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**ST. MARY'S UNIVERSITY  
SCHOOL OF GRADUATE STUDIES  
DEPARTMENT OF PROJECT MANAGEMENT**

**ASSESSMENT OF PROJECT MANAGEMENT  
PRACTICES IN HIGH-RISE BUILDING: THE CASE OF  
CBE HEADQUARTER BUILDING PROJECT**

**BY  
MAHIDER ASRAT ZEWDU  
ID: SGS/0279/2013A**

**July, 2022  
ADDIS ABABA ETHIOPIA**

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**A Thesis submitted to the School of Graduate Studies of ST. Mary's  
University in partial fulfillment of the requirements for the Degree  
of Master of Arts in Project Management**

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## **DECLARATION**

I, Mahider Asrat, hereby declare that the thesis work entitled “**Assessment of Project Management Practices in High-Rise Building: The Case of CBE Headquarter Building Project**” submitted by me for the award of the Master of Art Degree in Project Management at ST. Mary’s University, is original work and it hasn’t been presented for the award of any other Degree, Diploma, Fellowship or other similar titles of any other university or institution.

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Name

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Signature and Date

**St, Mary’s University, Addis Ababa**

**July, 2022**

## **ENDORSEMENT**

This thesis is submitted to St. Mary's university, school of Graduate studies for examination with my approval as a university advisor.

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Advisor

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Signature and Date

**St, Mary's University, Addis Ababa**

**July, 2022**

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## **Abbreviations and Acronyms**

AAU	Addis Ababa University
AAiT	Addis Ababa Institute of Technology
AEA	Association of Ethiopian Architects
BoQ	Bill of Quantity
CBE	Commercial Bank of Ethiopia
CA	Contract Administrator
CSCEC Ltd	China State Construction Engineering Corporation Ltd.
CM	Construction Management
CPO	Construction Projects Office
DB	Design and Build
DBB	Design-Bid-Build
FIDIC	Fédération Internationale des Ingénieurs-Conseils
HQ	Head Quarter
ICB	International Competitive Bid
LDCs	Less Developed Countries
NCB -	National Competitive Bid
PMBok	Project Management Body of Knowledge

## **Abstract**

*High-rise building construction projects are very major part of construction industry which has an important role for growth of the nation. The challenges and risk factors in high-rise construction projects are high. Even though since recently high-rise building projects have been undertaken in Addis Ababa, very little studies were carried out on regarding the challenges and practice of managing high rise building projects. Accordingly, the study mainly aimed to assess the project management practices of the high-rise building construction in Addis Ababa with specific reference of CBE high-rise building project. The study used descriptive case study research design and qualitative research approach where field observation and semi-structure interview was used as primary source of data and documentation analysis as secondary source of data. The study used purposive sampling technique. Hence, the interview included one project manager, one contract administrator, and six project team members who were believed to know the area or subject matter very well. Different kinds of secondary data were also greatly used as triangulation mechanism. The qualitative research came up with a finding that DB project is becoming effective in meeting its project cost though there were some changes in cost were made due change in scope, however, the project is not effective in its time schedule as it has having significant time delay so far and the quality assurance is not certainly known though significant follow-up and supervision were made to ensure that project was in accordance with the details stated in the contract. The study identified the outbreak COVID-19, a lack of construction materials, a language barrier, a lack of certain norms and regulations, a shortage of qualified labor and contractor claims as major challenges of project. The study also identified that the project could have provided a significant opportunity for learning capacity and transferring technology and knowhow related with high-rise building projects. The study concludes that having skillful experts, documenting every project instruction in written form, providing discrete authority to the contractor with full responsibility (empowerment), harmonization of stakeholders, back-to-back evaluation with continuous progress review meetings were identified as how effective project term managed can be used to bring the project finally to be completed based on the experience of the case study.*

**Key words: High-rise building, Design-Build Project, Project, Project Management, Commercial Bank of Ethiopia (CBE)**

# CHAPTER ONE

## INTRODUCTION

### 1.1 Background of the study

Construction industry has substantial role in the advancement of the World economy. According to The Global Competitiveness Report (GCR), in 10 trillion USD revenue and added value of 3.6 trillion, the construction sector is account for about 13% of the world GDP. It accounts 7% of the world's working population (GCR, 2019). Its inter-sectoral linkage with other sectors, makes it to be powerful in the economy by having highly observable output and encourages sizeable amount of economic growth (Giang & Pheng 2010).

Particularly, in developing countries including Ethiopia, construction sector has very crucial contribution for rapid and equitable socio-economic development through output generation, employment creation, and income generation and re-distribution. According to Kerzner (2011), major construction activities in developing countries account for about 10% of their GDP and more than 50% of the wealth invested in fixed assets. The 2019/20 Annual Report by National Bank of Ethiopia depicted that the industry sector had 29.2% share in the GDP of the country; and Construction had a 68.5% share in the industry sector (NBE, 2019/20). However, despite this significance, the performance of the construction industry in the developing countries is generally low as indicated in many researches. The case in Ethiopia is no different. Researchers, such as Zelele (2016) and Yimam (2011), suggest that the level of construction project management practice in Ethiopia in terms of adapting general project management procedures, functions, tools and techniques is low.

Among the major problems facing construction project management today are those involving the managing of large construction project that involves the coordination of many diverse activities toward a common goal. In a large construction, project manager must devise plans which will tell with as much accuracy as possible how the efforts of the people representing different functions should be directed toward the project's completion. The major task of project management in such big construction projects required the coordination of various professionals working in the project, so that they have a maximal contribution to the project (Chartered Institute of Building, 2002). More so, According to Gorecki (2015), due to unique nature of a

project, huge finance & resources required, diversified activities involved; the uncertainties usually come from such types of huge construction project. Improving project management capability has a role in reducing these uncertainties (Grant & Pennypacker, 2006). Here, assessing project management practice in general and such kind high-rise building construction project in general come of paramount importance.

High-rise building construction projects are very major part of construction industry which has an important role for growth of the nation. Construction of high-rise buildings had long been sought by human beings and has been actually realized. The realization and development of high-rise buildings has been possible due to the advancement of the engineering area such as the advent of steel, elevators and high-strength concrete along with the increased buying-power and human passion. The challenges and risk factors in high-rise construction projects are very high. Hence the various types of challenges involved in high-rise structures also play a major role in construction industry. Construction project objectives are always unique and built once. Various kinds of challenges associated with the project management practices are arising from different sources. Challenges all the time occurs at construction projects and frequently leads to time overruns or cost overruns or quality problem (Beedle, 2006).

Since recent time in Addis Ababa, buildings of 20 to 50 stories have been constructed these days and they are transforming the skylines of our capital city. In Ethiopia, a building greater between 35 to 150 meters, generally 12 to 50 stories, is considered as high-rise (MoUDC, 2019). Most of the high-rise buildings in Ethiopia are in the Addis Ababa. According to Emporis (2019), Addis Ababa currently has 101 Buildings which are considered to be high rise buildings that have total height of more than 45 Meter. In addition to these high-rise buildings being constructed, there are also more than 20 building under construction and new ones are being proposed and in progress. One of these is LaGare situated in the center of the city within proximity of the Addis Bole International Airport, with a rail line running along its northern edge. It has two tall residential towers, rising to their highest points of 34 stories in a „gateway“ configuration at the end of the central spine (EHE, 2019)

The 48-storey CBE Tower is the tallest building in Addis Ababa, which is under construction near the Ethiopia Hotel off Ras Desta Damtew Street. The height of the building is 206 m (676ft)

and has a gross floor area of 165,400m<sup>2</sup> (1,780,351 ft<sup>2</sup>) that will serve as the headquarters of the state-owned bank. Early 2015, the Commercial Bank of Ethiopia signed a deal with China State Construction Engineering Corporation (CSCEC) for the construction of the building at a cost of \$267 million. The CBE Tower, which was designed by Henn Architekten, a German firm, was scheduled to get underway in 2011 but that never happened because the bank did not obtain approval from the State. Construction finally got underway in March 2015, now cladding work is being finalizing. On final completion, CBE Tower will be the tallest building in Ethiopia and it will feature prominently in the list of tallest building in Africa. Even though high-rise building projects have been undertaken in Addis Ababa, very little studies were carried out on regarding the challenges and practice of managing high rise building projects. Accordingly, the study mainly aims to assess the project management practices of the high-rise building construction in Addis Ababa with specific reference of CBE high-rise building project.

## **1.2. Statement of the problem**

Construction of high-rise buildings had long been sought by human beings and has been actually realized. Ordinary people have become more aware and interest in high-rise buildings due to the World Trade Center disaster which happened in 2001 in New York and a considerable number of people seem to have an ambiguous anxiety about the height of high-rise buildings. Nevertheless, the trend of constructing high-rise building is expected to continue. It is because not only high-rise buildings integrate all of the state-of-the-art construction technologies, but also they tend to be seen as a national symbol or indicator of economic growth (Beedle, 2006).

However, construction projects in general and high-rise building project in particular are somewhat difficult to manage and challenging due to the nature of the industry and the project; such as complex and unique nature, mobile workforce, ingrained culture, working conditions, and project-based setup, diverse sub-contractors and suppliers; in addition to regulatory bodies and changes in government policies during the production process (Arditi and Balci, 2009). These factors significantly affect the efficient performance of construction site management team (Fapohunda and Stephenson, 2010) and in most cases lead to project failure (Kar, 2009). The reasons for such failure are quite complex and it is not wise to pinpoint specific reasons to ensure project success. However, it is felt the main reasons for project failure in developing countries are lack of advance planning, a holistic approach, lack of comprehensive engineering and

management strategy, inconsistency in monitoring and follow-up, coordination and communication lapses and above all, absence of a methodical approach (Kar, 2009). Besides technical issues, posit that professionals in the construction industry also need to handle managerial issues (Agundu, et, al., 2003).

The situations are also common in the Ethiopian construction sector in Ethiopia in general and Addis Ababa in particular. Currently, lots of high-rise building projects have been constructed in Addis Ababa. In this regards some distinctive facts can be found in the start and development of Addis Ababa's high-rise buildings. Firstly, the technological know-how skills and experience in building and designing high rise building is at infant stage in country. This meant that the level of technologies required for super high-rise building projects was not fully understood. Secondly, there were not enough even there were also limitation execution and enforcement the existing laws and regulations which result in lack of disaster management system and social recognition at the time of developing super high-rise buildings. Consequently, it resulted in the loss of opportunity to construct land-mark buildings due to the lacking of faith (confidence) of concerned authorities and lack of effective regulatory framework. Furthermore, bureaucracy of relevant laws and regulations is still preventing the development of super high-rise buildings (Zezele, 2016).

Current super high-rise building projects in Addis Ababa have faced with several problems. Projects are being performed by a few construction companies of large size due to the characteristics of the construction-centered industry. This discourages small-sized design firms with an unstable financial foundation, from developing key construction technologies for super high-rise buildings. Related laws and regulations adhering to partition-style are not fully reformed and deep exclusionism exists among the general contractors, specialty contractors and consultants. This has also resulted in not only the obstruction of the application of advanced construction management (CM) methods to integrate design and construction, but also the joint research and development through the partnership of the companies. Consequently, the super high-rise building era has begun without any key items such as laws and regulations, core technologies, construction management technologies, and social consensus (Zezele, 2016). Each problem in the execution of super high-rise building projects in Addis Ababa possess various challenge which will require and entails further investigations.

Timely completion of a construction project is frequently seen as a major criterion of project success by clients, contractors and consultants alike. Newcombe et al. (1990) has noted that there has been universal criticism of the failure of the construction industry to deliver projects in a timely way. NEDO (1983) states that a disciplined management effort is needed to complete a construction project on time, and that this concerted management effort will help to control both costs and quality. This is tantamount to saying that the client’s objectives can be achieved through a management effort that recognizes the interdependence of time, cost and quality. However, the CBE head quarter project had reported time delay. Due to the incorporation of additional element (scope) in project and unforeseen conditions associated with epidemics of Covid-19, the project had been extended for four times for a total of 813 days. The CBE head quarter project time performance is presented in table 4.1.

**Table 1.1: CBE head quarter project time performance**

Date of Signature:	April 28, 2015
Contract Time:	1460 days plus 365 days given for defects liability period plus 10 years guarantee period
Mobilization Time:	90 Days from signing date
Commencement Date:	July 27, 2015
Completion date	July 23, 2019
Extension due to supplementary agreement	6 months
Amicable time extension No.1	10 month and 3 days
Amicable time extension No.2	180 days
Amicable time extension No.3	180 days
Revised completion date	January 30, 2022
The actual project inauguration date	February 13, 2022
The total project extension period	813 days
Time elapsed in Date:	2343 days
Time elapsed in %:	>100%

Source: project document (CBE, CPO)



More so, despite the fact that construction of high-rise buildings is under construction in our country, from the reviewed literature and to the best of the researcher knowledge there is no previous work on assessing the project management practice of High-rise building construction project. By assessing the project management practice of High-rise building construction project in the case CBE head quarter building project, this study fills the literature gap concerning high-rise building construction. This study also aims to identify various challenges which occur in the construction of high-rise buildings with specific focus on CBE head quarter building, key construction technologies and project management methods, which are integral for the construction of high-rise buildings. The study will also lay a foundation to further understand implementation of project management processes in other high-rise building strategic public projects in Ethiopia

### **1.3. Research Questions**

The general research question that the study tries to answer was:

- ❖ How was the project management practiced in the context of high-rise building project in Addis Ababa?

#### **1.3.2. Specific Research Questions**

The specific research questions that the study tries to answer were:

- ❖ How the project cost, time and quality of CBE head quarter building project managed?
- ❖ What are the challenges faced in managing CBE head quarter building project?
- ❖ What lessons can we learn from managing such high-rise building project?

### **1.4 Objectives of the study**

#### **1.4.1 General objective of the study**

The general objective of this study was to assess the practices of managing high rise building in Addis Ababa with the case of CBE head quarter building project.

#### **1.4.2 Specific objectives of the study**

The Specific objectives of the study include the following:

- ⇒ To assess the project cost, time and quality management practice of CBE head quarter building project.
- ⇒ To identify challenges of project management practice in this project.
- ⇒ To suggest lessons that we learn in managing such kind of high-rise building project.

## **1.5 Significance of the Study**

The findings of this research are expected to contribute a lot for different project stakeholders, project managers and project teams undertaking similar projects. First of all, the study will provide an important insight about the challenges of managing high-rise building construction projects. The finding of the study may also help the company manager to have better knowledge and understanding regarding the gaps in the current project management practice. More, it will also give a better insight about the mitigation measures that need to be taken to resolve those challenges regarding management of high-rise building. Finally, the study may serve as a reference for further studies

## **1.6 Scope and Limitations of the Study**

The scope of this study was delimited to case study of CBE head quarter tower in Addis Ababa; which may restrict generalization of the findings to all high-rise building projects all over the city and the country. The conceptual scope of the study aims to describe and explain the project management practice with specific focus on project initiation, project conception and project realization (cost, time and quality) management practice of high-rise project in Addis Ababa. It specifically investigates how project management is being practiced in CBE head quarter building project in Addis Ababa by collecting data at a point in time.

## **1.7 Organization of the study**

The study is organized into five chapters. Chapter one discussed the introduction part. It contains the background to the research study, presents the statement of problem, objectives significance and scope of the study. Chapter two contains theoretical review, empirical review of previous studies and conceptual framework of study. Chapter three outlines the research methodology adopted in this study. Chapter four discusses about the data analysis and interpretation of the outputs. Chapter five outlines the summary of the finding, conclusions, recommendations and further research suggestions.

## **CHAPTER TWO**

### **LITERATURE REVIEW**

#### **Introduction**

This chapter includes the theoretical and empirical reviews which are found to be essential to the research inquiry. Thus, the first section discusses the theoretical literatures related to the study variables which are considered in order to lay solid foundation for the research. Besides, project management practice in the construction industry and related studies are also discussed in this chapter. In the final analysis, a brief summary of some of the related previous work on this study are discussed.

#### **2.1 Review of Theoretical Literatures**

In this section the conceptual definition of basic concepts concerning the main study variables are discussed. More so, the section also provides review of theoretical literatures concerning high rise building and other related issues of the study.

##### **2.1.1. Construction Industry**

The construction industry assumes a key part in deciding the advancement and prosperity of a country, and fundamentally adds to upgrading the stability and security of a nation (Ismail, et al., 2013). This could be attributed to the fact that the industry encompasses almost all aspects within the country be that related to irrigation, concrete structures, communication networks and all related civil engineering projects and initiatives. It therefore has wide applicability in such diverse sectors as health, education, agriculture, housing, commercial, utilities etc., all of which are related to infrastructural development and associated progress. It can therefore be concluded that the construction sector is an amalgamation of diverse organizations, impacting the construction process in varied ways.

According to Mulinge (2014), construction industry is an industry which is involved in the planning, execution and evaluation (Monitoring) of all types of civil works. Physical infrastructures such as Building, Communication and Energy related construction works; Water supply and Sewerage civil works, etc are some of the major projects / programs in the construction Industry. Leibing, (2001) identified the following basic features that are found in definitions of the construction industry:

- Massive: in the terms of the money that projects can cost – the worldwide total is virtually uncountable
- Dominant: construction is a major factor in the national economy and contributes to the growth of geographic areas and employs a huge workforce.
- Flexible: the construction industry can adapt rapidly to any climate, situation, or need.
- Active: due to its continuous movement toward better quality, higher/newer technology, safer structures, and better services
- Structured: involves every feature of a project from financing to management to regulatory controls, to the actual construction design and execution (Leibing, 2001)

According to Chitkara (2011), a construction project is a high value, time bound, special construction mission of creating a construction facility or service, with predetermined performance objectives defined in terms of quality specification, completion time, budgeted cost and other specified constraints. According to Chitkara (2011), a construction project is a high value, time bound, special construction mission of creating a construction facility or service, with predetermined performance objectives defined in terms of quality specification, completion time, budgeted cost and other specified constraints. Construction can be considered as a dynamic industry which is constantly facing uncertainties, because building project is multidisciplinary which involved many parties as the project owner and various professionals, contractors and suppliers, manpower and subcontractors, these uncertainties and the many stakeholders in these kinds of projects make the management of costs, time and quality of project quietly difficult

Construction is a vast and an active economic sector, which is also considered as backbone of the world's economy in general (Panassaya, 2015). According to Global Construction Category Intelligence Report (GCCIR), in 2020, the global construction output value at 10.25 Trillion Dollar. It will also cause a marked rise in job availability due to the number of people the industry employs, which is about 7.6% of workers around the globe in 2020 (Global Data, 2020)

Particularly in Ethiopia, this sector mobilizes an enormous amount of various resources and budgets that embraces huge manpower of different professions by creating a large job opportunity (Lucy, 2016). According to the 2020 edition of African Economic Outlook, the market value of the construction sector in Ethiopia is currently estimated at more than US\$14.8

billion which accounted for 12.9% of GDP at current prices during the 2019/20 fiscal year. Global Data has cut Ethiopia's construction growth to 3.1%, from an earlier estimate of 7.8% in 2020, and to 5% in 2021 (Global Data, 2020).

### **2.1.2. High-rise Building**

High-rise buildings are being built in connection with the growing population of cities, lack of land, as a rule, these are prestigious projects of special architectural significance, reflecting the state of the scientific and technical process, innovative technologies in construction. High-rise buildings have features that significantly distinguish them from ordinary buildings. In the following section brief review and discussion is presented as follows.

Various definitions are given to describe what a high rise building is. According to Craighead, (2009), any structure where the height can have a serious impact on evacuation is classified to be a high rise building. According to the building code of Hyderabad, a high-rise building is one with four floors or more, or 15 to 18 Meter (49 to 59 ft) or more in height. Emporis (2000), defines a high rise as a multistory structure between 35-100 meters tall or a building of unknown height from 12-39 floors while NFPA (2016), states that a high rise only comprises of buildings higher than 23 meters or about 7 stories. The *International Conference on Fire Safety in High-Rise Buildings* defined a high-rise as "any structure where the height can have a serious impact on evacuation". In the U.S., the National Fire Protection association defines a high-rise as being higher than 75 feet (23 m), or about seven stories.

In Ethiopia, provisions in 1986, 2002 and 2010 were made for building height classification. The new regulation for building height classifies building heights based on building height zones. The zones are elaborated as follows (AACPPPO, 2017):

- Building Height Zone 1: -has 70m minimum height and adds no limit on the maximum height.
- Building Height Zone 2: -Maximum building height of 70m.
- Building Height Zone 3: -Maximum Building height is 35m.
- Building Height Zone 4: Maximum Building height is 35m but the floor area ratio is different from zone 3.

As we can see from the above definition there is universally accepted standard definition for high-rise building. It is defined differently in terms of height depending on the jurisdiction. Most building engineers, inspectors, architects and similar professionals define a high-rise as a building that is at least 120 feet tall. Considering this fact, this paper uses Building Height Zone 3 and above buildings which is similar to the Emporis (2019) standard definition of high rise. Therefore, the research evaluated and studied buildings with a height of more than 35 meters.

Throughout history, mankind has been striving for something more perfect, more ambitious, erecting ever higher and more refined buildings. The first high-rise buildings were built in the USA (Chicago). The increase in land prices, technical progress in building and construction and the reliable construction of the elevator by the American engineer E. Otis led to the appearance of the first many-story houses, which were called “skyscraper”. At the turn of the 19th and 20th centuries, large volumes of office construction, as well as requirements for high concentration and building density, led to an increase in the number of storeys in buildings. At the same time, in addition to the possibility of erecting high-rise buildings on small land plots, the prestige and advertising of firms located on them played a significant role. That is why high-rise buildings are sometimes called “prestige buildings”, and the architecture of these buildings is called “the big business style”. In Europe, high-rise buildings appeared only in the middle of the 20th century. At first, these were detached buildings in a historic city area: Pirelli in Milan, Montparnasse Tower in Paris, etc. Since the 1960s high-rise buildings are located mainly outside urban historical zones. In the 1990s the most dynamically high-rise construction is developing in the countries of Southeast Asia (Saatcioglu, 2016).

The first high-rise buildings in Ethiopia were erected in the late 1950s -early 1960s in Addis Ababa. The earliest and most significant of which are 15 story Arada Building which has found around Piassa, Addis Ababa. According to Emporis (2019), Addis Ababa currently has 101 Buildings which are considered to be high rise buildings that have total height of more than 45 Meter. There are also more 20 high rise buildings which are currently under construction that have total height of more than 70 Meter.

According to Gould, et al, (2002), the high-rise building has posed some special challenges that are not usually encountered in other building construction. High-rise structures pose particular

design challenges for structural and geotechnical engineers, particularly if situated in a seismically active region or if the underlying soils have geotechnical risk factors such as high compressibility. They also pose serious challenges to firefighters during emergencies in high-rise structures. New and old building design, building systems like the building standpipe system, fire sprinkler system and other things like stairwell and elevator evacuations pose significant problems.

### **2.1.3 Definition of Project**

First of all, it is essential to understand what is meant by 'project'. Many authors have defined projects in several ways. Here after going to discuss the various definition of project.

While there are several definitions of projects in the literature, one of the best has been offered by Tuman (1983), who states: "A project is an organization of people dedicated to a specific purpose or objective. Projects generally involve large, expensive, unique, or high-risk undertakings which have to be completed by a certain date, for a certain amount of money, with some expected level of performance. At a minimum, all projects need to have well defined objectives and sufficient resources to carry out all the required tasks."

In the words of Turner (1999), "a project is an endeavor in which human, financial and material resources are organized in a novel way to undertake a unique scope of work, of given specification, within constraints of cost and time, so as to achieve beneficial change defined by quantitative and qualitative objectives." The definition suggests three key targets of the project, i.e. time, cost and quality, which are to be in focus when undertaking the project. It also highlights the importance of efficient organization of available resources in order to achieve a good final result. Declerck et al., (1983, 1997), illustrate the political perspective of projects in this way: "a project is a whole of actions limited in time and space, inserted in, and in interaction with a politico-socio-economic environment, aimed at and tended towards a goal progressively redefined by the dialectic between the thought (the project plan) and the reality."

As defined in a Guide to the Project Management Body of Knowledge (PMI, 2013), a project is "a temporary endeavor undertaken to create a unique product or service." Temporary means that every project has a definite beginning and a definite end. The end is reached when the project's objectives have been achieved, or when it becomes clear that the project objectives will not or

cannot be met, or the need for the project no longer exists and the project is terminated. Unique means that the product or service is different in some distinguishing way from all other projects or services. Though the desired end results may have been achieved elsewhere, they are at least unique to the organization. Moreover, every project has some elements that are unique (Manalebih, 2018).

In lines of the definition provided by Pinto (2007), and accepted for the purpose of this research, a project can be defined as possessing the following characteristics:

- A defined beginning and end (specified time to completion)
- A specific, preordained goal or set of goals (performance expectations)
- A series of complex or interrelated activities
- A limited budget

So, the term project is very broad term and it is defined differently by different scholars. Even if they define it by their own understanding it represents the same idea. There is no one universally agreed definition of project. But it all definitions of scholars gave similarity. Accordingly, the definition of project shares some communality such as an endeavor activity, temporary or time bound, goal-oriented and that has unique deliverables. By summarizing the above given definitions, for the purpose of this study project is defined as a temporary endeavor that has unique output and carries out multiple activities in order to accomplish an organization's objective by exploiting its resources and having a definite starting and ending points as well as budget and quality constraints.

#### **2.1.4. Project Management**

From the above given definitions and characteristics of projects, it becomes very clear that projects require an appropriate form of project management practices that are different from the functional management approaches. Therefore, it is important to define the project management in general and construction project management in particular as the focus of this study is construction project, particularly, CBE head office building project.

Like project's definition, project management has also been defined in several ways. However, irrespective the nature of the project or the type of project in question, it is defined as the



management of project from its initial conception to its ultimate completion and its maintenance. In a typical project, the status changes from that of an idea or concept, through to feasibility studies, execution and final completion. According to PMI (2013), Project management is an application of knowledge, skills, tools and techniques to project activities to meet project requirements. This is accomplished through the application and integration of the project management processes of initiation, planning, executing, monitoring and controlling as well as closing (PMI, 2013). The PMI definition stresses the achievements of predetermined project objectives, which normally refer to scope, quality, time, cost and participant satisfaction, and directly links them to the project life cycle.

Traditionally project management was based on a belief that if projects are completed by the triple constraint of time, cost and performance, the project is assumed to be successful. However projects should also be viewed from an organization's strategic perspective for the purpose of providing value to both the customer and the enterprise as well (Polkovnikov et al. 2014). This is reflected in Wysocki (2014) definition who defined project management as "an organized common-sense approach that utilizes the appropriate client involvement in order to meet sponsor needs and deliver expected incremental business value". Here, business value is the responsibility of the client through their requirements statements. The project manager is responsible for meeting those requirements. Meeting requirements is the cause and incremental business value is the effect. Wysocki (2014) added to the above definition by introducing questions to which project management is designed to answer, these are: What business situation is being addressed by the project? What is to be done? How will it be done? How will you know you did it? How well did you do?

The Code of Practice for Project Management for Construction and Development (Chartered Institute of Building, 2003) describes the Project Management as an emergent professional discipline which separates the management functions of a project from the design and execution functions and defines Project Management as "the overall planning, coordination and control of a project from inception to completion aimed at meeting a client's requirements in order to produce a functionally and financially viable project that will be completed on time within authorized cost and to the required quality standards." This definition stresses the realization of

predetermined project objectives, which generally refer to cost, time, quality and a client's requirements throughout project lifecycle from inception to completion.

The common point of all the project management definitions is to consider project management as planning, coordination and control of a project along the whole life cycle of the project to meet the client's requirements. Besides, in lines of the definition provided by PMI, (2013) and accepted for the purpose of this research, managing a project includes: identifying requirements; addressing the various needs, expectations and concerns of stake holders; setting up, maintaining, and carrying out communications among stakeholders; managing stakeholders towards creating project deliverables and meeting project requirements; balancing the competing project constraints including scope, quality, schedule, budget, resources, and risks (PMI, 2013).

### **2.1.5. Projects Management in Construction Industry**

The nature and characteristics of construction projects have some differences from other kinds of projects. The Construction extension to the PMBOK Guide by PMI (2016), described the generally accepted principles for construction projects that are not common to all general project types. Inherently, construction projects more often occur in an ever-changing, complex environment, and often with a high degree of risk. PMI (2016) further added that construction projects simultaneously address the geography, physical environments, existing infrastructure, communities, site conditions, and a wide range of stakeholder requirements. Moreover, PMI (2016) noted that construction projects typically carry large penalties or damages for projects that are completed late.

In construction, the term project management is frequently used to refer to site or construction management rather than taking a holistic view of the project from the conceptual stage (preparation of the client brief) to its ultimate completion and maintenance (facilities management). Walker (1984) provides a comprehensive definition for construction project management: "Construction Project Management is the planning, control and coordination of a project from conception to completion (including commissioning) on behalf of a client. It is concerned with the identification of the client's objectives in terms of utility, function, quality, time and cost, and the establishment of relationships between resources. The integration, monitoring and control of the contributions to the project and their output, and the evaluation and

selection of alternatives in pursuit of the client's satisfaction with the project outcome are fundamental aspects of Project Management" (Walker, 1984)

According to Kerzner (2003), construction management services are aligned with the activities and tasks associated with building design, construction documentation, construction procurement, and construction. The scope and approach to construction management is largely determined by the contractual arrangement established between the firm providing construction management services and the client. According to PMI (2004), managing a project includes:

- ⇒ Identifying requirements
- ⇒ Establishing clear and achievable objectives.
- ⇒ Balancing the competing demands for quality, scope, time and cost.
- ⇒ Adapting the specifications, plans, and approach to the different concerns and expectations of the various stakeholders.

The major task of project management in construction projects is to coordinate various professionals working in the project, so that they have a maximal contribution to the project (Chartered Institute of Building, 2002). According to Hendrickson (2008), in addition to the knowledge of general and project management, the management of construction projects requires an understanding of the design and construction processes. Hendrickson (2008) summarized the functions of project management in construction as follows:

- Specifying project objectives and plans, this includes: defining the scope, preparing the budget and schedule, setting performance requirements, and selecting project participants.
- Maximum utilization of resources through labor, materials and equipment procurement in accordance with a plan and schedule.
- Implementing multitude of operations by properly coordinating and controlling the processes of planning, estimating, designing, contracting and construction.
- Developing effective communications and mechanisms for conflict resolutions among various stakeholders.

Overall, construction plays a major role in both economic and social development. The construction industry is the foundation for economic development. Construction is a crucial

sector for every society, economy, and culture, especially for developing countries (Knoepfel, 1992). Therefore, project management is vital in order to implement and control the construction projects efficiently.

### **2.1.6. Project Management Challenges in Construction Industry**

Construction projects are somewhat difficult to manage and challenging due to the nature of the industry; such as complex and unique nature, mobile workforce, ingrained culture, working conditions, and project-based setup, diverse sub-contractors and suppliers (Arditi and Balci, 2009). These factors significantly affect the efficient performance of construction site management team (Fapohunda and Stephenson, 2010) and in most cases lead to project failure (Kar, 2009). The reasons for such failure are quite complex and it is not wise to pinpoint specific reasons to ensure project success. However, it is felt the main reasons for project failure in developing countries are lack of advance planning, a holistic approach, lack of comprehensive engineering and management strategy, inconsistency in monitoring and follow-up, coordination and communication lapses and above all, absence of a methodical approach (Kar, 2007). Besides technical issues, posit that professionals in the construction industry also need to handle managerial issues (Agundu, et. al., 2003).

Agundu, et. al. (2003), attest that various factor have been adduced for unhealthy scenario in management of construction projects in developing countries, the most notable being poor project analysis and management. However, Bowen et. al. (2002), argue that the concept of managing construction projects is deeply embedded in the traditional building procurement system. This is even as emerging project management. Kar (2009) contends that managing complex, multi-disciplinary projects in a developing country presents some special problems which vary from one project to another. However, Jacob, and McClelland (2001), argue that whether an organization manages stand-alone or multiple projects, whether those projects are small or large; most projects are difficult to manage because of two things:

- ⇒ They involve uncertainty, and
- ⇒ They involve three different and opposing commitments due date, budget, and content.

As the demand for highly innovative construction managers is constantly increasing, it has been acknowledged that management of construction projects from conception to disposal is difficult

and accompanied with enormous challenges. The construction managers deal with time, money, equipment, technology, people and materials in managing a construction project. They organize these resources into activities, execute the activities in logical sequences and manage to complete the projects within the stipulated time, budget and specified standard. The construction manager also manages the construction process to meet the clients' needs within legal, cost, time, quality and environmental constraints. In addition, construction manager takes the whole building cycle from inception to end of economic life, dealing with the procurement, construction, design or property management, recycling and disposal of building, and balancing the often conflicting requirements of clients, users and the community. Unfortunately, the complex nature of construction makes it one of the most adverse businesses that have ever existed. Thus, construction projects have often suffered from high fragmentation, large waste, poor productivity, cost and time overruns, and conflicts and disputes for a long time (Hai, et. al., 2012).

Moreover, Amalraj, et. al. (2007) agree that the challenges facing today's construction managers are bound to be formidable, while identifying quality, cost and schedule as some of the aspects of project management that are particularly challenging. Many of these challenges are a direct result of construction operations, while others a result of indirect, peripheral activities (Muir, 2005). Othman (2013) classifies challenges bedeviling mega construction projects in the developing countries into four categories of Engineering Challenges, Human Development Challenges, Managerial and Political Challenges and Sustainability Challenges. A surprising number of these challenges are not construction issues but must be addressed and managed by the construction manager to ensure project success. While some of the construction issues include workforce considerations, safety, time constraints, and the changing nature of the work, non-construction challenges that construction managers face that are part of the business landscape include legal issues, government regulations, environmental concerns, and socio-political pressures (Hai, et. al., 2012).

### **2.1.7. The High-rise building project development process**

This section provides a thorough understanding of the nature and processes of building construction project in general and high-rise building project development in particular. Besides,

the emphasis of this section is on the presentation of potential challenges associated with the various stages of the process.

High-rise building project development is a highly complex, dynamic and multi-disciplinary endeavor, which would be well described in terms of its actual content by means of a process-related perspective. Millington (2000) notes with regard to the fundamental significance of the High-rise building project development process: “The development process is our most challenging manufacturing process because its sub-systems are complex and because it is the instrument of change which affects all of a community and a society” (Millington. 2000).

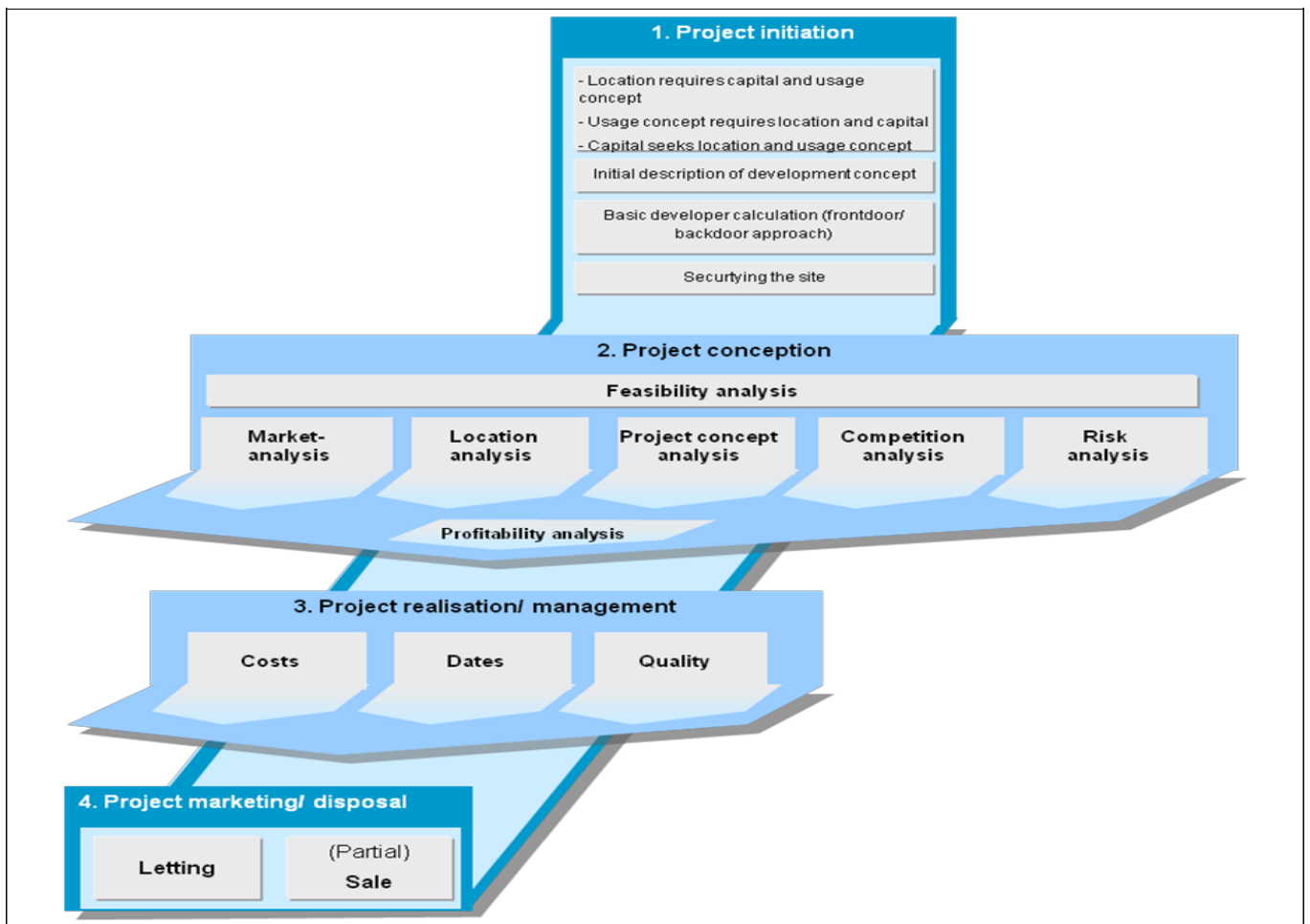
In the case of high-rise building project development, the process starts with the three factors of location, project idea and capital and ends with the building being ready for occupation. Various authors take different approaches, with differing degrees of detail, in mapping the high-rise building project development process by defining its individual phases (Wiegelmann, 2012). Flanagan and Norman (1993) emphasize two aspects of any construction project: the process, i.e., project phases, and the organization, i.e. project actors. From the process perspective, any construction project comprises a number of sequential phases. Different authors suggest a different number of project phases (PMI 2000). The simplest approach identifies two main phases – project development and project implementation. These two can be further detailed and developed into a larger number of phases, e.g. feasibility, design, procurement, construction, commissioning, and operation.

A PMI (2000), for example, propose a four-tier model, distinguishing between feasibility, planning & design, construction, turn over and set-up. Others such as (Harris et al. 2006) differentiate between eight phases, which are initiation, preliminary study, design and development, detail design, contract and procurement, manufacturing and construction, commissioning and operation and maintenance. Flanagan and Norman, (1993) identified the four phase of construction project which are investment decision, design, construction and occupy/use. Besides, Chapman and Ward (2003), differentiate between four phases, conceptualizing, planning, execution and termination. Despite the existence of different process models with varying numbers of phases, however such models generally cover mostly the same

tasks performed by a developer. Figure 2.1 overviews the different models presented in the literature.

For purposes of this study, the processes identified are consolidated into four main phases, namely: Project initiation, Project conception, Project realization/management and Project marketing /disposal. A similar phasing is presented by Gehner (2008). A generic flow diagram of the development process is presented in Figure 2-1. The figure illustrates how a project passes through the various stages of its development. Figure 2.2 the model used in the study.

**Figure 2-1: high-rise building project development process**



*Source: adopted from (Gehner, 2008)*

The model adopted in this research comprises only the first three phases – initiation, conception, project realization and management and exclude the last part- project usage/disposal. This is due

to the reason that the usage/disposal phase is excluded from the study because the project does not reach at the usage stage hence it is not important to consider it.

In summary, it should be noted that the complexity and dynamics of high-rise building project development process might be reflected in ideal-typical form by means of phase models. Nonetheless, it must be conceded that, in reality, the individual phases do not always take place in the sequence stated. In fact, real-life projects are generally characterized by overlaps, parallel operations and feedback effects, which cannot be mapped to a sufficient degree using phase models (Isaac et al, 2010).

### **2.1.7.1. Project initiation**

The initiation phase commences the construction development process. A main expertise of a development organization is to identify the future demand on space market to create and provide an adequate supply and thereby to create value (Gehner, 2008). Creativity and drive are essential for a projects' success. Generating ideas within the framework of project initiation can, in principle, be divided into a level of factual analysis and secondly a level of inspiration and vision (Neary, 2009). Accordingly, for a development may either be:

- An existing plot of land, for which a use / project concept must be found and financing required;
- A project idea for which a suitable location must be procured respectively capital in search;
- The availability of capital seeking investment in a real estate project and thus a property/ micro location and project idea/project concept (Neary, 2009).

Main activities within the project initiation phase are commencing specific market re-search to ascertain demand from potential users/tenants and potential investor pro-files for the proposed development as well as preparing rudimentary development appraisals that will comprise the design, cost and program elements of the development. In case of unsatisfying outcome of the concept and its initial economics, the project will likely not be pursued any further (Gehner, 2008).

Based on a positive evaluation, the next major step is to typically obtain approval from the developer's senior management board and other significant stakeholders to proceed with the



initial concept. If the preliminary review is positive, the next step is to secure the required land in case the site is not already in the developer's possession or under exclusivity. In that case, a strategy for identifying and securing a site of suitable size, budget and location is to be elaborated. Often it is preferred by developers not to purchase the land at this stage but ensure exclusivity with the owner(s), given that a full feasibility analysis has not yet been completed (Gehner, 2008).

### **2.1.7.2 Project conception**

The conception phase starts with the project feasibility analysis and ends in the implementation decision, or in abandoning the project. This phase can be qualified as one of the most important ones in the development process given its influence to the decision-making of the developer (Wilkinson & Reed, 2008).

Once the rough contours of the project have become visible in the preliminary acquisition review, what matters next is to outline the content of intellectual construct that was created in the initiation phase and to document it as a detailed project concept. This is ultimately intended to answer the question whether and in which manner the project is capable of being realized. According to Nozeman (2002) high-rise building concepts "comprise a great number of elements: function(s), location, size, branch (mix), target group(s), positioning, design, technical implementation/level of finishing, legal structure, marketing strategy, exploitation and management model." The term 'feasibility analyses has become accepted as a general term for the many types of analyses in advance of project implementation that are covered in this phase.

The goal of a feasibility study is to articulate a finding about the economic sustainability (feasibility) of the project under review. *"A building project is 'feasible' when the construction project analyst determines that there is a reasonable likelihood of satisfying explicit objectives when a selected course of action is tested for fit of a context of specific constraints and limited resources"* (Barkley, 2004). Prior to committing funds to a development project, a developer as well as his stake-holders and financing partners need a confirmation that market fundamentals will support the values assumed in the project appraisal (Barkham, 1997).

In terms of content, the feasibility analysis is based on detailed market and location analyses, building code reviews, design studies, use analyses, risk assessments, competitive analyses as

well as profitability calculations. The challenge at this early and uncertain phase of the project is finding a balance between costs (potentially sunk costs), project uncertainty and the necessary quality and detailed specification of the usage concept (Wiegelmann, 2012).

**i) Location analysis**

The analysis of the location should critically verify the findings of the inception phase as documented in the preliminary acquisition review. The objective must be to obtain verifiable data that can be analyzed and presented in a manner to demonstrate to third parties the planned use of the land. These analyses are concerned with the long term-effective characteristics of micro- and macro locations. The location factors are both easily quantifiable “hard” criteria, as well as more ‘soft’ criteria, which will always retain some level of subjectivity (Wiegelmann, 2012).

**ii) Project concept analysis**

The building or usage concept for the use of the property must be based on the market and location analyses (micro and macro) discussed above. It examines the architectural and technical design of the building. Important criteria are the standard of specifications and the flexibility of the use of the building and its space efficiency. The objective is to meet market demand while minimizing cost (to build and operate) and maximizing flexibility (ibid).

**iii) Competition analysis**

The three above aspects of market, location and usage concept typically run parallel and are combined as the basis of a competition analysis, comparing the market position of the evaluated project with properties, which are or will be in direct competition. The first stage is the identification of appropriate benchmark properties. The objectives are to meet client needs while differentiating the development as much as possible from competitors. However, the weighting of criteria will always retain an element of subjectivity, which leads to residual risk.

**iv) Risk analysis**

While risks are present at all stages of property development, the feasibility analysis offers the opportunity to analyze them at a preliminary stage and review their impact prior to commitment of capital, as well as documenting and trying to mitigate such identified risks during later

implementation. To some extent, the progress of a development project through the phases of development has a general impact on its risk levels.

In its early stages of the development process, the initiation phase is characterized by a high degree of uncertainty and, in particular, creative and complex search and analysis procedures. At the end of this phase, success potentials and competitive advantages of building construction projects are identified and the project fundamentals defined.

Having assembled the above data and analyzed it based on appropriate assumptions, the results need to be presented and the developer will make a decision whether to proceed with the project. Progressing the feasibility analysis and making the project more concrete involves more effort and cost than optimal in case the project. The risk of sunk costs is ever present, but the level of detail required before a decision can be made should be obtained at reasonable cost, both internal and external. In the frame-work of the project initiation, it is the objective to answer the question in which manner and in what time the factors location, project idea and capital can be combined against the background of the strategy concept in order to produce a property that is competitive and acceptable in macro-economic terms Miles, et. al. (1995), have described this relationship as follows: *“Land, labor, capital, management, and entrepreneurship are needed to transform an idea into reality.”* In case the project concept phase did not indicate that the developer’s business requirements and objectives could be met, the project will likely be aborted. In the case of a satisfying out-come and outlook, the phase of project realization / management will be entered (ibid).

### **2.1.7.3. Project realization/management**

The confirmation of the project's potential for success by the feasibility analysis triggers the initiation of negotiation and decision in the realization phase. At this point, at the very latest, the other parties to the project enter into the development process. These include the property owners, architects and engineers, building authorities and other representatives of the public interest, construction contractors, financial institutions, user groups, special service providers to the construction industry (project managers, consultants, etc.) (Wiegelmann, 2012).

The acquisition is made in the project realization phase by means of a binding right of purchase or the actual acquisition of the property to be developed. Finalizing the purchase can present

unexpected difficulties and changes compared to the feasibility study base case as time has passed and stakeholder expectations are evolving. The price offered and agreed should be within the forecast parameters. Legal documents should be subject to appropriate due diligence and mitigation of execution risks. General risks that can occur during this phase include title issues which may not be satisfactorily resolved, inability to reach agreement on purchase/sale terms or inability to achieve a favorable quality of purchase agreement, purchase/sale terms which are less favorable than market comparable, as well as after purchase/sale additional issues that should have been discovered during entitlement and due diligence process (Barkham, 2002).

Another goal of preparing a more detailed usage concept is the definition of an optimal user mix on the basis of the feasibility study, which typically already includes a preliminary usage concept. In the sequence of the development process, this phase of the work is either performed after the acquisition of the property and in the course of the project planning process or - in a case of adequate or guaranteed certainty relative to planning - already during the feasibility study. Questions of building functionality, flexibility, building efficiency and architectural design are discussed as part of the usage concept. Thus, a further core task in connection with this phase is the preparation of a planning, implementation and contracting concept (Barkham, 2002).

In this stage it is important to undertake three main project realization/management activities which includes: project design, purchasing and construction

#### **i) Project design**

The objectives of the project design should be to balance the requirements of the in-tended user (functionality) with construction costs and sustainable operating and facility management costs, the expertise of construction firms, planning requirements, engineering considerations and aesthetic preferences in order to produce a project-specific optimum design for the site. Detailed plans for land, structural and capital improvements have to be prepared and necessary permits and licenses obtained. A significant challenge during this step is that the project design does not meet market needs and results in lower than anticipated rents or sales proceeds. Also, the initial project design may not address all regulatory issues. Costs to comply with regulatory requirements may reduce projected margin or return (Wiegelmann, 2012).

## **ii) Procurement**

One of the main procurement tasks of the building construction project is to obtain a building permit within the schedule and on the basis of the previously developed usage type. The usual challenge during this stage is that bids from vendors/contractors require more time and or money than originally anticipated in the feasibility study, and that satisfactory contractors cannot be identified. Vendor negotiations may result in substantial revisions to project design (ibid).

## **iii) Construction**

The construction phase starts with the granting of the building permit and the aim is the completion of the project within the planned framework of schedules, costs and quality. Once all necessary permits have been obtained, the developer gives the orders to start work. The building construction developer retains a coordination and internal reporting function. The building owner's functions that cannot be delegated are performed within the context of corporate management. All construction, planning and consulting contracts are entered into, and project controlling/ project accounting tasks are performed in this con-text. There are further obligations to act as representative vis-à-vis all project participants and especially vis-à-vis the public during the entire development period, as well as the task of reporting to the principal/investor or the providers of outside capital (Barkham, 2002).

## **2.2. Review of Empirical Literatures**

In this section of the study, different reviewed literature relevant to the study will be discussed. The literature reviewed shows that there have been researches done to assess various organizations' project management practice in Ethiopia. However, there are gaps in literature concerning project management practice of building construction in general and high-rise building in particular.

Primarily literatures related to the project management practice of the Ethiopian construction industry are reviewed. Accordingly, Yimam (2011) conducted a study on the Ethiopian construction industry entitled "project management maturity in the construction industry of developing countries (the case of Ethiopian contractors)". The study aimed to assess whether and to what extent the processes, practices & tools under each project management knowledge area are being applied by the Ethiopian contractors in managing their construction projects. The research used interviews and questionnaires as an instrument and distributed it to 18 selected

Ethiopian grade I contractors. Based on the responses from the survey and interview, the research concluded that project management process maturity and practice maturity of the contractors is found to be at a low level. Also, the knowledge areas of material, procurement, cost, time, financial and human resource management have shown comparatively high maturity compared with other knowledge areas, and the project management maturity of contractors with ISO certification is found to be higher than those that didn't get certified.

Another research by (Hailu, 2016) was done to identify which processes of project management are effective for attaining the success of a project by studying cases of a successful and failed project. The research was carried out on two major building construction projects. The study on the two projects used a survey questionnaire as an instrument of the research. The research pointed out that if 88% of those effective knowledge area processes like quality, cost, time & communication processes are applied, then the success of a project is inevitable. The study output has shown that the triple constraints like cost, quality, and time, and the communication processes of the subject groups are the most effective project management processes towards the project's success. Moreover, planning processes from the process groups are useful for achieving the success of projects. The study also concluded that significant numbers of projects in Ethiopia are under the failed category. So, it recommends project management processes like planning, time, quality, cost, and communication processes have to be given considerable attention during implementation of the project.

Ayalew (2016), conducted a study titled "Assessment on Performance and Challenges of Ethiopian Construction Industry" to reveal the construction industry's level of project management practice. The study involved a literature review & used a structured questionnaire as a research instrument. The research involved 69 professionals from significant stakeholders of the construction industry. According to the response of the professionals and reviewed literature, the study concluded that the level of construction project management practices in terms of adopting general project management procedures, functions, tools & techniques to be unsatisfactory. Moreover, the study found that the level of practice of variables, such as cost, safety, risk, and time management, is to be deficient compared to their predetermined or planned values.

Befkadu (2017) conducted a study entitled “The practice of project management in Ethiopian real estate industry and its contribution to project success: The case of selected company in Addis Ababa”. The major aim of this study was to examine the application of project management practice by depending on the various problems. To this end, the study used a descriptive research design including both qualitative and quantitative methods. Data was collected using questionnaire and interview from real estate companies, owners and consultants. Based on the response, IBM SPSS Statistics 20 was used to analyze the data. The major finding involves that project integration, scope, time, HR, procurement, and claim management are well managed in the Industry as well as Project initiation process groups and project closing process group are practiced well and consistently. However, from the knowledge areas project cost management, project quality management, project communication management, project stakeholder management and project risk management are poorly practiced in the real estate industry in Ethiopia. Therefore, it was recommended by the researcher to improve project management practice within the industry in Ethiopia (Befkadu, 2017).

Form the above studies, and one can infer that the maturity of project management practice in the construction industry is low, and the emphasis is not given to the major constraints of projects such as time, cost, and quality. Considering this, this study gives a particular emphasis on these areas of project management.

Secondly, literatures related to the project management practice of government and private organizations in Ethiopia are reviewed to understand the level of practice in different organizations. Accordingly, Karlsson (2011), conducted study entitled "the project management practice in Sweden & Ethiopia and potential improvements in project management methods". The research was performed on one of the most prominent private organizations in Ethiopia, Midroc, and its subsidiary in Sweden. It aimed to identify successful project management methods and share between the two organizations to increase efficiency and minimize the risk of construction projects. The research used observation, informal interview, and document analysis to come up with the result. The study concluded that there are several areas of improvement in Midroc Ethiopia and only a few in the Sweden counterpart. In the Ethiopian company, the planning process is not prioritized, and many of the projects start execution without sufficient planning. Also, project control is not prioritized, and rather than controlling; problems are solved

as they occur. Moreover, issues also arise in project management systems, integration management, human resource, cost, time, and procurement management.

Another study was conducted by Temesgen (2013), entitled "Assessment of project management capability: A case study at Mesfin Industrial Engineering PLC" set out to assess the company's current level of project management practice. The study used an interview & semi-structured questionnaire to collect data from the different departments of the organization. The research suggested that the company was operating at a foundation level and also that this maturity was not achieved by all the project management knowledge areas and best practices. The study concluded that the project management processes defined & planned during the planning stage is not consistently applied to all projects implemented by the company (Temesgen, 2013).

A study done on prepaid energy metering project in Ethiopian Electric Utility by Eden Tamru in 2018 had focused its topic area on assessing the project management practices particularly focusing on the life cycle of projects. Depending on a detail analysis made by the researcher using SPSS, it was indicated that a moderate level of project management practice meaning that various gaps were exhibited. The researcher reached at this conclusion by using a purposive sampling technique from the target population and used both qualitative and quantitative methods by gathering data from primary and secondary source. Descriptive research design and deductive research approach was used. Depending on the finding the researcher has recommended to develop the project management practices in accordance with the real practices on ground (Getachew, 2018).

Another research reviewed on assessment on the project management practice of Ethiopian Petroleum Supply Enterprise (EPSE) application and Network Infrastructure Project done by Behailu Negera in 2018. In relation to project process activities, the researcher tried to assess the practice of project management in EPSE depending Prince2 process groups. To this end, the study used a descriptive research design and both qualitative and quantitative methods by which data is collected in a form of closed questionnaire as well as secondary data source. By using SPSS software version 20.0, to analyze the responses gathered from the entire population. The researcher observed that gaps existed in quality assurance, risk and issue management and lessons learned from former projects (Negera, 2018).



From above research discussed, one can point out that the project management practice at the organizational level is also low as the construction industry. Although there are some practices adopted and some level of understanding of project management, there is a long way to go in implementing the practices properly. From the literature and empirical reviews, it can be concluded that adequate research had not been done in evaluating project management practices of the building construction project in Ethiopia.

From the reviewed literature and to the best of the researcher knowledge there is no previous work on assessing the project management practice of High-rise building construction project. By assessing the project management practice of High-rise building construction project in the case CBE head quarter building project, this study will fill the literature gap concerning building construction building. The study will also lay a foundation to further understand implementation of project management processes in other high-rise building strategic public projects in Ethiopia.

## **CHAPTER THREE**

### **RESEARCH DESIGN AND METHODOLOGY**

#### **Introduction**

In this chapter, the researcher describes the procedures to ensure a methodical and well-informed investigation, focusing on sampling procedure, data collection and analysis methods. Data collection instruments and procedures are discussed as well as the target population and sampling procedures.

#### **3.1. Research Approach and Design**

Based on the purpose of the research, the researcher was utilized qualitative case study approach to assess the challenges of project management practices in the case of high-rise building project. The qualitative case study research approach is considered to be the most appropriate for this study for the reason that it allows the researcher to understand deeply and fully the phenomena and the problem under investigation. More so, the researcher was selected it because of the fact that it is suitable to investigate processes and challenges in addressing individual case problems, in this case the challenges of managing CBE head quarter project. It was therefore justified in view of the above descriptions and strengths that qualitative case study is the most suited and appropriate research approach for this study.

Regarding the research design, the study was utilized descriptive research design. The descriptive research design was selected for the reason that it helps to show the existing reality of real-world problems and provide essential fact about it. In this method the researcher was collected relevant data from the participants which were discussed in detail based on the objective of the study. In doing so, the qualitative data were used to assess the challenges of managing high rise building and to search a solution for it.

#### **3.2. Population and Sample Design**

##### **3.2.1. Target Population**

Target population is specified groups of people or object for which questions can be asked or observation are made to develop the required data structures and information. The major stakeholders who are actively participating in the project implementation are the very population of the study. This includes those staff members who are working in Construction Project Office

(CPO) of CBE and those who are working in Employee's representative side, which is Addis Ababa Institute of Technology (AAiT). The total numbers of professionals engaged in CPO are 15 including the Manager of the CPO of CBE and there are about 20 key professionals from the employee's representative side engaged in this specific project. This are mainly included project manager, project coordinators, project team members and supporting staffs who are directly involved in the managing and supervising CBE head quarter project in Addis Ababa.

### **3.2.2 Sampling Method**

Regarding the sampling method, the study was applied purposive sampling. Purposive sampling technique is preferred for the reason that it allowed researcher to select the sample that fit the criteria and interest of the study. Moreover, purposive sampling was selected for the reason that it increases the relevance of the sample to the population of interest, as only individuals that fit particular criteria are included in the sample. This method also allows researcher to select respondents that have better insight, knowledge and experience on the issues and problems under investigations.

### **3.2.3. Sample Size**

The sample size of the research is determined by purposively selecting respondents who are project team members who know the area or subject matter very well. In the interview the researcher was tried to include all appropriate individuals and project team members as much as possible in order to make the finding more robust. Meanwhile, the stakeholders namely from the Employer side; CBE CPO Project Manager, the Construction Lawyer and three engineers who were engaged in the project was selected for the interview based on research tools which were designed for each. From employer's representative sides, two site and office engineers who were undertaking the project follow up were parts in the interview.

## **3.3. Data Collection Tools and Procedures**

The study was employed both primary and secondary sources of data in order to get appropriate data. As the study adopt qualitative case study approach, the researcher was mainly use semi-structured interview as a primary data collection tool which is helpful in answering questions related to the study objectives. To this end, semi-structured interview was prepared to probe

views and opinions of some purposively selected respondents. The interview was prepared based on the review of related literature important to the subject of the study. In this method, the participants, who are the practitioners in their field, were pass on their knowledge to the researcher through the conversations held during the interview process. It is selected for the reason that it offers the merit of using a list of predetermined questions as in a structured interview, while keeping enough flexibility to enable the interviewee to talk freely about any topic raised during the interview. In addition, data was collected through various sources such as relevant books, project contract, project management plan, project progress reports, articles and journals.

### **3.4. Methods of Data analyzing**

Qualitative data analysis is an activity of “working with data, organizing it, breaking it into manageable units, synthesizing it, searching for patterns, discovering what is important and what is to be learned, and deciding what you will tell others” (Bogdan and Biklen, 1982 in Simon, 2011). Data analysis in qualitative research is an ongoing process that is undertaken concurrently with data collection, interpretation and report writing (Creswell, 2009). Whereas there are rules how to analyze quantitative data, there are no such explicit rules for qualitative ones (Bryman A. & Bell, 2011). Data analysis in qualitative research is an ongoing process that is undertaken concurrently with data collection, interpretation and report writing (Creswell, 2009). Considering this fact, in this study, the qualitative data that was obtained primarily through semi structure interview was subjected to in-depth scrutiny using thematic analysis. In this approach the data that were collected through semi structured interview would be analyzed by identifying patterns and relationships through scanning the interview information and then combining and summarizing the results accordingly. The researcher closely examines the data to identify common themes – topics, ideas and patterns of meaning that come up repeatedly. The thematic approach involves a six-step process: familiarization, coding, generating themes, reviewing themes, defining and naming themes, and writing up.

### **3.5. Ethical Consideration**

The researcher did her best to address ethical consideration of confidentiality, privacy, and informed consent. All the study participants were informed about the purpose of the study and verbal consent of all study subjects were obtained before data collection. Participants were also

be informed that they have full right to discontinue or refuse to participate in the study. To ensure confidentiality, the name of interviewee was not be written on the questionnaire.

## **CHAPTER FOUR**

### **DATA ANALYSIS, RESULT AND DISCUSSION**

#### **Introduction**

This chapter covers the presentation, analysis, and interpretation of data gathered through semi-structured interviews with the project manager and members of the project team. To analyze the collected data in line with the overall objective of the study, qualitative analysis was applied by combining and summarizing the results.

The data contains key elements in major project management practices and major challenges faced in building of high rise building with the specific case of CBE head quarter building project in Addis Ababa which are drawn from interview data and different literatures. The data were collected from semi-structural interview and through reviewing secondary data. After the semi-structural interview was conducted and answers were obtained, qualitative data analysis method was utilized by means of the thematic approach to present the finding of the interview. The reliability of the reply of the interviewees also crosses checked through reviewing secondary data such as project plan, project contract, project status reports and other project related documents. Hence, this section provides analysis of the interview data. The discussion is also supported by findings from similar studies.

#### **4.1. The project management practice of CBE head quarter building project**

This section presents information on the project management practice of the CBE head quarter project. The researcher has made a semi-structured interview with the CPO Manager of CBE, the Construction Lawyer and three well experienced project officer and engineers of the project and two professionals from employer's representatives at their work premises. The interview questions raised were mainly about the project contract administration, the project cost, time and quality management practices and the majors challenged and lesson learn from under construction project of the New CBE HQ DB project and the result were presented as follows.

### **4.1.1. Practice of the project conception process of the CBE New Head Quarter Project**

First and foremost, the study seeks to evaluate the CBE New Head Quarter Project's inception and conceptualization process. The study gathered data from semi-structural interviews and secondary data reviews to analyze the practice of project commencement and conceptualization, and the results are presented below. Before going into the practice of project initiation and conceptualization, it's vital to first go over the parties involved in a Construction Contract. Design - Build (DB) project delivery through FIDIC IV form of construction contract was used for the CBE headquarter building project. In major construction project, mostly there are three major parties: the employer, the consultant (Engineer) and the contractor.

The Employer (sometimes called the promoter) in this case Commercial Bank of Ethiopia, is the party who initiates pay for and is the ultimate owner of the project. The employer's role is as the initiator of the project and the end-user of the completed works. The main responsibilities of Employer are to appoint the Engineer (consultant) to select the contractor, to ensure that the site is available for the contractor, to pay the contractor and to agree any changes to the contract that becomes necessary. The FIDIC IV form of construction contract was used for the CBE headquarter building project, which allow the employer to limit the power of the Engineer (Consultant) and require the consultant to seek the employer's agreement before making time and cost decisions. If the engineer (Consultant) is not performing the duties properly, the employer has the power under the contract to replace the engineer (Consultant). In this case the Ethiopia Commercial Bank is the employer.

The contractor is the second party and whose main responsibility is to execute and complete the works and remedy any defects therein in accordance with the construction contract requires the contractor to undertake any of the requirements of the contract to the satisfaction of the engineer (Consultant). The contractor is obliged to provide all superintendence, labor, materials, etc., necessary to carry out and complete the project. The contractor is fully responsible for site operations and methods of construction. If the construction contract requires the contractor to undertake any of the design, the contractor is responsible for that design even if the engineer (Consultant) approves it. In this case, the well-known Chinese government owned Construction Company; China State Construction Engineering Corporation Ltd is contractor.

The Engineer (Consultant) is the third party in most forms of construction contract, who is appointed and paid by the employer. When a consulting firm is selected, the Engineer will act as a supervisor for the construction phase; possibly the firm may also have been the designer of the project. In CBE head quarter project case, there is not consultant. However, following the contact agreement signed with the contractor, the Commercial Bank of Ethiopia in the year 2016 has awarded the Addis Ababa University; Addis Ababa Institute of Technology (AAU-AAiT) for the Design Review, Supervision and Contract Administration of this CBE New Headquarter Design-Build Project. It is also important here that Addis Ababa Institute of Technology (AAiT) is not consultant it is rather advisor (representative) appointed by the employer to carry out certain duties on his behalf.

It was based on this that an agreement was made in April, 2015 between CBE and the well-known Chinese government owned construction company; China State Construction Engineering Corporation Ltd. whereas, this company to Design and build (DB) the CBE New Head Quarter project and the bank has accepted an offer by the Contractor through the Letter of Acceptance in March 2015 and in April 2015 for the Design, Build and completion of such works and the remedying of any defects therein with.

Following the land acquisition on lease basis of the CBE new HQ project, a consultant was commissioned to prepare design program for the Architectural design competition. “Architectural Design Competition” was selected aiming to get “state-of-the-art” design for the CBE Head Quarter Building. After consulting the Association of Ethiopian Architects (AEA), National Competitive Bid (NCB) open to “association of local and expatriate consultants” was selected. The Bid for Architectural Design Competition is advertised in May 2009. The evaluation and selection of prizewinners was concluded and prize award ceremony was held on 29th of December 2009. The 1st prize winner was a company from Germany with a local Consultant of Ethiopia. While designs made by another Netherlands company in collaboration with another Consultant from U.A.E and an Ethiopian Consult in collaboration with the U.A.E consultant secured second and third places respectively.

Following the award ceremony, negotiation was held with the first prize winner. However, the negotiation failed due to disagreement between the local and foreign consultants and the



relatively high offer compared to the international fee rate. In spite of all these challenges, CBE through its Technical Advisory Group (TAG) has tried its best for the last to engage the partnership, though not successful. In conclusion, the negotiation was terminated after 17 months due to the reason that the two consultants are not good partners. The result made CBE to cost so much time.

After the failure of the Architectural Design Competition in 2009, CBE studied Alternative Project Delivery Methods and chose Design-Build as alternative project delivery system. Design-Build (DB) is an innovative method a Single Contractor (one agreement) undertakes Design and Construction of the project. The Selection of Project Delivery Method was made after recommendation by Technical Advisory Group (TAG) established for this project and endorsement by the Top Management of the Bank. Accordingly, the “Design-Build” Bid was floated from 15th September 2011 to 13th January 2012. After technical evaluation, three firms were technically qualified and passed for the next financial evaluation. Then, a negotiation was undertaken with the least evaluated bidders, until June 2012, which was discontinued before conclusion of Contract due to various internal and extraneous reasons.

The second-round negotiation was undertaken from October 2014 to April 2015 for a period of 7 months. During this period, CBE proposed additional Employer’s requirement to make the building modern and more useful to the Bank for the next 50 years. Accordingly, the capacity of main hall is raised from 1500 seats to 2,000 seats. The total number of mini conference halls was raised to 7 (five halls of 200 and two halls of 300 seats). The total parking area is also increased from 1011 to 1500 stalls. At the conclusion of the 7 months strenuous negotiation on technical and financial matters, agreement was reached and it is approved by the Board of Directors of the Bank. Then the Contract for Design–Build of CBE New Head Quarter is signed with the China State Construction Engineering Corporation Ltd. on April 28, 2015. It is also important here to indicate that following this contact agreement signed with the contractor, the Commercial Bank of Ethiopia in the year 2016 has awarded the Addis Ababa University; Addis Ababa Institute of Technology (AAU-AAiT) for the Design Review, Supervision and Contract Administration of this CBE New Headquarter Design-Build Project. It is also important here that Addis Ababa Institute of Technology (AAiT) is not consultant it is rather representative appointed by the employer to carry out certain duties on his behalf. Here it is important to take one lesson that

unlike most construction project which followed Design-Bid-Build (DBB) approach, the CBE head quarter project is mainly followed the Design - Build (DB) contracts which is a new type of building project in the country. So far, the design-build (DB) was commonly practiced in hydropower and road projects.

There are three dominant delivery methods for a construction product: design-bid-build (DBB), design and build (DB) and construction management (CM) (Joyce and Gould, 2009; Winch, 2010). Design and build refer to the form of contracting where one supplier is responsible for parts of or the entire design and production (Winch, 2010). Design and Build (DB) is also known as turnkey contracting or single-point responsibility. Design-Bid-Build (DBB), also known as “hard bid” or “traditional method”, on the other hand, is a type of project delivery system where the owner holds two separate contracts, one with the designer and another with the contractor. The designer assists the owner in developing the program and is responsible for design and the development of drawings and specifications. (Nicholas, 2010). DBB is the most practiced type of delivery system in the Construction Industry of Ethiopia since the year 1987. After project owners did prepare the basic planning that identifies construction project programs, they call upon the participation of Design and/or Supervision Consultants either by tender or by negotiated contracts. This consultant will carry out the design together with the necessary tender documents which will be the bases for tendering to select contractors. This process is called Design - Bid - Build and hence, the name for such delivery system.

The conditions of the contract signed between CBE and the contractor was based on FIDIC manual; Silver book- conditions of contract for Turnkey Projects (First Edition 1999). As the per interview response this edition was selected because it is suitable for use on process where, the contractor will take on full responsibility for the design and execution of a project. Risks for completion of time, cost and quality are transferred to the contractor and so the silver book was the only suitable for use with this highly experienced contractor with the ability to manage risk. Similarly, the contractors also assume responsibility subject to some exceptions, for the accuracy of the employer’s requirements which is a major difference to usual design and build contracts.

The CBE has its own Construction Projects Office (CPO) which administers all the bank’s construction projects. Contract administration is one of the most important jobs of the CPO

related to construction projects and involves numerous tasks occurring before and after contract execution and work order issuance. All works are administered by the CPO in accordance with the contract specifications, terms and conditions, Ethiopian laws and regulations, and the bank's policy.

#### **4.1.2. The Design-Build (DB) project management practice of the CBE HQ Building project**

As per the interviewees reply and documentation review, it was observed that, from the five major project delivery methods in public and private construction projects, the contract type used for the CBE HQ project is the Design-Build (DB) delivery method. As per the interviewees' reply, the reasons for selecting this delivery method were; the Design Build or sometimes-called package deal or turnkey contract is an innovative method where the contractor takes full responsibility for the design and construction. The DB is suitable for large and complex projects like the CBE HQ building project; where early completion is a requirement.

Actually, it is a shift of procurement strategy from the previously intended and partly implemented Design-Bid-Build (DBB) for this specific project by way of international architectural design competition. Even though Design-Build is a new trial in building projects in Ethiopia, it is not a novel procurement strategy as it is already applied domestic hydropower and road projects. Most probably, this is a big innovation in the procurement of building projects. As interviews explained, CBE has a practice of DBB contract delivery system all the times before this new HQ building project; like for the new Lideta building, Megenagna Building, Sebeta and others. But now, it has entered a new DB contract with the well-known Chinese Government owned Construction Company; China State Construction and Engineering Corporation Ltd. for the new HQ building project of the bank where, this contractor is responsible for all parts of or the entire design and construction of the building.

As per the interviewees reply and documentation review, there are three major parties in the construction project's setting; the Contractor, Employer and the Consultant. The Employer (CBE) is the Client or Owner of the project & is the one who pays for the work. The role of the Employer is to express its project requirement (Employer's Requirement), launch the project, to conclude contracts with the Contractor and Consultant, supervise the performance, make major

decisions (like variations, extension of time, etc.), make payment and to accept the to be completed project. More so, as per the interviewees reply and documentation review, the Current practice of the CPO of CBE contract administration in different phases of the project's delivery process consists of; record keeping, document control, payment management, schedule and cost control, progress reporting, management of variations and change orders, management of claims and disputes; if any.

The total number of staff of Construction Project Office (CPO) of CBE reported is 20. whereas on the contractor's side, 88 Chinese employees both from the professional and skilled; and there are also about 40 key professionals from the employee's representative side engaged in this specific project. In addition, the contractor hired 370 local unskilled daily laborers. This means that, almost all the professionals and skilled manpower of the contractor company are foreigners from its own citizens.

In the case of CBE, the main basis of effective contract administration of CBE-CPO is having a clear description of rights and obligations. For the contract administration to be effective, the Counterpart Engineers shall base on the following main principles and commitments:

- a) Has to address the needs of the Bank outlined, in the terms of reference, specifications for works, or services,
- b) Ensure that the objectives of the project are achieved by taking the appropriate and timely action,
- c) Ensure that contracts are based on clear and accurate description of deliverables, clear rights and obligations of all parties involved in the contract execution. D) Monitor performance, collect information and identify steps that should be taken to measure actual contract achievement
- d) Proactive administration of contracts which should be based on close follow-up of implementation of the contracts and anticipating problems and responses before they impact on the contract performance
- e) Successful contract administration based on open and effective communication between all parties using appropriate channels, means and providing feedback to enhance contract

performance. These could be in the form of progress meetings, follow-up emails, calls, etc.

- f) Identifying potential contractual risks such as not meeting the deadlines, receipt of less than acceptable quality deliverables and alerting relevant officers.
- g) Implementing a system of monitoring and evaluating the performance of contractors, consultants, suppliers and other service providers

Interviewees were explained the advantage of DB project delivery method. As per the interviewees reply and documentation review, when compared to DBB procurement route used for previous building projects of CBE, the DB contract delivery system of the CBE HQ project has an advantages for the employer on that; single point responsibility- the contractor takes all responsibility for design and construct, reduced completion time - overlap of design and construction significantly reduces completion time, reduced overall cost - less number of variations and claims, few change orders, less claims and disputes, better security through bonds and warranty.

The DB is suitable for large and complex projects like the CBE HQ building project; where early completion is a requirement. In explaining the reason behind selecting of Turnkey Project delivery on of the interviewee narrated that:

*“The bank chose Turnkey Project Delivery because it is appropriate for usage in situations when the contractor will assume complete responsibility for the project's design and execution. A turnkey project is one in which a single entity—a contractor—works with a project owner to complete all stages of a project, from detail engineering to construction, under a single contract. Because this strategy places duties on the contractor that would otherwise fall on the owner in a standard design-bid-build (DBB) delivery, it eliminates difficulties for the project owner. Turnkey delivery approaches, unlike the DBB approach, combine features of project design, financing, procurement, subcontracts, and construction into a single-point-of-accountability solution. Because the risks of completion in terms of time, cost, and quality are shifted to the contractor, the silver book was the only option for this highly experienced contractor who could manage risk”.*

Specifically, cost and time advantage of turnkey project was reported during the interviews of the project team members. In this regard one of the interviewees explained:

*“The main benefit of a turnkey project is that it eliminates financial unknowns, prevents project cost overruns, and allows project owners to precisely calculate return on investment (ROI), as well as minimizes the amount of ambiguity surrounding overall project cost. As you know, the construction cost is unknown using traditional approaches until the project is developed and bid out. If a company with little or no construction experience is selected to design and engineer the project, they may not be able to do so within the budget. This can result in building bids coming in significantly higher than anticipated. This is most of the case in projects in our country. However, in the turnkey project is bid fixed cost, project owners are only responsible for the lump sum agreed upon during the contract negotiation. Thus, any increase in costs, such as surges in material costs, are already accounted for and are covered by the contractor. That's why the current CBE headquarters project only cost 3033.3 million dollars to build; otherwise, the price would be much higher”.*

The CPO further refers that, according to a study made by the Pennsylvania State University in collaboration with the Construction Industry Institute (CII), compared to the DBB method, the DB procurement route reduces total project cost by 6%, cost overrun by 5.2% and reduces time of completion by 33%. It further mentioned that, similarly, as per a study made for the US Federal Highway Administration in 2006 has revealed DB projects are 20.5% cheap and completed in 24.4% reduced time.

On average, managers of design-build projects surveyed in their study estimated that design build project delivery reduced the overall duration of their projects by 14 percent, reduced the 31 total cost of the projects by 3 percent, and maintained the same level of quality as compared to design-bid-build project delivery. On the other hand, other project survey results revealed that design-build project delivery, in comparison to design bid-build, had a mixed impact on project cost depending on the project type, complexity, and size. The surveyed design-build project managers further indicated that project delivery approach (i.e., design-build versus design-bid-

build) can be a contributing factor in controlling and potentially reducing project costs. However, project delivery approach was perceived to be less of a factor in affecting project cost than other characteristics of the project or its participants.

Interviewees were explained the disadvantage of DB project delivery method. The interviewees specifically mentioned that the employer has found as a disadvantage of this DB project delivery that, need for having a detailed, complete, and up to date employer's requirement (performance specification) at the beginning of the project; difficulty to assess and manage the quality of works as the specification of the project is not complete and difficulty to include changes. In this regard one of the interviews explained that:

*“The Disadvantage of the DB delivery system is loss of control cost of tender and cost of risks. Since limited supervisory role by the employer representative is practiced; which is relatively flexible and makes the employer distanced from the whole process, the employer has little chance to understand what is developed and entertain variations in requirements implying loss of control”.*

On the contractors' side, in order to provide reasonable offer, their tender cost is higher than in the case for DBB delivery system. This is because they need to carryout acceptable design for project cost offers. Though it was not practiced often, employers who shared costs related to tendering are informed to get seriously considered offers. World Bank suggested a two staged procurement method based first on technical merit and followed by financial competition and not for more than six bidders. The increase in risk transferred onto the contractor will be counterbalanced by the increase in contract prices which can be taken to include these costs of risks.

Regarding the relationship between the client and the contractor is a contractual relationship based on FIDIC manual; Silver book, 1999 and it is a strong binding agreement made; whereas the relationship between the contractor and the consultant is only a working relationship; i.e., no contract is signed between them. Since the consultant is only a representative of the employer, any formal communication made between the contractor and the consultant is also made copied to the employer. Hence, there is a triangular relationship among the employer, the consultant and the contractor. The relationship between the consultant and the contractor is based on

professional basis as stipulated in the contracts. Complains (e.g., delay in response, assignment of inspectors, etc.) occur at different times and stages of the work. However, such complains do not happen frequently and are easily managed by their respective representatives.

As interviewees were stated, practically, complaints are handled by negotiation between the Contractor and Employer/Consultant and nothing has gone to the Dispute Review Board or Arbitration so far. There were minor claims which were solved by discussion and negotiation before turning to disputes like; who owns facilities for employer's representative staff, payment for temporary water, electricity, detail finishing level and partitions of inter. However, the contract has Amicable Settlement, Dispute Adjudication Board and Arbitration as dispute settlement mechanism. The interests of the main stakeholders (Employer, Contractor, and Consultant) are generally in line and the teams work together to achieve the project objectives. In some cases, the contractor focuses in the schedule performance of the project, while AAiT's team focus on quality of works in addition to the schedule and cost requirements. The interviewees also reported that even though the design review, supervision and contract administration is outsourced to the consultant (AAiT), CBE CPO engineer staff regularly follow up and administer each and every phase of the project as per the terms and conditions set in the contract in collaboration with the AAiT.

The client issues to the contractor instructions which are necessary to perform the obligations under the contract. Each instruction is given in written form with respect to the contracting terms, in which the obligations are specified. In the cases of variation, adjustments are made. The interviewees here again agree that the written form of communication facilitates the administration of the contract which also leads to its success eventually.

The contractor is doing the design, execution and completing of the works in accordance with the contract, and made remedies on any defects in the works. When completed, the works are to be fitted for the purposes for which the works are intended as defined in the DB contract. The contractor is responsible for the adequacy, stability and safety of all site operations.

In addition, the contract payment is 65% in the form of foreign currency and the remaining 35% in local currency so that there will be foreign currency drainage for the country. On the other hand, the participants have raised one positive point on this issue that, the contractor came to this



project with its own money; i.e., it doesn't need local bank finance to undertake the project and this is an advantage for the country; whereas; if local contractors own this project, they must need huge amount of bank finance.

### **4.1.3. Project Time, Cost, and Quality management Practices**

The concept of managing construction projects is deeply embedded in the building procurement system. Ireland, (1983) argues that; time, cost and quality are the principal feasible objectives of the client in any construction project. Although it is claimed that time, cost and quality are incorporated in the management of construction projects; research has shown that in fact a time cost bias exists. Considering this the study assesses the time, cost and quality management practice of the CBE head quarter project. Accordingly, various questions related to the project time, cost and quality management practice were asked and the result is presented in the following section.

#### **4.1.3.1. Project Time management practice**

Timely completion of a construction project is frequently seen as a major criterion of project success by clients, contractors and consultants alike. Newcombe et al. (1990) has noted that there has been universal criticism of the failure of the construction industry to deliver projects in a timely way. NEDO (1983) states that a disciplined management effort is needed to complete a construction project on time, and that this concerted management effort will help to control both costs and quality. This is tantamount to saying that the client's objectives can be achieved through a management effort that recognizes the interdependence of time, cost and quality.

In terms of time management, in BD building contract, the Contractor takes the design risks and as such Request for Information (RFI's) and associated changes are minimal. However, the time management will consider the effect of excusable events on the schedule of the project. The Contractor makes its utmost effort to finalize the project in the intended time duration in order to get its contract payment early. In addition, the overlap of design and construction significantly reduces the completion time and hence, this project has been going based on its master time schedule for long time; but due to the occurrence of various international circumstances like COVID-19, which largely affected the global the construction economy, the project has reported the time delay.

It was observed that, the project has reported the time delay. An agreement was made in April, 2015 between CBE and the well-known Chinese government owned construction company; China State Construction Engineering Corporation Ltd. The project was commenced at July 27, 2015 after 90 days from the signing of agreement. The project completion date at per initial agreement was July 27, 2019. However, the project period was extended for three times. Accordingly, based on the supplementary agreement the project was first extended for six months period. This six-month extension was made due to the incorporation of additional element (scope) in project. In terms of project scope, based on the client request, supplementary agreement was signed to add two additional floors on the main tower and one additional floor in the commercial and conference building. More so, additional elements for building support systems such as Heat Ventilation and Air conditioner (HVAC), Pressurized firefighting, Security Camera Television (CCTV), etc. are included in the project which result in the first six-month extension.

The project also has been amicably extended due to unforeseen conditions for a second time (for 10 months and three days) and for third time (180 days). The project was being extended for the fourth time for 150 day and the completion date as per the extended contractual agreement was January 31, 2022. Over all, the project is extended for fourth times for a total of 813 days. Until January 31, 2022, 2313 days have been already elapsed from the total time duration of the project i.e., the time elapsed Vs. project period is already passed 100%. The building has been completed 97.8% from the total construction work as per the to-date progress report of CPO of CBE in January, 2022. Although some finishing work remains, the project was inaugurated with the presence of Ethiopian Prime Minister Dr. Abiy Ahmed on February 13, 2022, to coincide with the CBE's 80th anniversary. Over all, the project has taken 6 years and 5 months to complete.

As explain during the interview, the three consecutive amicable time extensions were made due the various external conditions. These three consecutive project extensions have been extended due to the occurrence of various unforeseen external and international circumstances which were outside the control of the contractor. In particular, the global epidemic of corona virus (COVID-19) was one of the main reasons for project time delay.

### 4.1.3.2. Cost Management Practice

Clients have been increasingly concerned with the overall profitability of projects and the accountability of projects generally. Cost overruns, in association with project delays, are frequently identified as one of the principal factors leading to the high cost of construction (Charles and Andrew, 1990). Research to date has tended to focus on the technical aspects of managing costs on construction projects in the attainment of client objectives. Considering this the study assesses the project cost management practices and the result is presented hereafter.

Regarding the case whether the employer can entertain any cost overrun request of the contractor more than the total contract price agreed in the contract, the respondents mentioned that, since the contractor's offer under the DB route is a lump sum offer, this offer is little affected by price fluctuation. Contract Price Breakdown annexed with contractor's offer may give glimpse of the contractors' pricing and could be used for pricing variation. However, the lump sum offer has precedence over this contract price analysis. Hence, the relative certainty of the contract price makes it a preferred method of procurement for the employer. This leads to extended processes in payment certification process, as the amount executed in a given period cannot be easily converted to value.

**Table 4.1: CBE head quarter project financial data**

Main contract agreement USD:	231,739,130.43
Discount (rebate) ----%- none	
Main agreement after rebate USD	231,739,130.43
Supplementary Agreement (B):	27,836,452.17
Additional Work - None:	
Variation work USD (D)	4,317,076.67
Revised contract Agreement (A+B+C+D)	263,892,659.28
VAT 15%	39,583,598.89
Revised Contract Agreement with VAT	303,476,558.17

Source: project document (CBE, CPO)

Additionally, as the cost per item is not known, the valuation of change orders and variations are difficult. However, since most of the risk is transferred to the Contractor, it may inflate the tender price initially. This increase in risk transferred onto the contractor will be counterbalanced by the increase in contract prices which can be taken to include these costs of risks. Due to the nature of DB building contract agreement (lump sum) the main responsibility of cost management mainly laid on the Contractor.

Although scope and design changes after the approval are difficult to administer and changes will be expensive to implement in DB projects, based on the negotiation made between the employers and the contractors some changes were made on the project which leads to the increase in the project cost. Thus, based on the interest of the client, the addition in scope of the project was made under supplementary agreement. In this regard, two additional floors in main tower and one additional floor in both conference and commercial building were added in the project which results in scopes change in the project. More so, additional elements for building support systems such as Heat Ventilation and Air conditioner (HVAC), Pressurized firefighting, Security Camera Television (CCTV), etc. are included in the project. Because of this, the project was completed with total cost of USD 303,476,558.17 from its initial contract value of USD 231,739,130.43 million.

#### **4.1.3.3. Project Quality management practice**

To the client, quality may be defined as one of the components that contributes to “value for money” (Flanagan and Tate, 1997). Vincent and Joel (1995) define total quality management as: “...the integration of all functions and processes within an organization in order to achieve continuous improvement of the quality of goods and services. The goal is customer satisfaction.” Furthermore, in order to achieve successful project quality management three separate drivers to quality management must be managed, namely: (i) Integration of the project team so as to have a single objective and a common culture; (ii) A customer focuses for the team thereby facilitating the provision of products and services that will meet the client’s needs and iii) A process of continuous improvement in the management of the construction project. When these three components are successfully integrated, the project begin to realize significant, measurable and observable improvements in the attainment of the clients’ objectives.

As the explained in the interview, in order to achieve the quality of the project, the project has set three quality milestones which are: CBE requirement, standards, and practices.

**Client Requirement:** The first of the essential features of a design and build contract is that the employer approaches a contractor with a set of requirements defining what the employer wants. Requirements are capabilities that a project must meet to satisfy a user's need to solve a problem. The client's needs can come from a number of sources including compliance to a standard or to legal regulations, a business need, a business problem, market need, competition, etc. Investment in requirement processes implemented from the start of the project life cycle pays off at the end. In this regard, the head of PMO stated:

*“In managing the quality of project, the first of the essential features of a design and build contract is that the employer approaches a contractor with a set of requirements defining what the employer wants. The contractor responds with proposals, which include production as well as design work. The scale of design work included depends on the extent to which the employer has already commissioned such work from others”.*

**Standards:** In managing the quality of project, standards are one of the three quality milestones that helps to manage the quality. According to the interviewees’ response, the various standards were set in contract and all the works were undertake according to standard set-in project agreement. In explaining how the project is undertaken according to the stipulated standards the interviewee from the consultant (AAiT) narrated the following:

*“In line with the stipulations of the design-build contract between the contractor and CBE, the consultant (AAiT) was responsible for managing any variation or change order requests made by respective contractual parties. AAiT review such requests and analyze their effect on the overall design and direct and indirect effect on the construction activities. AAiT prepare an assessment and recommendation report for CBE’s and the contractor’s team. Upon approval of such requests, AAiT follow up on the proper and effective implementation of such changes.”*

**Practices:** the project also applied the best practices in quality management. In this regards the interviewees explain that the involvement of all relevant stakeholder as an important practice. The interviewees also reported that even though the design review, supervision and contract administration were outsourced to the consultant (AAiT), all the participants regularly follow up and administer each and every phase of the project as per the terms and conditions set in the contract in collaboration with the AAiT. In explaining how the project quality is monitored in relation to the standards. One of the interviewees from CBE CPO stated the following:

*“The architect of the CPO works in each design review process with the consultant before it is approved. The civil engineers supervise the quality of the construction materials by making it a sample test at technology faculty department. Generally, they make in depth supervision on the materials. This mega project was being intensively constructed 24 hrs a day and the participants also work on the project site even during night hours in a shift basis. The Contractor’s work quality and technical ability was inspected by the Employer and Employer’s Representative (Consultant) through Design Review, Material testing at site laboratory & third-party Laboratory (AAiT Lab., at Ethiopian Conformity Assessment Agency (ECAA) and inspection by teams. If any of the parties become aware of an error or defect of a technical nature in a document which was prepared for use in executing the works, the party promptly will notice to the other party of such error or defect. Then accordingly things are settled in harmony. The client issues to the contractor instructions which are necessary to perform the obligations under the contract. Each instruction is given in written form with respect to the contracting terms, in which the obligations are specified. In the cases of variation, adjustments are made”.*

The interview also mentioned that the project applied written communication and documentation as an important practice for quality control. In this regards the interview mentioned that quality metrics and measures were centrally documented. The interviewees here again agreed that the written form of communication facilitates the administration of the contract which also leads to its success eventually. Respondents also mentioned how they tried to institute a quality assurance system to demonstrate compliance with the requirements of the contract. In this regard, one on the interviewee stated that:

*“The system was in accordance with the details stated in the contract. The client is entitled to audit any aspect of the system through the supervisors and project managers. Details of all procedures and compliance documents were submitted to the client for information before each design and execution stage was commenced”.*

Another important practice in relation to project quality management is the application of track trends. Trend quality metrics and measures over time to provide a graphical representation of trend of the project’s conformity to defend quality standards. In this regard, the interview responses revealed that in addition to the progress review meetings used to be held every month; the consultant reports the daily and weekly status of the project to the client. Concerning the application of track trends practice, one of the interviews narrated the following:

*“In terms of the application of track trends practice, in addition to the progress review meetings used to be held every month; the consultant reports the daily and weekly status of the project to the client. The participants in the monthly progress review meeting could be from any concerned offices other than the usual client, contractor, supervisor and project manager’s presence. Visual aids (such as, picture figures) and other elaborative materials were used while presenting the progress, strategically perspectives, total payment and financial monthly figures used to be presented in the meeting. These meetings grant the follow up of not just the quality but also the time and cost variables of the project”.*

More the interviewee also mentioned the practice of managing quality as iterative process. This means that the project applied the practices in which the project quality management is an ongoing, iterative process that is conducted throughout the project lifecycle. Concerning the application of practice of managing quality as iterative process, one of the interviews narrated the following:

*“We managed quality based on the principle that the project quality management is an ongoing, iterative process that is conducted throughout the project lifecycle. Reporting also continues until the contractor completes all work which was known to be outstanding at the completion date stated in the Taking-Over Certificate for the works.*

*Each report includes charts and detailed descriptions of progress, including each stage of design, contractor's documents, construction, testing; photographs showing the status of progress on site, percentage progress and the actual or expected dates of the rest of the project tasks, records of contractor's personnel and equipment and comparisons of actual and planned progress, with details of any events or circumstances which may jeopardize the execution of the project in accordance with the contract, and the measures being adopted to overcome delays”.*

More in regards to project quality management, the respondents were also mentioned the practices of quick feedback or quick act. This means that the project obtains quality feedback as quickly as possible to avoid escalation of potential quality issues. When errors, omissions, ambiguities, inconsistencies, inadequacies or other defects were found in the contractor's documents, the works were corrected at the contractor's cost, notwithstanding any consent or approval. Though these costs were very minimal that it didn't raise complications or serious disputes.

The other point discussed by the participants regarding the project quality management practice was; the contractor imports almost all the construction materials from abroad, mainly from China except few, like cement, sand and gravel because, it doesn't believe that other local construction materials have high quality even though these local materials can be further attested by Quality Standards Authority; then local material suppliers could get additional market by supplying to this project. The contractor had also employed professionals for the project from China up to the skilled laborers. Only the unskilled laborers were hired from local people. i.e., key professional works were owned by the Chinese.

The interviewees also mentioned that administration of quality in this DB project was probably found to be more difficult when compared with that of the CBE DBB projects before. In this regard one of the interviewees stated:

*“In this project, the complete specification and construction methods were not fully presented; i.e., all the interior work of the building was designed phase by phase (on-going design) during the project's implementation time and no Bill of Quantity (BoQ) was prepared at the beginning so as to know the exact*



*specification and type of the materials to be utilized in the building project. This leads the consultant to assign additional inspectors to ensure the quality of works. However, the designer may not be under the direct control of the Employer because; usually the designer was employed by the contractor directly”.*

On average, managers of design-build projects surveyed in their study estimated that design build project delivery reduced the overall duration of their projects by 14 percent, reduced the total cost of the projects by 3 percent, and maintained the same level of quality as compared to design-bid-build project delivery. On the other hand, other project survey results revealed that design-build project delivery, in comparison to design bid-build, had a mixed impact on project cost depending on the project type, complexity, and size. The surveyed design-build project managers further indicated that project delivery approach (i.e., design-build versus design-bid-build) can be a contributing factor in controlling and potentially reducing project costs. However, project delivery approach was perceived to be less of a factor in affecting project cost than other characteristics of the project or its participants.

#### **4.2. Challenge in project management of CBE head quarter project**

One major objective of this study was to identify challenges of project management practice in building CBE head quarter project. The following section discusses the major analysis and interpretation from the interview data regarding to the major challenges of project management in this project. All the interviewees highlighted several challenges. Various and diversified challenges were pointed out by the respondents. The challenges ranged from institutional, international, cultural, behavioral, conflict of interest, to environmental.

**COVID-19:** All the interviewees mentioned the outbreak of COVID-19, which they identified as a major challenge in the construction of the project. It is well known that the outbreak of Corona Virus in the world had a devastating effect on the world economy. The construction sector, in particular, was one of the worst hits. In relation to the challenges of COVID-19, one of interviewees stated:

*“The outbreak of COVID-19 is the major challenge in this project. Related to this was the fact that the disease was first detected in China. The problem was exacerbated by the fact that most of the construction materials were imported*

*from China. The occurrence of the corona virus was unpredictable and unforeseen condition and the impact was so great that it caused delays in the overall construction work. Due to this, as discussed above the project completion time was extended for several times”.*

**Lack of construction material:** The interviewees highlight lack of construction material as one important challenge. As per interviewees stated:

*“There were lacks of construction materials in domestic market. Most of the materials needed for construction were not found in local market. Because of this most the construction materials were imported from China. In order to keep the specification and quality of the project, the required construction materials and inputs were imported from abroad mainly from the China”.*

More so, the interview also highlighted that related to these were the challenges faced by the customs of the importing countries. This had slowed down the importation of the required material. As a result, some delays had occurred.

**Lack of skilled local manpower:** the interviewees also mentioned the lack of skilled local manpower as another challenge. As per responses of interviewees there was shortage of the lack of qualified professionals in the country to perform certain tasks that required special skills and knowledge. One of the respondents shared the following regarding the Lack of skilled local manpower:

*“There was critical shortage of skilled and experienced manpower locally in this project. Some of the standards and practices set out in the project documents were beyond the scope of construction in our country, so we needed manpower to understand those standards. There was shortage of the lack of qualified professionals in the country to perform certain tasks that required special skills and knowledge. As a result, these experts were brought in from abroad, and this took some time which in turn pose certain challenges in project”.*

In this regards interviewee were mentioned that foreign expertise was specially involved in curtain work, wind design, landscape design, sound system, acoustics or other related tasks.

**Lack of rules and regulations:** The respondents were also mentioned that due to the complexity and scope of the project, challenges related to the rules and regulations were faced during the start of the project. One of the respondents shared the following regarding challenges related to the rules and regulations:

*At the beginning of the project there were challenges related to lack of rules and regulations concerning the permit for construction of high-rise building. Since the building is very huge and one of the tallest in country, being built by an internationally experienced company and the project contract agreement has incorporated various international standards, at the beginning of the project there were various challenges associated with getting the construction permit and related licensing issues”.*

**Challenges related to standards and practices:** Another challenge associated with the project was that the difficulty to manage such huge mega project (high-rise building project) with our country construction building project management practices. There were many new elements, standards and practices that were beyond the scope of our country project management practices and standard. Interpreting, administering, and supervising such standards and such practices were also mentioned as challenges.

**Language difference and barriers:** The interviewees further indicated that language difference is another major challenge. Related to language difference and barriers, one of the interviewees mentioned the following:

*“Language difference created challenges in understanding and interpreting some of the standards which are written in Chinese. There were so many standards in the project document that it took a long time to read, understand and interpretation of those standards. The project agreement was so vast, somehow unique and new to our country, so it was challenging to find a professional who could understand and interpret it quickly”.*

**Challenges related to the management of claim and dispute:** The interview also mentioned that in terms of administering the project contract, there were some little challenges related with management of various claims. One of the respondents shared the following regarding challenges related to the management of claim and dispute:

*“There were some claims by the contractors and managing and negotiating such claims were posing some little challenges as interviewees indicated. As interviewees were stated, practically, complaints are handled by negotiation between the Contractor and Employer/Consultant and nothing has gone to the Dispute Review Board or Arbitration so far. There were minor claims which were solved by discussion and negotiation before turning to disputes like; who owns facilities for Employer’s Representative staff, Payment for Temporary Water, Electricity, detail finishing level and Partitions of inter. However, the Contract has Amicable Settlement, Dispute Adjudication Board and Arbitration as dispute settlement mechanism”*

Overall, the study identified several challenges which among other include: the outbreak of COVID-19, lack construction materials, languages barrier, lack of some practices and standards, lack of skilled man power and contractor’s claims

## **CHAPTER FIVE**

### **CONCLUSIONS AND RECOMMENDATIONS**

#### **Introduction**

In this chapter, the conclusions and recommendations of the study were discussed. The project work was an objective to assess the practices of managing high rise building in Addis Ababa with the case of CBE head quarter building project. Based on this, the chapter presents the conclusion and recommendations that comprise further actions, which the study proposes for improving the project management practice of high-rise building project.

#### **5.1. Summary of finding**

As it is to be recalled, the major objectives of the research were to investigate the practices of managing high rise building in Addis Ababa with the case of CBE head quarter building project, to identify challenges of managing this project and to identified lessons learn from this project. To achieve these objectives, the study used literature review, semi-structure interview, and site observation as a research instrument where qualitative analysis was used to make discussion of the finding. In this section, the major findings of the research which have been discussed before are summarized in accordance with the objectives of the research. The study came to claim the following as key findings of the project work.

It was found from the study that from the various major project delivery methods in public and private construction projects, the contract type used for the CBE HQ project is the Design-Build (DB) delivery method. The main reasons for selecting this delivery method were that it is innovative method where the contractor takes full responsibility for the design and construction and it is suitable for large and complex projects like the CBE HQ building project; where early completion is a requirement.

In terms of time project management, the project had reported the time delay. In BD building contract, the Contractor takes the design risks and as such Request for Information (RFI's) and associated changes are minimal. However, the time management will consider the effect of excusable events on the schedule of the project. Due to the incorporation of additional element (scope) in project and unforeseen conditions associated with epidemics of Covid-19, the project

had been extended for four times for a total of 813 days. Over all, the project has taken 6 years and 5 months to complete.

Regarding the cost management practice, the study found that the contractor's offer under the DB route is a lump sum offer and this offer is little affected by price fluctuation. Due to the nature of DB building contract agreement (lump sum) the main responsibility of cost management mainly laid on the Contractor. Although scope and design changes after the approval are difficult to administer and changes will be expensive to implement in DB projects, based on the negotiation made between the employers and the contractors some changes were made on the project which leads to the increase in the project cost. Because of this, the project was completed with total cost of USD 303,476,558.17 from its initial contract value of USD 231,739,130.43 million.

The CBE used a Design-Build (DB) delivery method to execute its head quarter project. The project quality management process has set three quality milestones which are: CBE requirement, standards, and practices. The first of the essential features of a design and build contract is that the employer approaches a contractor with a set of requirements defining what the employer wants. The contractor responds with proposals, which include production as well as design work. The scale of design work included depends on the extent to which the employer has already commissioned such work from others. The various standards were set in contract and all the works were undertake according to standard set-in project agreement. In line with the stipulations of the design-build contract between the contractor and CBE, the consultant (AAiT) was responsible for managing any variation or change order requests made by respective contractual parties. AAiT review such requests and analyze their effect on the overall design and direct and indirect effect on the construction activities. The project quality management provided various mechanisms for AAiT to effectively address quality issues such as assessment and recommendation report, in depth supervision on the material, deficiency lists, design review, material testing at site laboratory & third-party Laboratory. AAiT prepare an assessment and recommendation report for CBE's and the contractor's team. Upon approval of such requests, AAiT follow up on the proper and effective implementation of such changes.

The study also identified major challenges concerning with management and implementation of this project. The study identified several challenges which among other include: the outbreak of COVID-19, lack construction materials, languages barrier, lack of some practices and standards, lack of skilled man power and contractor's claims. The study also identified that the project could have provided a significant opportunity for learning capacity and transferring technology and knowhow from the CSCEC Ltd; which is one of the most experienced contractors in the world.

In terms of project lessons learnt, the study found that throughout its construction, the project offered valuable lessons and witnessed important technological and experience-sharing endeavors. The CBE HQ building project has provided a significant opportunity for learning capacity for various interested party. The project had attracted significant visitors from academic institutes, government offices, and the industry, due to its complexity, use technological advanced construction methods, and overall significance to the Ethiopian construction. Various interested parties, professionals, and some college graduate and undergraduate students visited the project site as apprenticeships, reporting back to their respective universities on what they saw. In this regard, the project had provided a significant opportunity for learning capacity and transferring technology and knowhow. Because of the complexity and scope of the project, there were various technologies, standards and practices related with building of the high-rise building project which gives an important lesson and learning opportunities for local professional and Engineers. In this regard, curtain work, wind design, air conditioning, the elevator system, landscape design, sound system, lighting system, acoustics, and other associated activities were cited by interviewees as essential lessons for our country's construction project. Overall, Ethiopian engineering students and construction companies have benefited from the project by learning about cutting-edge high-rise building technologies.

## **5.2. Conclusion**

The study has come a long way in discussing challenging and project management practices of the CBE head quarter project. Based on the finding of the study discussed above, the study makes conclusion. The study concludes that having skillful experts, documenting every project instruction in written form, providing discrete authority to the contractor with full responsibility (empowerment), harmonization of stakeholders, back-to-back evaluation with continuous

progress review meetings were identified as how effective project term managed can be used to bring the project finally to be completed based on the experience of the case study. However, the study also conclude that from what have been said by the interview respondents, the effectiveness of the DB contract delivery system of the CBE HQ project on time, cost, quality and scope of work is summarized in the way that; this DB project was becoming effective in meeting its project cost though there were some change in cost were made due change in scope, however, the project was not effective in its time schedule as it has having significant time delay and the quality assurance is not certainly known though significant follow-up and supervision were made to ensure that project was in accordance with the details stated in the contract.

### **5.3. Recommendation**

Based on the findings obtained from study, the study makes the following recommendations:

- Planning and scheduling of high-rise building construction is very important and complex. So, it is better the schedule prepared in detail and revised periodically by experienced professionals.
- Having a well-established contract is as good as having a good fence which leads to a smooth relationship with the stakeholders. It is hence recommended to have a clear contract first which later on leads to success with a proper follow up & monitoring of a project.
- Given the complexity and peculiar nature of the CBE HQ project, the consultant (AAU-AAiT) has to act as a key national institution for knowledge and technology transfer. All new technologies implemented in the project have to be disseminated to the local construction industry through various outreach mechanisms; including publication and seminars. A series of magazines on construction technology, new design approaches, instrumentation, electro mechanical systems and project management approaches have to be published and disseminated to local contractors, other consultants and even for college students of this field of study
- The number of skilled local workers in the electromechanical work and female workers in the project is less. Especially the number of skilled/professional local workers in the



electromechanical work better increased for the purpose of future maintenance, knowledge transfer and for the contractor it reduces salary cost in comparison with the foreigner.

- Trading off the three pillars of project management needs time to come up to a point of excellence. This means having well exposed and experienced contractors is beneficial for the most part. Though instead of bringing contractors from abroad, the local contractors can be brought to project management knowledge so that permanent solutions can be brought without incurring foreign currency outflows.

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## **Appendix I: Interview questions**

The purpose of this interview is to collect data for the study entitled "Assessment of Project Management Practices in High-Rise Building: The Case of CBE Headquarter Building Project " for partial fulfillment of the requirements for the Master of Art (MA) in Project Management in St. Merry University. This interview is required to assist in determining the objectives of the study. Your participation in this survey is voluntary. The information you provide will be used only for the purpose of the study and will be kept strictly confidential. Therefore, you are kindly requested to provide your genuine responses to different questions followed. Thanks in advance for your cooperation for this interview.

### **Section I: General Questions**

1. What is your responsibility/position in the project?
2. What is your responsibility in the project?
3. How long you are working in this project?

### **Section: II:**

1. Let us briefly explain the overall status of CBE head quarter project? How do you evaluate the status of CBE head quarter project against objectives?
2. Let me briefly explain the overall project management practices of CBE head quarter project? What do you think the purpose and objective of project management? Does the project clearly establish the purpose and objective of overall project management? If yes, is it formally communicated to all project stakeholders?
3. Are project management role and responsibilities assigned to project stakeholders? How?
4. How do you observe the project cost management practice in CBE head quarter project? Is there project cost overrun in this project? What were the major challenges in managing cost of the project? How did you overcome those challenges?
5. How do you observe the project time schedule management practice in CBE head quarter project? Is the timeline for performing project management activities set? How? Is there any delay in project time schedule? If yes, for how long it delays? What were the major challenges faced in managing time schedule of the project? How did you overcome those challenges?

6. How do you observe the project quality management practice in CBE head quarter project?  
Were there any scope changes with CBE head quarter project? If yes, how was the scope change handled?
7. Over all, what are the main challenges in managing CBE headquarter projects proficiently?  
What kind of solutions did you give for those problems and challenges? How do you handle them?
8. Is there any practice of lesson learned from of the project? If yes, what were the strengths and weakness mentioned in practicing project management?

***Thank You Once Again for Your Cooperation and Helpfulness!***