

**KWAME NKRUMAH UNIVERSITY OF SCIENCE AND
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Identifying the Causes of Time and Cost Overrun in the Procurement of Building
Construction Projects: A Focus on NCT Pre-Tender Stage Activities (A Case Study of
VRA, Engineering Services Department)

BY

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A thesis submitted to the Department of Building Technology, College of Art and
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MSC PROCUREMENT MANAGEMENT

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DECLARATION AND CERTIFICATION

I hereby certify that all material contained within this report is my own work towards the award of Masters of science in Procurement Management and that, to the best of my knowledge, it contains no material previously published by another person nor material which has been accepted for the award of any other degree of the University.

All sentences or passages quoted in this thesis from other people's work have been specifically acknowledged by clear cross-referencing to the author.

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Signature

Date

DEDICATION

I dedicate this work firstly to the Almighty God for the gift of life, knowledge, wisdom and how far He has brought me, I am very grateful. Also to my mother Mrs.

Felicia Terko Konotey, my wife Mrs. Tereshkova Konotey, my children Edmund Kweku Konotey, Michael Kweku Konotey, Felictoria Awoyaa Konotey, all my siblings and to the memory of my late father Elder Joseph Konotey Djaba.



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My deepest appreciation goes to my Mum, my late Dad whose sudden death occurs on the 27th day of August, 2015 and my siblings for their pieces of advice and financial support throughout my educational career life. I crown my appreciation to all friends and loved ones.

God Bless you all!!!

ABSTRACT

The main objectives of this study is the identification of factors within pre-tender activities that causes time and cost overruns during project execution and to suggest ways to improve pre-tender activities in other to mitigate the associated time and overruns during project execution at the Volta River Authority (VRA).

This study adopted the case study approach and collected data from thirty (30) key and relevant employees of the organization.

This study found that most of the respondents were not satisfied with the accuracy levels of VRA's pre-tender time and cost estimates and that more than half of the respondents disagreed that project procurement leads to the successful completion of VRA's building projects such as completing projects on schedule, within budget and to specification. It was found that the five (5) most significant factors within pretender activities that cause cost and time overruns during project execution at VRA are lack of detailed designs at the time of tender, poorly drafted specifications, poorly defined project scope, poor risk identification and mitigation at pre-tender stage and insufficient time to prepare detailed designs.

The conclusion drawn is that the pre-tender stage of the procurement process is highly significant in the realization of overall project objectives and that firms including VRA must give this area of the procurement phase all the attention it deserves.

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CHAPTER ONE

INTRODUCTION

1.1 Background of the Study

The procurement function is highly indispensable for all organizations – be it in the private sector of public and whether a small scale enterprise or a multinational organization (Rowlinson, 1988). This means that firms intending to achieve their objectives in a cost efficient and timely manner must pay close attention of their procurement units and not treat these units as after thoughts (Mangan et al. 2008). According to Jahns (2005), procurement is an organization-wide procedure that places much attention on the safety and costs features of buying and it entails single planned functions and takes into consideration both the technical and economic features of the supply market. This definition illustrates how firms must place emphasis on the protection and cost-efficiency facets of purchasing.

The importance of the procurement function is also felt during construction projects. The procurement function according to authors such as Cleland and Ireland (2002) and Merna and Al-Thani (2008) is crucial to the successful completion of construction projects. Considering that construction projects usually involve huge outlay of capital, there is the need to focus on key procurement functions such as the tendering process right from the onset. This focus on the pre-tendering is highly critical since it largely determines how the rest of the project will go. This means that procurement can and in fact lead to project success since time overruns and costs overruns are avoided (Abd El-Razek et al., 2008; Le Hoai et al., 2008).

According to King (2005), projects have gained notoriety because of some encountering major impediments and therefore leading to issues such as not delivering to specifications, not completing projects within budget and within schedule. Authors

such as Kronbichler et al. (2009) have concluded that most projects that failed were as a result of covering the basics in terms of poor estimation of cost and inability to accurately gauge when to complete these projects. Time overrun as defined by Trigunarsyah (2004) situations where projects goes beyond agreed dates and this situation is typically caused by contractors. Time overrun has also been described by Elinwa and Joshua (2001) as the period that goes by between the agreed due date and actual completion date. Moreover, Bramble and Callahan (1987) has defined time overrun as the period during which a certain aspect of a project is completed clear of the agreed date of completing the project.

This is where the role of the procurement function comes into effect. Since tendering is one important aspect of the procurement function, it is crucial that firms pay a close attention to it. According to Maddock and Chisholm (1997), tendering is an activity which is highly sophisticated and involves a lot of intertwining legal issues must definitely be known by firms before attempting to initiate the tendering process. According to Skitmore and Picken (2000), the tendering stage which is very important and falls within the first stage of the construction life cycle and because typical tendering processes are fragmented, managing it becomes very challenging, complicated needing the collaborative efforts of several units and individuals. This means the challenges of time and cost overruns can be curbed or totally eliminated when the tendering phase, especially the pre-tendering stage is given much attention. As further pointed out by Serpell (2005), the pre-tender phase estimates the cost of the project as well as determining the time within which the project will be completed. According to Serpell (2005), estimates are the foundations upon which project organizations make key decisions such as sourcing for funds, how to control costs and how to make the project a success overall. This therefore underscores the need to pay

close attention at the pre-tender phase in order to obtain the accurate cost of the entire project. However, the pre-tender stage even though useful is still approximation and guestimation and unfortunately, most projects organizations hurriedly put information together without taking time to ensure their accuracy (Serpell, 2005). This again leads to overestimation and underestimation which are not acceptable since overestimation forces the client to spend more resources out of anxiety when the situation is quite different on the ground. This may also prevent potential investors from participating since the high cost may not meet their budget. Underestimation on the other hand may convince the client to lower budget but which may latter turn out to be a wrong move.

Authors such as Abd El-Razek et al. (2008) and Le Hoai et al. (2008) have all pointed out that time and cost overruns are related to most projects worldwide and that these challenges are more pronounced in developing economies where time and cost overruns can sometimes go above 100% of the estimated costs of the project. As pointed out by Mohammed et al. (2007), realizing construction success is highly dependent on the capacity to take key decisions correctly at the right time.

1.2 Statement of Research Problem

Pre-tendering activities are regarded as highly critical to the success of construction projects. According to Anvuur et al. (2006), Ghana's construction sector is fraught with several challenges such as undue delays, going above budget and total abandonment if projects in certain instances. These delays are attributable to causes such as delays in the preparation of technical designs and a rather unbelievably long and winding system of control, long approval procedures and disputes over land ownership (Anvuur et al. 2006). Bondzi (2010) concluded in his study that the rather long and unnecessary bureaucracy and the use of the manual system cause delay and cost overruns the

procurement process in the Ghanaian public procurement system. This means that even though the procurement function in itself is highly significant in the realization of project objectives, there are certain inherent factors that may eventually lead to time and cost overruns.

The challenge of inaccurate cost estimate is reflected by rising large numbers of project time and costs overruns. This means that by determining the causes for the inaccuracies in a pre-tender cost and time estimate would lead to the completion of projects on time, within budgets and to specification. This again means that improving upon pre-tendering cost and time estimate would lead to project success. However, there is a paucity of empirical research on the subject matter from a Ghanaian perspective even though researchers such as Frimpong et al. (2003) have done some work in the area of study and found that out of the 47 public sector projects surveyed, as many as 33 representing 70% encountered delays and costs overruns.

There is still a dearth of empirical studies from the perspective of Ghanaian public sector organizations such as VRA which is always executing one project after another. The issues are: what are the causes of time and cost overruns? What are the challenges organizations such as VRA go through during their pre-tender stages? Are they well equipped to overcome these challenges? What can be done to ensure building construction projects in the country? Does the procurement law hinder effective pre-tender stage activities? It was against the foregoing that this study was executed with the intention of furthering the academic discourse and bridging the research gap in the subject area.

1.3 Research Questions

Sequel to the above stated research objectives, the following questions were posed:

1. What are the factors within pre-tender activities that cause time overrun during project execution?
2. What are the factors within pre-tender activities that cause cost overruns during project execution?
3. How can pre-tender activities be improved in other to mitigate the associated time and cost overruns during project execution

1.4 Aims and Objectives of the Study

The aim of the study was to identify the causes of time and cost overrun for building construction projects and with VRA's engineering services department being the focus. Specifically, this study sought to:

1. Identify factors within pre-tender activities that causes time overrun during project execution
2. Identify factors within pre-tender activities that causes cost overruns during project execution
3. Suggest ways to improve pre-tender activities in other to mitigate the associated time and cost overruns during project execution?

1.5 Significance of the Study

This research will contribute to existing knowledge on the subject matter of procurement and project management in the Ghanaian construction industry. The study would bring to the fore insights into the importance of procurement and project management as well as issues associated with the execution of successful projects in the construction sector in the country. It would also create awareness of the need to critically take the unique role of the procurement function seriously.

To the management of the various construction firms in the country, especially those involved in bidding and tendering for government contracts, this study through the findings and the recommendations thereof would put them in a better position to manage effectively their strategies and tactics in such a way as to ensure better implementation of the procurement function and therefore leading to the curtailment of time and costs overruns. As pointed out by Abd.Majid and McCaffer (1998), costs and time overruns has negative and undesirable consequences of key project stakeholders such as constructors project sponsors, project owners and other project participants.

As much as possible time and cost overruns should be avoided by project organizations and in fact all stakeholders must guard against them since failure to do so may lead to losses for all parties involved. This study can additionally serve as a source of reference for future academic studies.

1.6 Scope and Limitation

The scope of this study was limited to only the pre-tender phase of the procurement cycle and the focus on this phase was due to the fact that failure to get things done right may escalate and manifest in major problems during the other phases of the procurement cycle. This study was a case study and it focused only on VRA's Engineering Services Department. As a result, the outcomes of this study cannot be generalized to reflect conditions in other public sector institutions. However, the findings of this study would shed more light on the subject matter and also serve as a guide for future endeavours in this growing area of study especially from a Ghanaian perspective. The subject matter of this study was limited to only the causes of costs and time overruns in the construction sector. VRA's Engineering Services Department

was chosen for this study because of convenience, easy access to information and key decision makers of the organization.

1.7 Chapter Organization

This study comprised five distinct chapters. Chapter one which was the introductory chapter presented topics such as the background of the study, the research objectives and questions, problem statement, the significance of the study, the scope and limitation as well as the structure of the entire study. Chapter two reviewed the literature on the subject matter while Chapter three focused on the methods employed in conducting the study. Chapter four presented the analysis and findings of the study while Chapter five focused on the summary, conclusion and recommendations.

CHAPTER TWO

LITERATURE REVIEW

2.1 Introduction

This chapter reviews the literature on the subject matter of the study. It particularly reviewed the literature on the importance of time and cost overruns, their definitions, causes and their effects on realization of project objectives. It also reviews the literature on the tendering processes and on project management.

2.2 The Procurement Function and Project Procurement

This section reviews the literature on both procurement and project procurement.

2.2.1 Procurement

Knudsen (1999) has further defined procurement as including the various functions and tasks needed to ensure that products reach their intended destinations without any hitches. On the other hand, Jahns (2005) has defined procurement is an organizationwide procedure that places much attention on the safety and costs features

of buying and it entails single planned functions and takes into consideration both the technical and economic features of the supply market. Jahns' definition underlines the need for firms to ensure that products are delivered to their destinations in the best condition as possible and also in a more effective manner.

Finally, the International Standards Organization (ISO) (10845:2010) have described procurement as the method through which firms create contracts, manage and fulfil these contracts; and also encompasses several procedures such as the creation of the project to be purchased, asking and assessing tenders; awarding and managing contracts and also ensuring that all contracts comply with stated requirements.

Furthermore, Mangan et al. (2008), procurement is the process of identifying and getting goods and services and it includes sourcing, acquisition and it also involves encompasses all exercises from the determination of potential suppliers through to delivery from supplier to the customer or beneficiaries. It is important that the products/services are suitable and that they are obtained at the best conceivable expense to address the needs of the buyer as far as quality, amount, time, and location are concerned. Additionally, Hughes (2002) has also described the procurement function as a process that spans from the identification of needs through to the end of a service contract or the end of the useful life of an asset.

Based on these definitions, it can be surmised that procurement must include the specification, the delivery of these specifications, products, services and or works; the evaluation and reviews that will ultimately lead to a further procurement in the future. This again means that the procurement function can be a never-ending task for certain business entities.

The chief objective of procurement is to undertake activities related to procurement in a manner that the products and services so purchased are of the right quality, from the

right source, are at the right cost and can be delivered in the right amounts, to the right place, at the right time (Benslimane et al. 2005). According to Benslimane et al. (2005), some of the crucial objectives of the procurement function are to;

- i. To purchase quality materials having value for money in mind; ii. To guarantee timely delivery through selecting suppliers with good track records; iii. To persistently find, assess and evaluate dependable supply sources; iv. To determine the most dependable sources of supply through either open tender and or multi-stage tendering
- v. (Pre-qualifying suppliers and retaining just those that are equipped for meeting the firm's requirements; strategic sourcing) and limited tendering.
- vi. To identify the accessibility of new materials and screen patterns in market prices; vii. To buy in accordance with the firm's policies.

2.1.2 Project Procurement

According to Rowlinson (1988), project procurement is the amalgamation of the various activities executed by the project promoter with the intention of getting a new facility (e.g. a new building). Project procurement has further been described as the methods employed in realizing the objectives of projects and also getting value for money (for the huge capital outlays for building projects) by focusing on the risks inherent in the project and more importantly, influencing decisions on key areas such as sources of funding (OCG, 2003). Moreover, project procurement is typically seen as encompassing all the various procedures and steps needed to procure products, works or goods required from suppliers to facilitate the execution of the project. According to Fleming (2003), project procurement entails several key processes as can be seen in Figure 2.1. According to the PMBOK (2004), decision taken with respect to project procurement to a large extent determines the successful completion of projects and avoiding issues such as time and cost overruns.

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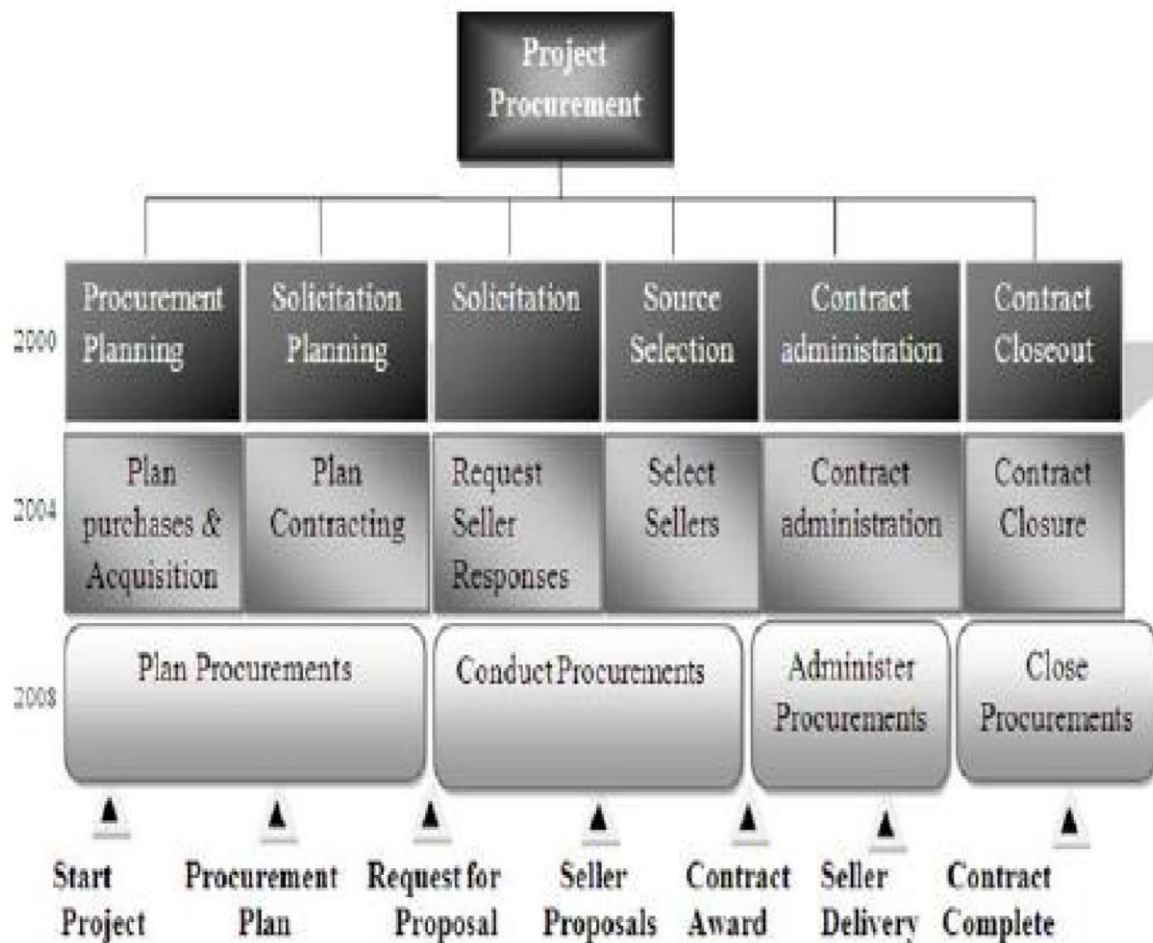


Figure 2. 1: Project Procurement Phases cycle

Source: (Fleming 2003)

2.1.3 Parties to procurement

According to Masterman (1996), with respect to the actual procurement contract, there is a need to focus on who is involved in a contract and what each of these parties' obligations and responsibilities are. The most commonly used engineering contracts recognize a "triangle of actors" - promoter, engineer and contractor.

1. **The promoter/client** also known as the employer, specifies, authorizes and pays for the work to be done.
2. **The Engineer** acts as an agent on behalf of the promoter. The duties of the engineer includes:
 - evaluation of the tenders
 - supervision of the work of the contractor;
 - Confirmation of whether or not the work is being complied to specification;
 - Mediation between the employer and the contractor in case of dispute.
3. The **Contractor (bidder)** successfully bids for a contract and carry out the work required.

2.2 Time Overrun

Construction projects that are delivered within schedule to the owner is described as projects that have undergone schedule or time overruns. Assaf and Al-Hejji, (2006) have for instance defined time overrun as the time beyond completion date specified in a contract, or beyond the date that the parties to the contract agreed upon for delivery of a project. To Mohammed et al. (2007), time overrun is an act or event that extends the time to complete or perform an act under the contract. According to Kaming et al.

(1997), time overruns is the extension of time beyond planned completion dates traceable to the contractors. Time overruns as defined by Vidalis and Najafi (2002) are incidents that impact on project's progress and postpone project activities. Again, Chan (2001) has defined time overruns as the difference between the actual completion time and the estimated completion time. It can therefore be surmised that time overruns is characterized as the time extended to finish the project after planned date which is often caused by both internal and external factors

(Choudhry, 2004).

2.2.1 Causes of Time Overruns

There are different types of time and cost overruns. According to Kaming et al. (1997) for instance, there are three types of time and cost overruns and these are

1. Time overruns and delays caused by incidents that are uncontrollable;
2. Time overruns and delays caused by incidents that can be controlled by the project owner;
3. Time overruns and delays caused by incidents that can be controlled by the contractor.

Again, Ahmed et al. (2003) in their study identified two main causes of time overruns and which they classified as external and internal. According to the authors, internal factors causing delays originates basically from the owners, designers, contractors and consultants while the external factors causing delays are usually from sources such as government regulations, suppliers of materials or inclement weather conditions. However based on the findings of authors such as Chan et al. (1996), Kaming et al.

(1997), Ahmed et al. (2003) and Alaghbari et al (2007), the causes of delays can be classified in to the following four categories:

1. Contractors' obligation

The main causes of delays basically caused by contractors or for which they have control over are delays in transporting product and materials to project sites; material shortage; errors made at project sites and flawed work; poor worker aptitudes, attitudes and skills, inadequate project hands; money related issues; coordination issues with others; low managerial ability of contractors, poor site management; and equipment and tool shortages on-site (Alaghbari et al. 2007).

2. Consultants' obligation

The factors identified with consultants' responsibilities include nonappearance of the staff of consultants; deficiency of experience with respect to the consultant; insufficient experience with respect to employees of consultants (both managerial and supervisory); delayed and poor supervision in decision making; inadequate records; and not quick in providing instructions (Alaghbari et al. 2007).

3. Owner's obligation

The factors that relate to owners' responsibilities include inadequate working experience; slow decision making; absence of coordination with builders; contract adjustments (especially additions and change of designs); and money related issues (delayed payments, financial difficulties and economic challenges) (Choudhry, 2004).

4. External components

The components that identified with external variables are; unavailability of materials; shortage of equipment, tools and facilities urgently needed for construction projects;

poor climate conditions; poor site conditions (area, ground, and so forth.); weak economic conditions (unstable currency, high interest rates); changes in laws and regulations; transportation delays; and external work due to major government services (such as roads, utilities and public services) (Alghbari et al., 2007).

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2.2.2 The impact or effects of Time overruns

Assaf and Al-Hejji (2006) have also pointed out that from the perspective of the project owner, time overrun implies loss of revenue through lack of production facilities and rent-able space or a dependence on present facilities; while from the view of the contractor, time overrun means higher overhead cost, penalties, loss of favour with clients, higher material costs as a result of inflation and not being able to take on new projects. According to Pourrostan and Ismail (2011), the main effects of time overruns are:

1. Time overrun;
2. Cost overrun;
3. Dispute;
4. Arbitration;
5. Litigation;
6. Client dissatisfaction;
7. Bad reputation and
8. Abandonment of construction projects.

2.3 Cost overruns

Several authors have defined cost overruns differently. For instance, Al-Najjar (2002), has defined cost overruns as the change in contract amount divided by the original

contract award amount. However, Zhu and Lin (2004) are of the view that cost overruns are the excess of actual cost over budget. Choudhury (2004) have defined cost overruns to be the difference between the original cost estimate of project and actual construction cost on completion of works of a commercial sector construction project. Cost overrun is described as the excess of actual cost over budget (Zhu and Lin, 2004). The authors further describe cost overrun as the change in contract amount divided by the original contract award amount.

Cost overrun = Final Contract Amount – Original Contract Amount

2.3.1 Factors that Causes Cost Overruns

Several researchers such as Morris (1990); Kaming et al. (1997) and Chimwaso (2001) have all attempted to identify the factors that influence projects to go way beyond what they were budgeted for. These authors identified several key factors that potentially lead to cost overruns. Some of these factors are:

1. Changes in designs and drawings;
2. Poor planning;
3. unpredictable changes in the prices of building materials

Kaming et al. (1997) concluded in their study that the major factors that cause cost overruns are

1. Design not finished during tendering period;
2. Supplementary additions requested by the owner;
3. Promoter making changes;
4. Poor planning of cost estimates;
5. Unfavourable conditions at the project site;
6. Re-measuring of temporary tasks;

7. Challenges of getting materials to site due to unfavourable location of the site;
8. Unavailability of information on cost during project execution

Again, Morris (1990) and Chimwaso (2001) concluded that other equally important determinants of costs overruns are:

1. Not providing information on time to contractor;
2. Serious oversights during the drawing phase;
3. Challenges within the project contract itself;
4. Additions and subtractions to designs;
5. Hesitation in addressing concerns of contractors;
6. Taking too much time putting value on changes to drawings;
7. Oversights and mistakes in the bill of quantities;
8. Not taking into consideration the cost of items with temporary quantities;
9. Overestimation by contractors

Cong et al. (2014) summarizes all the construction cost/tender price influencing factors under six broad categories (Figure 2.2) – project characteristics, client characteristics, contractors characteristics, tendering situation, consultant and design, external factors and market conditions, and inaccuracy of cost estimating.

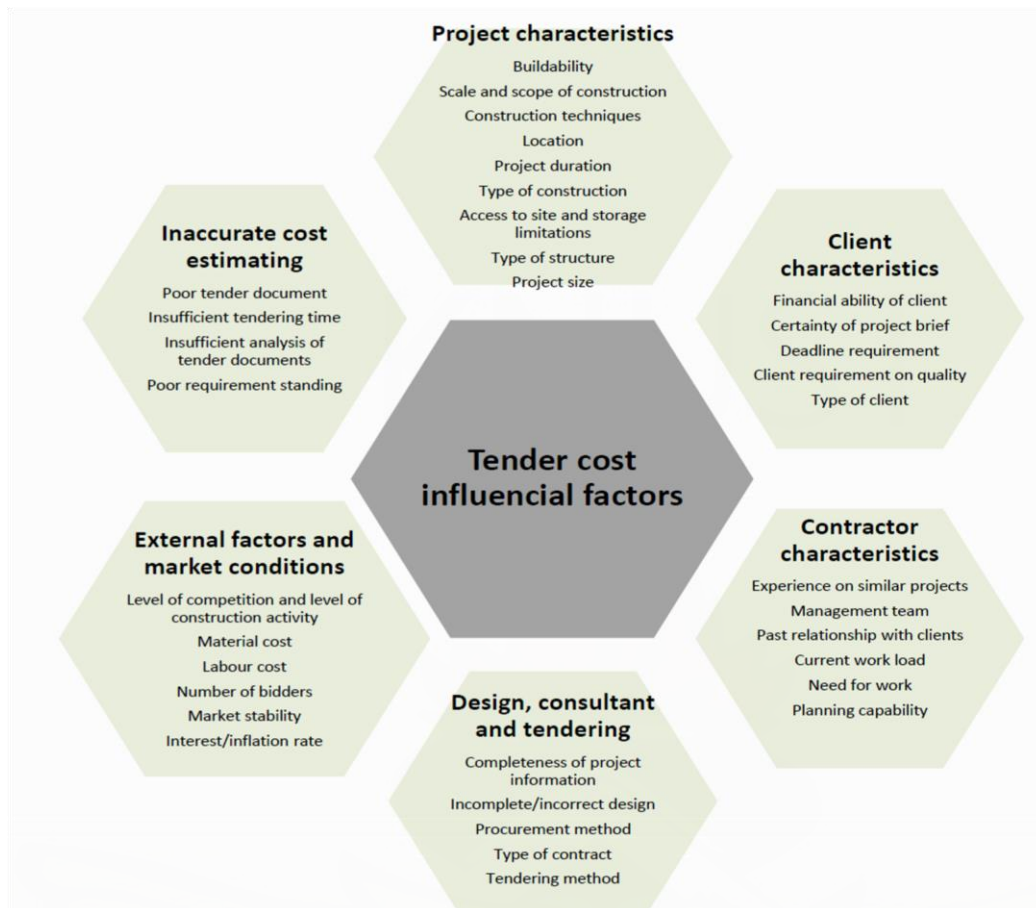


Figure 2.2 A summary of all the construction cost/tender price influencing factors under six broad categories

Source: Cong et al. (2014)

2.3.2 The impact or effects of Cost overruns

The effects of cost overruns are the consequences that results from delaying construction projects. Some of the main consequences of cost overruns from the perspective of the client or project owner are the added cost beyond the contract sum and therefore leading to loss of expected revenue or desired benefit. From the view of the final user, cost overrun engenders higher cost such as high rent, higher service, and higher products. The effects of overrun on the project professionals, consultant and

experts is the inability to obtain value for money and more importantly, a stain in their reputation and therefore making getting future contracts very difficult.

From the perspective of the project contractor, cost overruns essentially means decreased profits, blacklisting and tarnishment of reputation and eventually, lowering employee morale. Again, the construction industry as a whole is affected negatively since overruns may lead to the abandonment of costly projects, can engender a reduction in construction activities, loss of business, bad reputation and failure to get project finance from financial institutions or where they, do, the risk of abandoning projects midstream may mean higher cost of funds (Nega, 2008).

Additionally, authors such as Nega (2008), Eshofonie (2008) and Baki (1999) have all found out that cost overruns can further lead to undesirable consequences such as delays during projects; additional agreement, additional cost, budget shortfall, acrimonious relationship among parties, loss of reputation to consultants (will be seen as been incompetent) and the industry, higher cost of supervision and contract administration for consultants, payment delays to contractors etc.

Additionally, Eshofonie (2008) in his study identified the following as being the effects of cost overruns:

1. Company liability to insolvency and liability of the contractors to bad debt;
2. Not maximizing the use of labour, plants and equipment;
3. Higher cost of projects due to extension of time and
4. Moreover, delays implies that scarce resources will be have to be assigned to the project and this can lead to higher project cost and even the abandonment of the project.

2.4 Tendering

Knowles (1997) has defined tendering as the list of processes to procedure, display and manage tender documents by the client or consultant. The author further concludes that tendering for public construction concentrates on the process of choosing an appropriate contractor to perform a public project by calling for tenders, which are often achieved by sending out tender drawings and a bill of quantities or a specification, to receive prices in the form of estimates. Tendering is a purchasing procedure whereby potential suppliers are invited to make firm and unequivocal offer of the price (Neighbour, 2006). Norsworthy (2001) defined the tendering process as a call for tenders or merely “invitation to treat”. Tasmania (2006) also described tendering especially in the construction sector as a formal and legal procedure of soliciting tender offers in order to select the most appropriate contractor.

The tendering process is such that usually, prior to the presentation of completed tenders and following the selection of the most successful tender, a time period is typically given to tenderers by the client to prepare their estimates or proposals and carry out all necessary activities that will enable them realize it (Norsworthy, 2001). According to Tamimi (2009), this time period is the tender period or duration it starts with the tender advert and ends with the closing or submission date for tenders. Usually, tender duration highly depends on the type of tender, size, complexity and the value of the project and the information that needs to disclose by the tenderers (Tamimi, 2009). Again, Neighbour (2006) opines that to organize an achievable tender during the tendering period, the tenderers must be able to predict all the activities that they need to execute such as measuring the scope of the services being sought by the client, get prices from their own suppliers and sub-contractors, pay a visit to the project site, evaluate the tender and understand the contract conditions, evaluate their capacity to execute the

project, clarify any discrepancies or issues raised with the purchaser and document the bid.

Norsworthy (2001) has also observed that the contract documents must be examined in detail to guarantee that all terms and conditions likely to impact on the duration and cost of the project are not ignored. However, all these activities require the contractor or tenderer to invest significant time and as Norsworthy (2001) observed, the tendering process is laden with several risks. Again, Norsworthy (2001) is of the view that the lowest bidder is usually the one that was hurriedly and recklessly done without being detailed and also usually, the one with the biggest and numerous errors. Such low tenderers usually are problematic and cause several complications such as making big and unsubstantiated claims, abandon projects or delay the project since the contractors usually find out that their ridiculously low figures submitted may not be adequate in executing the project successfully. As pointed out by Binnington (2004), putting pressure on tenderers into hasty responses can therefore worsen the likelihood of serious mistakes.

2.4.1 Types of Tendering Procedures

According to Neighbour (2006), inviting competitive bids and tenders provides suppliers and potential suppliers an opportunity to participate freely and fairly with other and that the three major categories of the tendering process are:

1. ***Open Tender*** which simply means that any supplier interested may tender and here, tender negotiation is prohibited. Open tender is an arrangement where an advert placed in local newspapers or journal or articles invites contractors to apply for tender documents. Normally, open tenders are more transparent and it guarantees that only the bidder with the best price and capacity to meet all the technical specifications will win the tender.

2. ***Restricted Tender*** where parties interested in the tender are required to present their requests of participation. However, in this type of tendering, it only those who are shortlisted that are invited to participate in the tendering process. Again, tender negotiation is prohibited in this type of tendering procedure.
3. ***Negotiated Tender***. This type of tender is similar to the restricted tender. The only difference is that it allows for post tender negotiation. According to Norsworthy (2001), under this type of tender, it is not unusual to approach only one contractor and that such a tender is normally used for specialist projects since in such instances, the number of experts in these fields is limited. It is therefore based on one-to-one discussions.

2.4.2 Importance of the Tendering in Project Procurement

Tendering processes play very significant roles in project procurement (Adetola, 2000; Lou and Alshawi, 2009). In fact is not uncommon to see most public sector projects inviting suppliers and contractors to tender for public contracts essentially due to the procurement laws of countries (Adetola, 2000; Lou and Alshawi, 2009). According to Lou and Alshawi (2009), the construction sector is full of risks and that the tendering phase is therefore seen as the most crucial and therefore necessitating constructors to pay so much attention to it. According to Knowles (1997), the tendering phase determines whether contractors will have access to public projects and if they will, at what terms and conditions?

According to Lou and Alshawi (2009), the main merits of tendering include the following:

1. Transparency;
2. That tendering is established accepted and widely understood process;

3. Provides or leaves an audit trail;
4. Complies with organizational and public procurement policies;
5. Fair and acceptable to all tenderers;
6. Makes the bidding process highly competitive
7. Value for money;
8. Curbs corruption and
9. Making comparing offers quite effortless

The weaknesses of the tendering process according to Lou and Alshawi (2009) are:

1. Very bureaucratic;
2. May serve as an impediment for small scale contractors;
3. Can be a victory of form or process over substance;
4. It can stifle creativity, innovation and flair;
5. It can be costly for all stakeholders (in terms of time and financial resources spent on preparing and evaluating tenders);
6. It can prevent negotiation and
7. Prices usually presented are inflated to make room for negotiation.

2.4.3 The Tender Stage

According to Dulaimi and Hong Guo (2002), a typical tender stage includes collecting and bringing together all forms of resources (human, physical and financial) needed to execute a contract. Usually, the pre-tender unit determine the most suitable and efficient procedure through which the contract may be executed within time, to specification and within budget (Mbachu, 2011). Again and at this stage, firms use their Estimators who are able to recommend the best means of achieving cost efficiency procedural effectiveness. It must however be mentioned that the Estimator is only able to provide precise costs estimates and give an accurate time within which the project

will be completed when statements of methods are made available. This in effect implies methods of statements are crucial and indispensable since it details the different aspects of tasks to be executed (Dulaimi and Hong Guo, 2002).

2.4.4 Pre-Tender and Pre-Contract Processes

Most of the construction project obtained by a contracting firm is realized through some form of competitive tendering and bidding process (Norsworthy, 2001). Pretender cost and time estimate aims at giving hints and ideas about the general cost of the project right at the initial stages and thereby influencing decision making of top management and project stakeholders.

According to Marjuki (2006), the main objective of cost estimates during the pretender phase is to:

1. Present an approximate evaluation of the total cost of the project;
2. Serve as the foundation upon which all critical decisions especially with respect to scope, time, cost and specifications are made;
3. Gives details of usual project information such as total quantities of items required, the number of employees needed, the nature of equipment required and finance needed;
4. Gives financial input required for the preparation of cash flow projections and
5. Serving as a basis for interactions, brainstorming, agreements, negotiations, lobbying etc.

This therefore underscores the need to obtain and gather as much information as possible about the proposed contract and site. Usually, the contract documentation and tender drawings and specifications and designs will provide a valuable and helpful starting point but most Estimators will need to visit the proposed site to get a

“feel” for the contract and the environment in which the work will take place (Neighbour, 2006).

According to Neighbour (2006), usually, a preliminary visitation and examination of a project site is divided into three stages:

1. The Site visit
2. The Desk Top study
3. Soil exploration/insitu testing (which usually ends in a laboratory analysis of soil samples and a formal report for use by the tender team)

From the foregoing, it therefore becomes apparent that project organizations need to pay closer attention to obtaining accurate, timely and reliable information about all aspects of projects such as sites. Even though the contract document will typically detail all useful information about the scope, drawings and specifications of the project, moving physically to the site of the project is highly recommended (Neighbour, 2006). Neighbour is of the view that there are three steps involved in visiting the project site and these are:

1. Site visitation
2. Embarking on armchair/desktop research and
3. Scientific analysis of the soil to determine its suitability or otherwise.

From the foregoing, it can be said that visiting the site, investigating and sending back information to the tender team has a great impact on the tender figure eventually arrived at and submitted to the client. According to Lou and Alshawi (2009), factors to take into consideration during site visits include:

1. Paying close attention to entry and exit areas of the site;
2. Whether provisional access routes may have to be constructed;

3. Whether the site is suitable for construction of boreholes and other equally important utilities;
4. Whether there are obstacles at the site that may escalate cost or delay the project;
5. Whether the land is encumbered or not;
6. Whether the site is easily accessible to labourers;
7. Whether items and equipment can easily be delivered to this site;
8. Whether the site will generate controversy and negative publicity etc

2.4.5 Factors Influencing Tendering Costs

According to Cong et al. (2014), two main factors affect tendering costs and these are the tendering situation and the characteristics of the consultants and the specification. Elhag et al. (2005) found that the lack of alteration and the change of specifications can significantly affect the cost of tendering.

Another factor that might affect the tendering cost is the lack of information or insufficient information for the project at the time urgently demanded may affect tendering accuracy and therefore leading to costs overruns if care is not taken (Mbachu, 2011). In fact the author concluded in his study that even though not having information as and when needed may lower cost by missing out on significant cost parameters, it can produce more variations at a later stage of project execution. This therefore can lead to construction time and cost overruns. Similarly, the more changes ordered by the client, the higher the final contract cost. These three factors are deemed the three main factors in terms of consultant and design cost.

Again, the tendering situation is significant in terms of its influence on the cost of tendering. According to Mbachu (2011), the method used during the tendering process as well as the nature of the contract is crucial factors during a bidding situation.

According to Dulaimi and Hong Guo (2002), several methods can be employed in selection contractors.

2.5 Factors within Pre-Tender Activities That Causes Time And Cost Overrun During Project Execution

There are numerous factors within the pre-tender activities that cause time and cost overruns and there is the need to take these factors into consideration as early as possible during the estimation stage. According to Elhag et al. (2005), taking care of these factors is rather important considering that they can increase costs and the probability of disputes among parties to the contract and also wrongly lead to the Estimator decreasing the cost of an item for successful tendering in a very competitive market. The tendering process is a highly complex one because it usually entails the assessment of unidentified and undisclosed scenarios, issues bottlenecks and so forth. This therefore requires experienced and knowledgeable personnel to handle this process (Elhag et al. 2005).

According to Hendrickson (2000), there are three types of cost estimates and these are – design estimate; bid estimate and control estimate and all these must be carefully considered before the final bid is made. The initial stages of a project sometimes see Estimators hurrying into making estimations without the advantage of reliable and accurate information about the scope of the project. This means that Estimators at this stage have to bring their experience to bear and also fall on their past experiences, records and other unorthodox means that will enable them obtain sufficient information required to do their estimates.

As pointed out by Hendrickson (2000), the estimates would have been refined and made accurate before the tendering process itself commences. It has been established

that the accuracy and precision of estimates have an inverse proportionality to the time between which the estimates are created and the actual event. Moreover, the accuracy of construction cost estimates is highly reliant on the availability of subjective and personal information of Estimators and consultants. This means that the lack of sufficient information during the incipient phase of the project, Estimators/Quantity Surveyors may be forced to make certain assumptions with respect to the specification of the project and this may or may not happen as the design, planning and construction progresses. According to Liu and Zhu (2007), accuracy of estimates is measured by the extent to which the estimated cost compares to the actual total cost.

According to Oberlender and Trost (2001), there four main factors that determine the accuracy of early estimates and these are:

1. The person preparing the estimate (Estimator/Quantity Surveyor);
2. The manner in which the estimate was prepared;
3. The information about the project available and
4. Other factors that were considered while preparing the estimate.

According to Dysert (2006), the factors affecting pre-tender estimate accuracy are:

1. The scope and definition of the project;
2. The availability and quality of historical data on cost estimates;
3. The reliability and accuracy of postulations which forms the basis of the estimates;
4. The innovativeness of processes and the how technologically advanced equipment available are;
5. The level of expertise of the Estimator;
6. The kind of estimating method used;
7. The usefulness and how effective the estimates are used;

8. The time, energy and resources channeled into the estimation process and 9.

The seriousness of the external factors that impact on the project

Odusami and Onukwube (2008) found the following factors as having strong impact on –pre-tender cost estimate:

1. The knowledge, skills and experiences of consultants and estimators;
2. The availability of sufficient information and the ability to disseminate this information to all stakeholders in a timely fashion;
3. The familiarity of the project members with the type of construction in question;
4. The duration for the tender as well as prevailing market conditions;
5. How far advanced the completion of the drawing is;
6. The level of sophistication of project drawings and
7. How readily available project materials are.

CHAPTER THREE

RESEARCH METHODOLOGY

3.1 Introduction

This chapter concentrated on the research design used in the study. It particularly presented the sample of the study, the sources of data, the measuring instrument used and how the data collected was analyzed.

3.2 Research Design

According to Neuman (2007), research designs give authors a structure on how to gather and analyze data and it afterward shows which research technique are suitable. This study adopted the case study approach since it facilitated an in-depth discussion of the subject with specific reference to VRA's Engineering Services Department. Thus, the researcher needed to contact the key personnel and staff of the company in order to effectively elicit accurate information on the causes of time and cost overrun for building construction projects at VRA's engineering services department. It is the researcher's view that to effectively operationalize this objective; the best method to use was the case study approach since it enabled the researcher to obtain detailed information on the subject matter required for drawing a valid conclusion.

3.3 Target Population

The population of a research is the entire gathering of all elements from which the sample is essentially chosen (Neuman, 2007). The target population of this study comprised the project managers and team members during building projects of VRA. Contacting this target population enabled the researcher to obtain valid responses required for drawing a valid conclusion.

3.4 Sampling Design/Strategy and sampling Size

Sampling is important when the target population is large and the researcher cannot collect data from all of them (Yin, 2003). Even though there are different types of sampling techniques, this study employed the purposive sampling technique to collect data from the target population. The purposive sampling technique was employed because the information needed was available to only a selected few staff members of the organization and therefore making it the most suitable method (Yin, 2003). The main goal of purposive sampling in this study is to focus on some particular group of

respondents in the organization with required experience on causes of time and costs overrun which best enabled the researcher to answer the research questions. Therefore the sample being studied was not representative of the population of VRA, but it was made of a group of key respondents with extended knowledge and experience on the organization. The specific type or technique of purposive sampling used was stakeholder sampling. This technique was adopted because of its usefulness in the context of evaluation research and policy analysis whose strategy involves identifying who the major stakeholders are who are involved in designing, giving, receiving, or administering the program or service being evaluated, and who might otherwise be affected by it (Play, 2008). Therefore, it enabled the researcher to target only the stakeholders of the project.

3.4.1 Sample Size

Typical project members of VRA consist of about twenty to fifty members. For this study, thirty project members and supervisors were contacted based on their availability to participate in the study.

3.5 Sources of Data

This study used both primary and secondary data.

3.5.1 Primary Data

This entails gathering information through observation, recording and measurement of the activities and thoughts of actual people, examining phenomenon and having a first involvement with events. According to Yin (2003), gathering primary information is described as survey and that was exactly what this study did. It collected primary data from the key and relevant personnel of officials of VRA's Engineering Services Department.

3.5.2 Secondary data

According to Yin (2003), researchers use secondary data because they are usually needed for the introductory sections of studies while other researchers can use them for their full studies (qualitative studies). The merit of employing secondary data in research is that it is readily available, cheap and can also serve as the basis for forming conceptual frameworks and serving as a guide in the designing of research questionnaires. For this study, secondary data was obtained from an extensive examination and reviewing of literature related to the subject matter of the study and this data was gathered from articles, journals, textbooks etc.

3.6 Research Instrumentation and Procedure

This study used the survey questionnaires to collect data from the respondents. A questionnaire according to Neuman (2007) is a written list of questions, the answers to which are recorded by the respondents. The main reasons for using the questionnaires were because it was easier to administer, economical, could ensure anonymity and very convenient since it allowed the respondents to complete them in their privacy.

3.7 Data Analysis

The data collected from the field was then edited, coded, classified and entered in the computer (SPSS) for analysis. This was undertaken to ensure that the data from the respondents is accurate, reliable and consistent. The data was analyzed in both descriptive and quantitative forms such as using frequency tables, percentages etc.

3.8 Ethical Considerations

The study acted responsibly following ethically approved means of conducting a study of this nature to endure that data and information collected was not brought to disrepute. In conducting the study therefore, the management of VRA was duly informed and

approval and consent obtained. Again, all respondents had a right to privacy, to safety, to know the true purpose of the study, to get research results and to withdraw from answering questions posed.

CHAPTER FOUR

ANALYSIS AND DISCUSSION OF FINDINGS

4.1 Introduction

This section of the chapter analyzes the data gathered from the field. It specifically discusses issues such as the background of the respondents, the factors within pretender activities that causes cost and time overruns during project execution, the factors within pre-tender activities that cause cost overruns during project execution and suggesting ways of improving pre-tender activities in other to mitigate the associated time and cost overruns during project execution.

4.2 Background of the Respondents

The background of the respondents was analyzed in this section. It was found as illustrated in Table 4.1 that fifteen respondents representing 50% were BSc/BA/HND certificate holders; ten (33.3%) were MSc/MBA/MPhil certificate holders while five (16.7%) were holders of professional certificates. None of the respondents had SSSCE or below certificate. This finding strongly suggests that most of the respondents are highly educated. This finding is not surprising considering that the Engineering Services Department of VRA is deemed the engine of the entire organization since they are solely responsible for managing and overseeing building and construction and other infrastructural development projects. Being in this Department therefore requires

highly educated and brilliant employees to ensure that all building and construction projects are well and efficiently executed.

It was also found as shown in Table 4.1 that seven respondents (23.3%) were junior employees; eighteen (60.0%) were senior employees while five (16.67%) were drawn from management position. This finding again suggest that the study contacted different categories of levels within the engineering services department of VRA and therefore implying that responses gathered to a large extent reflected what pertains at VRA with respect to the subject matter of the study.

Finally and as can be seen in Table 4.1, six respondents (20.0%) have been with VRA for less than five years; sixteen (53.4%) have been with the organization for between 5 and 10 years; four (13.3%) have been with the organization for between 11 and 15 years while another four (13.3%) of the respondents have been with the organization for 16 years and above. This finding is quite impressive because most of the respondents have been with VRA for more than 5 years and therefore implying that VRA takes care of its employees and hence the reason why most employees do not leave the organization. This finding further implies that the respondents have been with VRA long enough to have sufficient knowledge and information on the organization's procurement activities, the bottlenecks that confronts it and the strategies being used to mitigate these bottlenecks.

Table 4.1: Background of the Respondents

| Socio demographics | Frequency | Percent |
|---|------------------|----------------|
| Academic & Professional qualifications | | |
| SSSCE and below | 0 | 0.0 |
| BSc/BA/HND | 15 | 50.0 |
| MSc/MBA/MPhil | 10 | 33.3 |
| Professionals | 5 | 16.7 |

Position of Respondents Junior

| | | |
|------------------|----|-------|
| employees | 7 | 23.3 |
| Senior employees | 18 | 60.0 |
| Management | 5 | 16.67 |

Working experience

| | | |
|--------------------|----|------|
| Less than 5 years | 6 | 20.0 |
| 5 -10 years | 16 | 53.4 |
| 11 – 15 years | 4 | 13.3 |
| 16 years or longer | 4 | 13.3 |

Source: Field Survey, 2015

4.3.1 The number of building projects that your organization executes in a year

It was found as shown in Table 4.2 that only two respondents (6.67%) mentioned that VRA executes only 1 building project in a year; four (13.3%) mentioned 2 building projects in a year; three (10.0%) mentioned that 3 times in an year while as many as twenty-one (70.0%) agreed that the organization executes more than 5 building projects in a year. This finding implies that VRA is quite active when it comes to building projects and this makes this study more important since all bottlenecks in relation to pre-tendering activities that instigates cost and time overruns would be identified, analyzed and pertinent suggestions made to mitigate future challenges.

Table 4.2 The number of building projects that your organization executes in a year

| | Frequency | Percent |
|--------------|-----------|--------------|
| 1 | 2 | 6.67 |
| 2 | 4 | 13.3 |
| 3 | 3 | 10.0 |
| More than 5 | 21 | 70.0 |
| Total | 30 | 100.0 |

Source: Field Survey, 2015

4.3.2 Respondents' Satisfaction with the Current Level of Pre-Tender Time and Cost Estimate Accuracy at VRA

This study found as illustrated in Table 4.3 that most of the respondents are not satisfied with the accuracy levels of VRA's pre-tender time and cost estimates. It was specifically found that only four respondents (13.33%) were satisfied with the accuracy levels of VRA's pre-tender time and cost estimates. However, fifteen

(50.0%) were not satisfied while six (20%) were not satisfied. Five respondents (16.67%) were neutral. This finding is worrying because failing to accurately estimate the cost of a construction project as well as the inability to provide an accurate time within which building projects are likely to be completed during the pre-tender phase of the organization's procurement process. This finding implies that there are inherent issues and bottlenecks that ought to be addressed right from the onset of the building projects since failure to do so may inevitably lead to serious issues such as time and cost overruns (Abd El-Razek et al., 2008; Le Hoai et al., 2008).

Table 4.3 Respondents' Satisfaction with the Current Level of Pre-Tender Time and Cost Estimate Accuracy at VRA

| | Frequency | Percent |
|----------------|-----------|--------------|
| Satisfied | 4 | 13.33 |
| Neutral | 5 | 16.67 |
| Not satisfied | 15 | 50.00 |
| Very satisfied | 6 | 20.00 |
| Total | 30 | 100.0 |

Source: Field Survey, 2015

4.3.3 Identifying the Role of Project Procurement on the Success of VRA's building projects (completing projects on schedule, within budget and to specification)

It was found as depicted in Table 4.4 that eight (26.66%) and eleven (36.67%) respondents strongly disagreed and disagreed respectively that project procurement leads to the successful completion of VRA's building projects such as completing projects on schedule, within budget and to specification while only five (16.67%) agreed. However, six (20.00%) of the respondents were neutral. This finding was confirmed when as illustrated in Table 4.5, eight respondents (26.66%) and eleven (36.67%) respondents strongly disagreed and disagreed respectively that overall, procurement allows VRA's building projects to be completed to the satisfaction of top management while only five (16.67%) agreed. However, nine (30%) were neutral.

These findings are once again disturbing because project procurement as reported by Fleming (2003), is highly indispensable to the realization of successful building projects since this function takes into account the risks and constraints, leading to decisions about the funding mechanism and asset ownership for the project. In fact findings imply that there are issues with VRA's implementation of its project procurement activities and which therefore prevents the organization from also completing its building projects on schedule, within budget and to specification.

Table 4.4 Respondents' Satisfaction with the Current Level of Pre-Tender Time and Cost Estimate Accuracy at VRA

| | Frequency | Percent |
|--|-----------|---------|
| | 8 | 26.66 |

| | | |
|-------------------|----|-------|
| Strongly disagree | 11 | 36.67 |
| Disagree | 6 | 20.00 |
| Neutral | 5 | 16.67 |
| Agree | 30 | 100.0 |
| Total | | |

Source: Field Survey, 2015

Table 4.5 Overall, procurement allows VRA's building projects to be completed to the satisfaction of top management

| | Frequency | Percent |
|-------------------|-----------|--------------|
| Strongly disagree | 5 | 16.66 |
| Disagree | 11 | 36.67 |
| Neutral | 9 | 30.00 |
| Agree | 5 | 16.67 |
| Total | 30 | 100.0 |

Source: Field Survey, 2015

4.4 The Factors within Pre-Tender Activities that Cause Cost and Time Overruns During Project Execution at VRA

This section presented the findings in relation to the first objective of analyzing the the factors within pre-tender activities that cause cost and time overruns during project execution at VRA.

4.4.1 The reasons for carrying out pre-tender estimation activities at VRA

As shown in Table 4.6, the reasons for carrying out pre-tender estimation activities at VRA are as presented in the following order of significance: To provide financial input needed for preparing cash flow curves (RII=0.987); To provide an assessment of the capital cost for the project in question (RII= 0.940); To form the basis for planning and

control by defining the scope of work and its associated estimated costs and schedules (RII= 0.867); To ensure successful tendering process (RII= 0.867) and (5)

To forestall future challenges (RII= 0.820).

Providing financial input needed for preparing cash flow curves (RII=0.987) This study found that the single most important reason or objective of embarking upon out pre-tender estimation activities at VRA obtain financial input needed for preparing cash flow curves. This finding implies that when effectively implemented, activities during the pre-tender stage enable a firm to get a fair idea of what to expect in terms of cash flow and by so doing, using the cash flow projections to make a case for the project. In effect, pre-tender activities enable VRA to have a fair understanding of the profitability of the project and this goes a long way in getting top management support.

This findings resonates what authors such as Serpell (2005) and Mohammed et al. (2007) concluded to the effect that realizing construction success is highly dependent on the capacity to take key decisions correctly at the right time and the pre-tender phase therefore is vital in making a business case for the project through its ability to provide financial input needed for preparing cash flow curves.

Providing an assessment of the capital cost for the project in question (RII= 0.940) It was also found that the second most important objective of carrying out pre-tender activities at VRA is to obtain an assessment of the capital cost for the project in question. This finding is important because building projects involve huge capital outlays and there is therefore the need to accurately and precisely know how much it will cost right from the onset so as to avoid unforeseen events such as project abandonment due to project clients running out of financial resources.

This finding echoes what Le Hoai et al. (2008) pointed out to the effect that firms must concentrate on giving the pre-tender stage all the attention and consideration required

since the pre-tender stage of the project facilitates the estimation of the cost of the project as well as identifying the time within which the project will be completed. According to Lou and Alshawi (2009), obtaining the correct estimates serve as a basis for financial support decisions and cost control since enables firms to know exactly how much the total cost of the project will be. This finding therefore implies that pre-tender estimations of projects allows VRA to know how much the project will cost and by so doing, providing top management of the organization tools and information for making decisions such as determining the sources of funds, negotiate interest rates etc (Serpell, 2005).

Forming the basis for planning and control by defining the scope of work and its associated estimated costs and schedules (RII= 0.867)

Another important reason for carrying out pre-tender activities at VRA is because it forms the basis for planning and control since it is able to define the scope of work and its associated estimated costs and schedules. Determining the scope of a project in terms of having sufficient knowledge about the project's objectives, what needs to be done and the boundaries not to cross goes a long way in avoiding post – tender issues such as cost and time overruns (Kronbichler et al., 2009). As pointed out by Trigunarsyah (2004) for instance, several projects fail because of failure to identify the scope and this inevitably leads to poor estimation of cost and time. This finding implies that VRA embarks on pre-tender estimates so as to identify the specific scope of each project since this enables the organization plan effectively in order to have a hustle-free execution. This is because knowing the scope will avoid the challenges of underestimation and overestimation which all have their unique effects on project success (Kronbichler et al., 2009).

It must also be mentioned that the fact that ensure successful tendering process (RII= 0.867) and forestalling future challenges were the fourth and fifth most important factors suggest that the management of VRA is very much aware of the essence of carrying out pre-tender exercises and since when effectively done leads to project successes. These findings are therefore in agreement with what several authors such as Kronbichler et al., (2009), Lou and Alshawi (2009) and Serpell (2005) concluded to the effect that firms must avoid rushing into tendering and embarking on projects without covering the basics and which in this instance means performing pre-tender estimates of time and costs estimates in order to avoid delays and going out of budget.

Table 4.6 The reasons for carrying out pre-tender estimation activities at VRA

| Factors | No. of Respondents | | | | | | RII | Rank |
|--|--------------------|----|---|---|---|-------|-------|------|
| | 5 | 4 | 3 | 2 | 1 | Total | | |
| To provide financial input needed for preparing cash flow curves | 28 | 2 | 0 | 0 | 0 | 30 | 0.987 | 1st |
| To provide an assessment of the capital cost for the project in question | 24 | 3 | 3 | 0 | 0 | 30 | 0.940 | 2nd |
| To form the basis for planning and control by defining the scope of work and its associated estimated costs and schedules | 15 | 10 | 5 | 0 | 0 | 30 | 0.867 | 3rd |
| To ensure successful tendering process | 15 | 10 | 5 | 0 | 0 | 30 | 0.867 | 4th |
| To forestall future challenges | 15 | 8 | 2 | 5 | 0 | 30 | 0.820 | 5th |
| To provide details of the basic needs for schedule preparation, including labour, material and construction equipment required | 6 | 16 | 4 | 2 | 2 | 30 | 0.747 | 6th |
| Serves as a catalyst for discussion, idea generation, teaming participation, clarity and buy-in | 10 | 10 | 4 | 3 | 3 | 30 | 0.740 | 7th |

Source: Field Survey, 2015

4.4.2 The Factors within Pre-Tender Activities that Cause Cost And Time

Overruns During Project Execution at VRA

As shown in Table 4.7, the factors within pre-tender activities that cause cost and time overruns during project execution at VRA are as presented in the following order of significance: (1) Lack of detailed designs at the time of tender (RII=0.947); (2) Poorly drafted specifications (RII= 0.940); (3) Poorly defined project scope (RII= 0.927); (4) Poor risk identification and mitigation at pre-tender stage (RII= 0.867) and (5)

Insufficient time to prepare detailed designs (RII= 0.867).

Lack of detailed designs at the time of tender (RII=0.947)

Designs and drawings forms fundamental aspects of building projects since they in effect determine the cost and time required to complete (Elhag et al. 2005). This finding suggest that having the designs and drawing right and also technical issues identified and addressed is the single most important factor within pre-tender activities that cause cost and time overruns during project execution at VRA (Table 4.7).

Again, this finding implies that various stakeholders of the organization are not able to agree on the designs of buildings projects and that the designs keeps changing and this unfortunately engenders delays and cost overruns since changes are continuously made and a final agreement never made on time. This finding actually resonates with what Mbachu (2011) opined to the effect that the inability to provide the details of the designs at the tender phase lead to overestimation or underestimation of both costs and schedules and therefore affecting the eventual execution of projects to the satisfaction of stakeholders. This finding again confirms what Cong et al. (2014) concluded to the effect that the lack of detailed designs at the time of tender leads to cost and time overruns.

Poorly drafted specifications (RII= 0.940)

As can be seen in Table 4.7, the second most significant factor within pre-tender activities that cause cost and time overruns during project execution at VRA was found to be poorly drafted specifications or low quality items. This finding implies that poorly drafted specifications such as low quality products and items and not obtaining the required items during the pre-tender stage are a challenge that the organization finds it difficult to address and overcome. What makes this finding worrying is that failing to draft good specifications may lead to the provision of shoddy products that may eventually have a toll on the cost and schedule of the project since the to and fro movement is a waste of time and resources (Elhag et al. 2005).

Poorly defined project scope (RII= 0.927)

The third significant factor within pre-tender activities that cause cost and time overruns during project execution at VRA was found to be failure to accurately define the scope of projects. This study further found as shown in Table 4.7 that the organization sometimes fail to define the scope of projects and this inevitably leads to issues of ambiguities, confusions, misunderstandings, unnecessary bickering and therefore causing delays and making the execution of projects highly costly. This study confirms what Marjuki (2006) concluded to the effect that project organizations should appropriately define the scope of the project and should no doubt in the minds of all stakeholders about what project covers and what it does not since failure to do this can spell disaster in terms of delays and cost overruns.

Poor risk identification and mitigation at pre-tender stage (RII= 0.867)

Failing to identify risk and mitigate their impact at the pre-tender stage was found to be another major factor (Table 4.7). All projects contain elements of risks and these risks

ought to be identified early in order to mitigate their effects (Chapman et al. 2003). According to the author, risk management in addition to managing perceived risk to facilitate project success also endeavours to identify weaknesses in techniques used in projects through a standardized manner so as to facilitates timely mitigation steps such as avoiding these risks, transferring these risks, reducing the probability of these risks or reducing the anticipated and unanticipated effects of these risks.

According to Keil et al. (1998), it is incumbent of organizations to identify key risks such as the lack of top management commitment to the project; inability to obtain the commitment of users; a lack of understanding of the requirements of the project; in adequate involvement of users and inability to manage the expectations of end users. This finding therefore implies that even though risk identification is highly critical during the pre-tendering stage, VRA finds it difficult to perform this task and therefore meaning the organization is often unable to identify those risk factors that impede project success and other issues such as delays and costs overruns (Elhag et al. 2005).

Insufficient time to prepare detailed designs (RII= 0.867)

The fifth most important factor within pre-tender activities that cause cost and time overruns during project execution at VRA was found to be insufficient time to prepare detailed designs (Table 4.7). This finding implies that designs are haphazardly and chaotically done and this unfortunately leads to errors, carelessness and recklessness during project execution where all these errors manifest and which leads to time and cost overruns when attempt is made to rectify them at a later stage (Kaming et al. 1997).

Table 4.7 The factors within pre-tender activities that cause cost and time overruns during project execution at VRA

| Factors | No. of Respondents | | | | | | | Rank |
|---------|--------------------|---|---|---|---|-------|-----|------|
| | 5 | 4 | 3 | 2 | 1 | Total | RII | |

| | | | | | | | | |
|--|----|----|----|---|---|----|-------|-------------|
| Lack of detailed designs at the time of tender | 23 | 6 | 1 | 0 | 0 | 30 | 0.947 | 1st |
| Poorly drafted specifications | 21 | 9 | 0 | 0 | 0 | 30 | 0.940 | 2nd |
| Poorly defined project scope | 20 | 9 | 1 | 0 | 0 | 30 | 0.927 | 3rd |
| Poor risk identification and mitigation at pretender stage | 19 | 8 | 3 | 0 | 0 | 30 | 0.867 | 4th |
| Insufficient time to prepare detailed designs | 8 | 18 | 2 | 2 | 0 | 30 | 0.867 | 5th |
| Inadequate employees with requisite knowledge and experience with procurement rules and procedures | 6 | 16 | 4 | 2 | 2 | 30 | 0.747 | 6th |
| Unavailability of qualified and skillful Estimators/Quantity Surveyor | 4 | 14 | 8 | 3 | 1 | 30 | 0.713 | 7th |
| Errors in estimating project cost | 4 | 15 | 6 | 2 | 3 | 30 | 0.700 | 8th |
| Lack of project site visit by design team prior to and during designing | 1 | 15 | 10 | 2 | 2 | 30 | 0.687 | 9th |
| Poor quality of assumptions from which the estimate are prepared | 0 | 15 | 13 | 0 | 2 | 30 | 0.673 | 10th |
| Poor communication and co-ordination among design team members | 4 | 10 | 10 | 3 | 3 | 30 | 0.660 | 11th |
| Poorly drafted Tender instructions and Contract conditions | 0 | 10 | 16 | 4 | 0 | 30 | 0.640 | 12th |
| Insufficient time in preparing detailed bills of quantities | 0 | 12 | 12 | 4 | 2 | 30 | 0.627 | 13th |
| Outmoded estimating techniques employed | 0 | 8 | 10 | 6 | 6 | 30 | 0.533 | 14th |
| Slow and bureaucratic tendering processes | 0 | 7 | 9 | 8 | 6 | 30 | 0.513 | 15th |

Source: Field Survey, 2015

4.5 Strategies of Mitigating Time and Cost Overruns during Project Execution

Having identified the the factors within pre-tender activities that cause cost and time overruns during project execution at VRA in the previous section (section 4.4.2), this section analyzed the findings in relation to the third objective of determining the strategies that can mitigate time and costs overruns during project executions at VRA.

As shown in Table 4.7, the factors within pre-tender activities that cause cost and time overruns during project execution at VRA are as presented in the following order of significance: (1) closer and improved co-ordination between Engineering Services Department and client departments (RII=0.967); (2) Obtaining sufficient information about projects (RII= 0.960); (3) Co-ordination between project team members at design stage (RII= 0.933); (4) Effective risk identification and allocation at pre-tender stage (RII= 0.927); (5) Top management support (RII= 0.867) and (6) Training of procurement staff(RII= 0.867).

Closer and improved co-ordination between Engineering Services Department and client departments (RII=0.967)

It was found as illustrated in Table 4.8 that forging closer and improved co-ordination between Engineering Services Department and client departments is the most significant suggestion that most of the respondents believe when implemented will mitigate the effects of time and cost and overruns during the execution of building projects at VRA. This finding underscores the apparent lack of coordination, cooperation and teamwork among the various departments at VRA and therefore leading to administrative bottlenecks such as insufficient detailed designs at the time of tender, poorly drafted specifications, poorly defined project scope, poor risk identification and mitigation at pre-tender stage and insufficient time to prepare detailed designs (see section 4.4.2).

This suggestion echoes what Cong et al. (2014) pointed to the effect that project organizations must focus on interdepartmental coordination, cooperation and teamwork since this will facilitated faster flow of information, sharing of ideas, identifying potential risks right at the incipient stage and all measures taken to counter these risks

issues and ultimately, leading to the minimization of costs overruns and executing projects within schedules.

Obtaining sufficient information about projects (RII= 0.960)

The second highly ranked suggestion or strategy recommended by the respondents is prevailing on all departments to disseminate sufficient and accurate information as much as possible about project scope, designs and specifications to all stakeholders early. As pointed out by authors (e.g. Adetola, 2000; Lou and Alshawi, 2009), quality, accurate and sufficient information sharing and flow is crucial to project success and this is even more significant during the pre-tender stage where this information is needed to for early estimates about costs and time. This suggestion also confirms the need for project teams to obtain and gather as much information as possible about the proposed contract and site. According to Lou and Alshawi (2009), typically, the contract documentation and tender drawings and specifications and designs will provide a valuable and helpful starting point but most Estimators will need to visit the proposed site to get a “feel” for the contract and the environment in which the work will take place.

Co-ordination between project team members at design stage (RII= 0.933)

The third most significant suggestion proffered by the respondents has to do with the insistence of better coordination among project team members during the design stage (Table 4.8). What makes this suggestion crucial and valuable is the fact that the design stage is a highly technical and complex one and it requires the expertise, experience and adequate knowledge of project managers and members. As pointed out by Lou and Alshawi (2009), the design stage is so critical that all resources, time and personnel should be channeled to this activity since getting it right from the beginning

significantly reduces future challenges with costs and schedules. This finding therefore points to a fundamental issue of non-coordination during the design stage at VRA and no wonder projects were generally found to be completed above budget and beyond agreed completion date.

Effective risk identification and allocation at pre-tender stage (RII= 0.927) Effective risk identification and allocation at pre-tender stage was another suggestion that the respondents believed when implemented will facilitate that most of the respondents believe when implemented will mitigate the effects of time and cost overruns during the execution of building projects at VRA. This suggestion is in consonance with what Elhag et al. (2005) pointed out to the effect that project organizations should take the time to identify all potential risks and bottlenecks and take effective measures that will mitigate these risks before actual project execution.

Top management support (RII= 0.867)

Gaining top management support was another recommendation provided by the respondents (Table 4.8). This suggestion accentuates the role that top management support and commitment plays in project success. This is because top management's support in terms of making resources (e.g. money, employees, equipment etc) available goes a long way in ensuring that projects are completed within schedule and within budget (Odusami and Onukwube, 2008).

Training of procurement staff (RII= 0.867)

Another equally significant strategy recommended by the respondents is the need to train employees on procurement issues. This finding is very crucial because training procurement staff would enable them to appreciate the strategic role that they play in the success of projects. More importantly, training will equip procurement staff and

other equally important stakeholders such as Quantity surveyors and Estimators with the right skills to facilitate accurate estimates, detailed specifications, elimination of elementary errors and by so doing, curbing the incidence of costs and time overruns.

Table 4.8 Strategies of Mitigating the Associated Time and Cost Overruns during Project Execution

| | No. of Respondents | | | | | | | |
|---|--------------------|----|----|---|---|-------|-------|------------------|
| Factors | 5 | 4 | 3 | 2 | 1 | Total | RII | Rank |
| | | | | | | | | |
| closer and improved co-ordination between Engineering Services Department and client departments | 25 | 5 | 0 | 0 | 0 | 30 | 0.967 | 1st |
| Obtaining sufficient information about projects | 24 | 6 | 0 | 0 | 0 | 30 | 0.960 | 2nd |
| Co-ordination between project team members at design stage | 21 | 8 | 1 | 0 | 0 | 30 | 0.933 | 3rd |
| Effective risk identification and allocation at pre-tender stage | 20 | 9 | 1 | 0 | 0 | 30 | 0.927 | 4th |
| Top management support | 19 | 8 | 3 | 0 | 0 | 30 | 0.867 | 5th |
| Training of procurement staff | 19 | 8 | 3 | 0 | 0 | 30 | 0.867 | 5th |
| Taking time to do proper and effective estimations | 10 | 18 | 1 | 1 | 0 | 30 | 0.847 | 6th |
| Peer review of designs and tender documents prior to advertising for bids | 10 | 14 | 4 | 2 | 0 | 30 | 0.813 | 7th |
| Cutting bureaucracy (simplifying procurement procedures) | 6 | 16 | 4 | 2 | 2 | 30 | 0.747 | 8th |
| Using modern and current estimation techniques | 10 | 10 | 4 | 3 | 3 | 30 | 0.740 | 9th |
| Ensuring Tender documents are will drafted and well packaged to meet the specific project objective | 4 | 15 | 6 | 2 | 3 | 30 | 0.700 | 10 th |
| Making designs and specifications simple | 7 | 8 | 6 | 5 | 4 | 30 | 0.693 | 11th |
| Ensuring the availability and supplies of labour and materials | 1 | 15 | 10 | 2 | 2 | 30 | 0.687 | 12 th |

| | | | | | | | | |
|---|---|---|---|---|---|----|-------|------|
| Hiring consultants with the requisite experience and knowledge about procurement laws and practices | 6 | 8 | 8 | 4 | 4 | 30 | 0.653 | 13th |
|---|---|---|---|---|---|----|-------|------|

Source: Field Survey, 2015

CHAPTER FIVE

SUMMARY, CONCLUSIONS AND RECOMMENDATIONS

5.1 Introduction

This chapter presents the summary of the entire study, makes conclusions and proffer suggestions that will ensure a more effective pre-tender process at VRA.

5.2 Summary of the Study

The summary of the study is as follows:

The Factors within Pre-Tender Activities that Cause Cost and Time Overruns During Project Execution at VRA

In relation to the first objective of the study, it was found that the five most significant factors within pre-tender activities that cause cost and time overruns during project execution at VRA are:

1. Lack of detailed designs at the time of tender (RII=0.947)
2. Poorly drafted specifications (RII= 0.940)
3. Poorly defined project scope (RII= 0.927)
4. Poor risk identification and mitigation at pre-tender stage (RII= 0.867) and
5. Insufficient time to prepare detailed designs (RII= 0.867).

Strategies of Mitigating Time and Cost Overruns during Project Execution The strategies that can mitigate time and costs overruns during project executions at VRA as per the recommendations of the respondents are:

1. Forging closer and improved co-ordination between Engineering Services

Department and client departments (RII=0.967)

2. Obtaining sufficient information about projects (RII= 0.960)
3. Co-ordination between project team members at design stage (RII= 0.933)
4. Effective risk identification and allocation at pre-tender stage (RII= 0.927)
5. Top management support (RII= 0.867) and
6. Training of procurement staff (RII= 0.867).

5.3 Conclusion of the Study

The procurement function when effectively employed may forestall major challenges during project execution stage such as time and cost overruns which affects the project owners, contractors and other project participant. Project owners may be affected through lost benefits that could have accrued from the completed facility, while contractors may have to spend more on labour and plant, pay penalties as per the contract or even lose other profitable contracts because resources for the next job are tied up on delayed projects. This means that covering the basics right from the onset of the project is vital to sources. This study's objective of identifying the factors within pre-tender activities that cause cost and time overruns during project execution at VRA has shown that there are several factors inherent in the procurement system of organizations that must be identified and addressed by VRA if projects are to be completed on time, within budget and to specification. Based on the findings of this study, the conclusion drawn is that the pre-tender stage of the procurement process is highly significant in the realization of overall project objectives and that firms including VRA must give this area of the procurement phase all the attention it deserves.

5.4 Recommendations of the Study

In addition to the strategies proffered by the respondents, the following recommendations are also added:

It is recommended that to minimize delays and costs overruns, it is vital that VRA strengthen its internal controls to its pre-tender exercise because this is crucial for accuracy in the estimation process. It is also recommended that where it finds it difficult to manage internally, VRA should outsource services to facilitate the preparation of detailed technical designs, preparing the scope of projects or terms of reference to ensure that time is not wasted on ambiguous scopes and designs. Moreover, this study recommends that for each project, an evaluation and assessment team with the requisite technical skills should be identified, selected and approved early and should be available to commence the evaluation procedure on time to avoid delays and costs overruns.

With respect to the issue of insufficient availability of information and poorly designed specifications, this study recommends that VRA should pay close attention to the cost estimating procedure by employing the services of experience and skilled professionals to carry out consultancy services that cannot be undertaken from within. This will ensure a more accurate costs and time estimates of projects. Similar, VRA should where necessary, employ the services of specialists and experts needed for a specific project, at the conception stage to advice on all specialist works or construction projects. This is important if feasible estimates are to be realized. Moreover, it is pertinent that VRA, consultants and contractors should update themselves with information currently available on the market such as getting cost information from manufacturers and suppliers of building materials, components and systems. Additionally, VRA should create a cost information data base that must be regularly updated since this will improve the accuracy and reliability of costs estimates for future projects.

Other recommendations proffered include:

1. There should be an unambiguous and clear identification of the requirements of the building project right at the beginning and in fact before the commencement of the estimate. Again, VRA should be careful in changing the scope of work as minimum as possible;
2. VRA should prepare cost and time estimates based on a complete set of drawings and specifications as much as possible;
3. Top management and experts should efficiently and effectively manage the design process to give the best information possible to the client for effective decision making;
4. VRA should carefully review and assess drawings, specifications and construction sequences and durations to determine total construction cost. Again, doing site visitations is highly recommended to enable the cost engineers to relate the physical characteristics of the project to the available design parameters and designs. This is highly suggested for projects that have unusual site conditions, major maintenance and repair projects;
5. That there is the need to conduct training courses, seminars and workshops in estimating methods, estimating process and computer applications in estimating. These seminars, trainings and workshops would enhance local practice in cost estimating and also increase the capabilities of estimators in using state-of-the-art estimating software packages.

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APPENDIX “A” RESEARCH QUESTIONNAIRE

Dear Sir/Madam,

Your kind co-operation is sought for the completion of this questionnaire, which is a survey being conducted to collect data for an academic exercise towards the award of master degree from the above mentioned University. Your willingness to complete the questionnaire will be much appreciated. All information will be treated as strictly confidential.

Please tick where applicable in the box/space provided below:

a. Junior employee ☐ b. Senior Employee ☐

c. Management ☐

f. Other departments (Please specify):

which you agree with the following statements

- (THE ROLE OF THE PROCUREMENT FUNCTION IN THE SUCCESS OF BUILDING CONSTRUCTION PROJECTS AT VRA)**

which you agree with the following statements

which you agree with the following statements

- which you agree with the following statements

which you agree with the following statements

- which you agree with the following statements

which you agree with the following statements

- which you agree with the following statements

which you agree with the following statements

- which you agree with the following statements

8. Overall, procurement allows VRA's building projects to be completed to the satisfaction of top management a. Strongly disagree

b. Disagree

c. Neutral

e. Strongly agree

SECTION III (THE FACTORS WITHIN PRE-TENDER ACTIVITIES THAT CAUSE COST AND TIME OVERRUNS DURING PROJECT EXECUTION AT VRA)

9. To what extent do you agree with the following statements as being the reasons for carrying out pre-tender estimation activities at VRA? (Where 1= Strong disagree; 2=disagree; 3=neutral; 4=agree and 5=strongly agree)

| S/N | Variables | 1 | 2 | 3 | 4 | 5 |
|------|--|---|---|---|---|---|
| i. | To provide an assessment of the capital cost for the project in question | | | | | |
| ii. | To form the basis for planning and control by defining the scope of work and its associated estimated costs and schedules | | | | | |
| iii. | To provide details of the basic needs for schedule preparation, including labour, material and construction equipment required | | | | | |
| iv. | To provide financial input needed for preparing cash flow curves | | | | | |
| v. | Serves as a catalyst for discussion, idea generation, teaming participation, clarity and buy-in | | | | | |
| vi. | To ensure successful tendering process | | | | | |
| vii. | To forestall future challenges | | | | | |

10. To what extent do you agree with the following statements as being the factors within pre-tender activities that cause cost and time overruns during project execution at VRA? (Where 1= Strong disagree; 2=disagree; 3=neutral; 4=agree and 5=strongly agree)

| S/N | Variables | 1 | 2 | 3 | 4 | 5 |
|--------|--|---|---|---|---|---|
| viii. | Lack of Detailed designs at the time of tender | | | | | |
| ix. | Poorly drafted Specifications | | | | | |
| x. | Slow and bureaucratic tendering processes | | | | | |
| xi. | Unavailability of qualified and skillful Estimators/Quantity Surveyor | | | | | |
| xii. | Errors in estimating project cost | | | | | |
| xiii. | Poorly Defined Project Scope | | | | | |
| xiv. | Lack of project site visit by design team prior to and during designing | | | | | |
| xv. | Poor communication and co-ordination among design team members | | | | | |
| xvi. | Poor risk identification and mitigation at pre-tender stage | | | | | |
| xvii. | Insufficient time to prepare detailed designs | | | | | |
| xviii. | Insufficient time in preparing detailed bills of quantities | | | | | |
| xix. | Poorly drafted Tender instructions and Contract conditions | | | | | |
| xx. | Poor quality of assumptions from which the estimate are prepared | | | | | |
| xxi. | Outmoded estimating techniques employed | | | | | |
| xxii. | Inadequate employees with requisite knowledge and experience with procurement rules and procedures | | | | | |

SECTION IV (STRATEGIES OF MITIGATING THE ASSOCIATED TIME AND COST OVERRUNS DURING PROJECT EXECUTION)

11. To what extent do you agree with the following statements as being the strategies that can mitigate time and cost overruns during project execution at VRA? (Where 1= Strong disagree; 2=disagree; 3=neutral; 4=agree and 5=strongly agree)

| S/N | Variables | 1 | 2 | 3 | 4 | 5 |
|-------|---|---|---|---|---|---|
| i. | Top management support | | | | | |
| ii. | Training of procurement staff | | | | | |
| iii. | Taking time to do proper and effective estimations | | | | | |
| iv. | Peer review of designs and tender documents prior to advertising for bids | | | | | |
| v. | Cutting bureaucracy (simplifying procurement procedures) | | | | | |
| vi. | Obtaining sufficient information about projects | | | | | |
| vii. | Using modern and current estimation techniques | | | | | |
| viii. | Making designs and specifications simple | | | | | |
| ix. | Ensuring the availability and supplies of labour and materials | | | | | |
| x. | Hiring consultants with the requisite experience and knowledge about procurement laws and practices | | | | | |
| xi. | Closer and improved co-ordination between Engineering Services Department and Client Departments | | | | | |
| xii. | Co-ordination between project team members at design stage | | | | | |
| xiii. | Effective risk identification and allocation at pre-tender stage | | | | | |
| xiv. | Ensuring Tender documents are well drafted and well packaged to meet the specific project objective | | | | | |

THANK YOU FOR YOUR COOPERATION