge on Cost Management. Close ended questionnaires were designed and administered to all the selected officials and then collected to obtain relevant information, opinions, and attitudes from the population within a short period of time. More over in order to strength the findings obtained through census inquiry, an in-depth interview was also conducted on the Bank‘s nine credit approving members. This has been done by considering their long years of experience in the company and their direct exposure to the research topic.

In addition, various documents were reviewed so as to cross-check the results of the questioner and interview reliability, and the findings are almost of same is included in the study.

3.8. Method of Data Presentation, Analysis and Interpretation of the Results

According to Brink, (1996) 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.

Data was collected from the primary source of questionnaires. The collected data was then analyzed and interpreted in a way that helps the researcher answer the research questions in order to meet the objective of the study. Conclusions and recommendations were then drawn from the data analysis result.

After questionnaires were collected, they were analyzed using descriptive statistics of SPSS software version 20. The interview questions were categorized and interpreted by hand by the researcher for they are relatively small. The researcher used descriptive statistic method and employed using range, mean, frequency, median, percentage, and tables to present the analysis result. Descriptive statistics are most helpful when the research is limited to the sample and does not need to be generalized to a larger population. And finally, based on the results recommendation and conclusion was given.

3.9. Measurement of Reliability and Validity

Reliability is a measure of the stability or consistency of test scores while **Validity** is the extent to which the scores from a measure represent the variable they are intended to.

As per (Creswell, 2009), employing multiple data collection instruments help the researcher to combine strengthen and amend some of the inadequacies and for triangulation of the data. Hence, in this project work obtained data from both primary & secondary data helped to amplify the triangulation of the data process to increase the reliability and validity of the analysis result from which the conclusion is drawn.

Moreover, structured questionnaire and interview were prepared carefully to avoid ambiguity to maintain a precise and clear response. The selected correspondents for this research were highly experienced and have direct and indirect exposure to the Cost Management system of the company. Therefore it is also the researcher's belief that their answers are credible and valid.

3.10. Ethical Consideration

Ethical considerations in research are very important. They help to distinguish right from wrong and acceptable from unacceptable behaviors on the part of the researcher. Ethical consideration is critical for the integrity, reliability, and validity of the research findings rely heavily on adherence of those principles. (Miller & Jessop, 2012)

Therefore, while preparing this study, the researcher made the following Ethical considerations.

- ✓ The research work was started after getting the willingness and approval of the stated organization.
- ✓ Respondents were clearly communicated about the objective of the research before they are asked to give their answer.
- ✓ The confidentiality of responses and information obtained from the credit performers was kept properly.

- ✓ There was no any physical or psychological damage to them because of the research.
- ✓ Respondents were not asked about their race, religion, etc.
- ✓ The findings of the research were presented without any deviation from the outcome of the research. In addition, the researcher gave full acknowledgements to all the reference materials used in the study.

CHAPTER FOUR

DATA PRESENTATION, ANALYSIS AND INTERPRETATION

4.1. Introduction

This research used a mixed research strategy with a descriptive and exploratory research method in order to collect the research data. 30 questionnaires developed based on the 5-point Likert scale. Each questionnaire contains 36 different factors related to Cost Estimation, Cost Budgeting and Cost Controlling of the Cost Management process. Respondents were asked to give their response to identify which factors affect the Cost management of Nashcon Construction most. In addition data collected through interview was also incorporated on this research analysis. For the interview 5 questions were prepared to evaluate the current status and implementation of Project Cost Management process of the company, i.e. Cost Estimation, Cost Budgeting and Cost Controlling processes. Moreover, the researcher reviewed documents relevant to this research paper such as: company documents (minutes, previous records etc…), previous related studies, journals, websites, book etc…

The results of the data analysis of the questionnaires and interview questions are interpreted and briefly explained in this chapter. For the explanation the researcher used charts, tables and percentages are used.

4.2. Questionnaire Response rate

As shown in Table 4.1 out of the total 30 questionnaires administered to selected relevant staff members of Nashcon Construction PLC, 29 were filled and returned. Only one questionnaire was not collected due to refusal to give response to the equations prepared.
According to Mugenda & Mugenda (2003) the statistically significant response rate for analysis should be at least 50%. Therefore the reliability of this research is significantly high for its response rate of the questionnaires is 97%.

Table 4.1: Response Rate of respondents

Status	No. of Questionnaires	Response Rate (%)
Completed and Returned	29	97%
Not Completed and Not Returned	1	3%
Total	30	100%

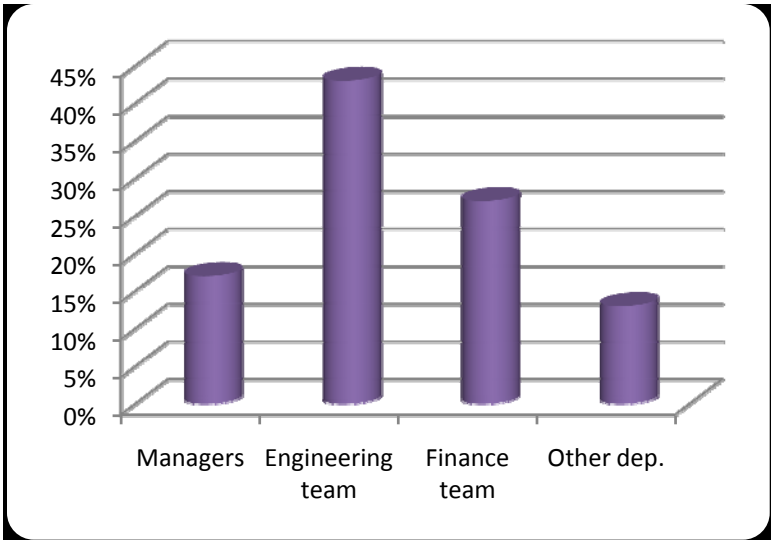
4.3. Analysis and Interpretation of Respondent's Profile

In this section the respondent's profile regarding their current position in the company, their experience and their educational qualifications are presented.

4.3.1. The Population Characteristics

For this research was 30 relevant respondents, who have a direct exposure to the Cost management system of Nashcon Construction PLC were selected carefully. Out of the 30 respondents selected, 5 were managerial team members, 13 engineering team members, 8 financial team members and 4 were members of other different departments.

Fig 4.1: Respondents qualification/position in Nashcon Construction PLC

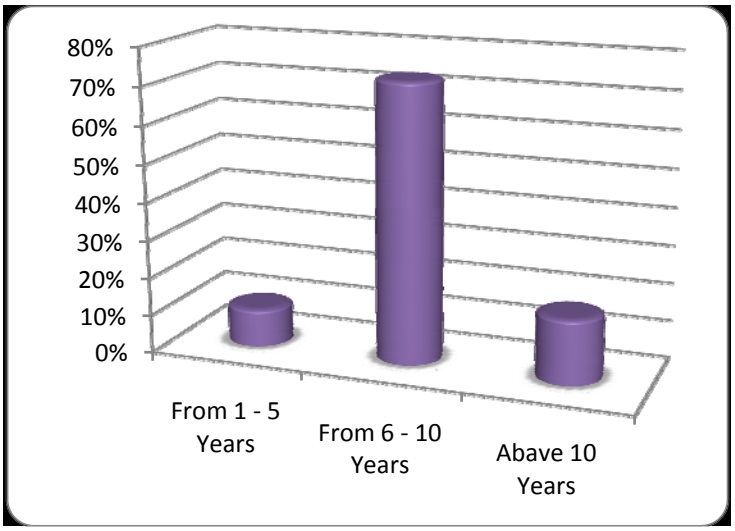


As shown in *Fig 4.1* 43% of the respondents were selected from engineering team, 27% from finance department and 17% of the population were at Managerial position. Project Cost Management affects most who are involved on the project directly during the implementation period. Since the study was conducted on a construction company, project woks are mostly lead by the Technical (Engineering) team. Thus, most of the population for this research was selected from the Engineering department.

4.3.2. Respondents Experience

According to (Jaipur, 1990) experience survey means the survey of people who have had practical experience with the problem to be studied. The researcher of this paper tried to select more experienced professionals for the quantitative and qualitative data collection.

Fig 4.2: Work experience of respondents



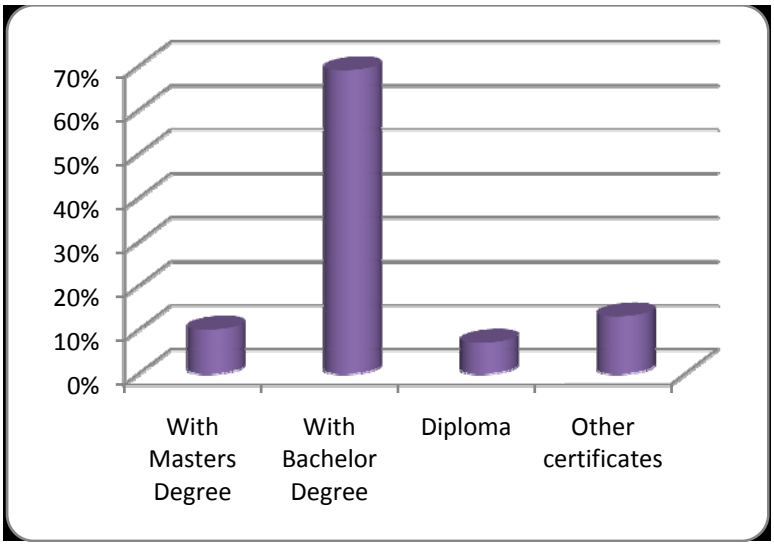
As shown in *Fig 4.2* above 73% of the respondents have from 6 to 10 year experience in their expertise. This implies that the respondents have the necessary knowledge and experience in Cost management to answer the questions.

4.3.3. Respondents Educational back ground

As indicated in *Fig 4.3* below 69% of the respondents were Bachelor Degree holders, 10% with masters Degree and 7% of the respondents have Diploma. Hence most of the professionals

selected have enough educational background to participate on the questionnaire answering process

Fig 4.3: Educational back ground of respondents



The prepared questioner was distributed to the selected sample population. In order for the answers to the questioner to be more reliable the researcher tried to select highly educated professionals of the company who have direct involvement in the project cost management process.

4.3.4. Assessing Reliability

The researcher focused on a population which is relevant to the objective of this research while selection to increase the reliability of the data collected. Nashcon Construction has currently 46 permanent employees. Out of those only 30 were selected for the qualitative and quantitative research approaches. Experience, Educational back ground and involvement on Project Cost Management of the company were the main selection criteria for the population.

The table below is prepared to further elaborate the characteristics of the respondents based on their experience, educational back ground and job description;

Table 4.2: Summary of respondent's characteristics

No	Profession	No of Respondents	Educational back ground	Experience	Job Description
1	**Managerial Team**				
	General Manager	1	Masters	> 10y	manages the overall activity of the company
	Administrator	1	Masters	> 10y	Manages the company's admin. activities
	Ass. Technical Manager	1	Bachelors	> 10y	manages the engineering team
	Site Supervision Head	1	Masters	> 10y	Manages project managers and formans
	Head off. Engineer	1	Bachelors	> 10y	manages the office engineers
2	**Engineering Department**				
	Project Managers	3	Bachelors	6y - 10y	managing the project activities on site
	Architect	1	Bachelors	6y - 10y	design revision, interpretation
	Quantity Surveyors	3	Bachelors	6y - 10y	cost estimation, report preparation
	Office Engineers	2	Bachelors	6y - 10y	budgeting, payment, schedule preparation
	Formans	4	2 Bachelors	6y - 10y	site work activity leaders
			2 Diploma		
3	**Finance Department**				
	Accountants	3	Bachelors	6y - 10y	manages the cash flow of the company
	Site Administrator	1	Bachelors	6y - 10y	site administration works
	Purchasers	2	Bachelors	6y - 10y	purchase materials
	Cashier	1	Bachelors	6y - 10y	manage small cash related items
	Transport & Mat. delivery Officer	1	Experience	6y - 10y	deliver material using company's trucks
4	**Others**				
	Store Keepers	1	Certificate	1y - 5y	in charge of materials on store
	Data Collectors	2	Tech. Cert.	1y - 5y	executed work data collection
	Total no. of respondents	**29**			

As shown on *Table 4.2* above; all the selected respondents participate in each construction projects undergoing in the company. Thus, respondents are directly or indirectly involved in the Project Cost Management process of the company. In addition from the selected population 69% of them have a better educational background and were Bachelors Degree holders. 73% were with relatively high work experience which worked from 6 – 10 years on their expertise area. And last but not least focus was given while selecting personnel who have better exposure to the

topic selected; this was achieved by selecting 43% of Engineering department members who have direct involvement in every project in Nashcon Construction; and 27% of Finance department team who also have direct involvement in the company's cash flow process.

In conclusion, relevant respondents with good work experience educational back ground and direct and indirect involvement on the company's projects were selected for this research. Therefore it can be concluded that the data collected from the questionnaire prepared on the factors affecting Project Cost Management of Nashcon Construction from the above respondents is highly reliable.

4.4. Analysis of Results and Interpretation

Qualitative data interpretation / In-depth Interviews

In order to increase the reliability of this paper, the researcher used a combination of questionnaire survey and interview methods.

For the interview part, questions related to Cost Management were developed and 5 managerial groups of the company were selected and interviewed in person about the current Project Cost Management status of Nashcon Construction PLC.

During the interview almost all of the Managers agreed that there is no enough awareness about the importance of Project Cost Management in the company's Project Management team. Moreover, the Managers argued that most of the company's projects are delayed, are susceptible to cost overrun and there is a great deal of Client dissatisfaction on the success of the project. They believe that this is due to lack of awareness and implementation of proper Cost Management system in the Company.

In addition the interviewed respondents agreed that the effort of Cost Management of the company is not formal. They added that Nashcon's Cost Management process has no formal procedure and is not systematic.

Furthermore, though Cost Estimation, Budgeting and Controlling are implemented on each project most of the respondents argued that the Cost budget preparation and Budget allocation is unsuccessful in most undergoing projects of the company.

Quantitative data interpretation

As stated in Chapter two various factors which affect the Cost Management Process i.e. Estimation, Budgeting and Controlling were identified from different literature reviews of previous studies. The researcher then further selected the most identified factors which have the potential to affect the effective implementation of Cost Management Process. Based on these factors, structured questioners on a 5-point Likert scale ranging from "Very low impact" to "Very high impact" was developed and distributed in order to identify which factors affect most the Cost Management of Nashcon Construction PLC. In each questioner the respondents were asked to indicate how each listed factors affect the company's cost management process in terms of "Very low impact", "Low impact", "Neutral", "High impact" or "Very high impact".

In order to find out the effect of potential most influential factors towards project's cost, respondents were asked their agreement and rate the determinant level of each factors.

Accordingly, the researcher compared respondent's average degree of agreement (mean) of each specific factors related to Estimation, Budgeting and Cost control.

In this regard, factors with higher mean values (above mean value of 2) are stated as the most influential factors which affect the Project Cost Management process of Nashcon. On the other hand factors which have relatively low mean values of less than 2 are stated as the less determinant factors of the Cost management system of the company.

Table 4.3: factors affecting Project Cost management

No	Variable	TR	Mean Value (MV)	Standard Deviation (SD)	Importance Index (RI)
	Factors Related to Cost Estimation				
1	Complexity of the design	29	3.34	2.03	0.67
2	Incomplete Design	29	4.59	3.04	0.92
3	Poor Communication	29	2.14	2.73	0.43
4	Material price fluctuation	29	4.55	3.11	0.91
5	Failure to site investigation	29	4.17	2.51	0.83
6	Lack of understanding of variables	29	2.38	1.98	0.48
7	Poor experience and lack of training in Cost Estimation	29	1.93	2.84	0.39
8	Unavailability of cost data	29	2.10	2.25	0.42
9	Poor scope definition	29	4.76	3.57	0.95
10	Discrepancy in contract document	29	3.52	2.68	0.70
11	Inaccurate estimation of direct, indirect and contingency costs	29	2.48	1.80	0.50
12	Poor relationship between Client and Consultant	29	1.76	2.95	0.35
	Factors Related to Cost Budgeting				
1	Poor WBS definitions	29	4.59	3.13	0.92
2	Inaccurate cost Estimation	29	2.38	1.94	0.48
3	Inaccurate/Impractical schedule	29	4.31	2.46	0.86
4	Lack of experience in Budgeting	29	2.48	2.29	0.50
5	Practice of assigning contract to lowest bidder	29	2.31	2.03	0.46
6	Unavailability of resource calendars	29	2.31	2.01	0.46
7	not having a risk register to foresee respective costs	29	4.14	2.17	0.83
8	Inadequacy of the details of cost related items in the agreement	29	3.69	1.50	0.74
9	Poor allocation of direct, indirect and joint cost	29	4.21	2.52	0.84
10	Inaccurate cost budgeting	29	4.59	3.02	0.92
11	Not updating budget after variation of changes	29	4.72	3.65	0.94
12	Company policies to cost related items	29	2.45	1.85	0.49
	Factors Related to Cost Control				
1	Allowance of numerous variation during project implementation	29	4.41	2.65	0.88
2	Change in schedule and construction methods	29	4.17	2.15	0.83
3	Week regulation and control methods	29	1.86	2.60	0.37
4	Conflict between project participants	29	2.31	2.29	0.46
5	Lack of proper training and experience in Cost controlling vicinity	29	2.10	2.30	0.42
6	Rework at site	29	3.69	1.99	0.74
7	Contractor experience in similar project	29	3.17	1.50	0.63
8	Site complexity	29	2.48	1.98	0.50
9	Poor site management	24	2.33	1.54	0.47
10	Communication errors	29	2.48	2.16	0.50
11	High cost of labour with low productivity	29	3.97	1.96	0.79
12	Not implementing project management tools (Primavera, MSP, EVA)	29	2.21	2.21	0.44

N.B. The Mean column is measured by degree of agreement by interval in 5-Likert scale to the Census items 1= non-determinant, 2 = to some extent determinant, 3 = neutral, 4= determinant, 5 =highly determinant.

As shown on *Table 4.3*, respondents identified that poor scope definition(4.79), not updating budget after variation changes(4.72), inaccurate cost budgeting (4.59, incomplete design (4.59), poor WBS definition (4.59), material price fluctuation (4.55), allowance of numerous variation during project implementation (4.41) are some of the top seven factors which influence Nashcon's Cost management system.

On the other hand, respondents agreed that poor relationship b/n Client and Consultant (1.76), week regulation & control methods (1.86), poor experience & lack of training in cost estimation (1.93), not implementing project management tools (2.21) and unavailability of cost data (2.10) are among the least determinant factors which affect Nashcon's Cost management process.

Table 4.4: Factors affecting the Cost Estimation process

Variable	TR	Mean Value (MV)	Rank	Standard Deviation (SD)	Importance Index (RI)
Poor scope definition	29	4.76	1st	3.57	0.95
Incomplete Design	29	4.59	2nd	3.04	0.92
Material price fluctuation	29	4.55	3rd	3.11	0.91
Failure to site investigation	29	4.17	4th	2.51	0.83
Discrepancy in contract document	29	3.52	5th	2.68	0.70
Complexity of the design	29	3.34	6th	2.03	0.67
Inaccurate estimation of direct, indirect and contingency costs	29	2.48	7th	1.80	0.50
Over all Mean, SD and RI		**3.92**		**2.68**	**0.78**

As shown on *Table 4.4*, respondents agreed that poor scope definition (4.76), incomplete design (4.59), material price fluctuation (4.55), failure to site investigation (4.17) and discrepancy in contract document (3.52) are the top five most determinant factors which have impact on the cost estimation process.

Moreover, most respondents agreed that Nashcon Construction's Cost Estimation process is not that much affected by factors such as its relationship with Clients & Consultants, it's manpower lack of communication skills or by its professional's lack of skill (*Table 4.3*).

Table 4.5: Factors affecting the Cost Budgeting process

Variable	TR	Mean Value (MV)	Rank	Standard Deviation (SD)	Importance Index (RI)
Not updating budget after variation of changes	29	4.72	1st	3.65	0.94
Poor WBS definitions	29	4.59	2nd	3.13	0.92
Inaccurate cost budgeting	29	4.59	3rd	3.02	0.92
Inaccurate/Impractical schedule	29	4.31	4th	2.46	0.86
Poor allocation of direct, indirect and joint cost	29	4.21	5th	2.52	0.84
Not having a risk register to foresee respective costs	29	4.14	6th	2.17	0.83
Inadequacy of the details of cost related items in the agreement	29	3.69	7th	1.50	0.74
Over all Mean, SD and RI		**4.32**		**2.64**	**0.86**

As shown on *Table 4.5* not updating budget after variation of changes (4.72), poor WBS (work break down structure) definitions (4.59), inaccurate cost budgeting (4.59), inaccurate/impractical schedule (4.31) and poor allocation of direct, indirect and joint cost (4.21) were identified as top five most factors affecting the cost budgeting process of the company.

On the other hand, as shown on *Table 4.3* respondents agreed that unavailability of resource calendar and poor company policies to cost related items are identified as relatively low determinant factors which affect the budgeting system of Nashcon.

Table 4.6: Factors affecting the Cost Controlling process

Variable	TR	Mean Value (MV)	Rank	Standard Deviation (SD)	Importance Index (RI)
Allowance of numerous variation during project implementation	29	4.41	1st	2.65	0.88
Change in schedule and construction methods	29	4.17	2nd	2.15	0.83
High cost of labour with low productivity	29	3.97	3rd	1.96	0.79
Rework at site	29	3.69	4th	1.99	0.74
Contractor experience in similar project	29	3.17	5th	1.50	0.63
Communication errors	29	2.48	6th	2.16	0.50
Site complexity	29	2.48	7th	1.98	0.50
Over all Mean, SD and RI		**3.48**		**2.06**	**0.70**

As shown on *Table 4.6,* respondents agreed that the most top five factors which affect the cost controlling process of the company are allowance of numerous variations during project implementation (4.41), change in schedule and construction methods (4.17), high cost of labour with low productivity (3.97), rework at site (3.69) and contractor experience in similar project (3.17).

Similarly, shown on *Table 4.3* most of the Cost controlling factors have relatively lower mean value than factors related to Budgeting and Estimation. Nonetheless, after comparing the mean values of the factors, the company's cost controlling methodology, its lack of project management tools like Primavera or MSP, or its lack of communication or managerial skills are identified as the least determinant factors of the Cost Control process.

Table 4.7: Summary of Factors affecting the overall Cost Controlling process

Variable	TR	Mean Value (MV)	Rank	Standard Deviation (SD)
Cost Estimation related factors	29	3.92	2nd	2.68
Cost Budgeting related factors	29	4.32	1st	2.64
Cost Controlling related factors	29	3.48	3rd	2.06

After the data analysis of the questionnaires the conclusion given by the respondents was that factors related to Cost Budgeting (4.32) affect the Cost Management process of Nashcon most while factors related to Cost Controlling (3.48) are the least affecting factors of the process. Thus the company has a relatively strong Cost Controlling system but has weak Cost Budgeting system.

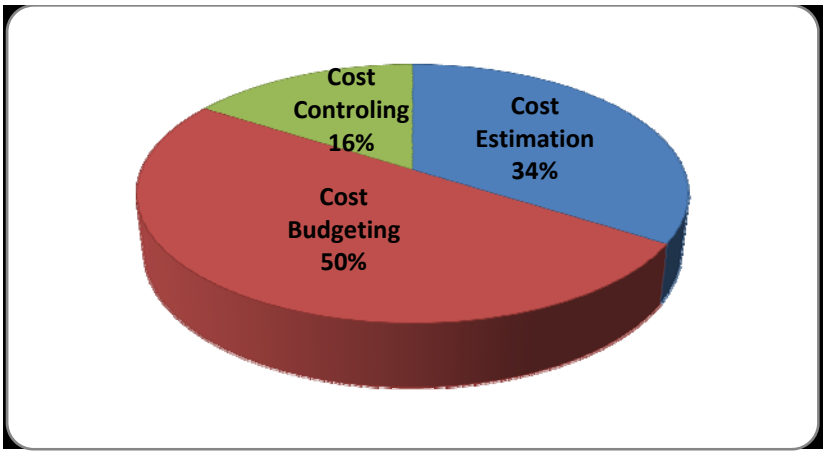
4.5. Chapter Summary

This chapter presented the findings obtained from the analysis done on the data collected. The chapter ultimately reveals the digest of major findings drawn from the study. The research findings are presented in charts and tables, and their interpretations are also briefly mentioned.

In this chapter critical factors which affect the Cost Estimation, Cost Budgeting and Cost Controlling process of Nashcon Construction were identified. Based on that, the researcher further explained the impact of the three components on the overall Project Cost Management of the company using arithmetic data.

The findings were organized in line with the objectives of the study which were: to study the extent of implementation of cost management process of Nashcon Construction PLC, to identify the critical factors affecting cost management process (cost estimation, cost budgeting, cost control) of Nashcon Construction PLC, to statically examine the impact of factors affecting cost management process and develop analysis based on the factors identified. Conclusion and recommendation based on the data analysis result will be discussed in Chapter five.

Fig 4.4: Impact of factors which affect the overall Cost Management process



Source: Research data (2018)

CHAPTER FIVE

CONCLUSSION AND RECOMMANDATION

5.1. Introduction

This chapter will aim to critique the literature review based on the research questions proposed at the beginning of this paper. The result therefore gives answers to which principal component of cost management influences the cost management of Nashcon construction PLC most, which factors affect the cost estimation process of the cost management system most, which factors affect the budgeting process of the cost management system most, and which factors influence the cost controlling process of the cost management system most.

Therefore, this chapter gives the summary, conclusions and recommendations to shade light on factors which affect the Cost Management Process of Nashcon. Moreover, suggestions were also made for further research based on the results in chapter four.

5.2. Summary of the Findings

After careful analysis of both the interview and the questionnaire documents, it was able to answer the proposed research questions in chapter one. Therefore this summary part will present the answers with the relevant evidences presented on chapter four.

From the in-depth interview, most respondents agreed that Nashcon Construction's current Project Cost Management system is poor. The interviewed management team also that the process is not formal and needs improvement. Moreover, they added that from experience, the company is most affected by factors which are related to the Budgeting process.

Similarly, from the data analysis result it was discovered that Cost Budgeting affects most the Cost management process of Nashcon. It was identified that half of the factors which affect the Cost management system of the company are related to these factors. Thus, both the interview and questionnaire results show that the factors which affect the Project Cost Management system of Nashcon are of Budgeting factors.

While assessing the data analysis results related to Cost Estimation: poor scope definition, incomplete design, material price fluctuation, failure to site investigation, discrepancy in contract document, complexity of the design and inaccurate estimation of direct, indirect and contingency costs were identified as most determinant factors which have impact on the cost estimation process. More over the results show that the company has relatively good relationships with Clients and has a relatively experienced Cost Estimation professionals equipped with a proper available cost data records.

Factors which affect the Budgeting processes were identified as: not updating budget after variation of changes, poor WBS (work break down structure) definitions, inaccurate cost budgeting, inaccurate/impractical schedule, poor allocation of direct, indirect and joint cost, not having a risk register to foresee respective costs and inadequacy of the details of cost related items in the agreement. Other factors such as unavailability of resource calendars, lack of experience and company's policies were determined as a relatively low affecting factors.

Though Cost controlling related factors were identified as the relatively least impacting factors on the overall Project Cost Management of the company, according to the results in the previous chapter: allowance of numerous variations during project implementation, change in schedule and construction methods, high cost of labour with low productivity, rework at site, contractor experience in similar project, communication errors and site complexity were listed as factors which affect the cost controlling process of the company.

5.3. Conclusions

The aim of this research was to provide crucial information about factors influencing cost management process to the project management teams who qualify the project's success. Interpretation of these factors is helpful for the construction professionals who work on the different phases of the construction in order to successfully deliver the project. Therefore this research focused on those factors which are prone to affect the Cost management process.

From the interview, the questionnaire results and other different referred written available documents of Nashcon, it can be concluded that the company has no continues formulated Project Cost management system. While project implementation projects delay and costs overrun occurs frequently due to improper implementation of Cost Management process.

As per the research data analysis result, the following factors were identified as most influential factors on the effective implementation of Cost management system of Nashcon. The selection was based on the highest mean value of the factors. Thus all factors whose Mean value is > 4 were selected as most influential factors.

1. Poor scope definition
2. Not updating budget after variation of changes
3. Inaccurate cost budgeting
4. Incomplete Design
5. Poor WBS definitions
6. Material price fluctuation
7. Allowance of numerous variation during project implementation
8. Inaccurate/Impractical schedule
9. Poor allocation of direct, indirect and joint cost
10. Failure to site investigation
11. Change in schedule and construction methods
12. Not having a risk register to foresee respective costs

From the above factors selected 50% of them are factors related to Budgeting, 25% of them are factors related to Estimation and the remaining 15% were Controlling related factors. Thus the Nashcon's Project Cost Management process is influenced mostly by the factors in relation to Cost Budgeting. Here factors related to Cost Estimation should also be given attention for they also have significant influence on the Cost Management process of the company.

On the other hand from the analysis of results of list of the factors, it was identified that Nashcon has a relatively good relationship with its Clients and Consultants, it has a good Cost Controlling methodology, and has experienced professionals with proper training of cost Estimation, Budgeting and Controlling knowledge.

Therefore it can be concluded that while maintaining its strong side, the company should also work on its weak parts in order to improve the Project Cost Management system by focusing on the Cost management components Estimation, Budgeting and Controlling. The company should work on areas in which most affects the Cost Management process.

5.4. Recommendations

Current records show that the projects undertaken by the Contractor Nashcon are facing major delay and significant cost overrun problems. This therefore indicates the need for effective implementation of Cost management process. The main aim of this research is therefore to suggest ways to improve the Cost management process of the company by identifying the negative potential factors which influence the process most.

Based on the above findings the following recommendations are given to improve the Cost management process of the company:

- Nashcon Construction should focus more on its Cost management tools. Continues effort should also be given to apply the tools in every stage of project implementations. This could help improve the current project success rate of the company.
- The project manager and all members of the construction must have established an understanding of the project's purpose, agreed on goals, selected the best course of action

for achieving the goals, created a comprehensive work breakdown structure, and assessed project uncertainties.

- Project managers must carefully manage scope by creating change orders for work that isn't covered by the project's initial requirements. Change orders authorize additional funding for the project to cover the cost of extra work. Therefore initially estimated budget should be revised after each new variation. In addition flexible budget planning, continues evaluation and monitoring the budget and proper budget planning will help reduce the problem.
- Project managers should introduce and properly define the WBS framework. Encourage team member's participation on the preparation of the WBS. This will also improve the team's participation in the schedule and budgeting preparation. It will also increase communication and will reduce risk and conflict.
- Incomplete design results in confusion on the project deliverables. Bill of quantities and other work orders are initiated from the project design. Thus, properly completed design complete with detail drawings should be prepared before the project is implemented. To reduce the possible conflicts and disputes that may occur during construction the design should also be coordinated before releasing the tender documents for bidding and construction. It is also recommended that the design manager should clearly understand the project objectives so that he can plan the required resources.
- Lack of enough budget preparation skills, poor scope definition and poor WBS definition are major factors for inaccurate cost budgeting. Therefore before budgeting, scope and WBS should be defined properly. More over continues training should be given to officers involved in the budget preparation.
- During project implementation, variation orders should come with additional budget and schedule approval. This will reduce the allowance of numerous variations during the construction period.
- Resource and cost allocation concerns balancing the various needs and priorities of a project. Determining the best course of action that will lead to maximizing the effective use of limited resources and cost to offer the best return on investment possible. This means project managers need to build a proper plan of how, when and why these

resources will be allocated and distributed for the entire project lifecycle—before, during and after the project.

- Site investigation should be done before any design, cost estimation and budgeting. This would improve the understanding of the professionals involved on the listed activities.
- Change in schedule could result in increasing the load of the work on employees. Similarly change in work methodology of the work could result on project delay. Therefore change in schedule and change in methodology should be controlled as much as possible. And when occurred, managers should come up with an action plan on how to deal with the changed situation.

5.5. Suggestion for Further Study

The main objective of this study is to determine factors which affect the Cost management process of Nashcon Construction. Although the study provides insight to some of the independent variables affecting project success based on project cost factors future researches needed to replicate and extended by including more variables such as time and quality factors.

Further similar study should be undertaken across other Construction companies so as to be able to generalize the findings.

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Questionnaire for Project Work

APPENDICES

APPENDIX I: Introductory Letter

Dear Sir/Madam thank you for your willingness in participating in this research process which is conducted to identify factors which affect the effective Project Cost Management in Nashcon Construction PLC.

Your response is highly valuable and important to the outcome of the research, hence contributory to the future improvement of the Cost Management process of the company.

Thanking you in advance for your valuable time, I respectfully and kindly ask that you help answer this questionnaire.

Sincerely yours;

Sirgut-Silassie-Azanaw

N.B. Should you have any further question, please do not hesitate to contact me. Tell: *+251911902684*

APPENDIX II: Questionnaire

Section One: General Information

Kindly tick the box in front of the your answer to the following questions;

1 Your Gender

Male ☐

Female ☐

2 Your work experience

From 1-5 Years ☐

From 6 - 10 Years ☐

Above 10 Years ☐

3 Your Educational back ground

Masters Degree ☐

Bachelors Degree ☐

Diploma ☐

Others ☐

4 Your current working department in the company

Management team ☐

Engineering team ☐

Finance team ☐

Others ☐

Section Two: Assessment of degree of impact

Factors affecting The Project Cost Management

Please state the extent to which each factors influence the project cost management process.

1 = Very low	2 = Low	3 = Neutral	4 = High	5 = Very High				
No	**Description**	**Degree of Impact/Influence**				
		1	**2**	**3**	**4**	**5**
	Factors Related to Cost Estimation					
1	Complexity of the design					
2	Incomplete Design					
3	Poor Communication					
4	Material price fluctuation					
5	Failure to site investigation					
6	Lack of understanding of variables					
7	Poor experience and lack of training in Cost Estimation					
8	Unavailability of cost data					
9	Poor scope definition					
10	Discrepancy in contract document					
11	Inaccurate estimation of direct, indirect and contingency costs					
12	Poor relationship between Clint and Consultant					
	Factors Related to Cost Budgeting					
1	Poor WBS definitions					
2	Inaccurate cost Estimation					
3	Inaccurate/Impractical schedule					
4	Lack of experience in Cost Budgeting					
5	Practice of assigning contract to lowest bidder					
6	Unavailability of resource calendars					
7	not having a risk register to foresee respective costs					
8	Inadequacy of the details of cost related items in the agreement					
9	Poor allocation of direct, indirect and joint cost					
10	Inaccurate cost budgeting					
11	Not updating budget after variation of changes					
12	Company policies to cost related items					
	Factors Related to Cost Control					
1	Allowance of numerous variation during project implementation					
2	Change in schedule and construction methods					
3	Week regulation and control methods					
4	Conflict between project participants					
5	Lack of proper training and experience in Cost Controlling vicinity					
6	Rework at site					
7	Contractor experience in similar project					
8	Site complexity					
9	Poor site management					
10	Communication errors					
11	High cost of labour with low productivity					
12	Not implementing project management tools (Primavera, MSP, EVA)					

APPENDIX III: Interview Questions

1. Is there awareness about the importance of project cost management in the company's Project Management team?
2. Is the effort of cost management formal?
3. For every project, will the Cost Estimation be prepared?
4. During the period of any project implementations will the Cost Budgeting be prepared and is there a proper budget allocated to work packages?
5. Is there any Cost Control system during the project implementation period?