

The main objective of the study is to focus on identification of the key challenges of resource management in medcon engineering & construction Plc. explores the practice in resources management, and develops a resources management system to facilitate the management of resources mainly in the construction.

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CONSTRUCTION PROJECT MANAGEMENT

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Acknowledgement

We would like to thank Dr.BahiruBewket the advisor of this project, for his valuable comments, suggestions, precious discussions, continuous supervision and for all necessary guidance, which helps to complete the project.

In addition, we wish to express our sincere gratitude to all who have contributed directly or indirectly to the success of this project without those constant supports and help, the study would never have been accomplished. Those professionals of the company who have participated in this project sacrificing their invaluable time are on the front line to receive our appreciation.

Finally yet importantly, we would like to thank all who have given assistance in obtaining the information and data related to this work especially the people who took time from their busy schedule to fill our questionnaire.

Abstract

The main objective of the study is to focus on identification of the key challenges of resource management in Medcon engineering & construction Plc. explores the practice in resources management, and develops a resources management system to facilitate the management of resources mainly in the building construction. Construction resources management related literature was generally reviewed. Forty questionnaires survey (close ended) were conducted on the company which is useful in fulfilling the project questions and 20 questionnaires were received and analyzed and which is 50% of the total.

The survey indicated that the stability of the worker and work discipline was one of the most important factors affecting on increasing productivity. Also other factor seen on the study is on the financial management, which is a critical gap in understanding the process of an organization financial management, and important factors that may lead to affecting on reducing productivity.

One of the main recommendations of this study is to encourage Medcon engineering & construction plc to have a construction resources management system and use it in determining the required incentives, training and work security for the employees.

CHAPTER 1

INTRODUCTION

1.1Med-Con Eng. & Construction background

MEDCON Engineering & Construction Plc was founded in 1999 EC, registered and licensed as a General Contractor by the Trade & Industry Development Bureau of Addis Ababa City Administration having Category One Water Works Construction General Contractor licenses of WWGC-1 from the Ministry of Water and Energy and category One Road Contractor RC-1 license from Ministry of Urban Development and Construction. It has also, a trade license, which is renewed for the current fiscal year, obtained from the Bureau mentioned above. The Federal Inland Revenue Authority also registers the firm for VAT and it has a Taxpayer Identification Number given from the same Authority.

In addition, the company has a domestic investment license obtained from the Investment Bureau of Addis Ababa City Administration, for a total

capital investment of above 25,500,700 (Twenty-five million five hundred thousand seven hundred) Birr.

Currently the company is engaged on construction of civil projects mostly on bridges and road projects. On its early beginnings in the construction sector, the company is gaining a good reputation from its clients based on the previously completed projects. Besides, the company's efficient and innovative working methodologies and its strict adherence to attain the required quality of works, has made it to become one of the promising construction firms in the sector.

In its entirety, the firm has entered into the construction sector by visioning to become one of the leading construction firms in the country and abroad by delivering a timely and efficient service that satisfies its clients.

1.2 Rationale

Construction projects can be accomplished utilizing management processes in order to achieve their objectives. These Processes include planning, organizing, executing, monitoring, and controlling during any construction, project the three inter-related factors of time, Money and quality need to be controlled and managed. Successful completion of Projects require all resources to be effectively managed. Resources management is considered as a means to achieve better productivity, which should be translated into cost reduction.

According to our study, we contribute a useful effort has been done to investigate the construction resources management practices of MEDCON Engineering & Construction Plc.

It is important to explore and evaluate the practices, and then offer recommendations, In addition, develop practical techniques to improve existing practice of the company.

1.3 Project Aim

The aim of this research is to develop the existing common practices in construction resource management for the company of MEDCON Engineering & Construction Plc. Also our project aims to recommend implementing of resource management system that, hopefully improves the company practices.

1.4 Project Objectives

The objectives of this project can be broken down into the following objectives:

- Develop and evaluate the local practices of construction resource management in medcon engineering company.
- Evaluate and recommend a system for construction resource management to improve the common existing practice.

1.5 Methodology Outline

The project was conducted through the related literature reviewed to identify the main topics to be handled in this project. A structured questionnaire was used.

1.6 The project Contents

Apart from this chapter, there are other five chapters and nine annexes. Chapter 2 presents the literature review of resources management in construction projects. Chapter 3 presents the Methodology. Chapter 4 presents research results. It includes the questionnaire design, the method of analysis, and analysis of the surveyed results and discussion of these results.

The discussions include the concepts, the description, the Implementation and evaluation of the resources management system. Chapter 5 presents conclusions, recommendations for the main party involved in the construction

CHAPTER 2

CONSTRUCTION RESOURCES MANAGEMENT

2.1 Human resource management in construction

2.1.1 Introduction

Human resources today in modern times have become the most important resource for the firms to obtain strategic advantage over the other firms (Dany et al, 2008). This is because managers in both the public and private sector organizations regard the human resources of their organization as its major source of sustaining competitive advantage by having the 'best of the best' Human resource systems in place for recruiting, selecting, motivating, and efficiently managing their people (Mesch, 2010). Human resource management (HRM) is the process of managing people within an organization. In construction, HRM is primarily concerned with ensuring that a project has sufficient human resources, with the correct skill-sets and experience, for the project to be successfully completed.

HR managers have to be able to identify and document project roles and responsibilities, and develop a plan describing the end-to-end processes that will be required on a project (or series of projects) in order to determine its human resource requirements. Without an efficient workforce organizations lose their ability to compete, both locally and internationally, eventually leading to poor organizational performance and thus ending up with little or no economic success (Tomaka, 2001).

HRM typically involves the following core activities:

- Role analysis
- Role specification
- Workforce planning
- Recruitment and selection of temporary and permanent staff as required.
- Training and development
- Performance management
- Compensation (remuneration)
- Legal issues
- Managing employee payroll, benefits and compensation
- Communicating with employees
- Resolving disputes
- Evaluating performance
- Managing employee relations
- Ensuring equal opportunities
- Making sure staff facilities are suitable and well-maintained.

Site workers (labor) account for up to 40% of the direct capital cost of large construction projects, and there is a need to maximize the productivity of labor resources (Thomas et al., 2004). Organizing and managing the project team are the main duties of human resource management. The owner, consultants, contractor, subcontractors and suppliers constitute the supply chain in construction higher success can be achieved by increasing the quality of communication between different

parties and team operation among different parties (Zeynep et al 2008). Construction workers are not machines, always behaving the same way under the same conditions. Even under apparently identical work conditions, different productivity values might be obtained. The productivity for the same work item is not constant throughout the construction period, and varies at different stages of the production (Aynur and Serdar, 2004).

2.1.2 Relationship between HRM and Organizational Performance

The traditional role of HRM in organizations was mainly to support the operations through managing people to win the employees' organizational commitment to the goals of the organization (McGunnigle& Jameson, 2000). In consequence, HR managers had to strictly comply with the detailed procedures of personnel administration, which drove the ways in which the organizations handled their human resource activities (Huselid, Jackson, and Schuler, 1997). The key HRM activities included in this regard are recruitment, selection, performance measurement, training and development, and administration of compensation and rewards (Dany et al, 2008). In addition to performing these HRM activities, HR managers have to create value for the organizations in which they work (Huselid et al, 1997).

However, today's HRM focuses heavily on the organization's successful outcomes through the integration of the various HR functions (Dany et al, 2008). Ulrich (1996, p2) strongly suggests that human resources determine an organization's success in overcoming major challenges facing executives today: "globalization, value chain for business competitiveness and HR

services, change, attracting and retaining intellectual capital”. Together these major challenges require that HR practices create and add value that can be measured reliably (ibid).

2.1.3 Approaches to Examine HRM and Organizational Performance Relationship

There are two major fundamental approaches to study the relationship between HRM and organizational performance. These are termed as:

‘Best-Practice’ approach, and

‘Best-Fit’ approach.

‘Best-Practice’ Approach

The ‘best-practice’ approach claims that HRM practices are universalistic and thus any organization can obtain enhanced organizational performance by adopting the HRM best practices for managing people in any organizational context (Boxall& Purcell, 2000).

‘Best-Fit’ Approach

On the other hand, the ‘best-fit’ approach argues for a ‘vertical fit’ whereby the HRM systems are integrated with the corporate strategy of the organization for obtaining improved organizational performance within a specific organizational context (Boselie, Paauwe, and Richardson, 2003).

Between these two approaches, the ‘best-practice’ approach is considered to be superior by HRM professionals and researchers for examining the

impact of HRM practices on organizational performance ((Hoque, 1999, p422).

Cautions in Examining the HRM and Organizational Performance Relationship

Although there is wide support to the idea that HRM practices lead to improved organizational performance yet there are some cautions that have to be observed. Huselid (1995), states that successful organizational performance has been obtained by high-performance firms since they were able to afford expensive HRM systems and practices and this may not be affordable to most other firms.

Furthermore, leadership style could have a stronger impact over the deployment of HRM practices due to the different types of influences that the leaders can exert on their people (Becker & Huselid, 2006).

2.1.4 Strength of relationships with other parties

Zeynep et al. (2008) assert that the strength of a company's relationships with other parties constitutes a social dimension of project environment. The strength of relationships with the parties involved in typical construction project such as public or private clients, regulatory agencies, subcontractors, labor unions, material dealers, surety companies, and financial institutions constitute an important aspect of a company. Relationships with clients rely on the communication and negotiating skills of company executives. The difficulty of achieving strong relationships between clients and contractors has always been a matter of concern, but recently the importance of cooperation and trust between clients and contractors has been understood somewhat better. The awareness of the

influence of good relationships on performance encouraged contractors to recognize clients' basic expectations relative to cost, time and quality. **2.1.5**

Most common factors affect labors management

Aynur and Serdar (2007) advised that there are many factors affect the productivity of employee's. Among these factors, economic factors and socio psychological.

2.1.5.1 The economic factors are: -

Timeliness of remuneration; - Amount of remuneration; - Social insurance; - Incentive payments; - Job security; and - Union membership.

2.1.5.2 The socio psychological:

Work discipline; - Health-and-safety conditions; - Work satisfaction; - Creating competition; - Relations with workmates; - Giving responsibility; - Sharing problems and their results; - Social activity opportunities; - Cultural differences; - Worker participation in decision-making; - Distance from home; and - Distance from population centers. Heizer and Render (1990) cited Enshassi et al., (2007) classified factors influencing site productivity into three groups: labor characteristic factors; project work conditions factors; and nonproductive activities. Zeynep et al., (2008) the selection of these factors was based on their potential to affect the success of a project through the implementation process. Such as communication, control mechanisms, feedback capabilities, troubleshooting, coordination, decision making, monitoring, project organization, planning and scheduling, and management experience.

2.2 CONSTRUCTION MATERIALS MANAGEMENT

2.2.1 Introduction

Material Resource Management (MRM) is a **material management**

Company specializing in co-ordination of planning, sourcing, purchasing, moving, storing and controlling **materials** in an optimum manner to provide a pre-decided service to the customer at a minimum

Nowadays, many contractors are doing investment to construction project to earn their profits. Unfortunately, there are not all contractors able to earn the profit of the investment in construction projects. This is because some of the contractor do not managed the materials properly. For examples, a contractor over order the material such as cements, bricks etc., and the cost will increase and the profits will become low or deficit of the money. Therefore, a systematic material management is very importance in Construction Company to avoid over ordering and receive low quality materials at the same time can minimizing the cost and maximum the profits

Construction materials can be consisting as a major cost for any construction project. This is because 50% or more of the total cost of the project is for purchasing the materials or even storing the materials also costs. Thus, efficiently managing the material is very importance. Therefore, the contractor should consider the time to order the material when they needs and the time delivery to the site. This is because if the material does not come at the schedule time will cause delay of the projects.

In additions, a proper site plan to put the material is very importance for construction site. For example, if the materials such as concrete batch plant putting too far from the build places, it will cause a lot of time for labors to bring the concrete to sites. This will delay the time to complete. Therefore,

difference material should locate at the suitable location. This will help to increase the productivity of the construction projects.

The construction site layout has been prepared which illustrates the layout equipment, building materials and access roads for the erection of the building. As a new site manager of the project, we noticed that many problems are carrying out by the plans and those problems will cause the projects to be delay or increase the cost of the projects. Thus, we need to re-organize the layout of the site and improve the site accordingly.

According to Arnold, J. R. and Chapman (2004), materials management can define as an organizing function responsible for planning and controlling the materials flow. This means that the materials management is a planned procedure that involves from the initial purchasing, delivery, handling and minimization of waste of the material with the purpose to ensuring the quality, quantity and time of the requirement should meet accordingly.

Material management are the activities involved to plan, control, purchase, expedite, transport, store, and issue in order to achieve an efficient flow of materials and that the required materials are bought in the required quantities, time, quality and at an acceptable price. (Stukhart ,1995)

2.2.2 Importance of material for a project.

Most of the organization are having the same problem which is related to the managing the flow of the materials. Therefore, the efficient management of materials is the main keys issue to determine the success of a completion of a project. In addition, the control to the materials is subject to the difference company and should be handled effectively to complete the

project. Building materials, cost is the major cost for the project. The cost represented by materials changed and may include between 20 % and above of the total of the project.

According to the Stukhart (1995) and Bernold and Treseler(1991) studies,

The materials cost can be around of 50% to 60% of the total of project cost. Materials are very important in the operations of the construction site since unavailability of materials can stop the construction work. In addition, unavailability of materials will affect the productivity and cause to the completion of the project.

Other than unavailability of materials, the excessive quantities of materials could also create the serious problems to managers in the construction site. This is because storage of materials can increase the costs of the project. In addition, when there are limited spaces in the construction site, the managers have to find other storage from other people to store the materials until they are needed. Therefore, it will require the re-handling of materials and the costs of the project. Some of the requirements must take to handle and store the materials properly when they are received. Thus, special attention should be given to materials after they purchased from the supplier.

According to Damodara (1999), there is obvious that materials can provide saving when it obtained at the lowest price to the company. In early

construction industry, many construction companies experienced that the increase in costs and a decrease in productivity which due to inflation and economic problems. From the research of Stukhart(1995) we can concluded that early construction industry were not using their resources efficiently and that the decrease in productivity is due to poor management in the construction site and materials.(Stukhart, 1995). Material management has been the main issue of concern in the construction industry. By the research of Baldwin t. al (1994) that is more that 40% of the time lost due to bad management in construction site, poor documentation of materials, lack of materials on site when needed and inadequate storage.

Therefore, the need for a proper material management system becomes mandatory. Many companies increased their efficiency of materials management to remain the competitive and protected for their future project. They try to reduced their overheads cost and improved their productivity strategies. The saving cost and improvement can run accordingly by materials management. The material available on site and management system is the main point to success a construction project.

Better materials management will help to increase the efficiency in the operation in construction site and reduce the overall cost from the total cost of the project. Top management such as project manager, site manager or architect should pay more effort to materials management. This is because available of the materials will affect the successful from their project. When the material is shortages, the high interest rates should pay, rising prices of the materials and competition with other companies.

There is a developing attentiveness in the construction industry that material management needs to be solved as an overall integrated administration activity.

2.2.3 Benefit of material management

An effective material management system can bring many benefits for a company in construction industry.

- ✚ Reducing the overall costs of materials
- ✚ Better handling of materials
- ✚ Reduction in duplicated orders
- ✚ Materials will be on site when needed and in the quantities required
- ✚ Improvements in labor productivity
- ✚ Improvements in project schedule
- ✚ Quality control
- ✚ Better field material control
- ✚ Better relations with suppliers
- ✚ Reduce of materials surplus
- ✚ Reduce storage of materials on site
- ✚ Labor savings
- ✚ Stock reduction
- ✚ Purchase savings
- ✚ Better cash flow management

2.2.4 Process of the material management

There are few steps which can implement the material management to construction site which is planning, purchasing, logistics, handling, stock and waste control. Each process was state out its characteristic as important role for an effective materials management.

- **Planning**

Materials planning include measuring, ordering and scheduling. It is emphasized that planning is a very important process to increase the productivity, profit, and assisting the time to complete the construction projects. The productivity of the construction project will be hanged if the material planning process is not implemented properly.

- **Purchasing**

Purchase the materials and have the services from supplier to get the support of operations as the construction project from production to marketing, sales and logistics. For examples, a detailed material list and co-ordination of the purchasing and order of material are significant to assuring the material will available on construction site.

- **Logistics**

Logistics is a concept that stresses movement of the materials and it involve planning, implementing, and controlling the movement and storage of all things from raw materials to the finished of the product to meet client requirements. During construction project, routing of the materials will affect the cost and time to complete the construction projects.

- **Handling**

Handling of materials is the flow of the materials to the component that provides for their movement and location. Due to the rate of handling materials, there are some quality needs to be in considerations when designing a materials handling system. The selection of the materials

handling equipment is important to enhance the production process, provide the effective operation of labor, increase production and advance the system to be more flexible.

▪ **Stock and Waste Control**

Stock control can categorize as a technique planned to be the cover and to ensure all materials or equipment are available when needed. Stock control include raw materials, processed materials, assembly components, consumable stores, general stores, maintenance materials and spares, work in progress and finished products. It is very important as the construction materials were delivery as requested and with the progression by the proper management of stock control. At the same time, construction activities will generate big amount of the waste and it will cause difficulty to the construction industry. However, with the planning of the material management, which is effective, will help to reduce the waste of material and increase the profit of the companies.

2.2.5 Challenging of Materials Management

Few categories selected in Materials management:

- ✚ The specification and measurement of the materials;
- ✚ Where to locate and thus procurements progression when the instruction of stock is done dealings by the supplier;
- ✚ Transaction to site and inspection of the order as off-loading, and storing onsite;
- ✚ The executive and monetary process of payment;
- ✚ The usage of materials in production site, waste removal, production process and purchasing and supply of materials. The challenges often

occurs when the materials is not equivalent as the ordering purchase, the skipped list out ordering materials, timing of materials arriving, quantities of materials, lack of training and adequate management, lack of Just In Time (JIT) strategy, lack of communication and relation between contractor and supply chain companies are the main impediments.

In construction site, the challenges are obvious which are specifically as:

- ✚ Miscarriage to order stock on time which postpone the projects;
- ✚ Mistaken time delivering which interrupts the work schedule;
- ✚ The amount ordering more than the needs;
- ✚ Wrong materials or fault in track of materials leads double work;
- ✚ Scamp on materials from delivery into production;

Double handling of materials because of inadequate material.

The key to success of a construction management process is to be effective in construction. The main problems lead to ineffective are fault timing of materials received by the site or inadequate quality, improper information for materials arrival to the site stock, missing materials, unavailability of storage space, and waste of labor for materials searching on site.

2.3 CONSTRUCTION EQUIPMENT MANAGEMENT

2.3.1 Introduction

Special construction equipment

Unlike the other materials, special construction equipment does not enter into the final product, but we like to consider it a physical resource worthy of early planning. In design-build work, the heavy-equipment requirement is something that should be investigated by the construction people during the design phase. We have seen many cases where it was more economical to

redesign the project than to use more costly erection equipment than might otherwise are needed. That is difficult to do in fully designed lump-sum-bid project environment. The design manager might suggest bringing in an outside construction consultant as constructability problems arise during design, but that is not done Very often.

The above problem areas come into focus and can be more readily solved when preconstruction planning sessions are used on the project. At the very least, it is a good idea to have the owner's construction people makes a constructability analysis near the 50 percent design stage, during their review of complex projects.

PLAN RESOURCE MANAGEMENT

Plan Resource Management is the process of defining how to estimate, acquire, manage, and use

Team and physical resources. The key benefit of this process is that it establishes the approach and level of management effort needed for managing project resources based on the type and complexity of the project. This process is performed once or at predefined points in the project.

Resource planning is used to determine and identify an approach to ensure that sufficient resources are available for the successful completion of the project. Project resources may include team members, supplies, materials, equipment, services and facilities. Effective resource planning should Consider and plan for the availability of, or competition for, scarce resources.

Those resources can be obtained from the organization's internal assets or from outside the

Organization through a procurement process. Other projects may be competing for the same resources

Required for the project at the same time and location. This may significantly impact project costs, Schedules, risks, quality, and other project areas.

2.3.2 Equipment planning

The purpose of equipment planning is to show the separate size and types of equipment required on rent, lease or outright purchase. Construction equipment and plant refers to the tools, instruments, machinery, and other mechanical implements required in performance of construction work. Construction plant is defined as concrete batch plants, aggregate-processing plants, conveying systems. In addition, any other processing Plants that are erected in place at job site and essentially stationary or fixed in place. Equipment is defined as items that are portable or mobile ranging from small hand tools through tractors, cranes, and trucks. For estimating purposes, plant and equipment are grouped together as equipment costs (Rajiv, 1994).

Sharma (1997) assert that the modern construction projects are complex in nature and Success of a project depends greatly on proper and scientific planning. Before starting every project is done with great care, as the efficiency of the whole project largely Depends should be worked out in anticipation and should be considered craftily. Planning of a construction project involves deciding about the extent of mechanization Equipment planning execution planning ECT. While planning a project we must very carefully decide about the extent of use of construction equipment's. On major Construction projects, mechanization is indispensable; while for middle and minor Construction projects a compromise between manual and

mechanical means have to be made. In a country, like Ethiopia where manpower is cheaply and easily available we can take advantage of this facility especially for the activities, which can be easily carried out by the labor. However, a combination of manual labor and machines is Preferred

2.3.3 Selection of equipment

Thomas et al. (2009) said about an important consideration in the preparation of an Estimate is the selection of the proper equipment to perform the required tasks. The Estimator should carefully consider number, size and function of equipment to arrive at Optimum equipment usage.

2.3.4 Some factors to consider during the selection process are

Sharma (1997) summarized the factors, which effect selection process such as: Availability of space, mobility and availability of equipment, equipment capabilities, Distances material must be moved, steepness and direction of grade, weather conditions, Hauling restrictions & mobilization. Proper selection of equipment for a construction Project is of vital importance for its speedy and economical completion. Problem of Equipment selection has become more complicated, because large variety of equipments are being manufactured now a day. Sharma (1997) said that the proper selection of equipment, a considerable experience in the operation and maintenance in the field is essential. Records kept for operation, Maintenance and actual obtained under comparable conditions of previous projects will greatly help in taking decision for equipment selection.

- Following are the main points, which should be considered in the process of equipment Selection:
- Suitability for job conditions.

- Size of the equipment.
- Standardization.
- Availability of equipment in the market.- Multipurpose equipments (versatility).

2.3.5 Equipment Cost

The actual charge against the project budget depends on whether the equipment is Leased or rented for the job or is owned by the company. If it is leased for the project Duration or some part thereof, the lease cost will directly change to the project. Time Cards, similar to labor time cards, will be used to record the actual time spent by the Equipment and operation personal; if the lease payment is based on fixed monthly Charge plus an hourly rate, the recorded hours will become part of the payment basis. In The case of an hourly rental arrangement, the actual hours will be multiplied by the Hourly rate to determine the payment (Clifford and Richard, 2003).

In management the cost aspects of jobsite equipment operation, the contractor records In addition, works with two types of data, the time the equipment is operated and the rate to be Charged for each hour of operation (Clifford and Richard, 2003).Sharma (1997) said that a cost reduction in construction can be achieved adopting Following ways:

- Proper planning
- Timely supply of funds, equipment materials, and personnel (i.e. men, material And machines)
- Proper equipment planning and selection. For this, engineers should keep informed on the development of new construction equipment.

- Proper equipment operation, maintenance and utilization.
- Adopting proper inventory control.
- Engaging experienced operators.
- Monitoring progress and adopting scientific methods.
- Ensuring continuous supervision.
- Adopting innovations and latest techniques suitable for the job. If necessary, modify the design or construction methods to permit the use of economical equipment.
- Eliminate unnecessary construction requirements.
- Use local materials when they are satisfactory. Equipment manager's main task is to reduce downtime, achieve optimum equipment Utilization and increase production at minimum cost.

The cost analysis and the will of adopting proper techniques suited to the situation are the basic factors for the success and therefore, there is a need for a rational planning, proper selection, and judicious deployment of equipment in relation to the conditions to achieve optimum utilization. Equipment engineer should coordinate with various wings of the organization in discharging his job of equipment planning, balancing, selection of equipment and its utilization, personnel selection and training financial planning, preventive maintenance and general supervision. Thus equipment management integrates and continuously interacts with human, technical, financial and production system in order to achieve top efficiency and cost effectiveness (Sharma,1997).

2.3.6 Training equipment operators

Sharma (1997) assert that the best equipment of the world is valueless without the Competent operator. A little thought is given as to who will run this equipment and how they will be trained to make maximum use of their capabilities. Most operators have acquired their skills by self-instruction or from other operators mostly by trial and error.

Contractors have now begin to realize that such a haphazard approach is wasteful and can be dangerous. With equipment becoming more sophisticated each day, it is not desirable to have just any one learn how to operate machine on a trial and error basis.

Such operators have little knowledge of the special features built into the equipment they drive. Realizing this problem, contractors have to help the users to make best use of the equipment.

2.4 FINANCIAL RESOURCE

Financial resource is the set of liquid assets of an organization, including cash, bank deposits and liquid financial investments.

Financial Resources are:

- ✓ In cash
- ✓ Short term bank deposits
- ✓ Liquid financial investments, like stocks and bonds services and to carry out long term investments.

FINANCE FUNCTION .

*Money is an arm or a leg; you either use it
Or lose it.*

- Henry Ford^

This statement is quite meaningful. It brings home the Significance of money, or finance, which comates, "the finance Is the lifeblood of business". Thus, finance holds the key to all Human activity. It guides investment and expenditure and endeavors to squeeze the most out of every available Rupee. No business activity can ever be pursued without financial support and for survival in the market, financial viability is the central theme of any business proposition.

2.4 FINANCIAL RESOURCES MANAGEMENT

Good financial resources management is key to achieve the goals of the organization. Situations in which the shortage of the funds can compromise the short-term operations must be avoided. For example, if the organization does not have enough funds to pay salaries or buy raw materials. On the other side, an excess of financial resources can lead to a high opportunity cost. Thus, development in financial management introduced treasure for fund-raising, comprising managing tax problems, cash management, insurance process and credit and collections and a separate person for controlling, which involves general accounting, cost accounting, systems and procedures and planning and budgeting.

Thus, financial management involves the following functions:

- I. Raising of Funds:**
 - (a) Cash Management,
 - (b) Tax Management
 - (c) Insu rance
 - (d) Crédit Management
 - (e) Recovery Management

II. Allocation of Funds:

- (a) General Accounting
- (b) Cost Accounting
- (c) Systems and Procedure
- (d) Planning and Budgeting

III. Research in Financial Management:

The research activity in financial management gained momentum In Med-Con Construction Plc. Since then, the research Contributed thought-provoking study,

The work done so far can be broadly classified into the following important aspects in the area of financial management:

- (i) Corporate financial behavior;
- (ii) Capital structure planning, including valuation of shares and dividend policies;
- (iii) Allocation of capital resources;
- (iv) Capital markets, including development banks and financial corporation's;
- (v) Management of working capital;
- (vi) Financial management of typical organizations

In what follows, an attempt is made to present an overview of the research activity carried out in the aspects that have relevance to the present study. One of the main segments of corporate financial behavior is the study of financial trends in individual company.

2.5 Time resource management

Time management is the process of organizing and implementing a strategy related to the time required for work activities on a project. Effective time management is essential to successfully and efficiently meeting budget and programmed targets, as well as achieving profitability.

Projects can risk incurring unnecessary costs and delays as a result of ineffective time management, either by failing to allow for the full complexity of a project, or by failing to effectively manage scheduled work or unexpected events.

On large projects, the client may appoint a programmed consultant to prepare a detailed program for the project including an

outline program for construction if a contractor has not been appointed. Once the contractor is appointed, they will take responsibility for programming the construction works, but the program consultant may continue to develop an overall program for the client.

During the planning stage, all work activities should be properly understood, and planned in detail to optimize the allocation of resources and reduce the potential for 'unknowns'. Estimates can then be made of how long each activity will take. This is critical to the setting of milestones and deadlines, for allocation of resources, and for determining the pricing of contracts and cash flow requirements.

As well, as work packages, time management should also make allowance for activities including:

- The interrelationships between tasks.
- Project management administration.
- Liaison with third parties, such as the local authority.
- Client approvals and decision making processes.
- Training.
- Accidents and emergencies.
- Internal and external meetings.
- Holidays and sickness in staff.
- Suppliers and subcontractor activities.
- Equipment breakdowns.
- Missed deliveries by suppliers.
- Interruptions to work progress due to inclement weather.
- Inspections, testing and other forms of quality control.

The concept of 'float' describes the time that an activity can be delayed without changing the overall project duration. The float is obtained by subtracting the duration of activities from the available time. The critical path is determined by all activities where the total float is zero.

The critical activities have to be carried out without delay, any modification in their duration results in change in the project's duration. The duration of an activity can sometimes be reduced by adding additional resources, but this will also increase its cost.

2.5.2 Impacts of Poor Time and Cost Performance

The construction industry is one of the most complex, fragmented industries referred as

Schedule and resource driven. In construction industry timely completion of project with the

Budgeted cost is a major criterion of project success. Time and Cost overruns have obvious impact for the key stakeholders in particular, and in the construction industry in general. Delays and cost overruns in construction projects prevent the planned increase in property and service production from taking place, and this phenomenon in turn affects, in a negative way, the rate of national growth [Arditi, et al, 1985].

Different researchers have studied the impact of time and cost overruns related to time and

cost performances. To the industry as a whole, cost overruns could bring about project abandonment and a drop in construction activities, bad reputation, and inability to secure project finance or securing it at higher costs due to added risks. All these consequences undermine the viability and sustainability of the construction industry. The impact of time and cost

overrun are not confined to the construction industry, but are reflected in the state of the overall economy of a country. Fetene (2008) has found out twenty main effects of cost overrun, which are collected from the respondents of the questionnaire survey and desk study:

- Delay,
- Supplementary agreement,
- Additional cost, budget shortfall,
- Adversarial relationship between participants of the project,
- Loss of reputation,
- High cost of supervision and contract administration for consultants,
- The contractor will suffer from a budget shortfall of the client,
- Poor quality workmanship,
- Dissatisfaction by project owners and consequently by end users,
- Negative attitude towards the construction industry by the higher public authority and by the society as a whole,
- The contribution of the construction industry to the growth of the national economy of the country will be less,
- Cost overruns on construction projects prevent the planned increase in property and service production from taking place, and this phenomenon in turn affects, in negative way, the rate of national growth
- Weakens the growth of the construction industry by eroding mutual trust and respect,
- Pours money unnecessarily to the project at hand at the expense of other new projects,

Identification of the Challenges of Construction Management in the Building Construction of

Ethiopian Public Universities: A case of Addis Ababa Science and Technology University.

□□Distorts fair and equitable resource distribution,

□□Discourage investment, the investment in building construction by public clients will be less, hence the number of projects will decrease in the future,

□□Creates skeptical outlook on appraisal of other new construction projects,

□□Some project owners (clients) become reluctant to effect additional payments to contractors and they view the cost overrun as a fabricated matter. This will propel to delay the project and become a source of dispute among participants of the project,

□□Creates frustration on stakeholders..

Poor time and cost performance doesn't affect only stakeholders in the project, but also the

building construction industry as a whole and consequently to the national economy of the Country.

Table 1 The Challenges of Construction Industry

Construction Issues		
Rising Costs	Time	Quality
□□Wages □□Materials & Supplies □□Productivity □□Time delay □□Capital equipment □□Inflation	□□Delivery of materials, supplies, & equipment □□Government restraints □□Productivity □□Changes □□Design schedule	□□Design Criteria □□Inspection □□Lack of Skilled Workers □□Supervision □□Finance □□Availability of □□Materials

	□□Construction Schedule	
Cost-Time-Quality Trade-offs		

Source: Adapted from Barrie and Paulson 1992

CHAPTER (3)

METHODOLOGY

3.1 Introduction

The previous chapter discussed about the different issues on the resource management challenges concerning; time management, human resource management, equipment management, material management and financial management

The construction activities took place in Ethiopia and other country. It also tried to provide an in depth understanding of building construction management challenges by discussing the findings of other researches.

3.2 Research strategy

Research strategy can be defined as the way in which the research objectives can be questioned (Naoum, 2007). The explanation of mass behavior often requires mass attitude data that can only be obtained by a survey (Weisberg and Bowen, 1977). The people who provide information to the researchers are referred to as subjects, study participants, or

respondents in quantitative research or as study participants or informants in qualitative research (Polit and Hungler, 1999). There are two types of research strategies, namely, quantitative research and qualitative research. (Naoum, 2007). Data may take the form of narrative information (qualitative data) or numerical values (quantitative data), (Polit and Hungler, 1999). Quantitative research is objective

in nature. It is defined as an inquiry into a social human problem, based on testing a hypothesis or a theory composed of variables, measured with members, and analysis with statistical procedures (Naoum, 2007). Quantitative researchers focus on the relationship between the independent variables and dependant variables (Polit and Hungler, 1999). Quantitative research is an objective measurement of the problem.

In this study, the questionnaire of this study is designed to get the factual information about local practices of contractors in managing construction resource in building projects as well as the opinions of contractors about these practices.

3.3 Research design

The purpose of this project is to explore the current practices of construction resources management of Medcon engineering and construction PLC. In addition, develop system to be used in resources management works. Data for the research were collected using both primary and secondary sources. The primary data was obtained through questionnaire direct from mentioned company that is involved in building construction. The secondary data were also obtained from the internet, thesis, journals, books and different articles in published documents. The secondary data were used to get an insight of the problem and were used as

criteria for developing and analyzing the primary data. In consideration of the nature of the project question, qualitative research method was Identified for the Resource Management in the Building Construction relates to the personnel attitude, opinion and view.

3.4 Literature Review

The literature review involves reading and appraising what other people have written about the subject area (Naoum, 2007). The literature review serves two purposes. First ,it seeks systematic reading of previous information, which is related to the area of investigation. The gathered information will develop issues and ideas and should drive to the next important stage, namely, research design. Second, the literature review helps us to improve our research study by giving us some insights into how we can design our own study (Naoum, 2007).

A survey and a review for relevant books and papers are conducted. In addition to these sources of data, a search in internet websites is carried out to get relevant information.

3.4.1 Limitation of the research

The study is limited to company which is too small to have specific arrangements for resources management; shortage of recorded document about company resource management

3.4.2 Data collection and questionnaire design

In this project, few methods of data collection were used which is questionnaire and documentary analysis. The good Design of the questionnaire is a key to obtain good results and warranting a high rate of Return. The questions of the project are constructed based on:-

- Literature review.
- Several interviews with contractors to obtain different thoughts, which can be useful for creating questions.
- Based on our experience and some engineers in construction.

The questionnaire was built mainly using closed questions, and it was divided into six sections as follows:

Section one: company profile, which includes 4 items.

Section 2: construction materials management in construction projects, which Includes 4 items.

Section 3: construction Human management in construction projects, which includes 4 items.

Section4: construction equipments management in construction projects, which includes 4 items.

Section 5: construction Time management in construction projects, which includes 4 items.

Section 6: construction Finance management in construction projects, which includes 4 items.

3.5 Population and sample

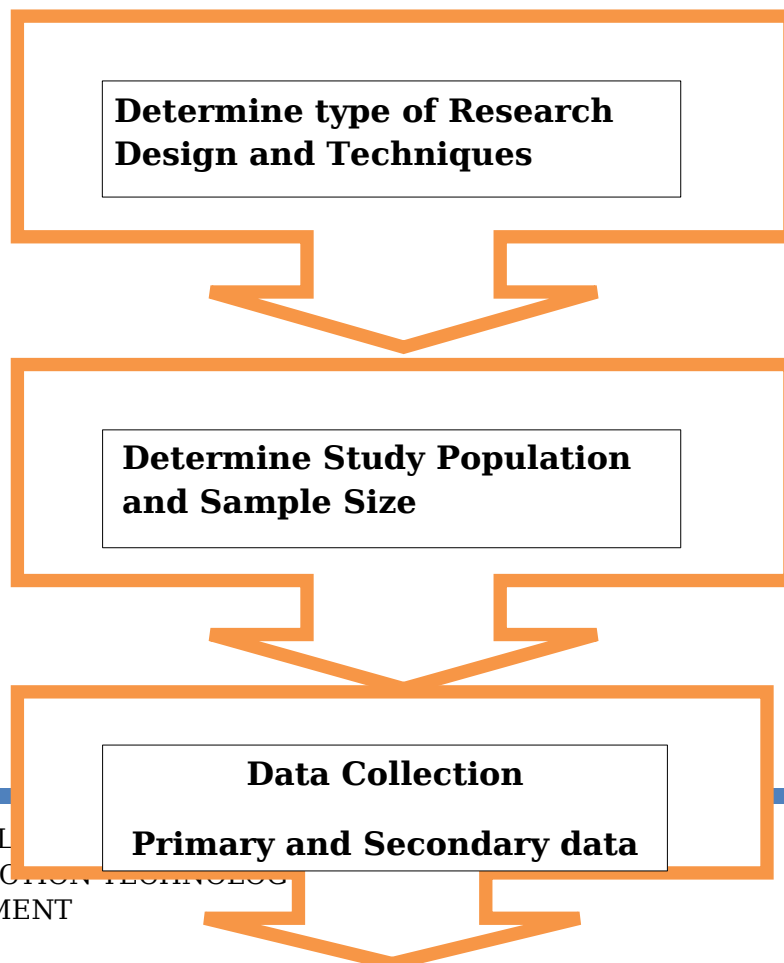
The studied population includes the Project manager, Site Engineer, Office Engineer and others of medcon engineering & construction Plc. As

resource, management is somehow sophisticated activity, our project addressed towards the contracting company.

3.6 Field work research

The problem solving approach accompanied with a field survey was adopted for conducting this research. A questionnaire was designed and constructed to survey the situation and reality of construction resource management practices of medcon engineering & construction Plc. The data which was collected by the questionnaire is analyzed and discussed.

Figure 3.1 Conceptual Framework of the methodology



Analysis of the Result

CHAPTER (4)

SURVEY RESULTS

4.1 Introduction

In this chapter, the results of the field survey are presented and discussed. The chapter illustrates and discusses the characteristics of the study population, application of construction resources management tools and techniques in construction projects, Implementation of construction resources management systems.

4.2 Study population characteristics

The general characteristics of the study population were investigated. They include the field of work, experience of respondents, number of employees, and the person in charge-of managing construction resources.

4.2.1 Major type of work involved

Major type of work involved	Frequency	Percentage
Building		
Roads Bridges		

Water works	No document	No document
Pre-mix cement concrete		
Total		

4.2.2 Respondents designation

Table 4.2 shows that 23.33 % (7) of contracting companies respondents were site engineers, 4 % (13.33) were projects managers, 20 % (6) were office engineers and 43.33 % (3) were others

Respondent designation	Frequency	Percentage
Project manager	4	13.33%
Site engineer	7	23.33%
Office engineer	6	20%
Others	3	43.33%
Total	20	100%

Total forwarded questions regards to the project study <small>Study on Resource Management</small>	Frequency			Percentage(%)		
	yes	No	I don't know	yes	No	I don't know
Are there Human, Financial, Material, Equipment and time resource management in the company	15	0	5	75%	0%	25%
Is there effective utilization of resources in the organization	10	10	0	50%	50%	0%
Is the capacity building regarding resources in the organization	4	13	3	20	65	15
Is the company profitable because of using the resources properly	10	10	0	50	50	0
Is the company secured insurance, incentive payment and job security	2	16	2	10%	80%	10%
Is there a team development(training and motivation) in the organization	12	8	0	60%	40%	0%
Is the organization maintain health & safety for the employee	7	9	4	35%	45%	20%
How is man power hiring and promotion methodology, is it formal & legal	15	5	0	75%	25%	0%
Is the financial resources applicable properly in the organization	6	12	2	30%	60%	10%
ADDIS COLLEGE/MSC. PROGRAM IN CONSTRUCTION TECHNOLOGY AND MANAGEMENT Is there a modern system for the controlling of financial management	8	10	2	40%	50%	48 10%
Is the process challenges during payment	5	12	3	25%	60%	15%
Is there a planned						

CHAPTER 5

FACTORS, CONCLUSION AND RECOMMENDATIONS

5.1 Introduction

This chapter introduces the project conclusions and recommendations for medcon engineering and construction plc. to improve the practices in construction resources management. Recommendations are also included.

5.2 Conclusions

From the results obtained, analyzed, and discussed, the study concludes that:

The contracting company Medcon is: Relatively newly established and Involved mainly in building works Small size organizations depending heavily on subcontractors.

- ❖ There are many factors that affecting the overall management process:-
 - ✓ Work discipline; - Health-and-safety conditions; - Work satisfaction; - Creating competition; - Relations with workmates; - Giving responsibility; - Sharing problems and their results; - Social activity opportunities; - Cultural differences; - Worker participation in

decision-making; - Distance from home; and - Distance from population centers incentive payments and relation between workers.

- ✓ Fault timing of materials received by the site or inadequate quality, improper information for materials arrival to the site stock, missing materials, unavailability of storage space, and waste of labor for materials searching on site. If the materials delivery on site without any checked by site manager, the materials will be used only satisfy that the materials in the situation of wrong materials wrong quality and also wrong quantity, it will cause delay of the work and increase the cost of the company.
- ✓ There are many factors, which related to equipment and impact on the cost of the company; like availability of construction equipment in the market, the quality of construction equipment and unqualified training for workers.
- ✓ Also other factor seen on the study is on the financial management which is a critical gap in understanding the process of an organization financial management,
- ✓ The interrelation between degree of recording and evaluation of financial transactions on organization financial decision making has not been fully quantified.

5.3 Recommendations

To the parties involved in company Top management of medcon engineering & construction PLC. Are invited to encourage development through the implementation of construction resources management systems.

Which includes-

- Making incentives for their staff members to attend training courses in construction resources management and its applications. Also the

company top managers should make; communication, control mechanisms, feedback capabilities, troubleshooting, coordination, decision making, monitoring, project organization, planning and scheduling, and management experience. HR managers have to be able to identify and document project roles and responsibilities, and develop a plan describing the end-to-end processes that will be required on a project (or series of projects) in order to determine its human resource requirements.

- Application of Health and safety: also is a part of importance in construction site to provide zero accident. It should follow according to handbook of health and safety. This is because the construction site is the risky site, when the health and safety can be determined on site; the worker will feel secured and confident to perform their work as well as possible.
- In addition, the managers should be encouraged actually to use computerized construction resources management systems to save effort and time, and to achieve results that are more accurate.
- Material management is the main key for success a construction company. Therefore, with the effective management of the materials, the company can save more money. Therefore, the materials management method must apply in organization of medcon and the proper arrangement of the materials will help company minimum the cost and maximum their profits.
- Proper selection of equipment for a construction company is of vital importance for its speedy and economical completion. Problem of equipment selection has become more complicated, because large varieties of equipments are being manufactured now days.

- Need for financial Intelligence gained through financial planning, budgeting, real time tracking and analysis is also stressed. Various money management tools exists which equip an organization to make informed financial choices. Fuzzy logic is an approach to computer science that mimics the way a human brain thinks and solves problems.
- In conclusion it may be said that analysis of capital structure, capital profitability, funds flow, working capital, fixed assets and value added as technique of evaluation of performance provide a better insight into the performance of **Med-Con Construction Plc** to form the opinion about their managerial effectiveness in general and financial management in particular.
- In general, Computer software systems are widely used in construction management in the developed countries. Yet, using computer applications is still in its early phase of development in the developing countries. Therefore, it is logical that computerization has emphasis in the process of improvement of project management practices in the developing countries