The International Journal of Multi-Disciplinary Research

ISSN: 3471-7102

An Investigation into the factors affecting project performance among contractors in Lusaka District of Zambia

(Conference ID: CFP/539/2017)

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ABSTRACT

Several factors affect contractor performance in the Zambian construction industry. Contractor performance is often responsible for either a successful project that reflects strong contractor skills and site management or a failure that reflects the contractor's lack of knowledge, skills and experience. Any factor affecting contractor performance either negatively or positively can be avoided or enhanced using project management skills. This study aimed at identifying the major factors affecting contractor performance among contractors in Zambia. It further assesses the relative importance of these factors from the consultants', contractors' and clients' perspectives.

The non-probability sampling techniques were used to select the 110 respondents. Specifically, the convenient, the snow-ball and the purposive sampling techniques were employed. In consonance with the mixed method design, questionnaires, in-depth interview, Focus Group Discussion and observation checklist were developed to collect the primary data from the field. These instruments were chosen because they are the most appropriate. Questionnaires comprised of many close ended questions and were designed solicit statistical information. This facilitated easy administration of the questionnaires. It also helped to avoid irrelevant answers from respondents and made entering data into the computer fairly easy. The in-depth interview was used because of its known advantages of building good rapport, creating a relaxed and healthy atmosphere in which respondents easily cooperate, answer questions and clear misapprehension about any aspect of a study. Focus Group Discussion allowed the moderator to probe for more information as it is flexible to explore unanticipated issues. The Focus Group was used to collect and gather qualitative information. The observation method was chosen in order to verify information collected through interviews and focus group discussions. The researcher spent time visiting project sites in Lusaka district.

The following are the factors identified in the research which contribute to project delay or abandonment: lack of business management skills, lack of financial management skills, exorbitant interest rates from banks, risks involved in construction industry, lack of access to finance, late payments of completed work by the client, lack of collateral, bidding for projects beyond contractor technical or financial capacity, lack of skills to properly program projects resources, inability to prepare documents for timely payment. Human resource in the construction industry should be developed through proper and continuous training programs about construction projects performance. Clients are recommended to facilitate payment to contractors in order to overcome delay, disputes and claims. Consultants should be more interested with design cost by using multi criteria analysis and choosing the most economic criteria in order to improve their performance and to increase clients' satisfaction. There should be adequate contingency allowance in order to cover increase in material cost. Contractors should minimize waste rate through project implementation in order to improve cost performance. They should be more interested with conformance to project specification to overcome disputes, time and cost performance problems. They should be more interested in the quality of materials to improve cost, time and quality performance. Contractors should have a cost engineer in their projects to control the cost successfully.

KEY WORDS: *Delays, Construction Industry, Client, Consultant, Business Environment, Project, Abdonment*

CHAPTER ONE

1.0 Introduction

1.1 Background to the problem

Construction industry plays a major role in development and achievement of the goals of the society. Construction is one of the largest industries and contributes to about 10% of the gross national product (GNP) in industrialized countries (Navon, 2005). Construction industry has complexity in its nature because it contains a large number of parties such as clients, contractors, consultants, stakeholders, shareholders and regulators. The performance of the construction industry is affected by national economies (Navon, 2005). In Zambia, efficient construction projects can provide a solid platform for reviving the Zambian economy and for building a more balance and independent economy during stable political conditions.

There is probably no sector that has significant implications on the daily lives of human creatures than the construction industry. It is universally accepted that for example, the wells and bore holes where human beings get water as a source of life, the buildings where we live and work, the roads and bridges we drive on, the utility distribution systems we use, the railways, airports, ferries and harbours we travel and trade from, dams and power lines that give us electricity, are all products of this vital industry(Takim and Akintoye, 2002).

For a number of reasons, the performance of construction projects has not been as impressive, fundamentally because of the Zambian Authorities' failure to establish a coherent institutional and policy framework (World Bank, 2004). Performance is related to many topics and factors such as time, cost, quality, client satisfaction; productivity and safety. Construction industry in Zambia suffers from many problems and complex issues in performance. There are many realistic reasons such as closures, amendment of drawings and amendment of the design. In addition, there are other different reasons affecting construction projects performance in Zambia such as poor management and leadership; inappropriate participants; poor relations and coordination; absence of motivation, control, monitor or decision making systems; inadequate infrastructure, political problems; cultural problems and economic conditions (UNRWA, 2000).While individual organizations have been measuring their performance for many years, there has been little consistency in the data and the way it has been published. The performance can be measured by key indicators for evaluation. The purpose of Key performance indicators (KPIs) is that clients want their projects delivered: on time, on budget, free from defects, efficiently, right first time, safely, by profitable companies. So, regular clients expect continuous improvement from their construction team to achieve year-on-year reductions in project costs and time. In addition, the Key Performance Indicators (KPIs) can be used for benchmarking purposes and will be a key component of any organization to move towards achieving best practice. Clients, for instance, assess the suitability of potential suppliers or contractors for a project, by asking them to provide information about how they respond to a range of indicators (DETR, 2000).

In Zambia many construction projects fail in performance. In addition, performance measurement systems are not effective or efficient to overcome this problem. Construction projects performance problem appears in many aspects in Zambia. There are many constructed projects which fail in time performance,

others fail in cost performance and others fail in Quality performance (Zulu and Chileshe, 2008).

Many studies have investigated the project performance factors that impact contractor performance in developing countries. A shortage of manpower skills, poor supervision and site management, unsuitable leadership, and equipment failure have all contributed to construction delays in the United Arab Emirates, as Faridi and El Sayegh (2006) have reported. Hanson et al. (2003) studied the client dissatisfaction factors in South Africa's building industry and found poor workmanship and contractor incompetence to be the main factors affecting project performance. Furthermore, customer satisfaction was found to be one of the factors affecting contractor performance and reputation by Gharakhani et al. (2013).

Zulu and Chileshe (2008) investigated contactor performance in Zambia and found it below expectations, arguing that nothing can be learned from local ongoing projects that have not been completed or have been delayed. They concluded that contractors' poor performance has huge implications on competitiveness. The construction industry being a key sector in the development and economic growth of Zambia has not escaped the challenges facing other countries worldwide in terms of delivering construction projects on time as stipulated in the contracts.

1.2 Statement of the Problem

The government has initiated a number of development projects countrywide in its quest to improve the living standards of citizens and grow the national economy. Huge amounts of money from the national treasury are released periodically to fund the implementation of these projects. In addition, the government has developed the construction policy and put the evaluation system in place. Training institutions have been established to enhance the knowledge and skills of contractors in the country. Despite the above efforts and developments put in place by the government, the number of delayed and abandoned projects has been increasing from time to time (Zulu and Chileshe, 2008).

Therefore, this research investigates the factors affecting the performance of construction projects in Zambia in order to assist clients, consultants and contractors to overcome performance problem and improve on the execution of the construction projects.

1.3 Main Objective of the Study

The aim of the study was to investigate the factors affecting project performance among contractors in Zambia.

1.4 Specific Objectives of the Study

1. To examine the cost factors contributing to poor project performance among contractors in Lusaka district.
2. To determine time factors that affect project performance among contractors in Lusaka district.
3. To assess quality factors that lead to poor project outcome.
4. To discover the solutions to the problems faced by contractors in Lusaka district.

1.5 Research Questions

1. What are the cost factors contributing to poor project performance among contractors in Lusaka district?
2. Do time factors affect project performance among contractors in Lusaka district?

3. How quality factors lead to substandard project delivery?
4. What are the solutions to the factors affecting project performance among contractors in Lusaka?

1.6 Significance of the Study

This research is significant because the benefits of identifying factors which affect contractors in Zambia can start a chain of reaction of positive effect that can be passed on to the upcoming main project players: Client, Contractor and Consultant by establishing the issues that are related to the construction project delays and provide a greater insight and understanding on the causes of delays. This study can reveal areas of weakness, incompetency and attitudes of contractors and how these affect the project performance in the process of implementation and establish areas which need amendment in order to address ineffective, inequality, inefficiencies and incapability among contractors.

It is hoped that this research will be beneficial to contractors, engineering institutions, local government, public organization, ministries, upcoming local entrepreneurs, National Council for Construction, mining industry, construction industry and the community where these projects are undertaken. This can be achieved by applying theoretical concepts discussed in many literatures into practice in real projects. It is hoped that these findings will guide efforts to improve the performance of the construction industry and will be useful to the construction players.

The contractors are factors of national development because they enhance entrepreneurship, create jobs to the citizens and save part of the money they are paid in Zambia hence the need to be efficient, effective and competent in project management especially in construction industry. Other than that, this study is expected to provide a better ways and methods in delivering construction projects by minimize the major causes of delays.

1.7 Conceptual Framework

The study adopted conceptual framework which focused on cost, time and quality factors complexity analysis. It is based on developments to the work of Hughes (1990) which emphasise that factors relating to cost, time and quality are crucially important to the successful completion of the projects. Hughes (1990) viewed business environment as an intermediate variable. He argued that changes in the environment effects the execution of the projects. The rationale for the argument is that a changing environment demands construction organisations to be responsive and dynamic. Cost, time and quality factors are independent variables while successful completion of the projects is dependent variable. Good business environment is an intermediary variable.

1.8 Definition of key terms

Business environment: These are factors in the environments which are crucially important to business.
Contractor: this is an organization or a group of organizations who have a legal obligation to execute the project on behalf of the client.
Client: this is an individual or an organization who legally owners the project.
Quality of Work: In construction projects, quality of work is associated with adherence to conditions of the contract and specifications stipulated in the contract documents in their entirety during the execution of the project.

Project delay: Failure to complete projects on Time. Time on construction projects is concerned with planning of the work over the anticipated duration in relation to its requirements with full appreciation of the resources needed and resources available.
Project abandonment: this is a premature permanent closure of the project by the contractor.

1.7 Organisation of the Study

This report has six chapters. Chapter One contains the background to the study, statement of the problem, objectives of the study, research questions, conceptual framework, significance of the study and structure of the dissertation. Chapter Two reviews the relevant literature on the factors affecting local contractors in Zambia.

Chapter Three focuses on the methodology of the study. It describes the study design, the target population, the sampling procedure, sample size, the research instruments used, data and sources, data processing and analysis, the ethical issues considerations and the challenges from the field work. Chapter four contains the presentation of findings. Chapter five discusses the findings while chapter six gives conclusions and recommendations.

CHAPTER TWO

2.0 LITERATURE REVIEW

2.1 Introduction

There are diverse interests in the construction industry. The principal interest or actors in the construction industry are: the client, the consultant and the contractor.

2.1.1 The Client

The Client is, by far, the single most important member of the construction team. He is the initiator and financier of all the projects. Duran (2006) noted that the major contribution the client can make to the successful operations of the construction industry lies in his skill in specifying his needs prior to the preparation of the design. It is also important for the client to set cost limits of the project at the briefing .He should also ensure that adequate financial provisions are made prior to the commencement of any project.

2.1.2 The Consultant

Cost considerations are among the most important and basic considerations that Consultants must deal with. It is essential to see that projects are contained within the client's budget and cost forecasts. Cost has the final control over virtually in every project. Accurate cost analysis, estimation and control is one of the necessary services the client requires from the consultants (Duran, 2006).

2.1.3 The Contractor

Duran (2006) further reveals that the major task of Contractors is to assemble and allocate the resources of labour, equipment and materials to the project in order to achieve completion at maximum efficiency in terms of time, quality and cost.

Problems arising from the clients, consultants and contractors may affect the successful completion of the project. Delays of a construction project can be defined as the late in progress or actual completion of works compared to the baseline construction schedule or contract schedule. Vast majority of project delays occur during the construction phase, where many unforeseen factors are always involved. Previous researchers defined construction delays by their own sentence, however it bring similar meaning.

According to Braimah (2008), the term 'delay' in construction contracts has no precise technical meaning. It can be used

in different sense to mean different conditions in project execution. However, the term is often used in its basic sense to mean any occurrences or events that extend the duration or delay the start or finish of any of the activities of a project.

In the study of Aibinu and Jagboro (2002), construction delay was defined as the time overrun either beyond completion date specified in a contract, or beyond the date that the parties agreed upon for delivery of a project. They defined delays as the time overrun beyond the contract date or beyond the date that the critical activities have been delayed.

Delay, from the view of Zack (2003), is slowing down of a work without stopping it entirely. It is different from suspension, which means stoppage of work directed to the contractor by a formal form from client. Aibinu and Jagboro (2002), described delay as a situation when the contractor and the project owner jointly or severally contribute to the non-completion of the project within the original or the stipulated or agreed contract period. Delay was also defined as an act or event which extends required time to perform or complete work of the contract manifests itself as additional days of work. Majid I.A. (2006) interprets delay as a loss of time. 'Time' refers to the duration for completing the construction project. When the project period is delayed, it means the project cannot be completed within original schedule.

2.2 Types of Delay

There are two main types of delay that occur on construction project, namely excusable and non-excusable delays. In actual practice, delays are frequently difficult to sort out, separate and accurately access particularly in term of claim process (Yates and Epstein, 2006). The terms of excusable and non-excusable come from the perspective of contractor. A delay that is compensable is compensable to the contractor but non-excusable to the employer. On the other part, a delay deemed as non-excusable is compensable to the employer because it results in levying of liquidated damages.

2.2.1 Excusable Delays

Delays that excuse a contractor from performing within the contract period and justify an extension of time (EOT) to perform are 'excusable'. According to Naha, Norelina (2008), excusable delays are those not attributable to the contractor's actions or inactions and typically include unforeseen events. These events are beyond the contractor's control and are without fault or negligence on his part. This type of delays can have an impact on non-critical activities which need a more detailed analysis to determine whether additional time extension is warranted, or if the reduction of float time can be justified. However, whether the delays are excusable is depends on contract provision. Excusable delays can be further classified into delays with compensation and without compensation (Naha, Norelina (2008).

2.2.2 Excusable Delays with Compensation

A delay is deemed compensable to the contractor when its cause is within the control of, is the fault of, or is due to the negligence of the project owner. According to Yates and Epstein (2006), contractors are entitled to a time extension as well as monetary compensation due to this type of delays. However, the contractor must show that the delay was "unreasonable" and prove the extent of the additional expense involved. These delays result from circumstances such as:

1) Failure of the owner to have the work site available to the contractor in a timely manner;

2) Owner initiated changes in the work;
3) Owner delays in issuing a notice to proceed;
4) Architect/Engineer supplied designs which are defective;
5) Owner not properly coordinating the work of other contractors;
6) Owner not providing owner furnished equipment in a timely manner;
7) Owner providing misleading information;
8) Owner interfering with the performance of the contractor;
9) Owner, or the Architect/Engineer, delaying the approval of contractor submitted shop drawings;
10) Owner, or the Architect/Engineer, using the shop drawing process as a means by which to change the contract requirements.
11) Contractor encountering differing site conditions.

2.2.3 Non-Compensable Excusable Delays

Non-compensable excusable delays are caused by the factors that are beyond the contractor's reasonable control and not attributable to the Contractor's fault or negligence (Ahmed *et al.*, 2002). When this type of delay is encountered, the contractor will not receive any compensation for the cost of delay, but he will be entitled only for an extension of time (EOT) to complete the work and relieved from any contractually imposed liquidated damages for the period of delay.

In order for delay to warrant an extension of contract time, the delay must affect the completion of the project. This provides the basis for the high importance attached to the use of critical path method (CPM) of scheduling for proving or disproving time related claims such as extension of time and prolongation cost (Bramble and Callahan,1992). The major elements that represent non-compensable excusable delays include events such as following:

1) ***Unforeseen events***. Unforeseeable causes generally refer to future events, not existing causes. By contrast, conditions of which the contractor should have been aware are not considered unforeseeable.
2) ***Events beyond the contractor's control***. These are cases in which work on the project is impossible.
3) ***Events without fault or negligence***. Such events are those in which the contractor is blameless, such as acts of god and labor or material shortages beyond what was expected at the time the contract was made.

2.2.4 Non-Excusable Delays

In this category, the contractor's own actions or inactions have caused the delay. It is a delay on which the contractor could have foreseen or prevented, but failed to do so Naha, Norelina (2008). Consequently, this type of delay presents no entitlement to a time extension or delay damages for the contractor, if the delay can be proved to have affected the whole project. The owner, however, could be entitled to liquidated damages. According to Ahmed *et' al* (2002), the amount of damages is dependent on the contract value of the project, which is based on the length of delay and the rate of damages per day. Such delays are inherently the Contractor's responsibility and no relief is allowed. They cited an unexcused delay may be considered as a breach of contract. There are numerous types of non-excusable delays as shown in Figure 2.

2.2.5 Concurrent Delays

According to Braimah (2008), the terms of "independent delays", "serial delays" and "concurrent delays" are used to describe delays based on the interrelation of the above delay types with respect to their duration and time of occurrence. Independent delays are delays that occur in isolation or without other consecutive or simultaneous delays while serial delays

occur in sequence consecutively and not overlapping with each other on a particular network path.

On the other hand, when two or more separate delay events occur during the same time period, which affects the completion date experienced on a project are often termed "concurrent delays" (Reynolds and Revay, 2001). If the delays are inextricably intertwined, neither the contractor can be held responsible for the delay or recover the delay damages from the owner.

It is difficult to determine which delays are concurrent. The resolution of this type of delay has been a contentious legal and technical subject in construction and engineering contracts (SCL, 2002). The reason for this is largely due to the fact that resolving it requires the consideration of the interaction of different factors such as the time of occurrence of the delays, their length of duration, their critically, the legal principles of causation and float ownership (Bubshait and Cunningham, 2004). Figure xxx classifies the different types of delays based on their various attributes.

2.3 Global Perspective

2.3.1 Causes of Delay:

Many researches have been carried out both in developed and developing countries to investigate the factors that have a substantial effect on the performance of construction projects. Some literature is explained below to highlight the factors affecting performance of construction projects.

2.3.1.1 Florida

Ahmed S.M. *et al.* (2002) conducted an empirical study regarding construction delays in Florida. Based on the contractor surveyed the most critical categories of delays are Code-Related Delays followed by Design-Related Delays and Construction-Related Delays. Odeh and Battaineh (2002) evaluated the result of their survey aimed at identifying the most important causes of delays in construction projects with traditional type contracts. The results indicate that contractors and consultants agreed that owner interference, inadequate contractor experience, financing and payments, labour productivity, slow decision making, improper planning, and subcontractors were among the top ten most important factors.

2.3.1.2 Hong Kong

Sepasgozar et' al (2015) conducted a survey to determine and evaluate the relative importance of the significant factors causing delays in Hong Kong construction projects. They analyzed and ranked the main reasons of delays according to different groups classified on the basis of the role of the parties in the local construction industry (i.e. whether clients, consultants or contractors) and the type of projects. Results indicate that the five principal and common causes of delays are: 'poor site management and supervision', 'unforeseen ground conditions', 'low speed of decision making involving all project teams', 'client-initiated variations' and 'necessary variations of works'.

2.3.1.3 Malaysia

Traditional contractual approach is still dominant in Malaysia construction sector and this may likely continue to be a trend. Malaysia construction sector comprises the clients or project owners, contractors, subcontractors, suppliers, and others key professional actors responsible for design and supervision of projects. These professionals include architects, engineers and quantity surveyors. Due to this mixed variety of parties involves in projects, they often encounter difficult situations and some degree of pressures. According to Odeh and Battaineh (2002), many of these

problematic conditions are beyond control and often lead to delays or project time overrun.

Sambasivam and Soon (2007) cited a project may be delayed as a result of the direct action of major parties, or of their failure to act especially if they have a duty to act in the circumstances. The outside forces also could intervene to delay a project. Hence, it is important to describe the causes of delay by looking at factors relating to actions and inactions of project participants.

Naha, Norelina (2008), studied the causes of delay in building projects limited in in Johor Bahru. The study found that (1) contractor's financial problems, (2) shortage in material, (3) fluctuation of materials price, (4) poor management and planning, (5) poor subcontractor performance, (6) inclement weather, (7) inadequate of contractor's experience, (8) construction mistake and (9) poor monitoring and controlling were the major causes of delays at the time.

Sambasivam and Soon (2007) conducted a study by taking an integrated approach and analyze the impact of specific causes on specific effects of delays in Malaysia. Based on their survey, the most important causes of delay were: (1) contractor's improper planning, (2) contractor's poor site management, (3) inadequate contractor experience, (4) inadequate client's finance and payments for completed work, (5) problems with subcontractors, (6) shortage in material, (7) labour supply, (8) equipment availability and failure, (9) lack of communication between parties, and (10) mistakes during the construction stage.

2.3.1.4 Indonesia

Majid, I.A. (2006), carried out a study on causes and effect of construction project delays in Acheh Indonesia. Contractor-related delays was ranked the most significant groups that cause delays, followed by equipment-related delay, client-related delays, material-related delays, finance related delays, consultant-related delays, external-related delays, and labour related delays.

2.3.1.5 Lebanon

Mezher and Tawil (1998) carried out a study on causes of delays in Lebanon from the viewpoint of owners, contractors and architectural/engineering firms. It was found that owners had more concerns with regard to financial issues, contractors regarded contractual relationships the most important, while consultants considered project management issues to be the most important causes of delays.

2.3.1.6 Saudi Arabia

Ogunlana (2008), have addressed 56 main causes of delay in Saudi Arabia large building construction projects and their relative importance. Based on the contractors surveyed the most important delay factors were: preparation and approval of shop drawings, delays in contractor's progress, payment by owners and design changes. From the view of the architects and engineers the cash problems during construction, the relationship between subcontractors and the slow decision-making process of the owner were the main causes of delay. However, the owners agreed that the design errors, labour shortages and inadequate labour skills were important delay factors.

There were many possible causes that contribute to construction project delay. However, according to Ogunlana (2008), although the principle reasons for delays are comparable across developing countries, several factors pertaining to local industry, social-economic and cultural issues and project characteristics also contribute to delays.

2.3.1.7 Nigeria

Aibinu and Odeyinka (2006), have assesses the causes of delays in Nigeria. They have analyzed quantitative data from completed building projects to assess the extent of delays factors contributed to overall delays on a project. By using a Pareto analysis, they revealed that 88% of the factors (representing 39 highest priority factors) were responsible for 90% of the overall delays. The result of the study indicated that financing projects in Nigeria continue to be one of the major sources of project delays and of poor time performance.

2.3.1.8 Swaziland

Thwala and Mvubu (2008), identified the following factors as constraints to the success of contractors in Swaziland: lack of business management skills, lack of financial management skills, exorbitant interest rates from banks, compulsory business management services, risks involved in construction industry, lack of access to finance both during preconstruction and construction, bad relationships with suppliers, late payments of completed work by the client, lack of collateral, bidding for projects beyond contractor technical or financial capacity, lack of skills to properly program projects resources in monthly segments for healthy cash flow, inability to prepare documents for timely payment, misunderstanding of terms of contract and inability to use applicable contractual instruments to demand performance by client.

2.3.1.9 Malawi

Kululanga (2012), explained that training (to teach writing and reading skills, financial management and business management skills), business management skills (to ensure sustainable business enterprises), financial management (to manage cash flow, among other things), unethical manners (to combat collusion, professional pricing the same job for more than one bidder, among others) and information technology (to make specific software available such as those required to aid preparation of works programmes) were areas identified to be amongst constraints and challenges faced by contractors in Malawi.

According National Construction Industry of Council of Malawi (2012), the causes of delay in traditional contracts were due to owner interference, inexperienced contractor, improper payments of completed work, labour productivity, poor site management, slow decision making, construction methods and improper planning subcontractors.

2.3.2 Identified Causes of Delay

For the purpose of this research, the causes of delay that have been established by Odeh and Battaineh (2002); Sambasivam and Soon (2006); Long *et al*. (2008), are used. Following are the classification, the sources of delays that arise from each of these factor categories were identified from literature. All of these were used in designing the questionnaire as to achieve the objectives of this research.

2.3.3 Client-related factors

Several studies identified the factors of client related delays. Sambasivam and Soon (2006),in their study have listed the client characteristic, project financing, client variation and interim payment to contractor. They identified the factor of interference, slow decision making and unrealistic contract duration. Aibinu and Odeyinka (2006), have added the factors of late contract award by client. Based on the literature review, eight factors of client related delays were identified as: (1) Slow payment of completed works, (2) Slow decision making, (3) Unrealistic contract duration, (4) Change order, (5) Financial difficulties,

(6) Uncooperative client, (7) Client interference, (8) Slow decision making

2.3.4 Consultant-related factors

Previous researchers have used this group of factors in their study. Ahmed S.M., *et al.* (2002), used the term of 'design team related factors'. They elaborate the factors into three: inadequate experience, project complexity and mistake in design. Ahmed identified the factors of design development, change order, changes in drawing and specifications, and incomplete document as contributors to this group of delays. They grouped these factors into 'design related'.

Aibinu and Odeyinka (2006), separated the consultant related factors into each design team participant: architect, structural engineer, services engineer and quantity surveyor. They added the factors of late valuation work, late preparation of interim valuation, inadequate supervision, late issuance of instruction and delay work approval. Therefore, researcher concludes the consultant-related factors as: (1) Defects in design, (2) Changes in drawings and specification, (3) Mistake in design, (4) Incomplete document/drawing, (5) Slow inspection of completed works, (6) Inadequate supervision to contractor, (7) Late preparation of interim valuation, (8) Late valuation work, (9) Late issue of instruction, (10) Delay of work approval.

2.3.5 Contractor-related factors

Numerous researchers were identified the factors of contractor related delays as the main contributor to the causes of construction project delays. Delay caused by contractors' attributes most often were classified into five main items: failure to evaluate the site or design, management problem, inadequate resources, poor workmanship and subcontractor failures (Abdul-Rahman H. *et al.*, 2001).

Odeh and Battaineh (2002), identified the factors of inadequate contractor experience, inappropriate construction methods, poor site management and supervision and unreliable subcontractor as contributors to causes of delays. Aibinu and Odeyinka (2006), elaborated this group cause into contractor financial difficulties, inadequate site supervision and planning and schedule problem. Hence, the factors were finally categorized as: (1) Poor site management/coordination on site, (2) Poor site management/supervision, (3) Unsuitable construction method, (4) Inadequate experience, (5) Construction mistakes, (6) Poor subcontractor performance, (7) Defective of works, (8) Improper planning

2.3.6 Delay Responsibility

The issue of delay responsibilities is related to whether the Contractor is awarded, or is liable for costs and additional time to complete the project. According to Ahmed *et al.* (2002), the categories of responsibilities are:

1. Owner Responsible (or Agent): Contractor will be granted time extension and
   additional costs (indirect), where warranted.
2. Contractor or subcontractor Responsible: Contractor will not be granted time or
   costs and may have to pay damages/penalties.
3. Neither Party Responsible (*force majeure*): Contractor will receive additional
   time to complete the project but no costs will be granted and no
   Damages/penalties assessed.
4. Both Parties Responsible: Contractor will receive additional time to complete the
   project but no costs will be granted and no damages/penalties assessed.

2.3.7 Effects and Minimizing Delays

A completion of construction project within time is a key criterion of project

success. Delays in construction project can increase the time and cost allocated for executing the various project activities, resulting in project cost overruns and late completions. Causes of time and cost extensions can result from all phases of projects, works and circumstance, however, major troubles usually thrive during construction phases.

2.3.8 Effects of Delay in Construction Project

Delays in construction project completion seem to be a perennial problem. When projects are delayed, they are either accelerated or have their duration extended beyond the scheduled completion date. Delays are usually accompanied by cost increases. The subject of delay has been addressed by several researchers and they found that delay always led to the negative effects.

Abdul-Rahman H. *et al.* (2006), state that delay may lead to disputes, low productivity and increases in cost. They addressed that delay are costly and often result in prolonged litigation by the parties. Additionally, associated delay problems can also result in total abandonment of project (Aibinu and Jagboro, 2001). Abdul-Rahman H. *et' al.* (2006), in their study found that delays effect to the disruption of work, loss of productivity, late completion of project, increased time related costs, third party claims and termination of contract. Li *et al*. (2000), have shown that additional costs, decline in quality and rework, are three possible situations due to the delay.

Some extent the contract parties through claims usually agree upon the extra cost and time elongation associated with delay. This has in many cases given rise to heated arguments between the owner and contractor. Thus, delay could generate distrust and create tension between the contractor, owner and the owners' project management team (Aibinu, 2009). It reduces the ability of the parties to resolve the claims expeditiously due to delay. These have a debilitating effect on clients, contractors, and consultants in terms of growth in adversarial relationships, mistrust, arbitration, cash-flow problems, and a general feeling of trepidation towards each other (Ahmed, *et al.*, 2002).

Aibinu and Odeyinka (2006), added that processing time and cost related claims associated with delays always generate dispute and further delays. Disputes may arise from questions relating to causal factors, contract interpretation, and quantum of the claims. In some instances, delays occur that are neither the fault of the owner, nor their consultants or contractors, or that may have concurrent or multiple causes which have to be carefully analyzed in order to properly assess responsibility (Yates and Epstein, 2006). Enormous amounts of time and energy are expended to resolve issues related to the causes of delays.

In gist, delays give rise to disruption of work, late completion of project, increased time related costs, third party claims, total abandonment and termination of contract.

2.3.9 Methods in Minimizing Construction Project Delays

Several researchers have recommended the methods of minimizing delay in construction project. Abdul-Rahman H. *et al.* (2006), suggested that the minimization of time overrun would require: strong management teams; thorough investigation of site conditions, together with the design of groundwork and foundations. They added that developing communication systems linking all project teams was the significant way to mitigate this matter.

Aibinu and Jagboro (2002), conducted a study on the effect of delays on project delivery in Nigeria. They identified two methods to minimize or if possible eliminate time overrun. There were acceleration of site activities and contingency allowance.

Odeh and Battaineh (2002), recommended the following to improve the delays situation in Jordan: enforcing liquidated damage clauses; offering incentives for early completion; developing human resources through proper training and classifying of craftsmen; adopting a new approach to contract award procedure by giving less weight to prices and more weight to the capabilities and past performance of contractors; and adopting new approaches to contracting, such as design-build and construction management types of contracts.

Ahmed S.M. *et al.* (2002), in their study of delays in Florida have recommended streamlining the Buildings Permit Approval Process as much as possible. The issues such as changes in drawings, incomplete and faulty specifications and change orders must be controlled with proper design process management and timely decision making.

Abdul-Rahman H. *et al* (2006), identified the procedures taken by contractor as to recover delays. From their survey, recommended procedures were increasing the productivity by working overtime hours or working by shifts, followed by asking for extension of time. If the problem was shortage of resources, they suggested rescheduling the activities within the available resources, using skilled labours and by using subcontractors. The respondent also agreed that site meetings are essential in solving the problems with the condition that it should not be too frequent.

Kaliba, Muya and Mumba (2009), studied the schedule delays in road construction projects in Zambia. They suggest the following recommendation to minimize the causes and effect of schedule delays: project timing and scheduling; well defined scope; accurate cost estimate; availability fund for project; effective communication; deliberate scheme to build capacity building; and legislation and good corporate government.

2.3.10 Changing Measures of Construction Project Performance

Trauner (2009), explained that in the early 1990s, project success was considered to be tied to performance measures, which in turn were tied to project objectives. At the project level, success was measured by the project duration, monetary cost, and project performance. Trauner called the time, cost, and quality criteria the "Iron Triangle." However, he argued that using the Iron Triangle of project management, time, cost, and quality as the criteria of success may have resulted in biased measurement of project management success. He proposed to shift the focus of measurement for project management from the exclusive process driven criteria to four major categories for success which are: the Iron Triangle, the Information System, Stakeholder Community Benefits, and Organisational Benefits. A significant number of literatures emphasized more the time aspect as an indicator for project success. Mahdavinejad and Molaee (2011), regarded completing projects on time as a symbol of an efficient construction industry. Duran (2006), suggested that ensuring timely delivery of projects is one of the important needs of clients of the construction industry.

The Project Management Book of Knowledge (2007), states that project management knowledge areas are project

integration management, scope management, time management, cost management, quality management, human resource management, communication management, risk management, procurement management, safety management, environmental management, financial management and claim management on which success measures ought to be based. Sustainable development concepts, namely, environmental respect, social integration and social economy, are factors with growing importance as indicators of successful performance of infrastructure projects.

2.3.11 Study Performance Indicators

Tahir and Darton (2010), confessed that measuring the performance of any construction project in terms of success or failure, despite looking simple, is in fact a very complex process. Modern construction projects even moderate in size are generally multidisciplinary in nature and they involve participation of designers, contractors, subcontractors, specialists, construction managers, and consultants. The objectives or goals of all participants need not be the same even in a given project. Tahir and Darton that to define the success or failure of a project without specifying the participant and without specifying the criteria for judging the performance holds no meaning to measuring the performance of any construction project. The present study has identified quality of work, timely completion, tender estimation, and tender preparation as measures of performance.

2.3.12 Quality of Work

Soanes and Steven (2008) noted that in construction projects, quality of work is associated with adherence to conditions of the contract and specifications stipulated in the contract documents in their entirety during the execution of the project. The Concise Oxford English Dictionary defines quality as the standard of something as measured against other things of a similar kind. However, Soanes and Steven showed that there are two distinct areas in which quality of work achieved is measured for success. The first one is by measuring and testing of construction materials forming the elements of the work product in situ or in the materials laboratory against a standard measure or specification. These materials must fulfill the prescribed characteristics in the contract documents for them to be incorporated into the construction process. Similarly, the work product must be within prescribed standard characteristics to be considered successful. This is generally fulfilled through the testing of the product at different stages during or after each job process. The second aspect of quality of work concerns what beneficiaries see and feel when making use of the construction product. This is a product of workmanship.

Soanes and Steven (2008) noted that workmanship has been defined in the Concise Oxford English Dictionary as the degree of skill with which a product is made or job is done. Some aspects of workmanship are fulfilled automatically when project specifications are adhered to. For example, when the surfacing stone sizes are within tolerance, the road will be nice and smooth to drive on. Similarly, when the final layer of a road base is within the stipulated level tolerance, the road will be comfortable to ride on. However, the degree of riding comfort of a road, all other things being equal, will depend on how the level tolerance has been controlled within the lower and upper limits. The road will be more comfortable to ride on where the upper and lower tolerance limits have been maintained to the minimum than where they have been allowed to fluctuate from the uppermost to the lowermost limits.

Tahir and Darton (2010) described the organization and management of quality control for small works, combined the phrases "quality of work" and "workmanship." He labelled quality of work (workmanship) as involving, ensuring that the attributes of the work satisfy the specified needs. They further described quality of work as measuring the ongoing and finished works against recognized standards and implementing quality control and quality assurance procedures. Quality is meeting the customer requirements.

2.3.13 Timely Completion of Construction Projects

According to Elinwa and Joshua (2001),Time on construction projects is concerned with(i)planning of the work over the anticipated duration (programme) in relation to its requirements with full appreciation of the resources needed and resources available; planning for utilization sets the basis or yardstick (plan) against which progress can be monitored and assessed;(ii)progressing which follows the programming of the work and compares the work undertaken against the plan allowing for the redistribution of resources, if necessary, to speed up the work if it is falling behind the plan.Tahir and Darton (2010),defined time overrun as the delay beyond planned completion dates traceable to the contractors. The construction industry plays a major role in the development of many countries. At the macro level, delay will lead to a negative rate of national economic growth and monetary loss. They noted that at the micro level, a delayed project can lead to time and cost overruns, disputes, arbitration, and even total abandonment.

Elinwa and Joshua (2001), confess that delays in construction projects are global phenomena and the sub-Saharan region is no exception. This trend has become the norm rather than the exception, especially in developing countries. This scenario, thus, constitutes a major risk and debilitating effect on relationships and cash flow among employers, consultants, and contractors, which can lead to exhaustive disputes, arbitrations, and expensive litigations. The significance of this impact, therefore, clearly justifies the concern over such a chronic problem facing the industry.

2.3.14 Tender Preparation

Laryea (2010) defined a tender or bid as a formal offer to supply goods or services for an agreed price. Tendering is the process used by many construction clients to obtain the programme and price for building a project. Laryea explained that tendering consists of three parts: deciding on the type of contract and the terms and conditions that would form the basis of the contractual relationship and under which the work will be done; selecting the most suitable contractor given the budget and time available; and establishing the contract price.

Chilipunde (2010), said that important elements at tender preparation stage include the following :(i) Establishment of a realistic contract period on which the tender may be based.(ii)Identification of construction methods.(iii)Assessment of method related items which affect the bid price.(iv)Making provisions to aid the build-up of contract preliminaries and plant expenditures.(v)Making provisions to aid the tendering/estimating process. Chilipunde further stated that to arrive at the project tender price, the costs arising from elements in (i) to (iv) including overheads and mark-up, compiled by the estimator, have to be adjudicated by senior management or the owner of the organization. The purpose of the adjudication is to assess the risk inherent

in the tender and decide upon a competitive bid price.

2.3.15 Tender Estimation

Laryea (2010) explained that if the contract price is correct, both the supply chain and construction project will function efficiently and effectively and the whole project will be a success. Laryea added that the engineer's estimate is crucial because it will affect the successful implementation of the supply chain management during the construction project. Only if the engineer's estimate is correct will it be possible to attain the level of service required to produce the right quality of products, at the correct time and budget.

Rogerson (2000) observed that when the number of bidders is large, as is the case in a slow economy, an owner runs a significant risk of selecting a contractor that has either accidentally or deliberately submitted an unrealistically low price. Tenders for local contractors in developing countries should not be rejected on the basis of tender price but rather to find the suitable ways of making sure that the engineer's estimates are correct and relevant for each individual project.

Elinwa and Joshua (2001) noted that cost estimation is an experience-based process. The realisation and understanding of cost determinants enrich the competence of cost estimators and hence, along with decent cost forecasting techniques, deliver more reliable and accurate cost estimates. Cooke and Williams further noted that smaller contractors who often deliver the work packages have to compute their estimates from first principles to be able to furnish accurate quotes to the larger contractors. They emphasized the need for computing estimates from first principles for local contractors in developing countries.They observed that the use of bidding theories by senior managers in adjudicating tenders is only relevant in a stable market place.

2.3.16 Contractors' Performance Constraints and Inhibiting Factors

Kululanga (2012) defined Constraint as a constraining condition, agency, or force that limits the systems' performance in a given context/environment. Kululanga said that removing constraints from bottleneck(s) is the most effective means of improving overall system performance.He observed that once the existing constraints are removed, new ones emerge. This calls for continued research in order to establish emerging constraints with a view to reduce or minimize their impact on construction projects and sustain successful performance. The terms "performance constraints" and "performance inhibiting factors" have the same meaning in this study and have been used interchangeably.

2.4 Zambia Perspective

According to Zulu and Chileshe (2008), the Zambian construction industry has undergone some change due to the changing nature of the market place, globalisation of the economy and markets, the upsurge of technology including information technology (IT), the changes in government policy including privatisation and liberalisation and strategic changes in supply chains.

Nsabika (2002), explained that the changing nature of the market place With the liberalisation and privatization programmes which were put into effect in the early 1990s almost complete, construction customers no longer have to stay loyal to their former sister companies under the Zambia Industrial and Mining Corporation (ZIMCO) group of companies, the Industrial Development Corporation (INDECO) group of

companies or the Zambia Consolidated Copper Mines (ZCCM). INDECO and ZCCM jointly formed ZIMCO, which until its unbundling and subsequent privatisation of the individual corporations was the second largest corporation in Africa.

Nsabika (2002) added that the changes have a fundamental implication on the way ZIMCO construction contractors used to conduct business. The privatised companies have become increasingly more knowledgeable about construction products and have become much more demanding about price and quality. Quality and delivery are and will remain the most critical factors in the market. Moreover, they have a free market from which to choose contractors from.

2.4.1 Globalisation of the economy and markets

Chonya (2002) mentioned that the Zambian economy is experiencing the full effects of globalisation such as floatation of the Kwacha on the exchange market. Mashamba (2001), noted that international players have entered the Zambian construction market and are a serious threat to the local contractors. According to Shachinda (2002), the number of international firms winning multimillion projects especially donor funded as well as projects attracting international financial investment, is on the increase. Suddenly, local contractors require an international credibility beyond the profile and reputation that they used to enjoy in Zambia. Moreover, they find they need to adapt to meet the requirements of clients from different cultures and with disparate values.

Nsabika (2002), observes that the Zambian financial market has not been very successful, and this has made the raising of capital and attraction of private sector investment difficult. Krebs, who is quoted by Nsabika added that government bonds and treasury bills, which have a negative effect on the whole Zambian economy, dominated the financial markets. As observed above, there are serious threats and opportunities in the globalised Zambian economy and construction market, and this requires paradigm shifts in business alignment and operations.

2.4.2 Technological developments including IT

Shakantu (2000) said that a key driver of transformation for the Zambian construction industry is technological change. Global telephony, satellite communications and video links are now widely available Information and communication technology (ICT) is significantly influencing technological change.Overby et al. (2001), explained that ICT has a pronounced effect on the way the industry communicates and its ability to access information. Improvements in communication capabilities have released the potential for construction professionals to have greater access to data, knowledge and other support nationally and otherwise. The developments in information technology are facilitating information flow through all aspects of the Zambian construction industry including design, construction, deployment, decommissioning, finance, marketing and sales as completely integrated packages. There is an argument for potentially using the Internet as a tool to raise efficiency of the industry. Overby et al. (2001) added that the Internet commerce revolution could transform organisations and organisational processes and create new opportunities and challenges for international marketers.

Shakantu (2000), mentioned that the impact of changing computer technology on the construction industry has been far

reaching. Complex tasks such as scheduling are much more routine due to the use of desktop computers. Simulations of entire construction processes and systems can be developed to determine the optimal approach to achieving desired performance. Overby et al. (2001), observed that a range of IT to support the complete range of business activities and help revolutionise ways of working has been rapidly developing.

Matipa and Zulu (2000), explained that technological uptake on Zambian projects has been slow despite the documented benefits of this resource. Kashweka (2001), argued that industry operations have largely remained traditional, with low technology applications used to run construction business.

2.4.3 Changes in government policy including privatisation and liberalization

Shakantu (2000) stated that the shift in government policy is another driver of change in the construction industry. Economic regulation was drastically reduced in favour of privatisation and liberalisation. The reform agenda has extended beyond issues of stabilisation and prudent economic management to regarding the private sector activity as the main engine for growth. The government is concerned about fiscal and monetary policy discipline. Chola (2002) notes that client organisations' construction budgets decrease and economics is winning over tradition. Clients are demanding real improvement in key areas of interest to them. Among the major effects of these economic changes has been the adjustment of procurement strategies to those emphasising value for money. He explains that there has been a reduction in expenditure on capital projects save for donor funded infrastructure projects such as rural road networks and water reticulation.

2.5 Chapter Summary

The performance of construction projects has not been as impressive, fundamentally because of the Zambian Authoritie's failure to establish a coherent institutional and policy framework. Performance is related to many topics and factors such as time, cost, quality, client satisfaction; productivity and safety. Construction industry in Zambia suffers from many problems and complex issues in performance. There are many realistic reasons such as closures, amendment of drawings and amendment of the design. In addition, there are other different reasons affecting construction projects performance in Zambia such as poor management and leadership; inappropriate participants; poor relations and coordination; absence of motivation, control, monitor or decision-making systems; inadequate infrastructure, political problems; cultural problems and economic conditions.

CHAPTER THREE

2.0 RESEARCH METHODOLOGY

3.1 Introduction

Research Methodology chapter describes the approach that the study followed. The various techniques and methods that were used to select respondents to participate in the study have been outlined. This chapter describes the study area, the study design, data and source, the target population, sample size for the study, sampling techniques employed, the research instrument used, data processing and analysis, and the ethical issues arising from the research. The chapter ends with a statement on the challenge from the field.

3.2 Research Design

The study adopted the cross-sectional design. In this type of study design, either the entire population or a subset of the population is selected, and from these individuals, data was collected to help answer research questions of interest. In cross-sectional studies, data are collected from the research participants at a defined point in time or relatively brief time period. The data are typically collected from multiple groups. According to Mann (2003), cross-sectional design helps to enrich a study because it helps to study a large number of people within a short period and determine the causes and prevalence of a phenomenon which other study design cannot do. Cross-sectional design was used in the study because data had to be collected from the study population once, within a specific period.

The cross-sectional design supports the use of different methods to collect data from selected respondents in a single study (Mann, 2003). In view of this, the mixed method technique (triangulation) was used in the study. This method involves triangulating both quantitative and qualitative methods to collect data at the same time. Creswell (2003) supports the use of mixed method approach in social sciences, because the technique has become increasingly popular as a legitimate research technique. Mertens (2003) opined that the mixed method helps in having a better understanding of the research problem by converging numeric trends from quantitative data and specific details from qualitative data. Neuman (2003) recommends the use of the mixed method when he said that combining different approaches in a study is the best method to be adopted, because it is better to look at a situation from several angles than to look at it from one direction.

Mikkelsen (1995) identified two forms of mixed method which are "within method" triangulation and "between method" triangulation. Within method triangulation involves using the same method on different occasions whilst the "between methods" triangulation is where different methods are used in the same study. The study used the "between methods" triangulation. In this study, both interview schedule (quantitative method), and in-depth interview and observation (qualitative methods) were used to collect data from the field.

Some criticisms have been levelled against the use of mixed method approach. For example, Creswell (2003), described the use of mixed method is time consuming, while Sarantakos (2005), observed that mixed method is difficult to replicate, and therefore advised that it is not more valuable than the single-method procedure, which can be more suitable, useful and meaningful to answer certain questions.

Despite the criticisms, several authors support the use of the mixed method because it offers many advantages which far outweigh the disadvantages. Researchers observed that the mixed method opens the way for richer and potentially more valid interpretations; it helps the researcher to gain better understanding of the phenomenon being studied, and it also helps to complement the strength of the qualitative and quantitative methods (Depoy & Gitlin, 2005). Similarly, Henderson (1991), opined that the mixed method helps to reduce bias because it helps to guard against the accusation that a study's findings are simply the artifact of a single method and a single data source.

3.3 Data and Sources

Both primary and secondary data were used in the study. Primary data was

collected using questionnaires, in-depth interviews and observation. The primary data was collected from local contractors, consultants and clients in Lusaka district. Secondary materials were obtained from books, journals, newspapers, articles, reports, the internet, as well as conference and working papers that concern themselves with the topic under investigation.

3.4 Study population

The study population consisted of the following:

- Road Development Agency
- Association of Building and Civil Engineering Contractors
- Zambia Development Agency
- Engineering Institution of Zambia
- National Association for Medium and Small-Scale Contractors
- National Council for Construction

The study population comprised of local contractors who are either members of National Association for Medium and Small-Scale Contractors or Association of Building and Civil Engineering Contractors. The study population also consisted of consultants from the following organization: Engineering Institution of Zambia, National Council for Construction and Zambia Development Agency. Since local contractors have done a number of projects for Road Development Agency, this organization was considered a client in this study.

3.5 Sample for the Study

3.5.1 Sampling Techniques

The non-probability sampling techniques were used to select the 100 respondents. Specifically the convenient, the snow-ball and the purposive sampling techniques were employed.

3.6 Research Instruments

In consonance with the mixed method design, interview schedule, interview guide and observation checklist were developed to collect the primary data from the field. These instruments were chosen because they are the most appropriate. The interview schedule was used because of its known advantages of building good rapport, creating a relaxed and healthy atmosphere in which respondents easily cooperate, answer questions, and clear misapprehension about any aspect of a study (Kumekpor, 2002).

The interview schedule was semi-structured and comprised of many close ended questions. This facilitated easy administration of the interview schedules. It also helped to avoid irrelevant answers from respondents, and this made entering data into the computer fairly easy. In-depth interviews were used to collect information from the five key informants. The interview guide for the In-depth-interviews was in semi-structured format in line with the view of Hockey, Robinson and Meah's (2008) that semi-structured interviews are flexible, and they allow for the exploration of emerging themes and ideas. In other words, In-depth-interviews provide some scope for asking for more relevant information through additional questions often noted when it prompts the interviewer. Observation checklist is another instrument that was used in the study.

3. 7 Training of Field Assistants

Two assistants were trained to help in the administration of the interview schedule. The objectives of the study were explained to the assistants so that they could have knowledge about the research. The training covered; how to identify respondents, recording and management of data. The assistants were briefed on how to manage ethical issues in the study.

3.8 Data Processing and Analysis

The data collected from the field was first cross-checked and edited to ensure that there are no mistakes in the responses and the information given is relevant. The data was then coded and fed into the computer. The Statistical Product for Service Solutions (SPSS version 16) was employed to process and analyse the interview schedules. The in-depth interviews were analysed manually. The data from the in-depth interviews was transcribed, categorised under specific themes and was used for analysis. Frequencies, percentages, averages, proportions and diagrams were used to present the results. Inferential statistical technique in the form of factor analysis was used to analyse the factors inhibiting local contractors to complete projects on time.

3.9 Ethical consideration

Proper permission was obtained from Lusaka District Commissioner. During the administration of the interview schedule, the researcher identified himself to the respondents to avoid impersonation. The purpose of the study and the nature of the interview schedule were made known to the respondents. Participation in the study was not by force but on the willingness of respondents to participate. Anonymity of respondents was respected. During the field work all forms of identification including names, addresses and telephone numbers of respondents were avoided.

3.10 Challenges from the Field Work

Since it was a case study of Lusaka district, the findings may necessarily not be generalized to other parts of the country. It was difficult to collect information from respondents at the first time as they seemed to be busy. Resources and time were other constraints in this study particularly that the researcher had no financial assistance but self-sponsored the study.

Under inadequate time, the period was very short in which to conduct and conclude the study effectively because the organisations are far apart where the information was collected from. The researcher was required to move from one organisation to another and some of them had to make the researcher wait for some hours before access to the director could be granted. Other organisations had to postpone the appointment.

CHAPTER FOUR

4.0 Presentation of the Findings

The previous chapter presented the research methodology for the study; therefore, this chapter presents the findings of the study.

Out of 110 respondents 47 (43%) were female while 63 respondents presenting 57 percent were male.

The researcher categorized the respondents according to their age groups. This was because big age gap influences perception and attitudes towards something. Respondents who had 21 to 30 years of age were 25 (23%). Those whose age was between 31 – 40 years were 39 presenting 35 percent. Thirty one respondents (28%) were between 41 and 50 tears old while 15 respondents were 51 to 60 years old.

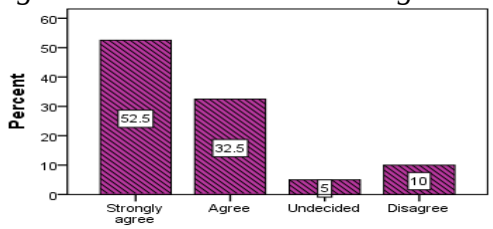
Respondents were asked how long they had been working in the construction industry and the following were the results: 26 respondents had the work experience ranging from 0 – 5 years, 29 percent of the respondents had 6 – 10 years of work experience while 27 respondents said that they had work experience from

11 to 15 years. Among those who mentioned that they had working experience starting at 16 to 20 years were 12 percent and those whose working experience were 21 years and above were 11.

4.1 The major reasons why many contractors in Zambia abandon the projects before completion.

4.1.1 Poor Financial Management

Figure 4: Poor Financial Management

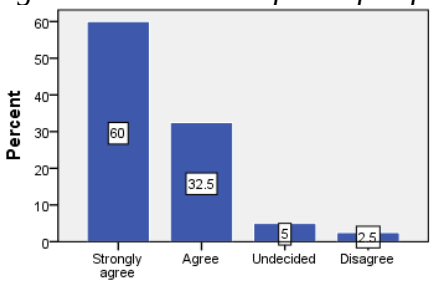


Source: Researcher's field work

According to the figure above respondents (52.5%) showed that financial mismanagement by contractors was one of the factors which contributed to delay or abandonment of projects. 32.5 percent of the respondents agreed to the assertion that mismanagement of finances contributed to the delay, five percent of the respondents were undecided while ten percent disagreed with the above assertion.

4.1.2 Deviations from Specifications

Figure 5: Deviations from Specifications

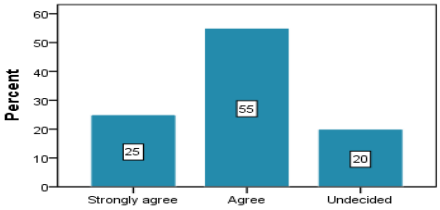


Source: Researcher's field work

Respondents were asked if deviation from specifications by contractors was one of the reasons why projects delayed. 60 percent of respondents strongly agreed and 32.5 percent of respondents agreed that contractors' deviation from specifications led to project delays or project abandonment. Only 5% of the respondents were undecided whether contractors deviated from specifications or not. Some respondents (2.5%) disagreed to the above statement.

4.1.3 Lack of Communication on Technical Matters

Figure 6: Lack of Communication on Technical Matters

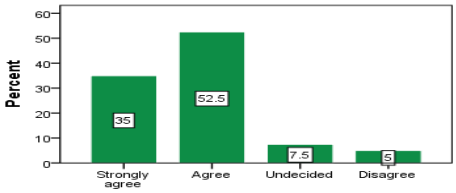


Source: Researcher's field work

Out of all the respondents interviewed, 25 percent strongly agreed and 55 percent agreed that lack of communication on technical matters contributed to delay or abandonment of construction projects in Zambia. 20 percent of the respondents were undecided.

4.1.4 Failure to Provide Reliable Tender

Figure 7: Failure to Provide Reliable Tender



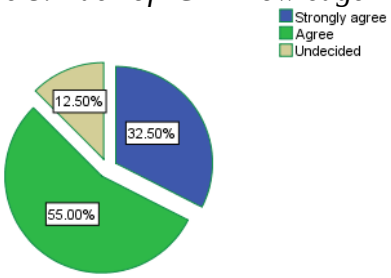
Source: Researcher's field work

Respondents were requested to agree or disagree to the assertion which stated that contractors' failure to provide reliable tender put them in trouble during the time of execution thus leading to delaying or abandoning of the projects. 35 percent of respondents strongly agreed and the

majority of the respondents (52.5%) agreed with the statement. 7.5 percent of the respondents did not know whether the above assertion was true or false. 5 percent disagreed.

4.1.5 Lack of ICT Knowledge

Figure 8: Lack of ICT Knowledge

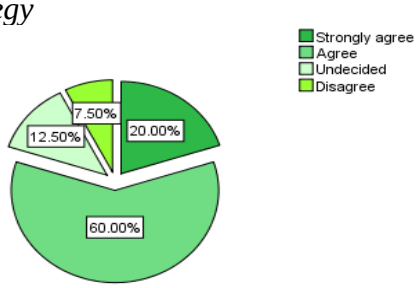


Source: Researcher's field work

Those respondents that strongly agreed to the above assertion were 32.50 percent. Majority of the respondents (55%) agreed that lack of ICT knowledge have an impact on project delivery. 12.50 percent did not know if lack of ICT had an impact on the completion of the project.

4.1.6 Inability to Develop Long-term Strategy

Figure 9: Inability to Develop Long-term Strategy

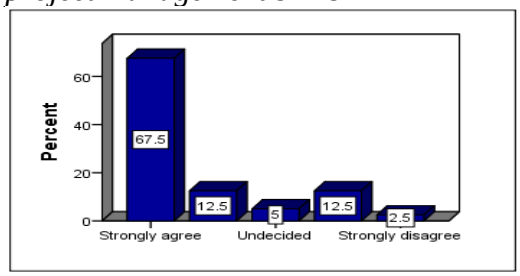


Source: Researcher's field work

60 percent of the respondents felt that inability to develop long term strategy was one of the factors which affected the contractors in Zambia. 20 percent strongly agreed that inability to develop long term strategy by contractors in Zambia had a negative impact on the execution of the projects. 12.50 percent of the respondents disagreed while 7.50 percent were undecided.

4.1.7 Some Local Contractors Lack project management skills

Figure 10: Some Local Contractors Lack project management skills

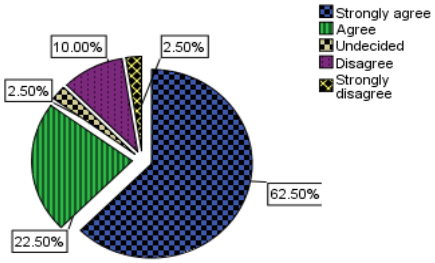


Source: Researcher's field work

Out of the respondents contacted in the study, 67.5 percent strongly agreed that local contractors use cheap incompetent man power in the execution of the projects. 12.5 percent agreed to the assertion that local contractors use cheap labour to reduce on the cost of production. 5 percent of the respondents were undecided, 12.5 percent of the respondents disagreed while 2.5 percent strongly disagreed to the assertion that local contractors use cheap incompetent man power.

4.1.8 Failure to Provide Safe Working Environment

Figure 11: Failure to Provide Safe Working Environment



Source: Researcher's field work

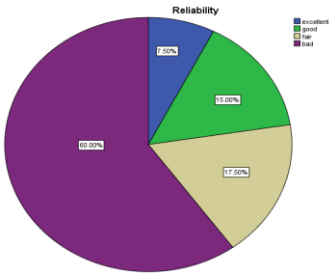
Many respondents (62.50%) strongly agreed with the statement which stated that failure to provide safe working environment contributed to delay or abandonment of construction projects in Zambia and 22.50 percent of the respondents also agreed to the assertion

above. Those undecideded were 2.5 percent. 10 percent of respondents disagree while 2.50 percent strongly disagreed with statement above.

4.2 Rating of Local Contractors

4.2.1 How do you rate the reliability of local contractors?

Figure 12: Rating the reliability of local contractors

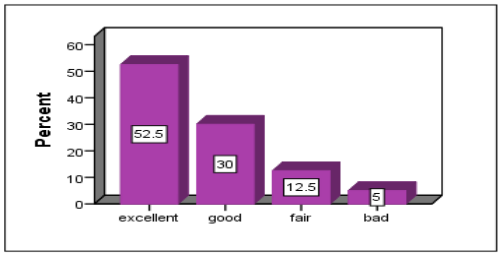


Source: Researcher's field work

Majority of the respondents (60%) said that local contractors are not reliable. Some of the respondents (17.50%) rated local contractors as fairly reliable, 15% of the respondents rated them as good while 7.50% rated local contractors as excellently reliable.

4.2.3 How do you rate the reliability of foreign contractors?

Figure 13: Rating the reliability of foreign contractors

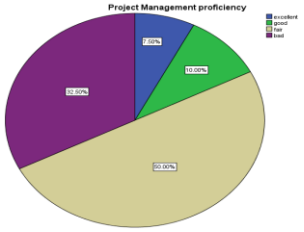


Source: Researcher's field work

Many respondents (52.50%) rated foreign contractor working in Zambia as excellent. Those who rated them as good were 30 percent while 12.5 percent rated foreign contractors as fair. Other respondents (5%) felt that foreign contractor have not executed projects according to the expectations of the clients hence they rated them as bad.

4.2.4 How do you rate project management proficiency of Local contractors?

Figure 14: rating project management proficiency of Local contractors

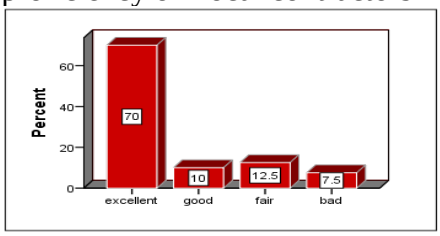


Source: Researcher's field work

Respondents were asked to rate the project management proficiency of local contractors. 32.50% said that the project management proficiency of local contractors is bad, 50% of the respondents rated them as faire, 10% rated them as good and only 7.50% rated local contractors as excellent.

4.2.5 How do you rate project management proficiency of Local contractors?

Figure 15: rating project management proficiency of Local contractors



Source: Researcher's field work

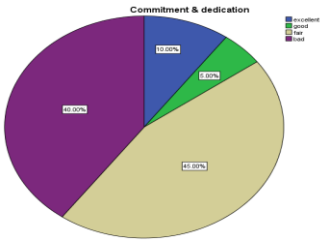
According to the figure above 70 percent of the respondents rated foreign contractors as excellent while 10 percent of the respondents rated them as good. Some of the respondents (12.5%) rated

ISSN: 3471-7102

foreign contractors as fair and 7.5 percent of the respondents rated them as bad.

4.2.6 How do you rate the commitment and dedication of local contractors?

Figure 15: rating the commitment and dedication of local contractors



Source: Researcher's field work

Respondents were asked to rate the local contractors' commitment and dedication to work. 40% rated them as bad, 45% ranked them as fair, 5% graded them as good while 10% of the respondents rated local contractors as excellent.

4.2.7 Rate the commitment and dedication of local contractors

Figure 17: rating the commitment and dedication of local contractors

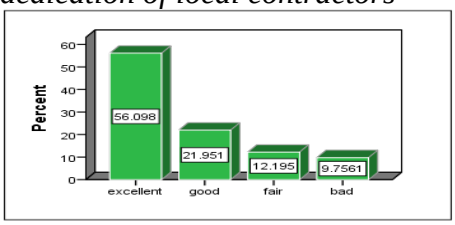
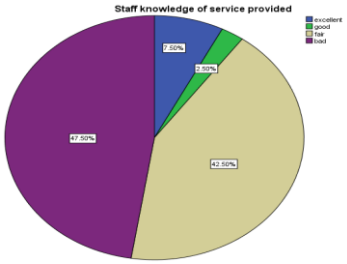


Figure 17: source, Researcher's field work

Many respondents (56.098%) rated foreign contractor working in Zambia as excellent. 30 percent of the respondents rated foreign contractors as good. Other respondents (12.195%) rated them fair while 9.7561 percent of respondents felt that foreign contractors have not done well hence rated them as bad.

4.2.8 How do you rate the staff knowledge of service provided

Figure 18: rating the staff knowledge of service provided



Source: Researcher's field work

Respondents were asked to rate staff knowledge of service provided. 47.5% said that the staff of local contractors has bad knowledge of service they provide. 42.5% of the respondents ranked the staff knowledge of service provided as fair, 2.5% said it is good while 7.5% regarded it as excellent.

4.3 Ranking of the factors

The relative importance index method (RII) is used here to determine owners, consultants and contractors perceptions of the relative importance of the key performance indicators in Zambia construction projects.

According to contractors, high cost of labor, additional cost, high cost of machinery, high cost of machinery maintenance and project financing were the top five cost factors that contributed to delay or abandonment of construction projects in Zambia. Clients ranked cost of materials, wrong method of estimation, contract management, project financing and high cost of machinery as the main causes of project delay. Consultants revealed that contract management, high cost of machinery, fraudulent practices, and high cost of machinery maintenance and fluctuation of prices of materials.

According to contractors, clients and consultants, it was obtained that the high cost of
machinery was the most important performance factor as it was ranked among top five factors by all the respondents. Consultants ranked it number two, it was ranked number three
by contractors while clients ranked it number five. This agreement among all target groups is traced to the difficult economic situation from which the country suffers.

These problems can be considered as an obstacle for cost performance of projects. All owners, consultants and contractors feel with such this sensitive problem in their projects. In Zambia many contractors do not have money to buy advanced machines for designing and execution. (UNRWA, 2006). Construction projects in Zambia suffered from difficult economic situation which lead to poor performance of projects Zulu and Chileshe (2008).

Cost of material has been ranked by the client's respondents in the second position with RII equal 0.8. It has been ranked by the consultant's respondents in the first position with RII equal 0.8 and has been ranked by the contractor's respondents in the first position with RII equal 0.8. This factor is considered as more important for consultants and clients than for contractors. The cost of material affects the cost performance of contractors. It should be mentioned that there were many projects in the Zambia which finished with poor cost performance because of the cost of material. This is because of importation of construction materials (UNRWA, 2006).

Time needed to rectify defects has been ranked by the contractor's respondents in the third position with RII equal 0.65. It has been ranked by the client's respondents in the second position with RII equal 0.675and has been ranked by the consultant's respondents in the first position with RII equal 0.933. This factor can be considered as an important for three parties and it has a similar rank for all parties as it affects directly on project performance such as time. Time needed to rectify defects is related to quality. If the contractor makes some era, to rectify that mistake is like to disturb the project schedule. This result is in line with Iyer and Jha (2005) who said that efficient and effectiveness by project managers can improve time performance of projects.

Availability of personals with high experience and qualification has been ranked by the client's respondents in the second position with RII equal 0.8. It was also ranked by the consultant's respondents in the second position with RII equal 0.8 while contractor's respondents ranked it second with RII equal 0.8 as well. This factor is important for the three groups. Availability of personals with high experience and qualification lead to better performance of quality, time, cost, productivity and safety of projects. In Zambia, projects are awarded to the lowest bidder. Some of the lowest bidders may lack management skills and less attention is paid to contractor's plan, cost control, overall site management and resource allocation. Samson and Lema (2002), Cheung et al (2004) and Iyer and Jha (2005) are in agreement with our result as this factor is very important because it affects strongly on quality performance of construction projects.

Quality of equipments and raw materials in project has been ranked by the client's respondents in the second position with RII equal 0.8. It has been ranked by the

consultant's respondents in the second position with RII equal 0.8 and has been ranked by the contractor's respondents in the third position with RII equal 0.6. It is not surprising to obtain that this factor is more important for consultants and clients because quality control is one of the most important duties for the consultant in the site of construction project. This leads to owner satisfaction and implementation of project according to specifications. In Zambia, most of available materials are with little variation in quality and produced by a limited number of producers. Cheung et al (2004) are in agreement with our result as this factor affects the project performance and the degree of client's satisfaction.

4.4 What are the problems faced by contractors in Zambia? (Information from Key informants)

4.4.1 Access to finance

Local contractors face a number of complicated challenges range of financial products and services, regulatory rigidities or gaps in the legal framework and lack of information on both the banks and the local contractors' side. Historically, the Zambian banking system was established on the basis of short-term lending mostly for trading transactions for a period of thirty (30) to ninety (90) days. The transaction was based on opening a letter of credit from bank to bank. Most banks had facilities such as short term loans, project financing, asset financing, overdrafts which did not adequately cover Small and Medium Local Contractors' long term financial requirements.

Bank of Zambia supervision had taken strong measures against commercial banks by passing a Statutory Instrument No. 184 of 1995, the Banking and Financial Services (Capital Adequacy) Regulations. The Statutory Instrument stipulates that if a client of a bank does not liquidate a loan within three months, the bank should charge the loan against its own profit and loss account. The nature of construction business, especially that which depends on the Government as a client entailed that contractors were not ideal borrowers. Local contractors are seen to be high risk because their client, the Government, did not pay on time. It was, therefore, risky for banks to provide any form of credit when the borrower did not know when they would pay back.

'The solution to the financial problem faced by local contractors is the Government to facilitate a construction bank that will enable contractors to access loans at reduced interest rates' he added.

Another key informant said that local contractors were usually established under sole proprietorship or limited company status consisting of family members. The company formation structure tended to make banks apprehensive to local contractors and had an effect on confidence and risk levels. Local contractors should be encouraged to form partnerships of three (3) to eight (8) companies and incorporate themselves as corporations. This would qualify them to access finance from capital markets. Furthermore, local contractors had limited knowledge on how to structure bankable credit proposals. It was essential that local contractors understood financial management. This would help them negotiate credit facilities with their bankers.

4.4.2 Collateral requirements

During the interview, an interviewee observed that financial institutions had collateral requirements that were difficult to meet in order for local contractors to secure credit facilities. However, a respondent said that there was potential in Zambia for local contractors to grow.

What was required to unlock the potential was for the banks to soften their stringent collateral requirements so that finance was made available in a timely manner and at affordable rates. The respondent added that high interest rates that currently ranged between twenty (20) to thirty (30) percent were a major hindrance to the growth of local contractors.

4.4.3 Limited technical and managerial skills

One of the key informants observed that lack of management skills was difficult to deal with in most local contractors as the size and skill set of senior management was often limited. He said that:

'Three essential attributes were required by those working in construction: possession of practical experience so that they were familiar with the working and intricacies of the industry; familiarity with various tools and techniques for planning, scheduling and controlling construction operations and possession of personality and insight that enabled them to work harmoniously with others, often under very strenuous circumstances. The local contractors thus need to acquire an array of skills such as business and expertise as they were expected to deal with people at strategic, technical and operational levels".

4.4.4 Lack of access to plant and equipment

All key informants echoed that most local contractors consisted of small workforces and undertook small and simple projects due to limited access to plant and equipment. Therefore, local contractors had a tendency to act as sub-contractors on medium to larger projects particularly road projects. Key informants observed that local contractors pursued labor-intensive projects that provide low value-adding services to clients, with little differentiation in product and service quality. One director said the following:

"The Government should ensure that cooperatives schemes among local contractors especially small and medium contractors are encouraged so that it is easier for them to access equipment and other requirements".

4.4.5 Document preparation

One of the key informant narrated that local contractors had difficulties in preparing responsive bids. There was need to enhance the capacity of local contractors in preparing tender documents through continuous professional development.

4.4.6 Delayed payments

"One of the major problems contractors are facing in Zambia is that the Government is not paying contractors on various infrastructure projects within the contractual period" said the respondent.

He added that according to the commonly used general conditions of contract under the International Federation of Consulting Engineers (FIDIC) red book, the employer was expected to pay the certified Interim Payment Certificates within twenty-eight (28) days. In addition, the Engineer was expected to certify the measured works within twenty-eight (28) days. This means that the contractor had fifty-six (56) days of maximum waiting period from the submission date of the Interim Payment Certificate to payment by employer.

He further said that "*contractors complain of delayed payment by employers, sometimes in excess of 6 months from the date of certification. As a result, contractors fail to meet their various contractual obligations and works had ended up costing much more than budgeted for due to claims and accrued interest*".

4.4.7 Procurement method

A key informant mentioned that many registered architectural firms in Zambia were small to medium size but well

qualified and competent. However, their participation was limited to small private projects and excluded from medium to large government projects because of the procurement methods used by the Government. For instance, in design and build, the design process happened side by side with the construction process. Apart from the fact that Zambia did not have the appropriate legal framework for this method, the manner in which it is being applied prevents the participation of many local architects. The design and build tenders are being administered in a manner which require complete designs with all construction drawings and bills of quantities. Apart from the wrong application of the method, the demand for a complete set of drawings is expense that most local firms could not afford and as such most local architects could not participate and the work ended up in the hands of foreign architectural firms.

In order to solve this problem the respondent suggested that:

"the Government should enforce the Zambia Institute of Architects Act Chapter 442 of the Laws of Zambia in order to compel foreign companies investing in Zambia to ensure that only local architects are engaged in the designing of buildings particularly Government buildings".

4.4.8 Perceptions of lack of capacity

One key informant stressed that there are perceptions of inadequate capacity among the Zambian architects and as such even the most basic of projects had been floated to foreign companies. This denies Zambian companies opportunity to participate. Apart from South Africa, Zambia was the first country in Southern African Development Community (SADC) to establish a school of architecture whose graduates are found around the SADC region and other countries. Zambian architectural firms are capable of working on any large scale and complex project.

Another director said the following:

"The twenty (20) per cent mandatory sub-contracting to local contractors in the road sector should be adopted for all construction activities and the threshold should be increased with a view to enhancing the participation of local contractors. In addition, there is need for the Government to make the twenty (20) per cent sub-contracting to local contractors' policy into law so that all principal contractors are bound by law to implement the policy. The law should make it mandatory that the scope of works to be subcontracted is specified in the bidding document and the selection process of a sub-contractor should be transparent and supervised by the client or their agent and not left to the main contractor".

Another director said that there is need for the Government to introduce a contractor rating system which should be in the custody of the National Council for Construction (NCC) for all the sub sectors in the construction industry that would rate local contractors according to their possible performances. This would enable contracting agencies to identify low risk contractors for possible contract award thereby minimising the perception that local contractors are "poor performers".

CHAPTER FIVE

5.0 Discussion of the Findings

5.1 Cost factors

According to contractors, clients and consultants, it was obtained that the high cost of machinery was the most important performance factor as it was ranked among top five factors by all the respondents. Consultants ranked it number two, it was

ranked number three by contractors while clients ranked it number five. This agreement among all target groups is traced to the difficult economic situation from which the country suffers

Cost of material was ranked by the client's respondents in the second position with RII equal 0.8. It was also ranked by the consultants respondents in the first position with RII equal 0.8 and contractors respondents ranked it the in the first position with RII equal 0.8. This factor is considered as more important for consultants and clients than for contractors. The cost of material affects the cost performance of contractors. It should be mentioned that there were many projects in Zambia which finished with poor cost performance because of the cost of material. This is in consonance with the findings of Abdulaziz and Al – Juwairah (2002) about the factors contributing to construction cost in Saudi Arabia.

5.2 Time factors

Time needed to rectify defects was ranked by the contractor's respondents in the third position with RII equal 0.65. It was ranked by the client's respondents in the second position with RII equal 0.675 while consultant's respondents' ranked time needed to rectify defects in the first position with RII equal 0.933. This factor can be considered as an important for three parties and it has a similar rank for all parties as it affects directly on project performance such as time. Time needed to rectify defects is related to quality and cost. If the contractor makes some era, to rectify that mistake is likely to disturb the project schedule. This result is in line with Iyer and Jha (2005) who said that efficient and effectiveness by project managers can improve time performance of projects.

5.3 Quality factors

Availability of personals with high experience and qualification has been ranked by the client's respondents in the second position with RII equal 0.8. It was also ranked by the consultant's respondents in the second position with RII equal 0.8 while contractor's respondents ranked it second with RII equal 0.8 as well. This factor is important for the three groups. Availability of personals with high experience and qualification lead to better performance of quality, time, cost, productivity and safety of projects. In Zambia, projects are awarded to the lowest bidder. Some of the lowest bidders may lack management skills and less attention is paid to contractor's plan, cost control, overall site management and resource allocation. Samson and Lema (2002), Cheung et al (2004) and Iyer and Jha (2005), are in agreement with our result as this factor is very important because it affects strongly on quality performance of construction projects.

Quality of equipments and raw materials in project has been ranked by the client's respondents in the second position with RII equal 0.8. It has been ranked by the consultant's respondents in the second position with RII equal 0.8 and has been ranked by the contractor's respondents in the third position with RII equal 0.6. It is not surprising to obtain that this factor is more important for consultants and clients because quality control is one of the most important duties for the consultant in the site of construction project. This leads to owner satisfaction and implementation of project according to specifications. In Zambia, most of available materials are with little variation in quality and produced by a limited number of producers. Cheung et al (2004), are in agreement with our result as this factor

affects the project performance and the degree of clients' satisfaction.

5.4 Solutions to the Problems

The most effective method of minimizing cost of construction in Zambia as perceived by the contractors, clients and consultants is ensuring efficient time management through proper resource planning, duration estimation and schedule development and control This is similar to recommendations of Ashworth (2000), where he observed that profitable firms may be generating their revenues from the elimination of waste at both professional and trade practice levels.

He recommended cost reduction measures including: establishing firmly the requirements and features of the project at the onset before getting started, preparing the project team to do its best by getting members to sign off on capabilities and responsibilities, staying diligent about keeping the project on the right path through contract clauses that disallow significant changes once the project is underway, effective human resource management through effective motivation, and project tracking involving discerning early what area or paths are leading to dead ends and applying early corrective actions.

The study discovered that there are perceptions of inadequate capacity among the Zambian local contractors and as such even the most basic of projects had been floated to foreign companies. The finding agrees with Mashamba (2001), who noted that international players have entered the Zambian construction market and is a serious threat to the local contractors. According to Shachinda (2002), the number of international firms winning multimillion projects especially donor funded as well as projects attracting international financial investment is on the increase. Suddenly, local contractors require an international credibility beyond the profile and reputation that they enjoy in Zambia. They need to adapt to meet the requirements of clients from different cultures and with disparate values.

Local contractors have limited funds as compared to foreign contractors. This is due to lack of collateral and high interest rates charged by the banks. The solution to the financial problem faced by local contractors is the Government to facilitate a construction bank that will enable contractors to access loans at reduced interest rates. The government which is the major client of most of the local contractors must pay the contractors according to the contractual obligations.

Foreign contractors possess practical experience thus they are familiar with the working and intricacies of the industry. They are familiar with various tools and techniques for planning, scheduling and controlling construction operations and have the personality and insight that enabled them to work harmoniously with others, often under very strenuous circumstances. Many local contractors do not possess practical experience hence they need to acquire an array of skills such as business and expertise as they are expected to deal with people at strategic, technical and operational levels. The following organisations Road Development Agency, Association of Building and Civil Engineering Contractors, Zambia Development Agency, Engineering Institution of Zambia, National Association for Medium and Small Scale Contractors and National Council for Construction should design capacity building programmes to help local contractors.

Local contractors lack access to plant and equipment. This makes it difficult for local contractors to compete favourably with foreign contractors. The Government

should ensure that cooperatives schemes among local contractors, especially small and medium contractors are encouraged so that it is easier for them to access equipment and other requirements.

CHAPTER SIX

6.0 Conclusion and Recommendations

6.1 Conclusion

Most consultants and contractors stated that the projects sometimes are delayed by late payment from the owners. In Zambia, contractors usually suffer from this problem. Delay in payment from owner to contractor lead to delay of contractors' performance and cause problem in time performance. This may also lead to disputes and claims between owner and contractor of project. These affect the overall performance of project which has been implemented.

Most owners, consultants and contractors agreed that actual cost of executed projects was more than the estimated cost because of harsh economic conditions. Continuous closures in Zambia lead to rapid shortage of construction materials and escalation of construction material prices. This escalation of material prices affects the liquidity and cost performance of projects.

Generally, it is obtained that some consultants and contractors' projects are highly satisfied by the owners in Zambia. In addition, other contractors and consultants' projects are medium satisfied by the owner because of many reasons such as: poor quality, non-conformance to specification, problems in cost and time performance, weak coordination or relationship between projects participants, occurrence of accidents through implementation stage, claims and disputes. In addition, consultants and contractors' projects usually have few defects with high impact on the owner satisfaction.

In most cases, an overall project safety factors has been moderately implemented in construction organizations. This is because of absence of safety control or its application through project implementation stage. In Zambia many contractors do not care about applying health and safety factors during construction of projects. In addition, consultants do not have sufficient control or continuous supervision for safety application. This leads to occurrence of accidents and problems in construction projects.

The Client is, by far, the single most important member of the construction team. He is the initiator and financier of all the projects. The major contribution the client can make to the successful operations of the construction industry lies in his skill in specifying his needs prior to the preparation of the design. It is also important for the client to set cost limits of the project at the briefing. He should also ensure that adequate financial provisions are made prior to the commencement of any project.

Cost factors are among the most important and basic considerations that Consultants must deal with. It is essential to see that projects are contained within the client's budget and cost forecasts. Cost has the final control over virtually every project. Accurate cost analysis and control is one of the necessary services the client requires from the consultants.

The major task of Contractors is to assemble and allocate the resources of

labour, equipment and materials to the project in order to achieve completion at maximum efficiency in terms of time, quality and cost.

6.2 Recommendation

Performance problem is costly and often result in disputes, claims and affect the development of the construction industry. The construction organizations must have a clear mission and vision to formulate, implement and evaluate performance. The environment of construction organizations should be proper to implement projects with success performance. It is important for construction organizations to identify the weaknesses of performance in order to solve and overcome. The following issues are recommendations related to obtained results.

6.2.1 Training programs

It is recommended to develop human resources in the construction industry through proper and continuous training programs about construction projects performance. These programs can update their knowledge and can assist them to be more familiar with project management techniques and processes. In addition, it is preferred to develop and improve the managerial skills of engineers in order to improve performance of construction projects. All of that can be implemented by offering effective and efficient training courses in scheduling, time, cost, quality and management of human resources. These courses will lead to success performance through construction projects such as availability of resources as planned through project duration, availability of personals with high experience and qualification, proper quality of equipments and raw materials used in project. In addition, training system will assists for improvement of construction time performance.

6.2.2 Recommendations for construction organizations

It is necessary for construction organizations in Zambia to evaluate both of market share and liquidity before implementation of any construction project because of difficult economic situation in Zambia. That will assist organizations to perform projects successfully and strongly. In addition, it is recommended that a new approach to contract award procedure by giving less weight to prices and more weight to the capabilities and past performance of contractors. It is necessary to establish proper industry regulations and appropriate mechanism for contractors' enforcement. A structured methodology and technique should be identified to overcome the effect of political interference and economic situation on the performance of construction projects in Zambia.

In addition, construction organizations are recommended to evaluate project overtime through project construction in order to enhance and improve time and cost performance of projects. Planned time for project implementation should be more suitable for practice because of difficult in economic situation in Zambia. Time needed to implement variation orders and to rectify defects should be estimated and scheduled without affecting project time completion. Having regular meeting among project participants can also enhance performance. Construction organizations should have different incentive systems in order to improve overall performance. In addition, they should have continuous safety training and meeting in order to apply safety factors and achieve better performance.

6.2.3 Recommendations for Clients

Clients are recommended to facilitate payment to contractors in order to overcome delay, disputes and claims. All

managerial levels should be participated with sensitive and important decision-making. Continuous coordination and relationship between project participants are required through project life cycle in order to solve problems and develop project performance. It is recommended to minimize disputes between owner and project parties. Employees in construction industries should be more interested with belonging to work to productivity and time performance of project.

6.2.4 Recommendations for consultants

Consultants should be more interested with design cost by using multi criteria analysis and choosing the most economic criteria in order to improve their performance and to increase clients' satisfaction. In addition, consultants are recommended to facilitate and quicken orders delivered to contractors to obtain better time performance and to minimize disputes and claims.

6.2.5 Recommendations for contractors

Contractors should not increase the number of projects that cannot be performed successfully. In addition, contractors should consider political and business environment risk in their cost estimation in order to overcome delay because of closures and materials shortage. There should be adequate contingency allowance in order to cover increase in material cost. A proper motivation and safety systems should be established for improvement productivity performance of construction projects in Zambia.

Contractors are recommended to minimize waste rate through project implementation in order to improve cost performance. They should be more interested with conformance to project specification to overcome disputes, time and cost performance problems. Quality materials should be more interested with contractors to improve cost, time and quality performance. This can be done by applying quality trainings and meetings which are necessary for performance improvement. Contractors are recommended to be more interested with sequencing of work according to schedule. In addition, contractors should have a cost engineer in their projects to control cost successfully.

6.3 Recommendations for future research

It is recommended to develop performance measurement framework and modeling system in order to measure performance of construction organizations and projects. In addition, it is recommended to study and evaluate the most important factors as a case study of construction projects in Zambia.

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