

**COST IMPLICATIONS OF DELAYS OF PUBLIC CONSTRUCTION
PROJECTS: A CASE OF MOROGORO MUNICIPALITY**

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ABSTRACT

Construction projects are series of projects related to the construction field that have limited time dimension with specific allocation of resources, in order to realize an idea and a particular purpose, after the idea but in Tanzania most of projects has cost implications due to late completion of the projects and execution. In particular, time and cost increases in large public construction projects seem to be a global phenomenon. Similarly, after the decision to implement a project, it is important that the project organization and project management are strictly set up operate in ways to minimize cost implications. Project delaying has effects on, variation of projects costs, change of allocation of fund, change of contract sum, change of work schedule and price inflation, which has cost implication leading to late completion of projects, increase cost of project and loss of profit for contractor, consultant and client. This study observed that inadequate supply of material, and contractor financial difficulties were the main causes of delays, in construction projects, categorized into three kinds of projects that are small projects, medium projects and large projects. These projects are determined through the cost of the project and time of the project. It should also be noted that each project may have unique requirements for this and that in such circumstances, project managers and developers should attempt to develop suitable monitoring and evaluation mechanisms. Bureaucracy and formalities should be reduced in client organizations in order to speed up the slow decision making process. Claims should be settled quickly so that they do not become a source of delays. Public institution should look forward the condition, which allows penalties to consultant in order to minimize unnecessary cost implication in public construction projects caused by consultant, while to contractor must avoid delays in order to minimize cost implication caused by liquidity damage.

DECLARATION

I, WALTER AWARD SANGA, do hereby declare to the senate of Sokoine University of Agriculture that, this dissertation paper is my own original work done within the period of registration and that it has neither been submitted nor concurrently being submitted in any other institution.

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LIST OF ABBREVIATIONS

AQRB	Architects and Quantity Surveyors Registration Board
CA	Content Analysis
CPM	Critical Path Method
CRB	Contractors Registration Board
ERB	Engineers Registration Board
M&E	Monitoring and Evaluation
MAPME	Masters of Art in Project Management and Evaluation
MMC	Morogoro Municipal Council
PME	Project Management and Evaluation
SMC	Solomon Mahlangu Campus
SUA	Sokoine University of Agriculture
UNDP	United Nations Development Programme
URT	United Republic of Tanzania
TZS	Tanzania Shillings

CHAPTER ONE

1.0 INTRODUCTION

1.1 Background Information

The construction industry is a field characterized with complexities and technological advancements. The industry requires huge amounts of capital (Mok, 2015). In Tanzania the industry is one of the sectors that contributes to the country's economic growth. Due to the nature of the industry and its complexity, construction projects are susceptible to delays. These delays also differ from one project to another and from one country to another (Pinto *et al.*, 2011).

Delay in a construction project can be defined as time overrun or extension of time to complete the project (Hamzah *et al.*, 2011). There are three parties that may be involved in delays; these are consultant, client and contractor (Doloi, 2012). In construction projects there are circumstance that can cause delay in completion of the projects. Examples are bad weather, delay in delivery of specialized materials, changes in project design, untimely issuing of site instruction, delays in payment of certificates and lower number of workforce on site (Meng, 2012).

Many construction clients are 'occasional' developers, and so need considerable assistance from competent professionals to enable them to formulate a comprehensive brief of project needs, and to become aware of their statutory and contractual duties. Other results Hongtao, (2014) found that problems often arise where clients do not have a clear vision of what they need and want. The standard practices usually allow some percentage of the project cost as a contingency allowance in the contract price and this allowance is usually based on judgment. Although the contract parties agreed upon the extra time and cost associated with the delay, in many cases there are problems between

the owner and contractor as to whether the contractor was entitled to claim the extra costs (Sambasivan, 2007). Project cost overruns and schedule delays are a widespread challenge affecting infrastructure procurement world over across time, project size and type (Flyvbjerg *et al.*, 2003). In their extensive study on project cost overruns and schedule delay Flyvbjerg *et al.* (2003) have indicated over the course of 70 years that the study considered, the incidence of cost escalation had not declined and concluded that it appears no learning seemed to have taken place. Similarly, Ahiaga *et al.* (2015) found that in spite of the vast attention given to cost overruns and project time delay in literature and practice, not much progress appears to have been made in terms of the reliability of initial project cost estimate and predictability of final actual cost over the years.

Other results Flyvbjerg *et al.* (2003), indicated that infrastructure projects are globally estimated to have 86% probability of experiencing cost escalation with average cost overrun of 45% for rail projects, 34% for bridge projects and 20% for road projects. Similarly, (Love *et al.* 2012; Odeck , 2004) found that cost and time overruns could sometimes average 70% and 183% over the initial stipulated estimate respectively.

The high incidence and magnitude of project cost overruns and schedule delays in Sub-Saharan Africa remain unabated and only further complicates the poor infrastructural situation of the region Flyvbjerg *et.al*, (2003). A study on Nigeria transport infrastructure project reported project overrun of averaging 14% cost escalation and time schedule delay of 188% Omoregie and Radford (2006). Likewise, in Ghana, 75% of ground water drilling projects was been reported to exceed budgeted cost and time (Frimpong *et al.*, 2003). In Kenya, a report on range of projects under the Constituency Development Fund indicated a 48% cost overrun and 87% time overrun Ngacho and Das (2013).

It is important that project owners keep track of project progress to reduce the possibility of delay occurrence or identify it at early stages (Saleh, 2009). In particular, time and cost increases in large public construction projects seem to be a global phenomenon. Similarly, after the decision to implement a project, it is important that the project organization and project management are strictly set up and operate in ways to minimize risk of cost estimate. However not all kinds of delays can warrant a contractor to be given time extension.

Other results Li *et al.* (2010) found that the effects as additional costs, decline in quality and rework, loss of productivity, late completion of the project, increased time related costs, third party claims, and termination of contract. Completing projects on time is an indicator of efficiency, but the construction process is subject to many variables and unpredictable factors, which result from many sources. These sources include the performance of parties, resources availability, environmental conditions, involvement of other parties, and contractual relations. However, it rarely happens that a project is completed within the specified time. The construction process is usually divided into 3 distinct phases: planning, design and construction (Baldwin *et al.*, 1971). In this last phase, where many unpredictable factors are involved, which usually occur most delays. Delay as referred in construction is prolonged construction period and disruptions are events that disturb the construction programme. Delays and disruptions are among the challenges faced in the course of executing construction projects. Delays as well as disruptions are sources of potential risks that current studies are looking into ways to manage. Various studies (Cohen and Palmer, 2004; Baloi and Price, 2003; Finnerty, 1996; Miller and Lessard, 2001) have identified sources of and types of construction risks that need to be managed as part of project management process. There are also risks and factors (Zou, Zhang and Wang, 2006; Aiyetan, Smallwood and Shakantu; 2008) that

affect construction project delivery time which are also causes of delays. Causes of delays have been identified in various parts of the world such as Malaysia, Saudi Arabia, Jordan, Kuwait, Hong Kong and Thailand (Sambasivan and Soon, 2007; Al-Kharashi and Skitmore, 2008; Al-Momani, 2000; Kumaraswamy and Chan, 1998; Noulmanee, Wachirathamrojn, Tantichattanont and Sittivijan, 1999). The results reveal that there are differences and similarities as to the causes of delays. Delays and disruptions have had effects to construction projects. Some of these effects are (Aibinu and Jagboro, 2002; Sambasivan and Soon, 2007): time overrun, cost overrun, dispute, arbitration, total abandonment and litigation. The purpose of this study is to identify causes and effects of delays in Tanzanian construction sector.

Time performance is one of the basic parameters for evaluating the success of a construction project and must always be one of the main concerns in project management. It is considered that a project is successful if it fulfills the requirements of three major indicators: time, cost and quality. Rwelamila and Hall (1995) found that the timely completion of a project was frequently seen as one of the major parameters for evaluating project success. Hence, construction projects experience several constraints such as material, organizational, professional and work package constraints (Edum *et al.*, 2008).

Other results Kikwasi (2012) found that the causes of delay and disruptions in construction projects in Tanzania, through questionnaire found that according to the client, consultants and contractors only 22%, 30% and 44% construction completed on estimated time respectively. Also results showed that the maximum amount of time overrun was 78%, 70% and 56% for clients, consultants and contractors respectively. Since Morogoro Municipal as delayed projects in construction through this enable to

investigate in cost implications caused by delays in construction projects.

1.2 Problem Statement

The success of a construction project is critically affected by the capacity of the implementing firms, design variations, nature of the contract and stability of the economic environment. However, there seems to be no agreement among scholars and practitioners as to the nature of the causes of delays in construction projects. There also seems to be lack of consensus as to the principal causes of delays in public construction projects. For instance, Aibinu *et al.*, (2002) found that the main cause of delay is poor planning. Other results Frimpong (2003) have indicated that poor risk management is to blame. Unfortunately, delays in large construction projects particularly buildings, will continue to plague the construction industry in the foreseeable future unless strategic measures are taken by the industry. The government may lack sufficient mitigating measures to address the problem. Although much has been done in identifying the factors that influence projects delay in large construction projects in Morogoro Municipal, the industry still experiences delays. This is attributed to the fact that there is still lack of information for the effective mitigation of delay. This study therefore seeks to contribute to these attempts by others in identifying further the causes of delay and cost implications in large construction projects in Morogoro Municipality and then come up with strategies to mitigate such delays and minimize cost implications.

Construction industry has been characterized by costs exceeding budgetary limits and completion time reaching further than what set out initially. This has been particularly noticeable for large public construction projects where overruns costs and time delays have long been regarded a common occurrence. The increase in project delays in the construction industry is hurting the economy because it results in wastage of resources,

enhanced costs of projects and frustration among Customers, yet construction are one of the principal sectors that can revitalize economic growth in Morogoro Municipal. This study will seek to contribute to these attempts in identifying cost implication caused by delays, which will affect the stakeholder of the projects.

1.3 Justification of the Study

This research seeks to make a contribution towards finding solutions for reducing construction cost implications caused by delays of the construction project. It is hoped that project managers, consultants, contractors and students of engineering and construction management in solving problems causing delays in execution of construction projects will use the findings of this research. The study sought to highlight the important factors accounting for the delays in large construction projects, in this way findings will contribute to the universe of knowledge regarding the initiation, planning, execution and termination of construction. This knowledge is important especially to the construction industry, which is constantly looking for better ways to complete projects on time, within costs and agreed- upon performance parameters. An understanding of the key causes of delays will play an important role in the ways large projects are conceptualized, planned and executed.

This study will also be important to the government in formulation of construction industry policies and the way these policies are implemented, also intends to spawn practical and theoretical further research questions that can become useful study basis for future researchers. Study findings should be considered as a contribution in the debate about how to improve the efficiency and effectiveness in the construction industry particularly with regard to scheduling and cost management.

1.4 Main Objective

To evaluate the cost implication of delays of public construction projects

1.5 Specific Objectives

- i. Evaluate main causes of delays in execution of public construction projects
- ii. Identify cost implication of delays in execution of public construction projects
- iii. To assess the severity of the cost implication of public construction project delays from the client, consultant and contractor's perspective
- iv. Assess the role of Monitoring and evaluation and its effectiveness in minimizing delays in execution of public construction projects

1.6 Research Questions

- i. What are the main causes of delays in execution of public construction projects?
- ii. What are the cost implications of delays in execution of public construction projects?
- iii. What are severities of the cost implication of public construction project delays from the client, consultant and contractor's perspective?
- iv. What are the role of Monitoring and evaluation and its effectiveness in minimizing delays in execution of public construction projects?

CHAPTER TWO

2.0 LITERATURE REVIEW

2.1 Conceptualization of Key Terms

Delay: Akinsiku and Akinsulire (2012) define delay as a persistent phenomenon of not delivering construction project within the specified product duration. In this study delay means the rate completion of the construction project. Delays in construction, the word “delay” refers to something happening at a later time than planned, expected, specified in a contract or beyond the date that the parties agreed upon for the delivery of a project (Pickavance, 2005). Lo, Fung and Tung (2006) define delay as the slowing down of work without stopping construction entirely and that can lead to time overrun either beyond the contract date or beyond the date that the parties have agreed upon for the delivery of the project. Syed *et al*, (2002) classify delays into non-excusable delays, excusable non compensable delays, excusable compensable delays and concurrent delays. Non-excusable delays are delays, which the contractor either causes or assumes the risk for. Excusable non-compensable delays are delays caused by factors that are not foreseeable, beyond the contractor’s reasonable control and not attributable to the contractor’s fault or negligence. Compensable excusable delays these are compensable delays are excusable delays, suspensions, or interruptions to all or part of the work caused by an act or failure to act by the owner resulting from owner’s breach of an obligation, stated or implied, in the contract. Concurrent delays occur when both owner and the contractor are responsible for the delay

2.1.1 Construction delays

Other results Assaf *et al*. (2008) defined delay of construction project as the time overrun compared to completion date as specified in a contract, or beyond the date that the parties

agreed upon for delivery of a construction project. Majid and McCraft (2009) defines delays in construction projects as the time overrun beyond the contract date or the date that the critical activities have been delayed.

2.1.2 Contract delays

Other results Akinsiku and Akinsulire (2012) define contract delays as delays that are caused by inability of a contractor to proceed with the project diligently or efficiently due to reasons such as lack of or as a result of inadequate resources needed to perform work on a project.

2.1.3 Construction project

Mulyani (2006) found that construction projects are series of projects related to the construction field that have limited time dimension with specific allocation of resources, in order to realize an idea and a particular purpose, after the idea.

2.1.4 Contractor

CRB (2018) Any person who for reward or other valuable consideration undertakes to carry out and complete any construction work for another person, of any structure situated below, on or above the ground or water bodies or other work connected therewith, where such person undertakes to do any such works: Himself supplies the material necessary for the work or is authorized to exercise control over the type, quality or the use of material supplied by any other person.

Contractors Registration Act 1997 and Contractors Registration Amendment Act No. 15 of 2008 provide that there are five types of contractors recognized in Tanzania: building contractors, civil works contractors, mechanical contractors, electrical contractors and

specialist contractors. The CRB, in its policies, laws and regulations, differentiates between two categories of contractors: the local contractor and the foreign contractor.

2.1.5 Subcontractor

A subcontractor is a type of contractor, who works on a contractual basis, and they also offer a particular set of skills, which they perform for customers. There are categories, in

- i. Nominated subcontractor's- enter into the agreement with clients and work under main contractor, who later claims for attendance to the subcontractors
- ii. Domestic subcontractor-enter into agreement with main contractor, not with client/customer.

Subcontractors often specialize in one specific area of construction and try to network with contractors who negotiate for larger jobs that include this area of specialty.

2.1.6 Consultant

Consultant an independent person, or organization, that will provide a specialized service or expertise regarding a specific issue on a project, consultant will normally be responsible for design and supervision of contractors during project execution. Normally a consultant is paid on an hourly basis and is exempt from all the insurances and liabilities of working as an employee.

It can be plugged into situations that are specifically suited to that consultant's expertise. When employing consultants to perform the work, the contractor or employer, is not obligated to continue to pay the consultant after completion of their specific service. There are no long-term commitments, nor the typical issues that employers have with employees.

2.1.7 Client

A client is a person or organization that takes the initiative to have a project designed and constructed, and in turn pays for the construction (Van, 2005; Bennett, 2003). Aiyetan (2010) defined a client as the project initiator who is responsible for the production of the project. A client is an organization or individual who commissions the services necessary to execute and complete a project in order to satisfy its needs and thereafter enters into a contract with other parties Masterman (2002, 2006). Generally, the Client will retain a significant level of control over the assessment and appointment of Designers and Contractors for a project.

2.1.8 Public construction project

A public construction project is defined as a project that is undertaken, managed or supervised by one or more publicly funded organizations (Kassel, 2010). This definition does not include any public projects that are implemented against the government, such as legal or illegal opposition demonstrations and projects aiming to overthrow the government. Below are examples of public constructions projects were by project site is where the old central market was constructed in 1953, which is located within central business districts of Morogoro town. The project land is located on “plot No 52-58 Block S” at junction of madaraka and Uhuru streets in Morogoro Municipality.



Figure 1: Front View of the Market Design

Source: MMC market business plan, (2017)

2.1.9 Construction project cost

Construction project cost is the process of forecasting the cost of building a physical structure. In order to minimize the stresses of potential cost overruns and failing to complete a project, the builder and owner devote time to estimating how much a project will cost before deciding to move forward with it; Owners considering large projects often seek multiple cost estimates, including those prepared by contractors. Project owners use cost estimates to determine a project's scope and feasibility and to allocate budgets. Contractors use them when deciding whether to bid on a project, the estimate is prepared with the input of architects and engineers to ensure that a project meets financial feasibility and scope requirements while Creating a construction cost estimate is good practice for anyone who cares about how much his or her project will cost; Since a cost estimate can only be accurate with a well-defined project plan, it is standard practice to create multiple estimates during the pre-design and design phases. These become more accurate as the project's level of definition increases. For example, the

project's cost of modern markets in Morogoro municipality extracted from Morogoro market business plan are;

Total Investment

Total project costs for the Morogoro Central Market project is estimated to reach TZS 24.7 billion. The costs are estimated on the basis of the costs of constructing market (77.7%), value of the land (19.0%) and pre-operational costs (3.3%). The breakdown of the investment costs is provided in the sub-sequent sub-sections. The summary of the total project costs is provided in Table 1 below;

Table 1: Total project costs of Morogoro modern market

Capital Expenditure	Total(Tzs)	Investment
Land Value	4 700 000 000	19%
Market Building	19 235 911 127	77.70%
Pre-operation costs	809 316 600	3.30%
Total Costs	24 745 227 727	100%

Source: Morogoro market business plan (2017).

Construction Costs

Detailed design and engineers cost estimated were completed as discussed in this business plan. Total construction cost is estimated at TZS 19.2 million for a total of 17 550-sq.m-construction area. This cost includes VAT of 18% i.e. TZS 2.93 billion. The construction cost is based on bills of quantities (BOQ) based on final detailed design of the central market.

The cost is aggregated on four-construction area: rentable space; mini shops; market stalls; and utility block. In addition to direct cost, there are shared costs among those construction areas, which are preliminary costs, site works, specialists' work and

contingency cost. These shared costs are allocated to each construction area on the basis of proportions of direct construction cost to total cost.

Table 2: Construction cost (Tzs)

Structure	Total costs	Space	Shops	Stalls	Utility
Direct cost	12 271 620 873	3 165 702 260	3 567 027 160	3 615 358 645	923 532 808
Preliminaries	255 500 000				
Site works	1 235 501 126				
Specialists					
works	1 538 997 600				
Contingency	1 000 000				
Total shared	4 029 998 726	1 039 616 218	1 171 411 263	1 187 283 317	631 687 928
Based cost	16 301 619,599	4 205 318 478	4 738 438 423	4 802 641 962	555 220 736
VAT 18%	2,934,291,528	756,957,326	852,918,916	864,475,553	459 939 733
Construction					
Base cost	19 235 911 127	4 962 275 803	5 591 357 340	5 667 117 515	3 015 160 469

Source: Morogoro modern market business plan (2017)

Pre-operating Costs

These costs cover design, engineering drawings, project management, supervision and other related expenses. The pre-operational cost is estimated to be TZS 857 042 558. The Morogoro Municipal Council has already incurred a total of TZS 362.3 million into the project preparation. It is estimated that additional TZS 446.9 million will be incurred during construction stage.

2.1.10 Monitoring and evaluation in construction projects

Monitoring and evaluation (M&E) are integral and individually distinct parts of Programme preparation and implementation. They are critical tools for forward-looking strategic positioning, Organizational learning and for sound management. The main aim of monitoring and evaluation is to develop the project progress monitoring system that improves construction management methods in project progress reporting and control.

Project progress monitoring and control is one of the most important tasks of construction project management; Every team member needs to know, in a timely and accurate manner, how is the project progressing, where they are currently in comparison to the initially set plans, whether deadlines are met, budgets are safely measured.

2.2 A review of Tanzania's Public Construction Project

In the construction industry and the traditional arrangement of procurement for work, contractors obtain work from clients, directly or through the consultants. The contract is made directly between the client and the works contractors. The invitation to tender typically informs the contractor which documents have been attached, the arrangements for site and consultant visits, and the deadline for the return of tenders and how the tender should be submitted (Brook, 2008). On public sector projects, the particular form of invitation to tender depends on whether the procurement procedure is open or restricted (selective).

The construction professionals in Mainland Tanzania are the contractors, engineers, and architects, all of which must register in their respective professional bodies namely the Contractors Registration Board (the "CRB"), the Engineer Registration Board (the "ERB") and the Architects and Quantity Surveyors Registration Board (the "AQRB").

2.3 Causes of Public Construction Project Delays

Major factors relate to equipment, which may result in schedule delay of any project, these include the equipment failures, scarcity of material, low skill levels of equipment operators, low productivity and efficiency of equipment and lack of high technology mechanical equipment. These material related factors, which are responsible for delay in construction projects (Wei, 2010).

Other results Sainbasivan and Soon (2007) found that quality of material and scarcity in material during the execution of projects are the main material related factors, which are responsible for delaying a project. Koushki and Kartam (2005) found that selection of material is the main contributor of delay in construction industry. Other results Sweis *et al.* (2007) have indicated that the main causes for delay are the shortage of materials and late delivery of material. Aibinu and Jagboro (2002) identified that the management problems in managing materials, the main contributor of the project delay. Equipment related factors are one of the many delaying factors that cause suspension of construction project.

Assaf *et al.*, (2006) conducted a study in respect of Saudi construction industry and concluded that equipment failure, scarcity of equipment, unskilled equipment operators, little and output and efficiency of equipment and absence of high-technology mechanical equipment are the main causes of delays in delivery of construction projects. increase in the cost of renting construction equipment play a substantial role in delaying any construction project (Shree, 2007). Also it was inferred that short supply of construction equipment could result in serious constraint for successfully completing a project on time.

2.4 Classification/Types of Construction Project Delays

2.4.1 Excusable or non-excusable delays

Construction delays are basically either excusable or non-excusable. According to Trauner *et al.* and Ochoa (2009, 2013), a delay is excusable or non-excusable depending on the clauses in the contract. For example, in some contracts, unexpected weather conditions are not considered as excusable and so these contracts do not allow for any time extensions. An excusable delay in general is based to an unexpected event beyond

the contractors or the subcontractors” control (Trauner *et al.* 2009). Delays resulting from the following issues are known as excusable delays: general labour strikes, fires, floods, Acts of God, client variation, mistakes and errors in specifications, variation in site conditions or buried services, abnormally weather condition.

2.4.2 Compensable versus non-compensable delays

An excusable delay could be classified as “excusable compensable” and “excusable non-compensable” Trauner *et al.* and Ochoa (2009, 2013). Compensable delays are caused by either owner or the designer engineer (Mubarak, 2005). In such situation the contractor is typically entitled to a time extension or recovery of the costs related with the delay, or both (Trauner, 2009). Factors which are specified in the contract resulting in delays such as differing site conditions, Changes in the work, access to the site are some examples of compensable delays. Non-compensable delays as those, which despite being excusable do not entitle the contractor to any compensation. Excusable non - compensable delays are normally beyond the control of either owner or contractor such as bad weather conditions, conflicts, national crises, floods, fires or labour strikes (Mubarak, 2005).

She adds that usually the contractor is entitled to a time extension, but not additional compensation. Delay is either compensable or non-compensable essentially depends on the conditions of the contract; the condition of contract will determine the types of delays that require time extension or monetary compensation.

2.4.3 Concurrent delays

Concurrent delays include a combination of two or more independent causes of delay occurring within the same time frame (Mubarak, 2005). Concurrent delay often includes excusable and non-excusable delays. Other results Trauner *et al.* (2009) found that

concurrent delays are simply defined as “separate delays to the critical path that occur at the same time”. This kind of delays as overlapping delay, which indicates that, the contractor or the client might generate concurrent delays. It happens, in both parties are accountable and neither client nor the contractor can retrieve damages.

2.4.4 Critical or non-critical delays

The primary focus in any study of delays in a project is to see if the delay affects the progress of the entire project or the project completion date (Trauner *et al.* 2009). Delays which lead to extension of project completion period is considered as critical delays and non-critical delays are delays that do not affect the project completion. Further claim that the issue of critical delays arises from the Critical Path Method (CPM), this CPM is ideally suited to projects consisting of numerous activities that interact in complex, interdependent interactions. From the as planned projected procedure, the employer or additional works inserts dates as the project proceeds, such as late provision of information. Then under the as-built collapsed network, it takes the as built Programme and deducts the assessed effects of the employer’s delay. It then assumes that any remaining delay is the responsibility of the contractor (Trauner *et al.* 2009).

2.5 Time Extension in Construction Projects

Extension of time claims for delay and disruption under construction contracts tend to tread on the same root problems over time, and it is somehow not easy to arrive at some kind of universal approach to dealing with the numerous possible situations and contractual frameworks, To avoid unnecessary disputes arising, it is important to understand common issues like contractual procedures of preparing, submitting and assessing claims; the treatment of float and of concurrent delays; the importance of

construction programmes and the mechanism of updating programmes; and Keeping of accurate and contemporaneous records (Jergeas, 1993).

2.6 Conceptual Framework

A conceptual framework is a theoretical structure that embodies all the assumptions, rules and principles for guiding the discussion of both the research design and data analysis (Misanga, 2014). It consists of interlinked concepts that provide a comprehensive understanding of the subject matter (Yabareen, 2009). Also the framework gives the pathways, by which an intercession of ideas is expected to cause the desired outcomes.

The study's conceptual framework (Figure 1) shows the relationship of variables. Delay of construction project has cost implications as a result of change of project owner resources allocations. Depending on project characteristics such as whether the project is large or small, client, contractor, consultant causes of delaying of public construction project may be; delay in payment, design change, poor work schedule, lack of fund and price Inflation. Project delaying has an effects on; variation of project costs, change of allocation of fund, change of contract sum, change of work schedule and price inflation which has cost implication leads to late completion of projects, increase cost of project and loss for contractor, consultant and client. This relationship is described in Figure 1. Therefore, this study will seek to evaluate the cost implication caused by delaying of public construction projects.

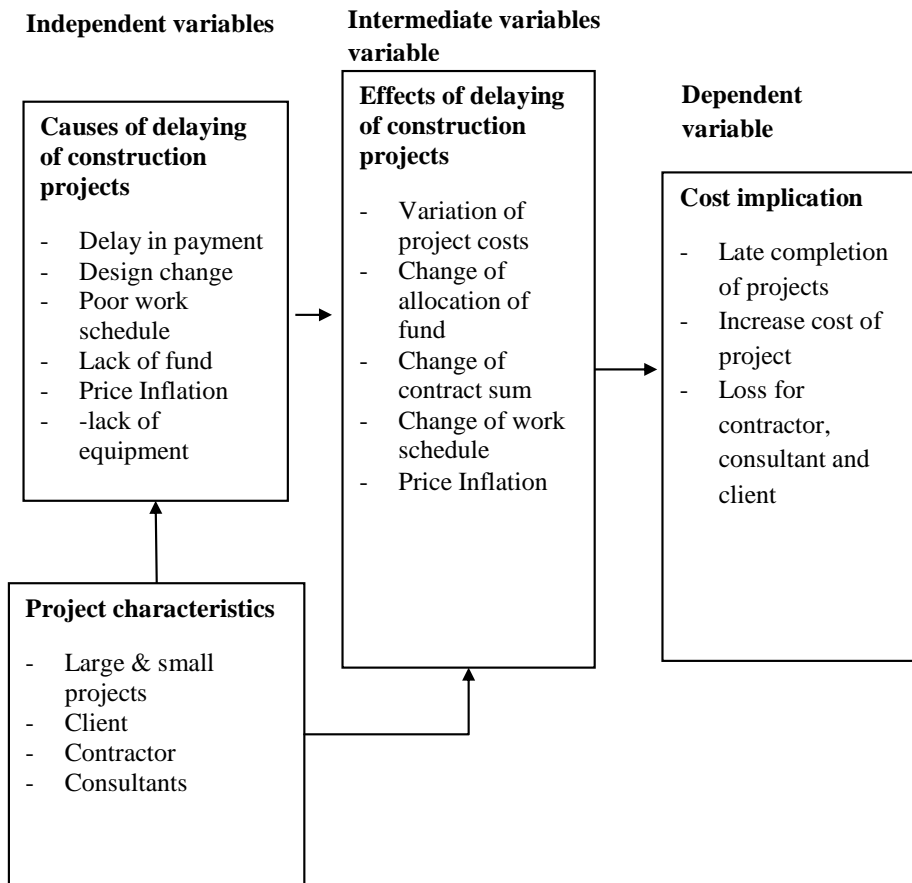


Figure 2: Conceptual framework showing relationship of variables

Source: Researcher own conception, (2018).

CHAPTER THREE

3.0 RESEARCH METHODOLOGY

3.1 Study Area

The study was conducted in Morogoro Municipality, which is found in Morogoro Region. Morogoro Region is one of the 20 Regions in Tanzania Mainland. The Region lies between latitude 5° 58" and 10° 0" to the South of the Equator and longitude 35° 25" and 35° 30" to the East. Seven other Regions border it. Arusha and Tanga regions to the North, the Coast Region to the East, Dodoma and Iringa to the West, and Ruvuma and Lindi to the South, Morogoro Municipality occupies a total of 72 939 square kilometers which is approximately 8.2% of the total area of Tanzania mainland. It is the third largest region in the country after Arusha and Tabora Regions.

Administratively Morogoro Region has seven districts, which are Mvomero, Ulanga, Morogoro urban, Morogoro, Kilosa, Kilombero and Gairo. The districts are divided into thirty divisions; these in turn are further sub-divided into 140 wards, there are 457 villages in the region (URT, 2017). Morogoro Municipality was selected for this study because is the fastest growing municipal with development of infrastructure which is located to the west of Dar es salaam city.

3.2 Research Design

Cross-sectional research designs were used in this study. It is the design, which involves collection of data sample of at least two groups of subject at one point in time. The design allows comparison to show the extent to which groups differ on dependent variables and were used for descriptive study as well as for determination of relationship between variables. The design has greater degree of accuracy and precision in social

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science studies than other designs. This design is relatively cheap, quick and effective since it utilizes limited resources in terms of funds, labour, transport and time. In a cross-sectional study, the investigator measures outcome and exposures of participants at the same time; this is one-time measurement of exposure and outcome (Setia, 2016). It is also very useful for descriptive purposes and the data was collected using this design used to determine relationship between different variables focused in this study.

3.3 Study Population and sampling Procedures

3.3.1 Study population

The study population for the research were delayed projects in Morogoro Municipality. Hence, a population of the study were depending on the number of registered projects in Morogoro Municipality.

3.3.2 Sample size

Bailey and Bartlett *et al* (1998, 2001) a sample size of 30 respondents is said to be the minimum sample for data collection. Furthermore, according to Maas and Joop (2005) found that sample size of at least 30 respondents is reasonably sufficient in social science research studies to ensure normal distribution of the sample mean. Since there was 32 construction project were registered by contractor registration Board in Morogoro municipality therefore, a sample size of 32 was collected from registered construction projects in Morogoro Municipality. In addition, to the above from registered construction projects, the project consultant, and other stakeholder of the projects and project team were selected randomly making key informants in each registered construction project.

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3.4 Data Collection Method and Tools

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This study collected both primary and secondary data. Qualitative data regarding to cost implication of delay of public construction projects were collected from respondents who were project managers, contractors and owners of the projects. Through direct observation interview were used to obtain information form the key personnel of the construction project these key personnel were the technical people from Morogoro municipality and contractors of the projects

Secondary data were collected from relevant documents regarding to the construction projects including review of the construction project contracts, budget, monitoring and evaluation reports, site meeting reports and program of the projects. In addition to that, tendered procedures, construction regulations, procurement processes through National construction council and Public Procurement Act were reviewed

3.5 Data Analysis Methods

3.5.1 Qualitative data

Qualitative data were analyzed using content analysis (CA) technique. Data were broken down into smallest meaningful units of information or themes and tendencies. Subsequently, corroboration of the results was used to link the study with latest relevant research studies. The reason for using this form of analysis is because the analysis makes replicable and valid inferences by interpreting and coding textual material.

3.5.2 Quantitative analysis

This analysis uses the syntax of mathematical operations to investigate the properties of data (Naum, 2003). The researcher has analyzed data findings using descriptive statistics method that basically give the general overview or trend of the results. Consequently,

the researcher has mainly adopted descriptive analysis which attempts to identify relationship between an independent variable and dependent variable (uni-dimensional analysis). This was important so as to produce a situation analysis that aims at achieving study objectives.

CHAPTER FOUR

4.0 RESULTS AND DISCUSSION

4.1 Classification of Respondents

From the methodology there was a need to know the classification of the projects in order to match with the study requirements where by the researcher compared with two different public institutions in construction projects.

This chapter presents findings, analysis and discusses the findings on the basis of research objectives which were:

4.2 Main causes of Delays in Execution of Public Construction Projects

The first objective of this study was to evaluate the main causes of delays in execution of construction projects. In collecting data to achieve this objective, causes of delays divided into three parts where by delays caused by clients (owner of the project), delays caused by consultant (designer and supervisor of the project) and delays caused by contractor. But this study however re-clustered these factors into four (4) broad categories of consultant-related, contractor-related, client-related and external-related factors, as the following are causes of delays in execution.

4.2.1 Delay caused by clients

Clients' cash flow problems, variation orders and slow decision-making were critical. In case of SUA and MMC observed that lack of incentive for contractors for early finish and slow decisions from owners were critical. Researcher considered delay in making progress payments by the client as critical, lack of finance to complete the works and slow decision making by the owner as having greatest impacts to delays, identified that delay in payments to contractor and frequent change orders had the greatest effect. Other

results Assaf *et al.* (2008) have indicated that the owner related delay factors as; delay in progress payments by owner, delay to furnish and deliver the site to the contractor by the owner, change orders by owner during construction, late in revising and approving design documents by owner, delay in approving shop drawings and sample materials, poor communication and coordination by owner and other parties, slowness in decision making process by owner, conflicts between joint-ownership of the project, unavailability of incentives for contractor for finishing ahead of schedule and suspension of work by owner.

Client initiated variations, unrealistic contract durations imposed by client and low speed of decision making as key. Delays in effecting payments to contractors and slow decision-making process were critical causes of delays. Mansfield *et al.* (1994) have indicated that the factors of financing and payment of completed works and design changes by client as key causes of delays. Other results Nkado, (1992) found that the factors of specified sequence of completion, priority on construction time, financial ability and possible changes to initial design as the major causes of delay under this category. Olawale and Sun (2010) found that the factors of design changes by client, and financing and payment for completed works as main causes of delays.

4.2.2 Delays caused by consultant

The literature review was done through books, engineering journals, conference papers, masters and academic theses, the internet, and interview with experts from the construction industry to identify causes that are responsible for delays in execution construction projects globally. Several studies have identified consultant related factors to cause schedule delays. Assert that incomplete drawings, late issuance of instructions and inadequate supervision critically impacted on consultant related group of delays.

According to SUA and MMC projects shows that inadequate site supervision by the consultant was the major cause of delay. By identified delays in approving major changes in the scope of works, inadequate experience of the consultant and late in reviewing design documents as critical. Also identified delays in design work and inadequate site inspection as the main causes of consultant related delays. Through identified the consultant related delay factors as; delay in performing inspection and testing by consultant, delay in approving major changes in the scope of work by consultant, inflexibility (rigidity) of consultant, poor communication and coordination between consultant and other parties, late review and approval of design documents by consultants, conflicts between consultant and design engineer, inadequate experience of consultant. Design errors made by designers, changes in types and specifications during construction, insufficient communication between owner and contractors in this case the design changes during construction, changes in material types and specifications during construction and design errors made by designers contributed to delays. While slow preparation and approval of drawings, incomplete drawings, specifications and or documents and change in drawings as factors of consultant related delays. Another thing delay in performing inspection and testing, poor communication and coordination with other parties, and conflicts between consultant and design engineer as the most significant in causing delays.

To conclude delays caused by consultant through identified the factors of inadequate evaluation of project's duration, discrepancies in contract documentation and contract and specification interpretation disagreement as causes of delay under consultant-related, also contract management, preparation and approval of drawings, quality assurance and control and waiting time for approval of tests and inspections as factors causing delays under the consultant-related categories.

4.2.3 Delays caused by contractor

Available literature contends that proper project planning, availability of materials; equipment and adequate labour are key critical success factors for the successful implementation of construction projects. A number of studies have been carried out in those key critical dimensions in order to assess their relative contributions to schedule delays in the construction industry.

Various construction projects identified financial difficulties, equipment breakdown and maintenance problems, planning and scheduling problems, material and equipment shortages, slow mobilization and shortage of manpower as main contributors to this category of delay factors. Al-Khalil and Al-Ghafly (1996) found that financing and cash flow challenges, poor project management and inadequate manpower were key considerations.

Al-Kharashi and Skitmore (2009) have indicated that poor qualification of contractor's technical staff, poor site management and supervision and difficulty in financing the project were critical. Technical personnel observed that inadequate supply of materials, and contractor's financial difficulties were the main causes of delay, the contractor related delay factors as; difficulties in financing project by contractor, conflicts in sub-contractors schedule in execution of project, rework due to errors during construction, conflicts between contractor and other parties (consultant and owner), poor site management and supervision by contractor, poor communication and coordination by contractor with other parties, ineffective planning and scheduling of project by contractor, improper construction methods implemented by contractor, delays in sub-contractors work, inadequate contractor's work, frequent change of sub-contractors because of their inefficient work, poor qualification of the contractor's technical staff,

delay in site mobilization, inadequate contractor finance, shortage of manpower, slow delivery of materials and errors committed during construction works affected delivery of the projects. Chan and Kumaraswamy (1997) identified the factors of poor site management and supervision and improper project planning and scheduling that contribute to causes of delays.

In a different projects, concluded that inadequate contractor experience, ineffective project planning and scheduling, and poor site management and supervision respectively ranked highly by using factor analysis conclude that site accidents due to lack of safety measures, use of improper or obsolete construction methods, and delay in material delivery contributed the highest impact, identified the factors of poor human resource management and labour strike and uniqueness of the project activities requiring high technical know-how as causes of delay during construction process.

4.2.4 Delays caused by external related factors

Observed that price escalation, inclement weather, labour disputes and strikes, government regulations, slow permit by government, civil disturbances and acts of God consecutively were critical. In different projects shows, delay in obtaining work permits from authorities was ranked as the most significant cause of delay, unfavorable weather conditions as the major cause of external related delays. Assaf and Al-Hejji (2006) identified the external related delay factors as; effects of subsurface conditions (e.g. soil, high water table, etc.), delay in obtaining permits from municipality, hot weather effect on construction activities, rain effect on construction activities, unavailability of utilities in site (such as, water, electricity, telephone, etc.), effect of social and cultural factors, traffic control and restriction at job site, accident during construction, differing site (ground) conditions, changes in government regulations and laws, delay in providing

services from utilities (such as water, electricity), delay in performing final inspection and certification by a third party also legal disputes and ineffective delay penalties, shortage of construction materials in market, and delay in manufacturing special building materials as factors that contributed to delays.

4.3 Cost implication of Delays in Execution of Public Construction Projects

4.3.1 Direct costs of project delay

Actual out-of-pocket costs borne by any stakeholder affected by a delay in project delivery. Most of the direct costs accrue to project and, therefore, are passed on to the public in the form of less- efficient use of taxpayer resources.

4.3.2 Indirect costs of project delay

Hidden costs that are borne by stakeholders often a much greater amount than the direct costs of project delay. Indirect costs include: Wasted traveler fuel and time, Economic impacts in the vicinity of the project, Loss of business efficiency for those businesses.

According to Figure 2, below which shows various projects in Morogoro Municipality, the figure shows the cost implication of the projects in the table 4 where through comparison between contract sum and actual sum, shows the actual sum exceed the contract sum this is the result of cost implication caused by delays which caused by both parties which are client, consultant, contractors and external factors

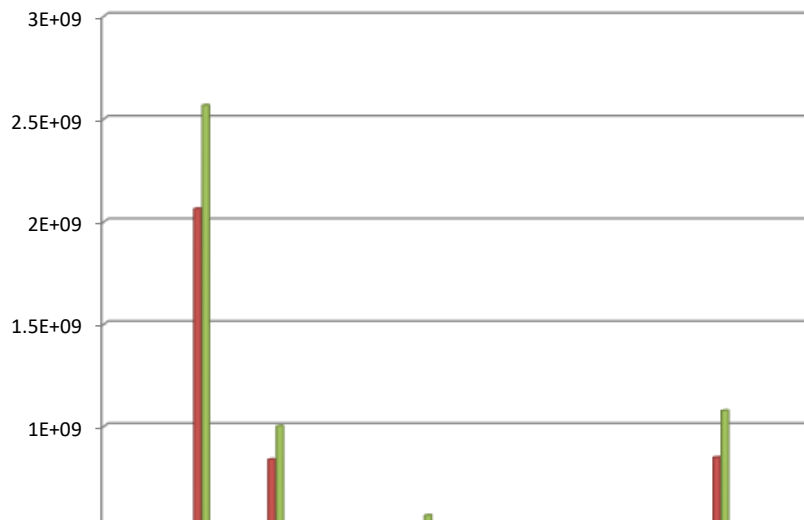


Figure 3: Variation of cost implication of different construction projects (cost in Tsh)

Source: Author, (2019).

4.4 Severity of the Cost Implication of Public Construction Project Delays from the Client, Consultant and Contractor's Perspective

In construction projects categorized into three kinds of project, which are small projects, medium project and large projects, these projects determine through the cost of the project and time of the project. Table 1 below show the variation of total cost of construction projects, where by its shows the cost of small project to large project.

Table 3: Types of project with cost of construction

Type Of Project	From (Tzs)	To (Tzs)
Small Project	1 000	250 000 000
Medium Project	251 000 000	500 000 000
Large Project	501 000 000	10 000 000 000

Source Author, (2019)

4.4.1 Estimation model

This project developed a simplified model that incorporates three kinds of project variables and produces estimates of the effect of project delay on personal and commercial travel and the cost to the general economy. Three projects of varying size were used as example

Table 4: Delayed construction projects with cost implications (Tzs)

Type of project	Description of projects	Contract sum	Actual completion sum	Cost implication sum	Percentage of cost implication
Small Project	Spot improvement of various roads in Morogoro Municipal Council.	99 328 182 .00	104 294 591.10	4 966 409.10	5%
	Routine maintenance of various roads in Morogoro Municipal Council.	103 910 800.00	113 262 772.00	9 351 972.00	9 %
	Preventive maintenance works along Kichangani road in Morogoro Municipal Council.	157 422 207.00	168,441,761.49	11 019 554.49	7%
	Periodic maintenance of Mbuyuni - Mji Mpya Secondary road and spot improvement of Sabato, Folkland, Pangawe - Kingolwira, Dsm - Mafisa, Rusegwa II, Mgulasi Secondary School, VETA Kihonda - Kihonda - Tungi Dsm road junction, Misitu - Ngerengere - Msamvu, Fungafunga and Msamvu stand roads.	230 666 400.00	259,038,367.20	28 371 967.20	12 %
Medium Project	Proposed expansion of SUA health Centre at SUA main campus in Morogoro Municipality	342 080 500.00	416 056 100.00	73 975 600.00	22%
	Construction of double cell 4x3 and single cell 3x3 concrete box culverts at Kitungwa river and its approach roads to gravel wearing course in Morogoro Municipal Council.	438 600 100.00	495 618 113.00	57 018 013.00	13%
	Routine maintenance of various roads in Morogoro Municipal Council	458 964 540.00	564 526 384.20	105 561 844.20	23%
Large Project	Upgrading of Kilombero - Mazimbu Campus and Kilakala roads to bitumen standard and preventive maintenance of Sultani road	837 632 000.00	1 000 970 240.00	163 338 240.00	20%
	Upgrading to double surface dressing standard of Msuya, mafiga, Nunge, Rainbow and maintenance of potholes repair for various roads in Morogoro Municipal Council.	847 803 586.88	1 076 710 555.34	228 906 968.46	27%
	Proposed construction of two storey laboratories building for the faculty f science at SUA, SMC	2 063 020 443.80	2 566 726 943.80	503 706 500.00	24%

Source Author, (2019)

4.5.2 Average of percentage of cost implications of the projects

Table 5: Percentage of cost implications caused by delays

Type Of Project	Total Percentage	Average Percentage
Small Project	33	8
Medium Project	58	19
Large Project	71	24

Source: Author, 2019

The “small project” illustrates delay to an increase of cost of the projects. The projects of 12month delay produced an addition of different cost to the economy, or for every month of delay. Table 3 below shows the percentage of cost implication of the small project for the four projects the average percentage of the projects is 8%. While in the medium project indicate the average percentage of cost implication is 19% and the large project show the average percentage of 24%.

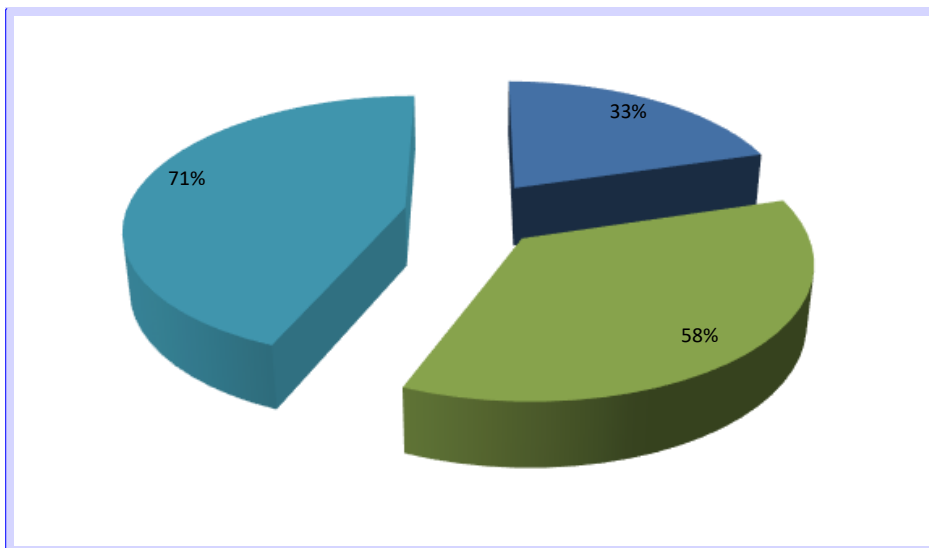


Figure 4: Increase of cost implication when the size of project increases

Source: Author, 2019

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In the figure above shows three type of projects where by the projects trend to increase the cost implication when the value of the project increase for the example in the figure above in the small project there is a total of four project but the total percentage of

increasing the cost implication is 33% while the medium project contain only three project but the sum of cost implication increase compared to small project where by the sum of percentage of cost implication of the three projects for medium project is 58% while for the large project is 71% for three projects.

4.5 The role of Monitoring and Evaluation and its Effectiveness in Minimizing Delays in Execution of public Construction Projects

Monitoring is viewed as a process that provides information and ensures the use of such information by management to assess project effects but both intentional and unintentional and their impact. It aims at determining whether or not the intended objectives have been met.

Evaluation draws on the data and information generated by the monitoring system as a way of analyzing the trends in effects and impact of the project. In some cases, it should be noted that monitoring data might reveal significant departure from the project expectations, which may warrant the undertaking of an evaluation to examine the assumptions and premises on which the project design is based. Monitoring and evaluation have been acknowledged in project management as a single management function, understanding and defining the concept professed in literature show a dual approach (Tache, 2011). Monitoring has been defined by the United Nations Development Programme (UNDP, 2009). As a continuous process by which stakeholders obtain regular feedback on the progress made concerning achieving their goals and objectives whiles evaluation is reported as a demanding and independent appraisal of either completed or ongoing activities to determine the extent to which they are achieving stated objectives to influence decision making. Monitoring and evaluation are, therefore, a continuous process. It involves the setting up of goals and project

success indicators for planning, undertaking continuous and systematic collection of data regarding the set goals and project success indicators (monitoring), and assessing the efficiency, relevance, impact, and sustainability of the project (evaluation).

Participatory monitoring and evaluation (PME) to include the active participation of primary stakeholders that provides an opportunity for capacities building. Unlike the straight M&E approach, PME creates an opportunity for joint learning among project stakeholders that promote commitment for taking remedial action. Most of the construction project in Morogoro Municipality fails to be successfully completed due to several reasons. Among these are lack of understanding of the need for monitoring and evaluation. This study attempts to outline the importance of these two and how they can be applied to ensure successful completion of projects. Unfortunately, many construction project owners and managers do not recognize the need and usefulness of these two. This study sets out the roles of both monitoring and evaluation in successful implementation of projects and how these can be applied.

4.5.1 Role of monitoring

In defining the term monitoring, one needs to be exposed to a number of concepts associated therewith. Monitoring is the continuous assessment of a Programme or project in relation to the agreed implementation schedule. It is also a good management tool that should, if used properly, provide continuous feedback on the project implementation as well assist in the identification of potential successes and constraints to facilitate timely decisions. Unfortunately, in many projects, the role of this is barely understood and therefore negatively impacts on the projects. Monitoring is not only concerned with the change of inputs into outputs, but can also take the following forms:

4.5.1.1 Physical and financial monitoring

Measuring progress of project or Programme activities against established schedules and indicators of success.

4.5.1.2 Process monitoring

Identifying factors accounting for progress of activities or success of output production.

4.5.1.3 Impact monitoring

Measuring the initial responses and reactions to project activities and their immediate short-term effects. Projects are monitored so as to: Assess the stakeholders' understanding of the project, minimize the risk of project failure, Promote systematic and professional management; and, Assess progress in implementation.

In many developing countries, one tends to find the following aspects in monitoring and evaluation of projects, there is a dominant use of external consultants in monitoring and evaluation, there is a dominant use of donor procedures and guidelines in monitoring, Sustainability is often not taken into account, Monitoring is sometimes used to justify past actions. Concerns of stakeholders are not normally included, Lessons learned are not incorporated.

Decision-making in monitoring and design of project monitoring system

The purpose of this is to provide a conceptual framework that may be used in designing a project monitoring system.

Where by it enable to re-identify the purposes of a project monitoring system. It should be emphasized that, whereas a project monitoring system is a process of comparing actual use of inputs and completed outputs with planned use of inputs and planned

completed outputs, the purpose of a project monitoring system is to provide information to stakeholders that can be used to make decisions during the implementation of the project.

4.5.2 Characteristics of an excellent monitoring system

Each project is unique. It is therefore suggested that prior to starting of a project, a discussion should ensure to try and identify these. Among them could be: simple, quickly provides information for corrective action, cost-effective, flexible, accurate, comprehensive, relevant, accessible, leads to learning, transparent, and shares information up and down. Tools for monitoring one of the greatest weaknesses of management information is the lack of effective and timely communication of information to the users. Some monitoring staff often invests too much time and resources in gathering data that they frequently fail to interpret and present in a form that will convey the meaning of the progress made. This should be avoided if possible. Appropriate monitoring tools should be put in place and used accordingly.

The importance of communication in project management is equally critical. It is the “oil” that lubricates the project movement in the attainment of the stated objectives.

Some of the most widely used tools for project monitoring, and their limitations include the following:

4.5.2.1 Verbal communication

This is probably the most effective mode of communication. Among its advantages is that it is quick, and its presentation can be adapted to concerns and questions of the

audience. However, this type of tool to communicate monitoring information can lead to misunderstandings and sometimes denial of information. Meetings.

The very nature of project / Programme management makes it inevitable that certain meetings are convened to communicate and share project information. Other programmes may even require standing committees where outsiders may be invited to review Programme performance. One needs to be cautioned that, while it is important to have meetings, they should be used as effective tools. Meetings can be used for sharing and interchanging information, clarifying, stimulating, and seeking the best solutions regarding project performance.

4.5.2.2 Reports

The importance of monitoring reports should not be overlooked. It should be noted that these are an essential part of project / Programme monitoring. Activities undertaken, inputs supplied, money disbursed, etc.

However, reports are only effective if they are submitted to the right people at the right time to facilitate corrective decision-making.

4.5.2.3 Diary notes

While most people do not use this mode of recording information, it remains an important option. It is essential to record key decisions, which may have been made at formal or informal meetings. Its format should be simple giving the date, time, place and the names of the people present when the decision was taken.

However, experience from many countries (developing) indicates that some of the problems in general would include, most reports gather dust in offices without being effectively used, Sometimes the wrong information is collected, which may not be useful in decision-making, some departments or units do not have the necessary logistics – e.g. paper, typewriters, etc. – to write reports, there has normally been no feedback on the reports presented to higher authorities.

All the above need to be action upon to ensure those maximum benefits of this are attained.

4.5.3 Preparation of monitoring reports

The purpose of a project monitoring report is to provide information to assist stakeholders in comparing performance against plans so that current or potential problems can be identified and analyzed. The uses of project monitoring reports are to; Document completion of project activities, identify significant deviations from plans, reveal problems to appropriate stakeholders, assist in corrective decision-making, monitor implementation of corrective actions, identify shortcomings of existing management and monitoring systems, provide information for coordination of national development programmes, provide reference material for planning of subsequent projects; and provide information for future evaluators.

4.5.4 Evaluation

Definition of evaluation

Evaluation can be defined as a process that determines as systematically and as objectively as possible the relevance, effectiveness, efficiency, sustainability and impact of activities in the light of a project / Programme performance, focusing on the analysis of the progress made towards the achievement of the Stated objectives.

In most cases, evaluation is not given emphasis in projects, as what is normally considered is monitoring.

4.5.4.1 Purpose of Evaluation

Evaluation has several purposes, which include the following: it assists to determine the degree of achievement of the objectives, it determines and identifies the problems associated with Programme planning and implementation, it generates data that allows for cumulative learning which, in turn, contributes to better designed Programmes, improved management and a better assessment of their impact. The key words in this Scenario are “lessons learned”, it assists in the reformulation of objectives, policies, and strategies in projects / programmes.

Monitoring and evaluation when carried out correctly and at the right time and place are two of the most important aspects of ensuring the success of many projects. Unfortunately, these two although known to many project developers tend to be given little priority and as a result they are done simply for the sake of fulfilling the requirements of most funding agencies without the intention of using them as a mechanism of ensuring the success of the projects. It should also be noted that each project may have unique requirements for this and that in such circumstances, project

managers and developers should attempt to develop suitable monitoring and evaluation mechanisms. It is recommended that further education be given to many project manager sin aspects of monitoring and evaluation so as to encourage them to use these tools often and correctly.

CHAPTER FIVE

5.0 CONCLUSION AND RECOMENDATIONS

5.1 Conclusion

The study was for assessing the cost implications caused by delays in public construction projects in Morogoro Municipality. From this study, it can be concluded that the top ten major factors that contribute to project delays are weather conditions, poor site conditions, poor site management by the contractor, incomplete documents from the consultant, lack of experience on the part of the consultant's site staff, financial problems of the contractor, contract modifications by the client, delay in approving major changes in the scope of work by the consultant, contractor having coordination problems with other parties, and , construction mistakes and defective work by the contractor, through those delays may lead to increase the project cost which is cost implication to the public construction projects. The factors have been divided into four groups based on the causes of delays. Delays due to contractor factors were ranked as the most significant, followed by delays due to consultant factors, client factors, and external delays. From the analysis that was carried out, it has been shown that time overruns and cost overrun is the two most frequent consequences of delays in construction projects.

Since the consequences of delay can differ among different parties. However, the general consequences of delays are loss of wealth, time and capacity. For the client, delay could mean the loss/waste of income and unavailability of facilities. For contractor, delay could mean the loss of money/revenue for extra spending on maintenance of equipment and materials, labour hiring and loss of time.

5.2 Recommendation

Monitoring and evaluation when carried out correctly and at the right time and place are two of the most important aspects of ensuring the success of many projects. Unfortunately, these two although known to many project developers tend to be given little priority and as a result they are done simply for the sake of fulfilling the requirements of most funding agencies without the intention of using them as a mechanism of ensuring the success of the projects.

It should also be noted that each project may have unique requirements for this and that in such circumstances, project managers and developers should attempt to develop suitable monitoring and evaluation mechanisms. It is recommended that further education be given to many project manager sin aspects of monitoring and evaluation so as to encourage them to use these tools often and correctly.

According to this study I suggest that while it is common practice for contracts to include a performance guarantee clause, there should also be a payment guarantee clause so that if the client does not pay a duly issued payment certificate within the stipulated period, the contractor may demand his payment from the guarantor. Bureaucracy and formalities should be reduced in client organizations in order to speed up the slow decision making process. Claims should be settled quickly so that they do not become a source of delays. Contractors should prepare adequate plans and schedules during execution of public construction projects. During the rainy season, contractors should plan to execute activities that are not normally affected by the rain in order to mitigate delays. Apart from that since the contractor has liquidity damage when lead to unnecessary delays the condition in the contract allow penalties to contractor, while to client there is additional cost increasing when caused delays but the regulation fail to set the condition to

consultant because in contract there is no condition which allow to issue penalties to consultant so that I suggest that the public institution to look forward the condition which allow penalties to consultant in order to minimize unnecessary cost implication in public construction projects caused by consultant. The Consultant shall estimate likely ruling bill rates applicable to the proposed time of construction, showing how these are derived. In order to make a fair and reasonable estimate of the cost of project, the Consultant shall prepare a unit price analysis of each item using basic cost elements (labour, materials, equipment, tools, overheads, on - site costs, profit, etc.), and showing separately the cost of all taxes (direct or indirect, duties, levies and fees). The cost estimates project shall also include the costs for implementation of Environmental Management Plan (EMP), and HIV/AIDS alleviation Programme. The estimate shall be treated with high confidentiality and submitted to the Client accordingly.

The Consultant shall provide all site and backup staff and exercise all necessary architectural, engineering, surveying, quantity surveying, quality and financial control of all building and civil works in accordance with the approved designs, specifications and contract documents including the followings: Provide day to day supervision of the works in terms of quality and quantity and arrange for monthly progress report, Supervise the Contractor in undertaking all the necessary material tests before they are incorporated into the works, such tests may be done directly by him or by other approved competent entities at his cost, Check the Contractor's setting out of the works and leveling as per the designs, Check measured or estimated quantities of work completed and certify payment certificates for interim payment to be effected by the Client, Provide continuous liaison with the Client on all possible changes on the designated scope of works, Keep updated all records including reports, site diaries, correspondence, instructions given to contractor, test records, measurement and quantity calculations,

payment records and all other relevant documents pertaining to the supervision of the works, Records all claims and submit recommendations to the client for review and ultimate settlement, if justifiable, Prepare acceptable monthly/periodic project reports as per formats presented by the Client, Arrange and attend fortnight site meetings to be attended by all concerned parties and/ or any other management meeting as may be deemed necessary, Prepare and submit to the client the final payment certificate for the completed works, Prepare Project final Accounts, Prepare and compile –as- Built- Drawings, and Prepare a final report for the works.

Client should know the trend of cash change over a period of construction of the projects according to contract and avoid design changes of the projects while in progress this will enable the client to follow the schedule of the project. Through this will enable clients to plan the cash flow of the projects, which will bring good results, that is important to consider financing structure to ensure that during operation the project is able to generate adequate cash flows. While to contractor should minimize delays in order get profit since the contractor is the business oriented when cause delays there is the policy which guide the client and consultant to deduct some percentage of amount paid to contractor during the evaluation of claims certificate this called liquidity damage, when there is liquidity damage its cause loss to contractor, therefore the contractor should avoid the delays in order to obtain profit in the projects.

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APPENDICES

Appendix 1: List of interview questions

1. Is there any delay in schedule planned in your firm or institution?
2. There is any cost implication caused by delays in construction projects
3. In what degree are you aware of delay in construction projects?
4. In your firm, do you include project review during project planning? Yes/No
5. If yes who are the participants involved in undertaking previous project review in your firm?
6. How long does it take to conduct review of completed project after the project handing over?
7. How is delay and cost implication considered in your organization in order to learn from previous projects and hence avoiding repeating mistakes?
8. In your opinion do you find that previous project review helps organizational learning? Yes/No
9. To what extent it is project reviews are helpful to minimize delay and cost implication in the company/institutional? Highly/Moderately/Lower
10. Is there a specific person who collects and keeps projects' information? Yes/No
11. If No in 10 above who is responsible for this duty?
12. Do the projects' information from different projects shared among all company
13. Employees for lessons learned purposes? Yes/No
14. To what level do you share different projects' information in the overall learning process? Maximum/average/minimum
15. In your firm/institution, what time does it take to review the project schedule?
16. What are the steps do you pass when you review your planned schedule?
17. What are the causes that hinder effective project delay in construction as an organizational learning tool in your firm?
18. Among Planning, Coordination, Staff Corporation, Management and Training areas, where do you think your firm lack efforts to reinforce review of previous projects?
19. What are your opinions towards improving practices among construction industry in Tanzania in order to enhance organizational learning in order to follow the planned schedule?

_____ **THANK YOU FOR YOUR TIME AND ATTENTION** _____

Appendix 2: Picture for public construction projects

Appendix 2.1: Kichangani road to Nane and Mafiga



Appendix 2.2: Arc hotel road to Nanenane



Appendix 2.3: Old Dar es salaam Road



Appendix 2.4: Laboratories at SUA (SMC)

