

**EFFECT OF PROCUREMENT PROCESS MANAGEMENT ON  
CONSTRUCTION PROJECT COST VARIATIONS IN LOCAL  
GOVERNMENTS IN UGANDA: A CASE OF MBARARA MUNICIPALITY**

**BY**

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## APPROVAL

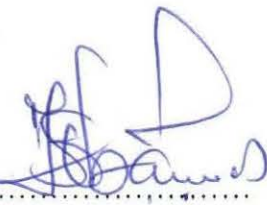
We the undersigned approve that we have read and hereby recommend for submission to the Graduate School of Kyambogo University, a dissertation titled: "Effect of Procurement Process Management on construction projects cost variations in local Governments of Uganda: A case of Mbarara Municipality" in fulfillment of the requirements for the award of Master of Science in Construction Technology and Management Degree of Kyambogo University.

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## DECLARATION

I, Aggrey Atukwasa, hereby declare that this dissertation is my own work and that, to the best of my knowledge and belief, it contains no material previously published or written by another person nor material which has been accepted for the award of any other degree of the university or other institution of higher learning, except where due acknowledgement has been made in the text and reference list.

Sign.....

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## **DEDICATION**

I dedicate this project to my beloved Family; Kyomuhangi Sylvia Atukwasa, Atukwasa Alvin, Abaasa Anolyn, Akatukwasa Alicia and Atukwasa Arshavin. May God continue to bless you!

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## TABLE OF CONTENTS

APPROVAL .....	i
DECLARATION .....	ii
DEDICATION .....	iii
ACKNOWLEDGEMENT .....	iv
TABLE OF CONTENTS.....	v
LIST OF TABLES .....	ix
LIST OF FIGURES .....	x
LIST OF ABBREVIATIONS.....	xi
ABSTRACT.....	xii
CHAPTER ONE .....	1
INTRODUCTION .....	1
1.1 Background of the Study .....	1
1.1.1 Historical Background.....	2
1.1.2 Theoretical Background .....	3
1.1.3 Conceptual Background .....	5
1.1.4 Contextual Background.....	6
1.2 Statement of the Problem.....	7
1.3 Objective of the Study .....	9
1.3.1 Main Objective .....	9
1.3.2 Specific Objectives.....	9
1.4 Research Questions .....	9
1.5 Justification of the Study .....	10
1.6 Significance of the Study .....	11
1.7 Scope of the Study .....	12
1.7.1 Content Scope.....	12
1.7.2 Geographical Scope.....	12
1.8 Conceptual Framework .....	13
1.9 Chapter summary .....	15
CHAPTER TWO .....	16

## TABLE OF CONTENTS

APPROVAL .....	i
DECLARATION .....	ii
DEDICATION .....	iii
ACKNOWLEDGEMENT .....	iv
TABLE OF CONTENTS.....	v
LIST OF TABLES .....	ix
LIST OF FIGURES .....	x
LIST OF ABBREVIATIONS .....	xi
ABSTRACT.....	xii
CHAPTER ONE .....	1
INTRODUCTION .....	1
1.1 Background of the Study .....	1
1.1.1 Historical Background.....	2
1.1.2 Theoretical Background .....	3
1.1.3 Conceptual Background .....	5
1.1.4 Contextual Background.....	6
1.2 Statement of the Problem.....	7
1.3 Objective of the Study .....	9
1.3.1 Main Objective .....	9
1.3.2 Specific Objectives.....	9
1.4 Research Questions .....	9
1.5 Justification of the Study .....	10
1.6 Significance of the Study .....	11
1.7 Scope of the Study .....	12
1.7.1 Content Scope.....	12
1.7.2 Geographical Scope.....	12
1.8 Conceptual Framework .....	13
1.9 Chapter summary.....	15
CHAPTER TWO .....	16

LITERATURE REVIEW .....	16
2.1 Introduction.....	16
2.2 Theoretical Review.....	17
2.2.1 The Principal-Agency Theory .....	17
2.2.2 The KraljicPortfolioPurchasing Model .....	18
2.3 Conceptual Review .....	20
2.4 Overview of the Variables .....	21
2.4.1 Project Planning and Development (Contract initiation and Project Costing) .....	21
2.4.2 Bidder selection and Contract execution .....	22
2.4.3 Contract Analysis and Procurement Performance.....	23
2.4.4 Contract Management .....	23
2.4.5 Commercial Management & Contract Administration .....	24
2.4.6 Procurement Process Players.....	25
2.4.7 Project Management.....	27
2.5 Synthesis of the Literature .....	28
2.6 Chapter Summary .....	29
CHAPTER THREE .....	31
METHODOLOGY .....	31
3.1 Introduction.....	31
3.2 Study Design .....	31
3.3 Study Area .....	32
3.4 Study Population.....	33
3.5 Study Sample Size .....	33
3.6 Sampling Techniques .....	35
3.7 Sources and Type of Information required .....	35
3.7.1 Secondary data .....	36
3.7.2 Primary data .....	36
3.8 Data Collection Tools.....	36
3.8.1 Interview Guide.....	36
3.8.2 Self-administered Questionnaire .....	37



3.9 Validity and Reliability of the Instruments.....	37
3.9.1 Validity.....	37
3.9.2 Reliability.....	38
3.10 Achievement of Specific objectives.....	39
3.10.1 Impact of project planning & development stage management on project cost variations.....	41
3.10.2 Impact of the bidder selection stage management on project cost variations.....	42
3.10.3 Impact of contract management stage on project cost variations.....	42
3.10.4 Procurement process management framework for best practice on construction projects.....	43
3.11 Methods of Data Analysis.....	44
3.12 Chapter Summary.....	44
CHAPTER FOUR.....	46
PRESENTATION OF RESULTS, ANALYSIS AND DISCUSSION.....	46
4.1 Introduction.....	46
4.2 Characteristics of respondents.....	46
4.2.1 Gender of respondents.....	47
4.2.2 Education Level of respondents.....	48
4.2.3 Experience of respondents.....	49
4.2.4 Age of Respondents.....	50
4.3: Empirical Findings.....	50
4.3.1 Impact of project planning and development stage management on project cost variations.....	50
4.3.2 Regression analysis of the determinants of procurement process management at project planning and development stage.....	54
4.3.3 Impact of bidder selection stage management on project cost variation.....	57
4.3.4 Regression analysis for the determinants of procurement process management at bidder selection stage.....	61
4.3.5 The impact of contract management on project cost variations.....	64
4.3.6 Regression analysis for the determinants of procurement process management at contract management stage.....	66
4.3.7 Probable sources of project cost variations.....	70
4.3.8 The impact of procurement process management on project cost variations.....	72
4.3.9 Procurement process management framework for best practice on construction projects.....	75

4.4 Operation of the developed framework .....	77
4.5 Qualitative Data Analysis .....	78
4.6 Chapter Summary .....	81
CHAPTER FIVE .....	82
CONCLUSIONS AND RECOMMENDATIONS .....	82
5.1 Introduction .....	82
5.2 Conclusions .....	82
5.2.1 Project planning and development stage management on project cost variations .....	82
5.2.2 Bidder selection stage management on project cost variation .....	82
5.2.3 Contract management on project cost variations .....	83
5.2.4 Procurement process management framework for best practice on construction projects .....	83
5.3 Recommendations .....	84
5.4 Areas for further studies .....	86
REFERENCES .....	87
APPENDICES .....	94
APPENDIX I: INTERVIEW GUIDE .....	94
APPENDIX II: QUESTIONNAIRE .....	96
APPENDIX III: COST VARIATIONS IN MBARARA MUNICIPALITY .....	105
APPENDIX IV: SAMPLE SIZE DETERMINATION .....	107

## LIST OF TABLES

Table 3.1: Study Population and Sample Size Selection .....	34
Table 3.2: Validity of the instruments .....	38
Table 3.3: Reliability Statistics .....	39
Table 4.1: Response Rate .....	46
Table 4.2 Gender of respondents .....	47
Table 4.3: Experience of respondents.....	49
Table 4.4: Project planning and development stage management on project cost variation .....	51
Table 4.5: Model summary for the impact of project planning and development on project cost variation.....	55
Table 4.6: Regression model of project planning and development on project cost variation .....	56
Table 4.7: Impact of bidder selection stage management on project cost variation.....	58
Table 4.8: Model summary for the impact of bidder selection on project cost variation .....	62
Table: 4.9: Regression model of bidder selection on project cost variation.....	62
Table 4.10: Impact of Contract management on project cost variations.....	64
Table 4.11: Model summary for effect of Contract management on project cost variations .....	67
Table: 4.12: Regression model of effect of Contract management on project cost variations .....	68
Table 4.13: Project cost variation.....	70
Table 4.14: Model summary for effect of procurement process management on project cost variations ..	72
Table: 4.15: Regression model of impact of procurement process management on project cost variations.....	73

## LIST OF FIGURES

Figure 1.1: The procurement management process stages .....	1
Figure 1.2: Conceptual framework of the study .....	14
Figure 4.1 Education Level of Respondents .....	48
Figure 4.2: Age of Respondents.....	50
Figure 4.3: Management framework for best practice in procurement process .....	76

## LIST OF ABBREVIATIONS

AFDB	African Development Bank
FY	Financial Year
LGE	Local Government Entity
OAG	Office of the Auditor General
PDE	Procurement and Disposal Entity
PPDA	Public Procurement & Disposal of Public Assets Authority
PDU	Procurement and Disposal Unit
PPMS	Procurement Performance Measurement System report
SD	Standard Deviation
SPSS	Statistical Package for Social Sciences
UBOS	Uganda Bureau of Statistics
USMID	Uganda Support to Municipal Infrastructure Development
UGX	Uganda Shillings
VfM	Value for Money

## ABSTRACT

Procurement process management has been attracting great attention from practitioners, academicians and Researchers due to high construction project cost variations resulting from non-adherence to proper processes and procedures. This study describes the effect of procurement process management on cost variations on construction projects in Local Governments of Uganda with Mbarara Municipality being used as a case study. Regardless of the enactment of the PPDA Act, (2003) and operationalization of various regulations to enhance performance of the procurement function in Uganda, Local Governments have persistently exhibited high variances with regard to cost variations and over costing of construction projects for the last five successive years. A case study research design was employed. A survey instrument was developed and administered to the public entity with a sample of ninety one (91) respondents out of the population of 129; selected using purposive and random sampling techniques. Data sets from questionnaires were analyzed using descriptive statistics (weighted mean and weighted standard deviation) and regression analysis. Findings revealed that: the extent to which project planning and development predicts cost variation was moderate ( $R^2 = 0.450$ ). Results further indicate that bidder selection stage in the procurement process management impacts the variations in the project costs moderately ( $R^2 = 0.686$ ) the extent to which contract management predicts project cost variation was high ( $R^2 = 0.755$ ). However, findings revealed that procurement process management moderately influences the construction cost variations ( $R^2 = 0.403$ ). This implies that where each of the variables has a moderate or high impact on project cost variation, a combination of variables result in a moderate impact on project cost variations. Although the procurement process management practices are quite commendable, project performance remains average and project cost variations are always present. This is an indicator that there are other factors that cause variations in construction projects costs in Local Governments in Uganda besides procurement process management as observed from the framework. This study thus recommends that relevant staff in Mbarara Municipality, mainly engineers, auditors, procurement unit officials and contracts committee members should be in charge of contract preparation and approvals. This will ultimately ensure efficiency, effectiveness and timely accomplishment of contracts. Therefore, those endowed with skill and experience in the area should spearhead the procurement process management.

**Key words:** Procurement process, management, construction project, cost variations.

## CHAPTER ONE

### INTRODUCTION

#### 1.1 Background of the Study

This first chapter of the dissertation presents the background to the study, statement of the problem, purpose of the study, objectives of the study, research questions, and justification of the study, significance of the study, scope of the study, conceptual framework and overall chapter summary.

Procurement process management refers to the process of systematically and efficiently managing contract cycle that encompass; contract development, implementation, and administration in order to maximize financial and operational performance as well as managing inherent risk (Mitnick, 2006). Procurement process management encompasses the life cycle of a contract and involves many stakeholders including, but not limited to the contracting officer, the client department and the supplier. According to Public Procurement & Disposal of Public Assets Authority (PPDA) regulations, contract management is a mandatory function for all public entities in execution of public projects. This study summarizes the procurement process into three major stages as demonstrated in Figure 1.1.



**Figure 1.1:** The procurement management process stages

*Source: Researcher's concept 2020*

### **1.1.1 Historical Background**

By the late 1990s, the role of procurement was characterized by transition into strategic sourcing looking at suppliers as partners and long term contracts (Waswa, *et. al.*, 2013). This was the beginning of procurement's modern day evolution. In the 2000s, the strategic significance of procurement expanded as businesses recognized that suppliers are crucial to achieving business objectives. Consequentially, supplier relationships evolved from arm's-length to collaboration, with procurement acting as an effective conduit between businesses and its supply network.

The Common Market for East and Southern Africa (COMESA, 2011) guidelines observe that neither the COMESA Procurement directive, nor the United Nations Commission on International Trade Law UNCITRAL Model, specifically address the subject of contract management. In several African countries, few scholars have thoroughly examined and empirically tested the factors that affect a government agency's decision to manage contracts. Within relatively scarce empirical evidence on contracting decisions and management (Boyne, 1998; Ferris and Graddy, 1986), there is yet little information on the effectiveness of contract management specific to public procurement.

Traditionally, public procurement in Uganda was centralized and carried out by Crown Agents on behalf of government in 1964. Central Tender Board regulations were introduced in 1977 while public procurement reforms were initiated in 1997. The 2001 marked the inauguration of the 2000 regulations that decentralized public procurement.



In 2003, the public procurement and disposal of public assets (PPDA) Authority was introduced while the amendment of the local government (LG) Act and introduction of the LG (PPDA) Regulations was in 2006. In the year 2008, the Institute of Procurement Professionals of Uganda was formed while the PPDA Act was amended in 2012 and 2014. Since public procurement contributes about 55% of Uganda's total budget (World Bank website, 2012), it is posited that, these sequential reforms have made procurement a strategic function in Uganda.

In general, the level of effort required for procurement process management will vary depending on the value and complexity of the procurement. Simple contracts may require only minimum management, while more complex contracts will require continuous monitoring by the Procurement and Disposal Entity (PDE). The Accounting Officer or a person appointed by the Accounting Officer from the user department shall manage the contract (The PPDA (Contracts) Regulations 2014).

### **1.1.2 Theoretical Background**

While several theories illuminate the determinants of effective contract management among which include; ethics, availability of skilled personnel and organizational influences among others (Ackermann, 2011), the Principal–Agency Theory (AT) underpin this study. This is because The Arincipal–Agent theory, in supply chain management and economics occurs when one person or entity, is able to make decisions and/or take actions on behalf of, or that impact, another person or entity: the "principal".

The successes considered within the AT are many fold. For example, outsourced projects are usually governed by the principal-agent relationship (i.e. agency theory). An agency relationship is defined as one in which one or more persons (the principal) engage another person (the agent) to perform some service on their behalf which involves delegating some decision-making authority to the agent (Jensen & Meckling, 1976; Ross, 1973). The cornerstone of AT is the assumption that the interests of principals and agents diverge. According to agency theory, the principal can limit divergence from his interests by establishing appropriate incentives for the agent, and by incurring monitoring costs designed to limit opportunistic action by the agent.

This study, therefore, adopts the view that it is prudent to monitor and control the critical factors of project performance (as defined in the Success Factors Model) within a contracting arrangement (as defined in the AT) to ensure the success of outsourced projects in the organization. This research, therefore, used the framework by Belassi and Tukel, (1996) within the confines of agency theory to investigate procurement process management as a factor that may influence construction projects cost variations in local government of Uganda.

In the view point of Chiappori and Salanie (2003) as cited by Salam (2013) and Basheka (2008), rationally, the underlying principle of the Principal-Agency Theory is that there should be a clear understanding of the needs of the principal and ability of the agent to meet these needs competently which in this study's perspective is value for money

among other satisfaction qualities. In this outlook, the principal must closely monitor agent's performance and create reward structures that reinforce desired performance (Ketchen and Hult, 2006). Research conducted by Makabira and Waiganjo (2014) posit that, research has shown that procurement contributes about 60%-70% of an organization' expenditures. In line with the operational nature of procurement expenditures, decisions must be taken by the organization's management (Agents)/ contract managers on behalf of the company owners (principals) under the power entrusted to them through their employment contracts.

### **1.1.3 Conceptual Background**

Conceptually, procurement management process is characterized by different stages categorized as; (a) Contract planning and budgeting (b) Market price assessment, (c) Procurement requisitions filed with clear specifications or terms of reference (ToR) (see Sec 34 PPDA Act 2003), (d) Confirmation of availability of funds, (e) Review and Preparation and approval of procurement methods and bidding document, (f) bidder selection and contract management phases up to project completion and contract evaluation.

Literally, procurement process management denotes the management of contracts including, but not limited to development, performance and compliance with the terms and conditions of the awarded contract by the provider and the procuring and disposing entity (Uganda Local Government Regulation, 2006). Accordingly, procurement process

management encompasses negotiating the terms and conditions in contracts and ensuring compliance with the technical specification, terms and conditions as well as documenting and agreeing on any changes or amendments that may arise during its implementation or execution. It can be summarized as the process of systematically and efficiently managing a contract (contract creation, execution and contract performance analysis) for the purpose of maximizing the achievement of the procurement objectives as well as minimizing the financial and operational risks of procurement (Aberdeen Group, 2008 cited by Ssempebwa, (2014); Rendon, (2010) cited by Oluka and Basheka, (2012). These scholars perceive contract management as being qualified workforce, clear processes, relationships, resources, leadership and policies all of which have direct impact on resulting contractors' performance outcomes.

#### **1.1.4 Contextual Background**

Mbarara Municipality is located in Western Uganda and was elevated to a city status in the financial year 2020/2021. Like most other Ugandan Local Governments, it is named after its major town; Mbarara, where the district headquarters are located. The Municipality's procurement performance measurement system reports (PPMS, 2014/15/2018/19) by PPDA indicate low levels of compliance with regard to professional contract management. Whereas compliance level for the mentioned years was averaged at 54%, they were scored 30%. In a similar vein, the Auditor General's Report for year ending June 2018, suggested that the key issues affecting procurement of works at Local Government level include; the lack of adequate supervision by Engineers, and poor

quality output and payment for no work undertaken or less work done than specified under the contracts.

## **1.2 Statement of the Problem**

In the Ugandan procurement process management practice there is no specific set standard determinant of construction projects' costs leading to cost variation and associated over costing. Traditional as well as the transplanted alien ("one jacket fits all") procurement methods of estimating construction projects costs seem to obscure the magnitude of the variation inherent in the estimates made by both procurement entities and bidders/service providers (Makabira and Waiganjo, 2014). Currently, there is continuous escalation of project costs in construction projects in Uganda as evidenced from Value for money audit reports of 2016/17 and 2017/18. The Uganda's Inspectorate of Government report revealed that conventional procurement setting has continued to bring about significant variations in the construction projects' costing while similar projects have been characterized by varying unit rates for individual items in the bills of quantities as well as the overall contract prices in different Municipalities with unclear justification (GOU, 2018). As a result, there is great concern for cost variations as most of the public construction projects are implemented using tax payers' money.

Regardless of the enactment of the PPDA Act (2003) and operationalization of various regulations to enhance performance of the procurement function in Uganda, Mbarara Municipality has persistently exhibited high variances with regard to cost variations and over costing of construction projects for the last five successive years 2014/15 to 2019/20

(Appendix III). PPDA reports revealed that contract managers for a sample of projects worth UGX 12,600,000,000 did not have tallying initiation and completion costs. Besides, some records on evaluation reports, contract awards, completion reports and work certificates and payment receipt documents were also missing (Procurement Audit Reports 2016/17 & 2018/19; Auditor General's Report, 2018/2019). It is envisaged that, major components of contract management like contract creation, execution and analysis are obscured. As a result, Mbarara Municipality is likely to suffer financial shocks that may eventually pose an increasing risk to government of Uganda to incur more costs than budgeted for and perpetuating mismanagement of funds (Inspectorate of government report, 2018; Auditors' report on Mbarara Municipality, 2018). The Value for money Audit Report of 2018 established that, from 2015 to 2019, Mbarara Municipality had incurred extra costs amounting to 12 billion Uganda on selected construction projects. This is the money that could be used to provide other services in Mbarara Municipality.

While, a few available previous studies attributed costs variation to many socio-economic factors, none of these focused on procurement process management as a factor affecting construction project variations (Witjes, and Lozano, 2016). There is need to study the procurement process stages in order to identify where the cost variations are most likely to occur and come up with a framework on how to manage these project cost variations.

### **1.3 Objective of the Study**

#### **1.3.1 Main Objective**

The main objective of the study was to examine the effect of procurement process management on construction project cost variation in Local Governments in Uganda; a case of Mbarara Municipality.

#### **1.3.2 Specific Objectives**

This study was guided by the following specific objectives:

- (i) To determine the impact of the project planning & development stage management on project cost variations in Local Governments in Uganda;
- (ii) To determine the impact of the bidder selection stage management on project cost variation in Local Governments in Uganda;
- (iii) To determine the impact of contract management stage on project cost variation in Local Governments in Uganda;
- (iv) To develop a procurement process management framework for best practice on construction projects in Local Governments in Uganda.

### **1.4 Research Questions**

The research questions were formulated to answer the objectives of the study as follows:

- (i) What is the impact of the project planning & development stage management on project cost variations?
- (ii) What is the impact of the bidder selection stage management on project cost variation?

- (iii) What is the impact of contract management stage influence project cost variation?
- (iv) What can be done to achieve the best practice on construction project costs in Uganda?

### **1.5 Justification of the Study**

Most studies available in Uganda and beyond mainly focus on compliance and conformance of projects to the PPDA Act but barely any has endeavored to look at why similar projects have different costs and variations therein (Kutosi *et al.*, 2015). As a result, there has been over expenditure on construction projects as well as failure or late delivery of services.

Audit reports (2015 to 2019) revealed that contract managers for a sample of projects worth UGX 12,600,000,000 did not have tallying initiation and completion costs. It is envisaged that, major components of contract management like contract creation, execution and analysis are obscured.

This study seeks to investigate the role of procurement process management so as to mitigate over estimation and reoccurring variations and design a suitable framework that can aid in harmonizing the Local Governments and service providers to reduce project cost variations and subsequent loss of public funds.



### **1.6 Significance of the Study**

The results of this research will help construction projects overseers, implementers, users, policy makers and Researchers in the field of construction management in getting a solution to project cost variations. Looking at procurement process management in Uganda is of contemporary concern since the government adopted the PPDA and has been actively investing in the system for over 15 years. Furthermore, recognizing that procurement is central in executing government projects as well as other micro and major transactions cannot be over emphasised thus the need to monitor the procurement process closely in order to get viable intervention. This can create trajectories for mitigating over expenditure on government-funded construction projects as well as late delivery of services. The proposed good practice model will enhance professionalism in management on construction projects' cost of Local Governments in Uganda and can be replicated in other projects.

Overall, the findings of this study will add to the deposit of scholarly body of knowledge with regard to the procurement process management. They will also help in mitigation measures to minimize unnecessary volatilities by exposing the underlying drivers of variance trajectories right from project planning, design to implementation. Information obtained in this study will stimulate academic engagements and references for future Researchers in related fields. Notably, implications are drawn for Agencies targeting sustainable development through cost cutting, as well as for designing and implementing construction projects in other parts of the Uganda which can be replicated to guide

project cost estimation here and in other developing nations. This study is premised to increase the understanding of how chosen procurement procedures and contract management affect project cost performance.

## **1.7 Scope of the Study**

### **1.7.1 Content Scope**

This study included the specific objectives with regard to constructions in buildings, roads and bridges executed between the financial years 2014/15 and 2019/20. This study considered projects with contract values of not less than Ugx. 100,000,000= (one hundred million shillings). This contract value was considered by the Researcher to have an impact on service delivery of the Municipality.

### **1.7.2 Geographical Scope**

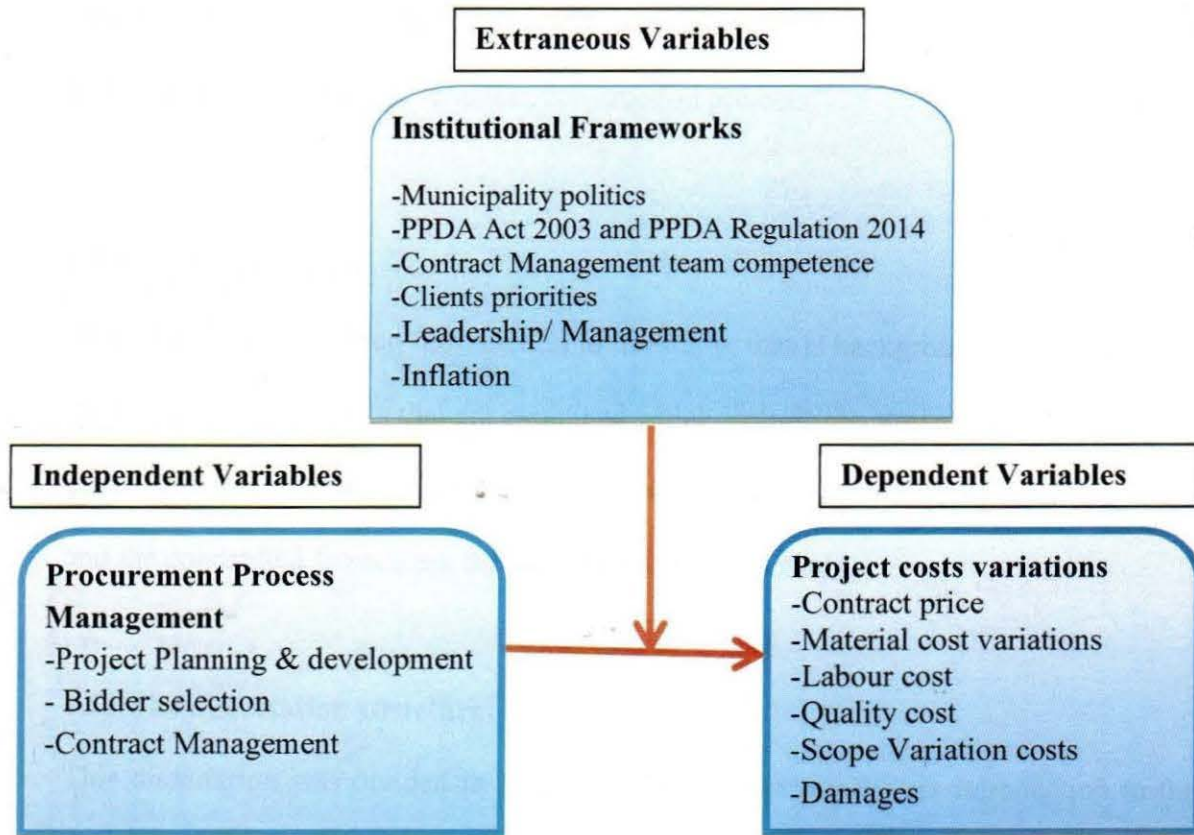
This study covered the Municipality of Mbarara that is located about 266km from Kampala City. It is in south western region of Uganda, it's the main commercial center for Mbarara District. It has a population growth of 2.58% per annum with 6 divisions after addition of other 3 divisions of Nyakayojo, Biharwe and Kakiika which put the population to over 350,000 people making it the highest populated Municipality after Nansana and Kiira municipalities.

This Study was conducted between August 2019 and February 2021.

### **1.8 Conceptual Framework**

The conceptual framework of this study represents the Researcher's synthesis of literature on how to explain the phenomenon under investigation. In resonance with (Ravitch and Riggan, 2016) view point, it can be applied in different categories of work where an overall picture is needed.

This framework is the Researcher's understanding on how the particular variables in his study connect with each other (McGaghie, Bordage and Shea, 2001), and "sets the stage" for the presentation of the particular research question that drives the investigation being reported based on the problem statement in section 1.2.



**Figure 1.2:** Conceptual framework of the study

*Source: Researcher's concept 2020*

Figure 1.2 indicates that the independent variable: Procurement process management affects the dependent variable of project cost. It indicates that Procurement processes have impact on project cost variations which is measured by contract price, material cost variations, labour cost, quality and timeliness hence value for money. The framework further indicates that extraneous variables influencing the both the dependent and independent variables are PPDA Act 2003 and PPDA Regulations as amended in 2014 and procurement process management team competence and roles. Figure 1.2 shows how

procurement process management shortfalls need harmonization, to minimize project costs variations in local government construction projects.

### **1.9 Chapter summary**

This chapter has provided introduction to the study, that is background of the study and other important elements that are explained which include the statement of the problem, objectives of the study, research questions, justification of the study, significance, scope and the conceptual framework that was followed in the study.

### **1.10 The dissertation structure**

This dissertation was divided in five chapters. Chapter one covers introduction to the study, Chapter two reviewed the literature related to the study, Chapter three explains the methodology used, Chapter four covers presentation of results and discussion; while Chapter five provides conclusions and recommendations from the study.

## CHAPTER TWO

### LITERATURE REVIEW

#### 2.1 Introduction

In this chapter of the study, the Researcher reviewed some of the recent literature on factors affecting the local government project cost. Literature review was aligned to the study themes derived from the study objectives. This chapter is divided into two main portions namely; theoretical literature review and empirical review. Theoretical review explains different theories written by different scholars on the study variables. Definition and discussion on key terms has been covered. On the other hand, empirical review attempts to explain the gaps identified from different studies done on similar subject and hence try to bridge those gaps. Conceptual framework, on which the study is based, was developed.

Procurement process refers to a successions of steps that an entity identifies and follows in order to obtain goods or services for their goals and objectives (Koksal, & Arditi, 2004; Miller, 2013; Kaminsky, 2012). Globally, the construction industry is a fundamental part of the economical backbone of both developed and developing nations (Ngai *et. al.*, 2002). It is estimated that the construction industry accounts for between 7-10 percent of the Gross Domestic Product (Voordijk *et. al.*, 2000). Furthermore, construction products and processes have a large impact on safety, health and environmental aspects (Bayliss *et. al.*, 2004). Since all human beings in modern societies are directly affected by construction processes and/or products, the importance of a well-

functioning construction industry is beyond doubt (Eriksson, 2007; Ngai *et al.*, 2002; Cheung *et al.*, 2001). In many countries the construction industry has, however, attracted criticism for inefficiencies in outcomes such as time and cost overruns, low productivity, poor quality and inadequate customer satisfaction (Chan *et al.*, 2003; Ericsson, 2002,). Practitioners, Researchers and society at large have, therefore, called for a change in attitudes, behaviour and procedures in order to increase the chances for construction projects to be successful and result in improved end products (Dubois and Gadde, 2002). It is, therefore, very critical for the stakeholders in the construction industry to effectively and efficiently manage the procurement processes so as to ensure that all gaps that are likely to escalate project costs are addressed on time.

## **2.2 Theoretical Review**

The theoretical review section explains the influence of the procurement process management on project cost variations while the Principal-Agency Theory and Kraljic Portfolio Purchasing Model are used to bring out the reality interface.

### **2.2.1 The Principal-Agency Theory**

This Theory emerged in the 1970s from the combined disciplines of economics and institutional theory. There is some contention as to who originated the theory, with theorists Stephen Ross and Barry Mitnick claiming its authorship (Mitnick, 2006). It explains the relationship between principals: such as shareholders, and agents; a such as a company's executives. In this relationship the principal delegates or hires an agent to

perform work. The theory attempts to deal with two specific problems; first, that the goals of the principal and agents are not in conflict (agency problem), and second, that the principal and agents reconcile different tolerances for risk (Mitnick, 2006). Chiappori and Salanie (2003) as cited by Salam (2013); and Oluka and Basheka (2012) also add that the underlying principle of the Principal-Agency Theory is that they satisfy their needs competently. Principal must closely monitor agents' performance; create reward structures that reinforce desired performance (Ketchen and Hult, 2006). Indeed, when procurement contract is well defined and planned, the principal and agents find it easy to meet needs of each other in an efficient way resulting into timely execution of the contract (Oluka and Basheka, 2012). The Principal-Agency Theory can be applied to this study with a case company as a principal and contractors or service providers or suppliers as agents. The theory becomes significant to the study as it highlights the need for robust contract requirement and specifications as well as the objectively process of monitoring contractors' performance. When contract requirements, contract management team roles and responsibilities and key performance indicators are well defined, the principal and agents will find it easy to meet needs of each other in an efficient way resulting into timely execution of the contract in predetermined performance level.

### **2.2.2 The Kraljic Portfolio Purchasing Model**

According to Geldermann and Weele (2005), Kraljic (1983) introduced the first comprehensive port-folio approach for the use in purchasing and supply management. This scholar advised managers to guard their firms against disastrous supply interruptions



and to cope with changing economic and technological dynamics. His message was that “purchasing must become supply management’ in this context, Kraljic (1983) developed a convenient portfolio approach for the determination of a comprehensive strategy for supply before entering a contract. Kraljic’s approach included the construction of a portfolio matrix that classifies purchased products and services on the basis of two dimensions: profit impact and supply risk.

Leverage items allow the buying company to exploit its full purchasing power, for instance through tendering, target pricing and product substituting. Routine items are for low value, are ordered frequently and therefore cause high transaction costs. Therefore, strategies are aimed at reducing transaction costs through category management in e-procurement solutions. Bottleneck items cause significant problem and risks that should be handled by volume insurance, vendor supplier control, and safety stock and backup plans. In some cases, a search for alternative suppliers or products is needed. Strategic items require a more collaborative strategy between both the buyer and the seller (Geldemann and Weel, 2005). The general idea of Kraljic’s model is to minimize supply risk and make the most of buying power. Each of the four quadrants allows for differentiated supplier strategies based upon position of a product in the portfolio. The model therefore gives an organization opportunity to consider contract management in terms of risk management when thinking of where to allocate resources so as to manage the contractor’s performance.

### **2.3 Conceptual Review**

The conceptual framework of this study represents the Researcher's synthesis of literature on how to explain the phenomenon under investigation. Literally, it maps out the actions required in the course of the study given his previous knowledge of other Researchers' point of view and his observations on the subject of research. In essence, this study's conceptual framework is an analytical tool with several variations and contexts with regard to the defined study variables and their interface in defining the outcome. In resonance with (Raytch and Riggan, 2016) view point, it can be applied in different categories of work where an overall picture is needed. In other words, this framework is that the Researcher understanding of how the particular variables in his study connect with each other. Thus, it identifies the variables required in the research investigation in resonance with (McGahie, Bordage and Shea, 2001), and "sets the stage" for the presentation of the particular research question that drives the investigation being reported based on the problem statement in Chapter one section 1.2 .

Overall, the study's conceptual mapping depicts the procurement process management in totality with a bearing on the above parameters of project cost and the outcome plus policy and culture frameworks that influence extra system operational environment. This framework portrays significant trajectories in which the procurement process management affect project cost and outcome portfolio. This framework situates process management to explain the project variations and the resultant cost variation. After a thorough synthesis of various literatures, the Researcher came up with the conceptual or a

hypothetical model as a precursor for empirical model framework for procurement process interface with acceptable project estimation. This chapter shows how contract management as a factor that needs harmonized, if project costs variations are to be solved in Local Governments in Uganda.

## **2.4 Overview of the Variables**

### **2.4.1 Project Planning and Development**

The ultimate goal of contract initiation is coordinated and integrated action to fulfill a need for goods, services or works in a timely manner and at a reasonable cost. Mullins (2003) noted that contract creation is the process of determining the procurement needs of an entity and the timing of their acquisition and their funding such that the entity's operations are met as required in an efficient way. Early and accurate planning is essential to avoid last minute, emergency or ill planned procurement which is contrary to open, efficient and effective and consequently transparent procurement. In addition, most potential savings in the procurement process are achieved by improvement in the planning stages. Contract initiation clarifies what is needed and when is needed to both user and buyer. Contract initiation enables the Procuring Entity and its staff to work smoothly to achieve the organization's goals with the right quality and quantity and quantity of inputs in place; ineffective contract initiation may result in failure to achieve those goals and procurement principles and causing damage to the credibility of the organization (Thai, 2004).

Adequate contract initiation and prioritization of needs by each Procuring Entity is an essential prerequisite to effective purchasing for the following reasons; funding for procurement is unlikely to be sufficient to meet all requirements, and scarce financial resources must be channeled that the priority aims of Procuring Entity are adequately met before spending on less essential procurements (IAPWG, 2006). According to Baily (2005), contract creation is used to provide information about the purchase of goods and services, how vendors will be chosen, what kind(s) of contract(s) will be used, how vendors will be managed, and who will be involved at each stage of the process. This documentation should be approved by appropriate individuals before the actual procurement process begins. According to Camillus and Rosenthal (2010), contract like any other agreements can be entered into after a series of activities before formal steps of a contract. In the view of Trent and Monczka (2012), these are considered as pre-contracts obligations or activities. These activities include among others the following cited in this literature.

#### **2.4.2 Bidder selection and Contract execution**

In the view of Nyongesa and Waynoka (2014), bidder selection and the whole process of attaining successful contracts depends on the terms and conditions specified to be fulfilled. The contracting firm and the supplying firm have to live to fulfill the terms and conditions if the contract is to remain valid and binding. According to Adams, *et.al.*, (2012), conditions specified in the notice and the terms under which the works, services or goods involved in the contract are to be supplied determine how it is implemented.

When the terms specify providing on quarterly basis, this determines how much of the resources are invested and how the contract is implemented.

### **2.4.3 Contract Analysis and Procurement Performance**

Carter and Kirby (2006), state that designing a monitoring program to focus on items/ services delivering is important. This is also known as contract analysis. This therefore means, that focus is on monitoring the outcomes that result from the contract. Furthermore, it is important to note that the contract payment methodology has an effect on what needs to be monitored. For example, if payment is based on a firm fixed price (a specific amount of money for a unit of service), it is not necessary to verify contractor's expenses as they are not relevant to this type of contract.

Regulation 58 (f) and (g) of the PPDA Act 2003 states that the PDU shall monitor contract management by user departments to ensure implementation of contracts in accordance with the terms and conditions of the awarded contract; and report any significant departures to the Accounting.

### **2.4.4 Contract Management**

The largest majority of contributors recognize that one fundamental aspect of Contract Management is risk management and its mitigation; risk examples being operational, financial, safety, corporate social responsibility (Trent and Monczka, 2005). It caters for the limiting of liabilities through formal documentation of all agreements or

disagreements and inclusions, exclusions or deviations. Essentially, contract management is a risk management tool that creates an environment for value added services from contracting parties to be recognized.

#### **2.4.5 Commercial Management & Contract Administration**

One aspect that was clear was that contract management is separate from commercial management and contract administration, but that the demarcation is blurred. Commercial Management was generally considered to focus on opportunity realization for a relationship and contract management is a subset of that. Indeed commercial management may over-rule on the specifics of a contractual issue if there is greater benefit within the longer term context of the contracting parties' relationship. A commercial manager will develop added value by exploiting the benefits of the relationship and its supporting contracts.

Contract administration is viewed as a subset of contract management (Scott, 1974). Indeed one contributor suggests that it can be "summarized as the process of systematically and efficiently managing and maintaining the standards of the contract execution". So contract administration is the means by which compliance is assured within the project lifecycle (Bennett, 2007). This is achieved by liaison role with stakeholders, taking feeds from service delivery managers, allowing the PM to get on with the job of being the PM and supporting operational management of service delivery by monitoring performance.

Whilst there was an overwhelming response based on contracts in a project management framework, service contracts were mentioned much less, contract management is viewed as one methodology by which negotiated savings are realized and new opportunities are developed.

#### **2.4.6 Procurement Process Players**

Various discourses posit that one of the biggest challenges in procurement lies in supplier management (Arias *et al.*, 2012; Anthopoulos, *et al.*, 2016). These scholars advance that, companies need to identify the best suppliers, maintain a steady supply of high-quality materials, and assess supplier performance for a continuous business relationship potential. Suppliers need to be monitored in terms of the things they can deliver, the timeliness of the delivery, and the quality of the supply (Miller, 2013; Kaminsky, 2012; Abu-rumman, 2014).

Literature further shows that, there are several routes that a company can take by which the design and construction of a building can be procured (Kaminsky (2012). The variety of choice, however, can be an issue when a company is still looking for the route that is optimal for the business or the specific construction project (Stoica and Brouse, 2013). It is further argued that, the selected route should follow a strategy that fits the objectives of the client's business plan, factoring in the cost of procurement, speed, quality, risk, financing, and specific project constraints. Factually, completing a construction project

within the allotted project is always one of the priorities of construction companies. This means actively looking for opportunities to reduce costs and realize savings. With increased prices of goods and services when the project is executed, along with budget constraints, reducing costs and achieving savings are rarely achieved.

In addition, scholars like (Mirza, Pourzolfaghar, and Shahnazari, 2013) argue that, long lead times and procurement cycles in construction have multifaceted several causes and need multiple approached to address. It is further argued here that one of the biggest reasons is the delay in the preparation of technical specifications, terms of reference (TOR) for services, and statement of work (SOW) for works. Notably, failure to start the evaluation process on time, as well as hitches during the contract negotiation is believed to be contributing largely to the long procurement process (Kaminsky, 2012). By and large, the element of human error such as overlooking the procurement schedule was also purported to cause delays in the process further.

Furthermore, Mirza *et al.*, (2013) illustrate that the accuracy of data is a critical factor when it comes to the procurement decision-making process. It is posited that, for companies to be able to make sound procurement decisions, they need reliable and accurate data. Poor-quality procurement data cause all sorts of problems for an organization, including excess inventory and inventory shortages, and inhibit the organization from optimizing the procurement process. There are a lot of pressing challenges that the construction procurement staff is faced with. But that doesn't mean



companies are powerless in dealing with these issues. This study argues that, by being aware of these problems in construction procurement, they can develop a procurement strategy that will provide a solid foundation they can stand on.

A number of studies advance a lot of interest in why some projects fail and others succeed, including the reasons or drivers of project success. Many believe project management is most important since the role of the Project Manager is overall management of the project, including management of the team so that it functions appropriately and performs well (Mirza *et. al.*, 2013). Others argue that, other factors that determine project success are the skill of the project team, process followed on the project, and whether there are established, tried-and-true ways or technology to accomplish the work i.e. the level of difficulty of the project (Anthopoulos, *et.al.* 2016).

#### **2.4.7 Project Management**

According to Mir and Pennington (2014), the performance of the Project Manager is important for project success with regard to determining the project cost, supervision and monitoring among others. Mir and Pennington noted that this result was consistent with previous research, specifically Din *et.al.* (2011); Stefanovic , 2007; Stefanovic and Shenhar, 2007). Other Scholars like, for example (Remer, & Ross, E. (n.d); Kaminsky (2012) illustrate that the importance of non-technical leadership practices to the success of a project is fundamental in estimating and operating in acceptable and affordable costs. He, however, noted that non-technical leadership practices have not received a lot of

attention in the literature. Procurement and Disposal Audit Report on 74 Entities for Procurements and Disposals for the Year Ended June 2017 by PPDA, the Authority noted that in 175 procurements worth UGX 33,801,945,702 Entities failed to conduct evaluation. Failure to carry out evaluation could lead to failure to attain value for money.

### **2.5 Synthesis of the Literature**

Value for money is a concept generally used to assess an organization's capacity to obtain the maximum benefit from the goods, services or works it acquires or provides, in close relation to the resources available to it. This assessment does not only measure the cost of goods, services but also work. It equally takes into account a complex mix of factors, such as quality, cost, use of resources, and fitness for the organization's purpose, timeliness and opportunity. Once these factors have been comprehensively taken into consideration, an assessment can be made as to whether the highest value has indeed been achieved for the money paid. However, some of these factors can be subjectively measured, making them more difficult to quantify or harder to understand. Following the awarding of the contract, it is imperative to ensure efficient management of the contract to make sure that the supplier meets the deadlines, does not exceed the budget and meets the requirements and specification set out by the purchaser.

In Uganda generally, selected scholars have conducted research on contract performance in public procurement but no comprehensive study has been carried out on procurement process management and construction project cost variations. Besides, there are no

empirical studies that can be traced to explain why there is persistent project cost variations. Several authors have advanced theories explaining contract management and contract performance of Public Entities (Muhwezi and Ahimbisibwe, 2015; Kibogo and Mwangangi, 2014). But none of the above authors explains the influence of procurement process management on project cost variations in local government in Uganda although Kutosi *et al.*, (2015) attempt to examine how contracting affects procurement performance of State owned Enterprises in Uganda.

## **2.6 Chapter Summary**

While, a few available previous studies have attributed costs variation to many factors which include according to (Cunningham, 2013), the client's priorities, quality considerations, cost considerations, time considerations, the nature of the project, the cost of the design, choice of materials, the attitude towards sustainability and whole life costs, the nature of the site, the method of procurement, legislative constraints, socio/environmental factors, market conditions, method of construction, labour costs, site overheads and geographical location among others, none of the studies has looked at procurement process management as a factor affecting construction project costs.

Categorically, empirical evidence has further provided that use of procurement process management made cost an essential element in many forms of competitive advantage in search for the elusive combination of resources and capabilities that yield differential performance. Cost is often a common aspect in sources of advantages in pursuit for value

for money. Therefore, this study intended to fill this gap by examining the relationship between procurement process management and project cost variations in Local Governments of Uganda through study of Mbarara Municipality and the detailed methodology to achieve this is presented in Chapter Three.

## **CHAPTER THREE**

### **METHODOLOGY**

#### **3.1 Introduction**

This chapter explains the methods that were used to carry out the investigation, that is method of data collection and other important elements that are explained which include the study area, sample population, data collection method, data analysis and the procedure that will be followed in the study.

#### **3.2 Study Design**

Various study designs exist in research such as historical, descriptive, feminist, developmental, case study, field study, correlational, casual-comparative, experimental, quasi-experimental and action studies. For this case study, the research design was based on practical, logical and structured manner of the organization relating to the area of the study (Cooper and Schindler, 2008). A case study and exploratory design with an intensive analysis of an individual unit was used in order to gather an in-depth understanding of the procurement processes management and how they affect project cost variations, the phenomenon under investigation. Key parameters included; project planning and development, selection of bidders, contract management, cost variations and value for money. Over all, the research employed both qualitative and quantitative approaches. While quantitative approach involved statistical analysis, the qualitative used narratives to explain, understand and complete the data.

### 3.3 Study Area

This study was limited to the Municipality of Mbarara. The selection of this Municipality was based on the following:

- (i) It has indicative planning figures for the Financial Year 2020/2021 above Ugx. 1,239,632,724= from Uganda Road Fund which is the second highest to Gulu with Ugx 1,309,575,667= in the municipalities elevated to city status in 2019/2020 financial year (Uganda Road Fund, 2019).
- (ii) In August 2014, the national population census put the population of Mbarara Municipality at 195,013 before addition of other 3 divisions of Nyakayojo, Biharwe and Kakiika which put the population to over 350,000 people making it the highest populated Municipality after Nansana and Kiira municipalities (UBOS, 2019).
- (iii) Mbarara Municipality is among the 14 municipalities that have been benefitting from USMID program. Mbarara received Ugx 30,050,639,730= (thirty billion fifty million six hundred thirty nine thousand seven hundred thirty shillings) from the two USMID project batches in the five years (Works Department, Mbarara Municipal Council).

There is need for proper use of the funds received which can be achieved through a well-executed procurement process and minimizing project cost variations.

### 3.4 Study Population

The study sought the opinions of selected project professionals presently working with Mbarara Municipal Council with a population of 129 people (Human Resource Unit, 2019). The departments and sections included the Municipality Engineers/ Contract Managers, Procurement Officers, Administrators, Division staff, Vote controllers and Department Heads. The major reason for selecting this category of people is that they are directly or indirectly involved in the Municipality projects which go through procurement processes at different levels.

### 3.5 Study Sample Size

The sample size was determined using the Krejcie and Morgan (1970) formula:

$$s = \frac{X^2 NP(1-P)}{d^2(N-1) + X^2 P(1-P)} \dots \dots \dots \text{(Equation 3.1)}$$

Where;

$s$  = required sample size.

$X^2$  = the table value of chi-square for 1 degree of freedom at the desired confidence level (3.841).

$N$  = the population size.

$P$  = the population proportion (assumed to be 0.50 since this would provide the maximum sample size).

$d$  = the degree of accuracy expressed as a proportion (0.05).

For this case;

$$X^2 = 3.842, N = 129, P = 0.5 \text{ and } d = 0.05.$$

$$s = 3.842 \times 129 \times 0.5(1 - 0.5) \div (0.05^2 (129 - 1) + 3.842 \times 0.5(1 - 0.5))$$

$$s = 123.9045 \div 1.2805$$

$$s = 96.7625927372 = 97 \text{ participants}$$

This gives a sample size,  $s$  of 96.76 rounded off to 97 participants. This is in resonance with Table 3.1.

**Table 3.1:** Study Population and Sample Size Selection

S/ No	Department	Population	Selected sample	Method
1	Office of the Town Clerk	3	2	Purposive
2	Administration	23	11	Purposive
3	Finance and planning	8	7	Purposive
4	Human resource Management unit	3	3	Random
5	Procurement and Disposal Unit	2	2	Random
6	Contracts Committee	5	5	Random
7	Internal Audit Unit	2	2	Random
8	Works and Technical Services	9	6	Purposive
9	Environmental management Unit	1	1	Random
10	Physical Planning Unit	2	2	Random
11	Education	5	4	Purposive
12	Community Based Services	3	2	Purposive
13	Production Unit	4	3	Purposive
14	Trade, Industry and Economic Development	2	2	Random
15	Public Health	2	2	Random
16	Municipal Divisions	55	43	Purposive
	<b>Totals</b>	<b>129</b>	<b>97</b>	

Source: Mbarara Municipal Council; Human Resource Management Unit, 2019



The sample consisted of at least 97 respondents selected from the total population of staff of 129 in Mbarara Municipality. The respondents were selected from all departments as shown in Table 3.1.

### **3.6 Sampling Techniques**

Sampling process involved a number of steps which include but not limited to defining the population, listing the elements of the population (sample frame), determine the appropriate sampling methodology, deciding on the appropriate sample size and select a representative sample. A number of sampling techniques are used which includes probabilistic and non-probabilistic sampling. These include: systematic sampling, stratified sampling, cluster sampling, simple random sampling, convenience sampling, purposive sampling, snowball sampling, judgment sampling and quota sampling. The study used purposive and simple random sampling mainly because; information was sought from few professional people that are involved in the procurement process and implementation of construction projects.

### **3.7 Sources and Type of Information required**

The main sources of data were documentary review and interviews. The Researcher collected both secondary and primary data.

### **3.7.1 Secondary data**

Secondary data were sourced from PPDA reports, PDU minutes and reports, bidding documents, Council reports/minutes, Works committee reports, Executive committee reports, project progress reports, payment certificates, site meeting minutes, supervision and monitoring reports

### **3.7.2 Primary data**

Primary data were generated from key informant interviews using interview guide and questionnaires that were developed. Both the questionnaires and interview guide were used to obtain primary data.

## **3.8 Data Collection Tools**

The following methods were used to collect data:

### **3.8.1 Interview Guide**

Face to face in-depth interviews were held with five (5) key informant interviewees selected to capture details of procurement process management and the implications thereof. An interview guide (Appendix I) was used to collect qualitative data from selected heads of departments who were in position to give in-depth information through probing the selected staff during face-to-face interview. The five interviewees included: The Deputy Town Clerk, the Senior Procurement Officer, the Municipal Engineer, the Head of Finance and the Chairman Contracts committee.

### 3.8.2 Self-administered Questionnaire

Carefully designed questionnaires were used to easily answer research questions (Amin, 2005). The Researcher ensured that every item in the closed ended questionnaire was fine tuned to address specific objectives as well as the research questions. The responses were arranged on a five-point Likert scale which enhanced simplicity and straight forward answers. The questionnaires were hand delivered to respondents and collected within a week before they were later analyzed.

## 3.9 Validity and Reliability of the Instruments

### 3.9.1 Validity

Research tools were prepared and presented to the Supervisors to check their relevancy and correctness. The Researcher ensured that the questions were relevant basing on the Supervisors' comments in order to obtain meaningful and reliable results represented by variables in the study. To ensure this desired response, questionnaires in this study were subjected to scrutiny by 4 experts in the field of study prior to their deployment for data collection to eliminate vague and ambiguous questions and streamline the content structure, flow and conciseness to ensure content validity. A total of 48 items out of 54 in the questionnaire were rated as relevant, yielding a content validity index as calculated using equation 3.2.

$$\text{Content Validity Index (CVI)} = \frac{\text{Agreed items by all judges}}{\text{Total Number of Items judged}} \dots \text{(Equation 3.2).}$$

**Table 3.2:** Validity of the instruments

S/N	Section in the Questionnaire	Agreed items by all judges	Number of items judged	Content Validity Index (CVI)
1	Impact of project planning and development stage management on project cost variations	7	9	0.778
2	Impact of bidder selection stage management on project cost variations	10	11	0.909
3	Impact of contract management stage management on project cost variations	8	9	0.889
4	Project cost variation	6	7	0.857
	<b>Totals</b>	<b>31</b>	<b>36</b>	<b>0.861</b>

From Table 3.2, the Content Validity Index (CVI) obtained was 0.861. According to Amin, (2005) an acceptable content validity index of a research instrument should be 0.7 and above. For this study the validity index was 0.861 which is within acceptable range ( $0.7 < CVI < 1$ ).

### 3.9.2 Reliability

Reliability measures consistency of results of a research instrument after repeat. Reliability of the instrument was measured by use of Cronbach's Alpha coefficient. An alpha coefficient of 0.5 or higher is sufficient to show reliability (Amin, 2005). The closer it is to 1, the higher the internal consistency in reliability (Sekaran, 2003). The questionnaires were pre-tested using respondents of Mbarara Municipal Council and their reliability was computed as seen from Table 3.3.

**Table 3.3:** Reliability Statistics

Procurement Stage	Number of Items	Cronbach's Alpha
Planning and development stage	9	.822
Bidder selection stage	11	.906
Contract Management stage	9	.873
<b>Average</b>	<b>29</b>	<b>.867</b>

*Source: Primary data*

The results obtained from Table 3.6 showed Cronbach Apha value of 0.867 using SPSS, which was above 0.5, therefore the questionnaire was considered reliable.

### 3.10 Achievement of Specific objectives

Quantitative analysis was conducted using descriptive statistics by assessing the mean and standard deviations of responses to the statements identified from questionnaires. The datasets from the questionnaire were analyzed using descriptive statistics, specifically the weighted mean and weighted standard deviation using SPSS computer software. The formula for finding the weighted average is the sum of all the variables multiplied by their weight, then divided by the sum of the weights.

$$\text{Weighted Mean} = \frac{\sum_{i=1}^n (x_i \cdot w_i)}{\sum_{i=1}^n w_i} \dots\dots\dots (\text{Equation 3.3}).$$

Where;

$w_i$  is the weighting given to the  $i$ th data point,

$x_i$  is the value of the  $i$ th data point and;

$n$  is the number of data points in the set.

The expression for weighted standard deviation used in this study was:

$$\sqrt{\frac{\sum_{i=1}^N w_i (x_i - \bar{x}^*)^2}{\frac{(M-1)}{M} \sum_{i=1}^N w_i}}, \dots\dots\dots(\text{Equation 3.4})$$

Where:

N is the total number of observations;

M is The number of non-zero weights;

w<sub>i</sub> is the weighting given to the *i*th data point;

x<sub>i</sub> is is the value of the *i*th data point and

$\bar{x}$  is the weighted mean

Regression analysis was carried out for each objective. A t-test for inferential statistic was used to determine if there is a significant difference between the means, which may be related in certain features using the SPSS software. The t-test was also used for the purpose of hypothesis testing in the statistics. A t-value of 0 indicates that the sample results exactly equal the null hypothesis. As the difference between the sample data and the null hypothesis increases, the absolute value of the t-value increases.

$$t = \frac{\bar{x}_1 - \bar{x}_2}{\sqrt{s^2(\frac{1}{n_1} + \frac{1}{n_2})}} \dots\dots\dots(\text{Equation 3.5})$$

Where;

*t* is the t-value,

$x_1$  and  $x_2$  are the means of the two groups being compared,  
 $s_2$  is the pooled standard error of the two groups, and  
 $n_1$  and  $n_2$  are the number of observations in each of the groups.

The objectives of the study were achieved as follows:

### **3.10.1 Impact of project planning & development stage management on project cost variations**

The first objective which sought to determine the impact of the project planning & development stage management on project cost variations was achieved by using qualitative method approach and documentary review. Departmental workplans, Procurement plans and design reports from Mbarara Municipal Council were reviewed. Qualitative data set was generated through in-depth interview to get various views and perceptions of the respondents. For quantitative analysis, descriptive statistics were determined by assessing the responses to the statements identified from questionnaires about the impact in terms of mean and standard deviations. The variables were ranked according to their descending order. The mean of the means from responses were obtained from SPSS outputs and used to select statements to be used for generation of a regression model. The statements with means above the mean of the means were selected and regarded to have significant impact on planning and development stage and to project cost variations and hence be used as variables in regression analysis. The findings were compared with the previous studies from the literature review to discuss their agreement or disagreements.

### **3.10.2 Impact of the bidder selection stage management on project cost variations**

The second objective was to determine the impact of the bidder selection stage management on project cost variation in Mbarara Municipality. For this objective, the Researcher used documentary review/ statistical extraction to determine the trends and the overall project cost and which stage cost variations occur most. Literally, all reports from bid document solicitation, evaluation and project reports were analyzed to determine where variations occur mostly and overall final project cost variations.

For quantitative analysis, descriptive statistics were determined by assessing the responses to the statements identified from questionnaires about the impact in terms of weighted mean and weighted standard deviations. The variables were ranked according to their means in a descending order. The mean of the means from responses as obtained from SPSS outputs were determined and used to select statements to be used as variables for generation of a regression model. The statements with means above the mean of the means were selected and regarded to have an impact on bidder selection stage and to project cost variations and hence used in regression analysis. The findings were compared with the previous studies from the literature review to discuss their agreement or disagreements. The findings are presented in Chapter Four section 4.3.2.

### **3.10.3 Impact of contract management stage on project cost variations**

The third objective assessed the impact of contract management stage on project cost variation in Mbarara Municipality. Documentary review/ statistical extraction to



determine the trends and the overall project from contract management files from PDU and user departments were conducted. Responses from the level of contract management and how it affects the cost variations were obtained and converted into descriptive statistics of mean and standard deviations. The variables were ranked according to their means in a descending order. The mean of the means from responses were determined and used to select statements to be used as variables for generation of a regression model. The statements with means above the average of means were selected and regarded to have an impact on contract management stage and to project cost variations and hence be used in regression analysis. The findings were compared with the previous studies from the literature review to discuss their agreement or disagreements.

#### **3.10.4 Procurement process management framework for best practice on construction projects**

Objective four was to develop a procurement process management framework for best practice on construction projects in Local Governments in Uganda. The Researcher attempted to create mechanisms of improving the procurement process for use in construction projects. In this objective, the Researcher looked at good practice generated from the literature, focus group interviews and in depth interviews to develop a procurement process improvement framework. Two highly ranked variables from statements with the highest means from each objective and procurement process management were used to develop a framework for best practice on construction projects in Uganda.

### **3.11 Methods of Data Analysis**

The study used both quantitative and qualitative methods of data analysis. Quantitative data collected were analyzed using SPSS. Before the analysis process, data/questionnaires were prior to coding by the Researcher, checked for possible errors, incompleteness, misclassification and gaps in the information obtained. For data coding, the data base using SPSS computer program was used to customize data entry process. Qualitative field data were organized into categories and sub categories, sorted and arranged following the research themes. This was done progressively from the field findings so as to create meaning of data at each stage purposely to minimize response errors. Coding was done to identify key responses to form verbatim quotations and constructed narratives during presentation and discussion. The qualitative data from FGDs was analyzed using content analysis to synthesize the emergent issues. The detailed explanations gained from the FGDs was used (including anecdotal evidence) to elaborate on the quantitative data from the in-depth interviews.

### **3.12 Chapter Summary**

This chapter has explained the methods that were used to carry out the investigation, that is method of data collection and other important elements that are explained which include the study design, area, sample population, data collection method, data analysis and the procedure that was followed in the study. This research primarily focused on the Local Governments of Uganda. However, selecting Mbarara Municipality may not be a

true representation of the views of all Local Governments of Uganda as a limitation in this study. The Researcher used close-ended questionnaires for data collection and this had a weakness of limiting the amount of data collected. Although there is a likelihood of missing out relevant data, the Researcher was able to hold in-depth interviews and going back to respondents for clarification on unclear issues. This chapter thus enabled the interpretation of the data presented and discussed in Chapters four and five.

## CHAPTER FOUR

### PRESENTATION OF RESULTS, ANALYSIS AND DISCUSSION

#### 4.1 Introduction

This chapter of the dissertation comprises of the presentation, analysis, interpretation and discussion of the study findings. Responses of study respondents from different areas were entered into a computer for analysis using SPSS program. Frequencies, percentages and relationship tests were used to analyze responses of participants on how procurement process management affects construction project cost variations in Local Governments in Uganda.

#### 4.2 Characteristics of respondents

The number of questionnaires distributed to respondents who participated in the study was compared with the number of questionnaires returned by the Researcher as expected and the response rate computed as seen in Table 4.1.

**Table 4.1:** Response Rate

<b>Number of questionnaires given out</b>	<b>Number of questionnaires received</b>	<b>Response rate (%)</b>
97	91	93.8

*Source: By Researcher (2020)*

Table 4.1 shows a response rate of 93.8% which is within the scholarly accepted percentages and taken as complete response rate. In the views of Mugenda and Mugenda (2008), a 70% response rate is acceptable to represent the sample. Personal information

about respondents such as sex, age and education were analyzed to aid categorization and description of the nature of study respondents. All in all, 5 respondents were engaged in in-depth interviews with the Researcher for purposes of understanding deeper the phenomenon under investigation. The details on the respondents' demographic characteristics were converted into percentages and frequencies for easy interpretation.

#### 4.2.1: Gender of respondents

Gender was one of the demographic variables used to describe the respondents in the study because of its stake influencing variant decisions.

**Table 4.2** Gender of respondents

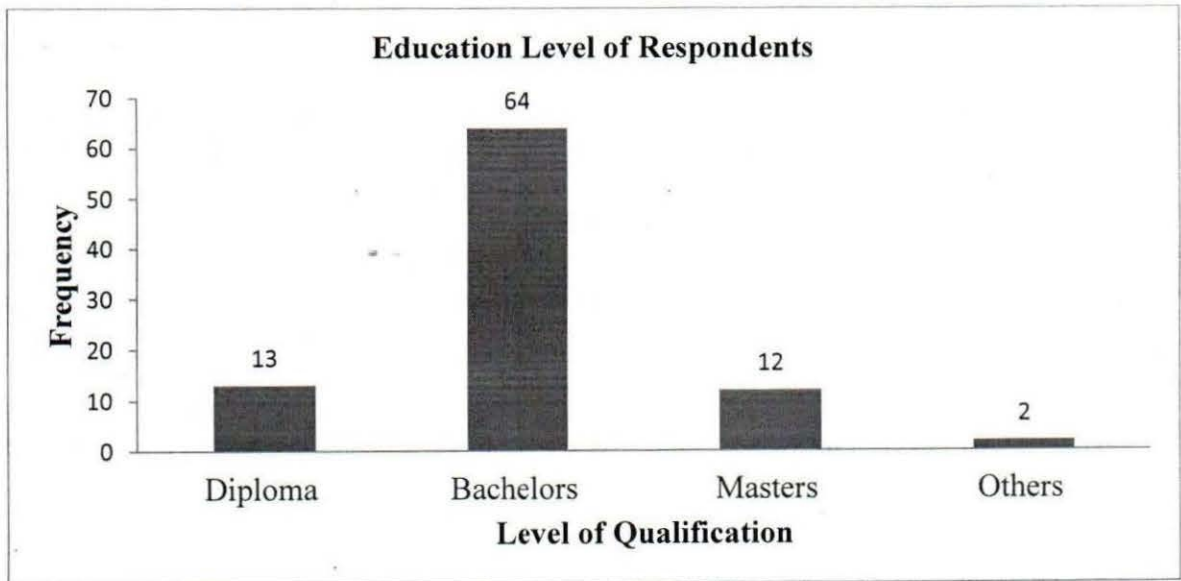
Gender	Frequency	Percentage
Male	62	68
Female	29	32
<b>Total</b>	<b>91</b>	<b>100</b>

*Source: Researcher Primary Data, (2020)*

From Table 4.2, it is observed that 68% of the respondents were males while 32% were females. Literally, this was a good number of female respondents according to gender and the results were therefore not biased to gender.

#### 4.2.2: Education Level of respondents

Education level was one of the demographic characteristic used to describe the participant in the study. The findings are presented in Figure 4.1.



**Figure 4.1:** Education Level of Respondents (Primary Data, 2020)

From Figure 4.1, majority of the respondents had degree qualifications and therefore they were considered knowledgeable. The higher levels of qualification by the officers involved in procurement process is expected to provide reliable data about procurement planning, bidder selection and contract management which will result into reliable and dependable findings of the study.

#### 4.2.3: Working Experience of respondents

The experience of the respondents was also analyzed as one of variables used to describe the demographic characteristics of participant in the study. The findings are presented in Table 4.3.

**Table 4.3:** Experience of respondents

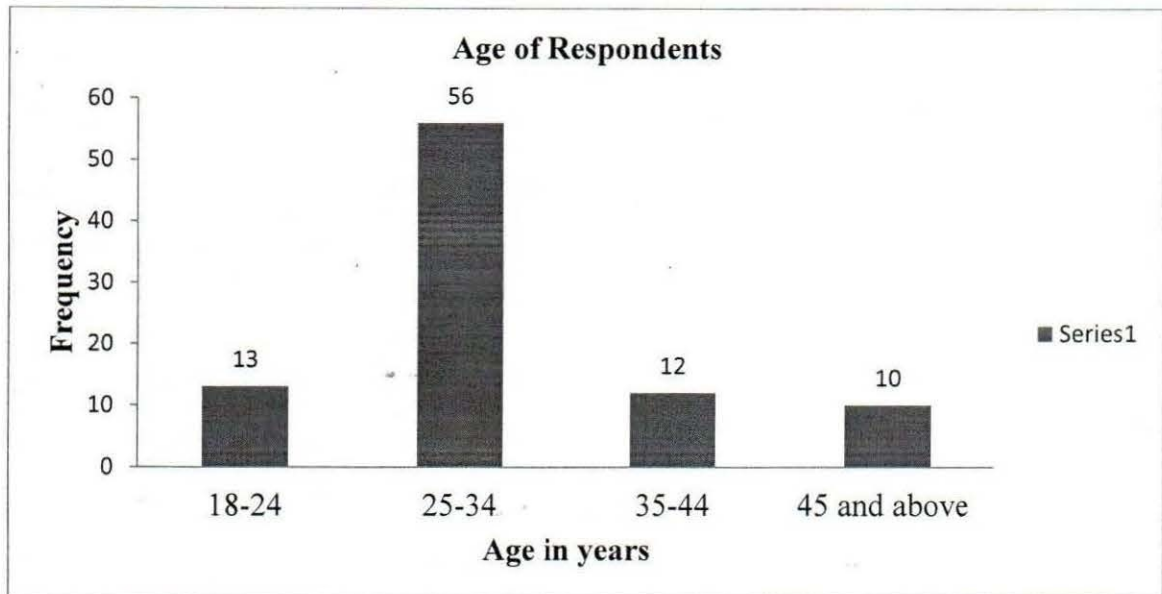
Level of experience (years)	Frequency	Percent
1-5	5	6
6-10	62	68
11-15	20	22
16 and above	4	4
<b>Total</b>	<b>91</b>	<b>100</b>

*Source: Primary Data, (2020)*

From Table 4.3, it is seen that majority of the respondents had experience of 6-15 years (90%) and therefore had enough understanding procurement process management and project cost variations. The higher level of experience of respondents indicates that the data collected were considered to be reliable and therefore lead to reliable and dependable results.

#### 4.2.4: Age of Respondents

The ages of the respondents were recorded in Figure 4.2.



**Figure 4.2:** Age of Respondents (Primary Data, 2020)

From Figure 4.2, majority of the respondents were aged 25 to 34 years who were youths engaged in procurement process management for projects in Local Governments. This means that the mature employees were involved in the procurement process and therefore the data collected were expected to be reliable.

### 4.3: Empirical Findings

#### 4.3.1: Impact of project planning and development stage management on project cost variations

The first objective of the study was to examine the impact of the project planning & development stage management on project cost variations. To understand this impact,



descriptive statistics were determined by assessing the responses to the statements identified through literature review about the impact in terms of weighted mean and weighted standard deviations as seen in Table 4.4.

**Table 4.4: Project planning and development stage management on project cost variation**

(Key: 1=Strongly Disagree, 2=Disagree, 3= Not Sure, 4=Agree, 5=Strongly Agree)

No	Statement	Frequencies					SD	Mean	Rank
		5	4	3	2	1			
5	There are competent staff in Mbarara Municipal Council who prepare contract documents with very high degree of accuracy and are checked by higher managers before final submission.	34	38	13	6	0	0.9	4.1	1
7	Risk factors and budgetary constraints are considered and identified at the planning stage.	11	71	4	5		0.6	3.97	2
4	Documents such as designs, specifications, terms of references and bills of quantities are prepared at the planning stage and are always prepared for all the projects.	21	54	6	10	0	0.9	3.95	3

**Table 4.4 continued**

No	Statement	Frequencies					SD	Mean	Rank
		5	4	3	2	1			
8	Estimating is done based on the amounts in budget and procurement plans.	23	54	1	12	1	1	3.948	4
6	Selection matrix is stipulated based on the project's size and complexity plus scope, schedule, and requirements.	14	45	13	19	0	1	3.59	5
1	A needs assessment is prepared at this stage for proper resource allocation.	10	42	12	26	1	1.1	3.37	6
3	Market price assessment is carried out to guide preparation of bidding documents and project designs.	18	24	10	27	12	1.4	3.1	7
2	Procurement plans and budgets are followed each financial year	15	20	8	35	13	1.36	2.88	8
<b>Mean of the means of responses</b>								<b>3.61</b>	

*Source: Researcher's Primary Data, (2020)*

According to Table 4.4, the statements were ranked based on the mean in a descending order of the responses as seen in the column of ranks. As seen in the table, the statement that “there are competent staffin Mbarara Municipal Council who prepare contract documents with very high degree of accuracy and are checked by higher managers before final submission” had the highest mean response (mean = 4.1, SD = 0.9). This means that most of the respondents were in agreement with this statement.

The statement that “risk factors and budgetary constraints are considered and identified at the planning stage” had the second highest mean response (mean = 3.97, SD = 0.6). This means that this statement was also positively responded to by the majority of respondents. The statement that “documents such as designs, specifications, terms of references and bills of quantities are prepared at the planning stage and are always prepared for all the projects” also was analyzed (mean = 3.95, SD = 0.9) which was a high positive response. The statement that “estimating is done based on the amounts in budget and procurement plans” obtained a high response of (mean = 3.948, SD = 1) which was also high and positive. The statement that “selection matrix is stipulated based on the project’s size and complexity plus scope, schedule, and requirements” scored a mean response of 3.59 which was also high and positive. The statement that “a needs assessment is prepared at this stage for proper resource allocation” obtained a mean response of 3.37. This response was an average between “neutral” and “agree” but also a positive response. The statement that “market price assessment is carried out to guide preparation of bidding documents and project designs” had a mean of 3.1 but which was also a positive response. The statement that “Procurement plans and budgets are followed each financial year” scores the least mean of 2.88.

The average of the mean responses was found out to be 3.72 and the statements with means above the mean of the means of responses were taken to have significant impact at this stage.

The mean of the means from responses obtained from SPSS outputs in Table 4.4 was determined and used to select five statements to be used for development of a regression

model. The statements with means above the average mean were regarded to have significant impact on project cost variations and hence be used in regression analysis.

There was a wide variation in the responses about whether project planning should serve as a road map. This means that project planning and development activities such as needs identification, market price assessment, preparation of designs, TORs and specifications, preparation and issuance of bid documents are done appropriately. This is in contrast with Trent and Monczka (2012) who stated that before formal steps of contracts, some activities such as identifying need for contract, specifications and statement of works, preparation of bid documents and preparation of contract management plan are involved and the potential contractor or bidder must be involved. Where these pre-contractual activities are not undertaken in the entity, the organization may fail to achieve its target goals and procurement principles thus causing loss of credibility of the organization. Thai, (2004) stated that contract initiation enables the Procuring Entity and its staff to work smoothly to achieve the organization's goals with the right quality and quantity of inputs in place; ineffective contract initiation may result in failure to achieve those goals and procurement principles and causing damage to the credibility of the organization.

#### **4.3.2: Regression analysis of the determinants of procurement process management at project planning and development stage**

To validate the results from the respondents on effect of project planning and development stage on project cost variation, a regression model was developed. The

regressors were the significant variables obtained from Table 4.4 based on the ranks. The four highly ranked variables that affect project planning and development stage management were identified and used in the model as independent variables. The variables were:

X<sub>1</sub>: There are competent staff in Mbarara Municipal Council who prepare contract documents with very high degree of accuracy and are checked by higher managers before final submission;

X<sub>2</sub>: Risk factors and budgetary constraints are considered and identified at the planning stage;

X<sub>3</sub>: Documents such as designs, specifications, terms of references and bills of quantities are prepared at the planning stage and are always prepared for all the projects and;

X<sub>4</sub>: Estimating is done based on the amounts in budget and procurement plans.

Model summary is presented in Table 4.5.

**Table 4.5:** Model summary for the impact of project planning and development on project cost variation

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.671	.450	.425	.334501

*Source: Primary Data, (2020), Dependent variable(Y): Project Planning*

From the model summary, the correlation coefficient R of 0.671 was obtained which shows that there is a high correlation between project planning and development and cost variation. The coefficient of determination of 0.450 means that 45% of the variations in

costs are caused by variations in project planning and development stage management and the remaining percentage is unexplained by this model.

**Table: 4.6:** Regression model of project planning and development on project cost variation

Model	Unstandardized Coefficients		Standardized Coefficients	t	Sig.	
	B	Std. Error	Beta			
1	(Constant)	1.217	.323		3.762	.000
	X <sub>1</sub>	.120	.041	.240	2.918	.004
	X <sub>2</sub>	.150	.058	.212	2.578	.012
	X <sub>3</sub>	.137	.041	.268	3.320	.001
	X <sub>4</sub>	.194	.039	.417	5.023	.000

Source: Researcher's Primary Data, (2020), Dependent variable(Y): Project Planning

From Table 4.6, the coefficients are obtained and the model specified as:

$Y = 1.217 + 0.120X_1 + 0.150X_2 + 0.137X_3 + 0.194X_4$ . The constant coefficient of 1.217 means if the level of planning is zero costs, variations will be 1.217. The coefficient for X<sub>1</sub> of 0.120 means improving in competence of staff in Mbarara Municipal Council who prepare contract documents with very high degree of accuracy and are checked by higher managers before final submission will reduce the cost variation by 0.120. The slope coefficient of regression for X<sub>2</sub> was 0.150. This means that if risk factors and budgetary constraints are being considered and identified at the planning stage, cost variations will reduce by 0.150. The coefficient of 0.137 for X<sub>3</sub> means that if documents such as designs, specifications, terms of references and bills of quantities are prepared at the planning stage and are always prepared for all the projects, the cost variations will reduce by 0.137. The coefficient of 0.194 for X<sub>4</sub> means that when

estimating is done based on the amounts in budget and procurement plans cost variations will reduce by 0.194.

The coefficients were all significant since the significance measures by the p-values were all less than 0.05. This means that improved management of procurement at planning and development stage results into significant reduction in cost variation.

The findings were compared with the previous studies from the literature review to discuss their agreement or disagreements. The results were in agreement with the results according to Mullins (2003) that proper project planning influences the success of the project.

Other researchers such as IAPWG, 2012, Monozka, 2012 and Camillus and Rosenthan, 2010 indicate similar findings to this study. Mbarara Municipality has to pay attention in regards to planning and development stage in the procurement process as per PPDA Act and guidelines, (2014) if they are to reduce the project cost variation.

#### **4.3.3 Impact of bidder selection stage management on project cost variation**

The second objective of the study was to examine the impact of the bidder selection stage management on project cost variations. To understand this impact, descriptive statistics were determined by assessing the responses to the statements identified through literature review about the impact in terms of descriptive statistics of weighted mean and weighted standard deviations as seen in Table 4.7.

**Table 4.7:** Impact of bidder selection stage management on project cost variation

(Key: 1=Strongly Disagreed, 2=Disagree, 3= Not Sure, 4=Agree, 5=Strongly Agree)

No	Statements	Frequencies					SD	Mean	Rank
		5	4	3	2	1			
3	Standard bid documents, tools and techniques in selection and evaluation criteria are well spelt out in the documents.	45	40	5	1	0	0.7	4.4	1
1	Selection process involves comparing and contrasting vendors' advantages in terms of price/cost; the lowest bidder is considered	33	51	4	3	0	0.7	4.3	2
2	Other technical and commercial responsiveness are also considered in selection of the best bidder	34	53	2	2	0	0.6	4.27	3
8	Evaluation and contracts committees are selected to serve the interests of top managers.	25	60	6	0	0	0.6	4.21	4
10	There is a tendency of bidders creating arithmetic errors at this stage which may affect the project cost later if not detected.	29	57	3	2	0	0.6	4.2	5
4	Bids are closed and opened in presence of bidders who may wish to attend.	32	44	15	0	0	0.7	4.19	6
7	Procurement contracts are decided and awarded through careful bid evaluation and collaborations between various managers selected as evaluation committees and Contracts committees.	25	58	0	4	4	0.7	4.1	7



**Table 4.7 continued**

No	Statements	Frequencies					SD	Mean	Rank
		5	4	3	2	1			
5	The best evaluated bidder is displayed as required by PPDA.	16	64	11	0	0	0.6	4.05	8
9	Some incompetent members are nominated on Evaluation and contracts committees.	20	53	15	3	0	0.7	3.99	9
11	Connivance between bidders and selection managers cause cost variations in project implementation.	24	50	6	11	0	0.9	3.96	10
6	Bidders prepare the bids already aware of the Engineer's estimates	24	33	20	5	9	1.2	3.6	11
<b>Mean of the mean responses</b>								<b>4.12</b>	

Source: SPSS output (Primary Data)

According to Table 4.7, the statements about bidder selection and its effect on cost variations were ranked based on the mean of the responses as seen above in the column of ranks. The statement that "standard bid documents, tools and techniques in selection and evaluation criteria are well spelt out in the documents" scored a mean response of 4.4 with a standard deviation of 0.7. This means that the statement got a mean between "strongly agree" and "agree" which was a high positive response. The statement that "selection process involves comparing and contrasting vendors' advantages in terms of price/cost; the lowest bidder is considered" had a mean response of 4.3 with a standard deviation of 0.7 which means that it scored between "agree" and "strongly agree" with a small variation

of responses as measured by the standard deviation of 0.7. The statement that “other technical and commercial responsiveness are also considered in selection of the best bidder” was also studied and scored a mean response of 4.27 with a standard deviation of 0.6. This means that the statement scored between “strongly agree” and “agree”. The statement that “evaluation and contracts committees are selected to serve the interests of top managers” got a mean of 4.21 and standard deviation of 0.6. The statement that “there is a tendency of bidders creating arithmetic errors at this stage which may affect the project cost later if not detected” was also studied and scored a mean response of 4.3 with a standard deviation of 0.57. This was a high positive response with low variation which is a sign that there is inspection and acceptance of receipts as measure of a positive impact of a good bidding process on reduction of project cost variation.

The statement that “Bids are closed and opened in presence of bidders who may wish to attend” got a mean response of 3.6 which means it scored between not sure and agree. This statement also had a standard deviation of 1.22. This statement therefore was not responded to very positively but showed a sign of good contract management process in terms of contract performance monitoring. The statement that “procurement contracts are decided and awarded through careful bid evaluation and collaborations between various managers selected as evaluation committees and Contracts committees” got a mean of 4.1. The statement that “the best evaluated bidder is displayed as required by PPDA” scored a mean response of 4.05 with a standard deviation of 0.74. This means that this statement was responded to on average between “strongly agree” and “agree”. This was a high positive response which means there is good time management in decision making about

construction projects as a measure of good contract management. The statement that “bidders prepare the bids already aware of the Engineer’s estimates” scored a mean response of 3.6 with a standard deviation of 1.2. The average of the mean of responses was found out to be 4.12 which was a high positive response. The statements with mean above the mean of the means were considered to have a high impact on the bidder selection management stage and therefore selected for regression analysis. According to PPDA Act 2003, a bidder is selected according the set evaluation criteria usually the one with the lowest price after complying with the preliminary and commercial responsiveness.

#### **4.3.4: Regression analysis for the determinants of procurement process management at bidder selection stage**

To validate the results of the impact of bidder selection on project cost variation, regression analysis was conducted. The regressors were the variables obtained from the Table 4.7 based on the ranks. The five major factors that affect contract management were identified using the ranks and used in model development as independent variables.

The variables were:

$X_1$ : Standard bid documents, tools and techniques in selection and evaluation criteria are well spelt out in the documents.

$X_2$ . Selection process involves comparing and contrasting vendors’ advantages in terms of price/cost; the lowest bidder is considered

$X_3$ : Other technical and commercial responsiveness are also considered in selection of the best bidder

$X_4$ : Evaluation and contracts committees are selected to serve the interests of top managers.

X<sub>5</sub>: There is a tendency of bidders creating arithmetic errors at this stage which may affect the project cost later if not detected.

The regression model was therefore specified and coefficients of regressions for the different variables from bidder selection were determined. The results are presented in Table 4.8.

**Table 4.8:** Model summary for the impact of bidder selection on project cost variation

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.828 <sup>a</sup>	.686	.667	.1756

Source: Primary Data, (2020), Dependent variable(Y): Bidder selection

From the model summary in Table 4.8, the correlation coefficient R of 0.828 was obtained which shows that there is a very strong positive correlation (0.8 – 1.00) between bidder selection stage and cost variation. The coefficient of determination of 0.686 means that 68.6% of the variations in costs are caused by variations in bidder selection stage management and the remaining percentage is unexplained by this model.

**Table: 4.9:**Regression model of bidder selection on project cost variation

Model	Unstandardized Coefficients		Standardized Coefficients	T	Sig.
	C	Std. Error	Beta		
(Constant)	1.335	.215		6.204	.000
X <sub>1</sub>	.106	.030	.226	3.486	.001
X <sub>2</sub>	.138	.020	.417	6.751	.000
X <sub>3</sub>	.321	.077	.578	4.167	.000
X <sub>4</sub>	-.067	.068	-.136	-.978	.331
X <sub>5</sub>	.165	.028	.378	5.922	.000

Source: Primary Data, (2020), Dependent variable(Y): Bidder Selection

From Table 4.9, the coefficients are obtained and the model specified as:

$$Y = 1.335 + 0.106X_1 + 0.138X_2 + 0.321X_3 - 0.067X_4 + 0.165X_5.$$

The constant coefficient of 1.335 means if the level of bidder selection is zero, costs variations will be 1.335. The coefficient for  $X_1$  of 0.106 means if standard bid documents, tools and techniques in selection and evaluation criteria are well spelt out in the documents, bidder selection stage management will be improved and cost variation will reduce by 0.106. The coefficient of regression for  $X_2$  was 0.138. This means that if selection process involves comparing and contrasting vendors' advantages in terms of price/cost and the lowest bidder is considered, cost variations will reduce by 0.138. The coefficient of 0.321 for  $X_3$  means that if other technical and commercial responsiveness are also considered in selection of the best bidder, the cost variations will reduce by 0.321. The coefficient of -0.067 for  $X_4$  means that when evaluation and contracts committees are selected to serve the interests of top managers cost variations will reduce by 0.067. The coefficient of 0.165 for  $X_5$  means that if there is a tendency of bidders creating arithmetic errors at this stage which may affect the project cost later if not detected, cost variations will reduce by 0.067.

The coefficients for all the five variables were generally positive which means that improvement in the bidder section activities at bidder selection stage leads to reduced cost variations. The coefficients were all significant since the significance measures by the p-values were all less than 0.05 except for  $X_4$ . This means that improved management of procurement at bidder selection stage results into significant reduction in cost variation.

The findings were found out to be in agreement with previous studies such as Nyongeza and Wanyota, 2014, Adams *et. al.* 2012 and others. According to Adams, et al, (2012), conditions specified in the notice and the terms under which the works, services or goods involved in the contract are to be supplied determine how the contract is implemented.

#### 4.3.5: The impact of contract management on project cost variations

The success of the project depends on the level of contract management. The effect of contract management on cost variation formed the third specific objective of the study. Responses from the level of contract management and how it affects the cost variations were obtained and converted into descriptive statistics of mean and standard deviations as seen in Table 4.10.

**Table 4.10:** Impact of Contract management on project cost variations

(Key: 1=Strongly Disagreed, 2=Disagree, 3= Not Sure, 4=Agree, 5=Strongly Agree)

No	Statements	Frequencies					SD	Mean	Rank
		5	4	3	2	1			
4	A centralized system of contract change monitoring and control is used to evaluate and determine whether potential changes to contracts are needed.	27	60	3	1	0	0.6	4.24	1
7	Contract managers tend to honor the changes in the contract that cause project cost variations.	32	44	15	0	0	0.7	4.19	2
6	Most projects are not completed on schedule and with planned costs	22	61	7	1	0	0.6	4.14	3

**Table 4.10 continued**

No	Statements	Frequencies					SD	Mean	Rank
		5	4	3	2	1			
2	Contracts of the Mbarara Municipal Council are managed fairly and justly by officers who understand contract management well.	9	75	7	0	0	0.4	4.02	4
5	There are formal physical inspections, internal audits and reviews of procurement operations.	20	56	7	8	0	0.8	3.97	5
1	Contract managers are carefully selected and approved by the Accounting Officer	13	35	12	22	9	1.3	3.23	6
3	Regular progress reports, site meetings, quality control and site diary are maintained on all project management files	10	25	15	26	15	1.2	2.88	7
	<b>Average mean</b>							<b>3.81</b>	

Source: Researcher's Primary Data, (2020)

The statements about contract management were ranked based on their average of responses as seen in the column for rank in Table 4.10. From the table, the statement “a centralized system of contract change monitoring and control is used to evaluate and determine whether potential changes to contracts are needed” scored a mean response of 4.24 with a standard deviation of 0.6. This is a strong response between “agree” and “strongly agree” with a low variation in the responses. The statement that “Contract managers tend to honor the changes in the contract that cause project cost variations” got the mean of 4.19

and a standard deviation 0.7 which means that the mean was between “agree” and “strongly agree” but with a low variation. The results showed that the responses had high averages and low standard deviations which means that contract management would bring out reduced costs variations. The statement that “most projects are not completed on schedule and with planned costs” had a mean response of 4.14 with a standard deviation of 0.6. The mean of the responses for the statement that “contracts of the Mbarara Municipal Council are managed fairly and justly by officers who understand contract management well” was 4.02 with a standard deviation of 0.42. This is a strong positive response between “agree” and “strongly agree”. “There are formal physical inspections, internal audits and reviews of procurement operations” was also studied and obtained a mean of responses of 3.97 with a standard deviation of 0.8. This was a strong positive response with a low variation. The statement “Contract managers are carefully selected and approved by the Accounting Officer” had a mean response of 3.23 with a standard deviation of 1.3 which means that the mean of responses for this statement was between agree and not sure but the variation was a bit higher.

#### **4.3.6: Regression analysis for the determinants of procurement process management at contract management stage**

To study the effect of contract management on project cost variation, a regression model was used. The regressors were the variables obtained from the Table 4.7 based on the ranks. The five major factors that lead to contract management were identified using the ranks and used in the model as independent variables. The variables were:



$X_1$ : A centralized system of contract change monitoring and control is used to evaluate and determine whether potential changes to contracts are needed.

$X_2$ : Contract managers tend to honor the changes in the contract that cause project cost variations

$X_3$ : Most projects are not completed on schedule and planned costs

$X_4$ : Contracts of the Mbarara Municipal Council are managed fairly and justly by officers who understand contract management well.

$X_5$ : There are formal physical inspections, internal audits and reviews of procurement operations.

The regression model was therefore specified as  $Y=A+E_1X_1+E_2X_2+E_3X_3+E_4X_4+E_5X_5$ .

Where;  $E_1$ ,  $E_2$ ,  $E_3$ ,  $E_4$ , and  $E_5$  are coefficients of regressions for the different variables from contract management. The model summary is presented in Table 4.11:

**Table 4.11:** Model summary for effect of Contract management on project cost variations

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.858 <sup>a</sup>	.736	.724	.255639517412422

Source: SPSS output (Primary Data), Dependent variable(Y): Contract Management

From the model summary, the correlation coefficient R of 0.869 was obtained which shows that there is a strong positive correlation (0.80-1.00) between project contract management and cost variation. The coefficient of determination of 0.755 means that 75.5% of the variations in costs are caused by variations in project contract management and the remaining percentage is unexplained by this model.

**Table: 4.12:** Regression model of effect of Contract management on project cost variations

Model	Unstandardized Coefficients		Standardized Coefficients	t	Sig.
	B	Std. Error	Beta		
(Constant)	1.074	.330		3.268	.000
X <sub>1</sub>	.190	.067	.220	2.840	.006
X <sub>2</sub>	.262	.046	.375	5.638	.000
X <sub>3</sub>	.261	.060	.315	4.371	.000
X <sub>4</sub>	.123	.038	.204	3.239	.002
X <sub>5</sub>	.103	.037	.171	2.753	.007

Source: SPSS output (Primary Data), Dependent variable(Y): Contract Management

From Table 4.12, the coefficients are obtained and the model specified as:

$$Y = 1.074 + 0.190X_1 + 0.262X_2 + 0.261X_3 + 0.123X_4 + 0.103X_5$$

The overall p-value is 0.000.

This model presents a significant effect of contract management on construction project cost variations. The constant of 1.074 means if the level of contract management is zero costs variations will be 1.074. This presents an insignificant effect on contract management. The coefficient for X<sub>1</sub> of 0.190 means if a centralized system of contract change monitoring and control is used to evaluate and determine whether potential changes to contracts are needed, it will reduce the cost variation by 0.190. The coefficient of regression for X<sub>2</sub> was 0.262. This means that if contract managers tend to honor the changes in the contract that cause project cost variations, cost variations will reduce by 0.262. The coefficient of 0.261 for X<sub>3</sub> means that if most projects are not completed on schedule and planned costs, the cost variations will reduce by 0.261. The coefficient of 0.123 for X<sub>4</sub> means that when contracts of the Mbarara Municipal Council are managed fairly and justly by officers who understand contract management well, cost variations will reduce by 0.123. The coefficient of 0.103 for X<sub>5</sub> means that if there are formal physical inspections, internal audits and reviews of

procurement operations. Cost variations will reduce by 0.103. The coefficients for all the five variables were all positive which means that improvement in the contract management activities will improve the contract management stage management hence leads to reduced project cost variations; the overall model was significant ( $p = 0.000$ ) since the significance measures by the p-value was less than 0.05. This means that improved contract management of procurement at contract management stage results into significant reduction in cost variation.

The findings were in agreement with Camillus and Rosenthal, (2010), who stated that designing a monitoring program to focus on items/ services delivering is important. The findings were also in agreement with Regulation 58 (f) and (g) of the PPDA (2014). PPDA shall monitor contract management by user departments to ensure implementation of contracts in accordance with the terms and conditions of the awarded contract and report any significant departures from the terms and conditions of the awarded contract. Good management and supervision of contracts requires follow up, feedback and enough awareness of what is occurring to eliminate surprises. Kakwezi and Nyeko, (2014) added that effective contract performance monitoring and management requires the contract manager to regularly check progress, carry out random checks and check compliance to the specifications; the contract manager should be aware of breaches of contract and be prepared to take action.

#### 4.3.7: Probable sources of project cost variations

The success of the project depends on the level of management of cost variations in the project. Responses from the level of cost variations were obtained and converted into descriptive statistics of mean and standard deviations as seen in Table 4.13.

**Table 4.13: Project cost variation**

(Key: 1=Strongly Disagreed, 2=Disagree 3= Not Sure, 4=Agree, 5=Strongly Agree)

No	Statement	Frequencies					SD	Mean	Rank
		5	4	3	2	1			
4	The project cost variations originated mostly from planning and development stage in the procurement process	25	60	6	0	0	0.548	4.21	1
3	Stakeholders are relatively satisfied with the cost of the work	16	64	11	0		0.545	4.05	2
2	The cost variations from the budget are averagely low	20	53	15	3	0	0.723	3.99	3
5	The project cost variations originated mostly from bidder selection stage in the procurement process	13	58	11	9	0	0.797	3.82	4
6	The project cost variations originated mostly from contract management stage in the procurement process	6	56	22	7	0	0.716	3.67	5
7	The project cost variations affect service delivery and value for money	10	51	21	2	7	0.987	3.60	6
1	The contractors complete projects within the budget estimates as per the Engineer's estimates	9	51	18	5	8	1.047	3.53	7
<b>Mean of the mean of responses</b>								<b>3.83</b>	

Source: SPSS output (Primary Data)

According to Table 4.13, the statement that “the project cost variations originated mostly from planning and development stage in the procurement process” was also analysed and it got a mean response of 4.21 with a standard deviation of 0.548. This means that this statement was responded to on average between “strongly agree” and “agree”. The statement that “stakeholders are relatively satisfied with the cost of the work” scored a mean response of 4.05 with a standard deviation of 0.545 which means it scored between “strongly agree” and “agree” and the responses had low variations. The statement that “the cost variations from the budget are averagely low” scored a mean response of 3.99 with a standard deviation of 0.723 which means that the statement got a mean between “agree” and “not sure” but close to “agree” and with low variation. “The project cost variations originated mostly from bidder selection stage in the procurement process” scored a mean response of 3.82 with a standard deviation of 0.797. This score was between “agree” and “not sure” but close to “agree” and the variation was low. “The project cost variations originated mostly from contract management stage in the procurement process” was also studied and scored a mean response of 3.67 with a standard deviation of 0.716. This was between “agree” and “not sure” but close to not sure with a low variation. The statement that “the project cost variations affect service delivery and value for money” was also studied and got a mean response of 3.60 with a standard deviation of 0.987. “The contractors complete projects within the budget estimates as per the Engineer’s estimates” had a mean response of 3.53 with a standard deviation of 1.047.

#### 4.3.8: The impact of procurement process management on project cost variations

Inferential analysis was conducted to generate regression coefficients. The regression analysis was carried out to understand the effect among the variable; procurement process management and construction project cost variations. The regression model was therefore generated as  $Y = \beta + \beta_1 X_1 + \beta_2 X_2 + \beta_3 X_3 + e$

Where;

Y = dependent variable (construction project cost variations);

$\beta$  = intercept;

$\beta_1$ ,  $\beta_2$  and  $\beta_3$  are coefficients of regressions for the different variables from procurement process management;

X = Independent variable (procurement process management measured by  $X_1$ ,  $X_2$  &  $X_3$ );

$X_1$  = Project planning and development stage management;

$X_2$  = Bidder selection stage management;

$X_3$  = Contract management stage management;

The results are as seen in the table as presented in Table 4.16:

**Table 4.14:** Model summary for effect of procurement process management on project cost variations

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.635 <sup>a</sup>	.403	.382	.2984

Source: SPSS output (Primary Data), Dependent variable (Y): Project cost variation

From the model summary, the correlation coefficient R of 0.635 was obtained which shows that there is a moderate correlation between procurement process management and cost variation. The coefficient of determination of 0.403 means that 40.3% of the

variations in construction project costs in Mbarara Municipality are caused by variations in procurement processes management.

**Table: 4.15:** Regression model of impact of procurement process management on project cost variations

Model	Unstandardized Coefficients		Standardized Coefficients	t	Sig.
	B	Std. Error	Beta		
(Constant)	1.712	.332		5.158	.000
Project Planning and development stage management	.188	.060	.272	3.160	.002
Bidder selection stage management	.087	.059	.125	1.480	.142
Contract management stage management	.246	.046	.469	5.408	.000

*Source: SPSS output (Primary Data), Dependent variable(Y): Project cost variation*

From Table 4.17, the coefficients are obtained and the model specified as:

$Y = 1.712 + 0.188X_1 + 0.087X_2 + 0.246X_3$ . The constant of 1.712 means if the level of procurement process management is zero the construction project cost variations in will be 1.712. This presents a significant effect on construction project costs. The model explains the effect of each objective of the study as discussed in the subsequent sections.

For the first objective which was “To determine the impact of the project planning & development stage management on project cost variations in Local Governments in Uganda”, the coefficient for  $X_1$  of 0.188 means that project planning and development stage management significantly predicts construction cost variations ( $\beta_1 = 0.188$ , p-value = 0.002).

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**Table: 4.15:** Regression model of impact of procurement process management on project cost variations

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Contract management stage management	.246	.046	.469	5.408	.000

*Source: SPSS output (Primary Data), Dependent variable(Y): Project cost variation*

From Table 4.17, the coefficients are obtained and the model specified as:

$Y = 1.712 + 0.188X_1 + 0.087X_2 + 0.246X_3$ . The constant of 1.712 means if the level of procurement process management is zero the construction project cost variations in will be 1.712. This presents a significant effect on construction project costs. The model explains the effect of each objective of the study as discussed in the subsequent sections.

For the first objective which was “To determine the impact of the project planning & development stage management on project cost variations in Local Governments in Uganda”, the coefficient for  $X_1$  of 0.188 means that project planning and development stage management significantly predicts construction cost variations ( $\beta_1 = 0.188$ , p-value = 0.002).



This means that 18.8% of the construction project cost variations are caused by project planning and development stage management. Therefore the extent to which project planning and development stage management influences construction project cost variations is significant.

The second objective was “To determine the impact of the bidder selection stage management on project cost variation in Local Governments in Uganda”. The coefficient of regression for  $X_2$  was 0.087. This means that bidder selection stage management also insignificantly predicts construction cost variations ( $\beta_2 = 0.087$ , p-value = 0.142). This means that 8.7% of the construction project cost variations are caused by bidder selection stage management. Therefore, the extent to which bidder selection stage management influences construction project cost variations is also low.

The third objective was “To determine the impact of contract management stage on project cost variation in Local Governments in Uganda”. The coefficient of 0.246 for  $X_3$  means that contract management stage management significantly predicts construction cost variations ( $\beta_3 = 0.246$ , p-value= 0.000). This means that 24.6% of the construction project cost variations are caused by contract management. Therefore contract management stage management significantly influences construction project cost variations.

Considering that the coefficient of determination was 0.403 means that 40.3% of the variations in construction project costs are caused by variations in procurement processes

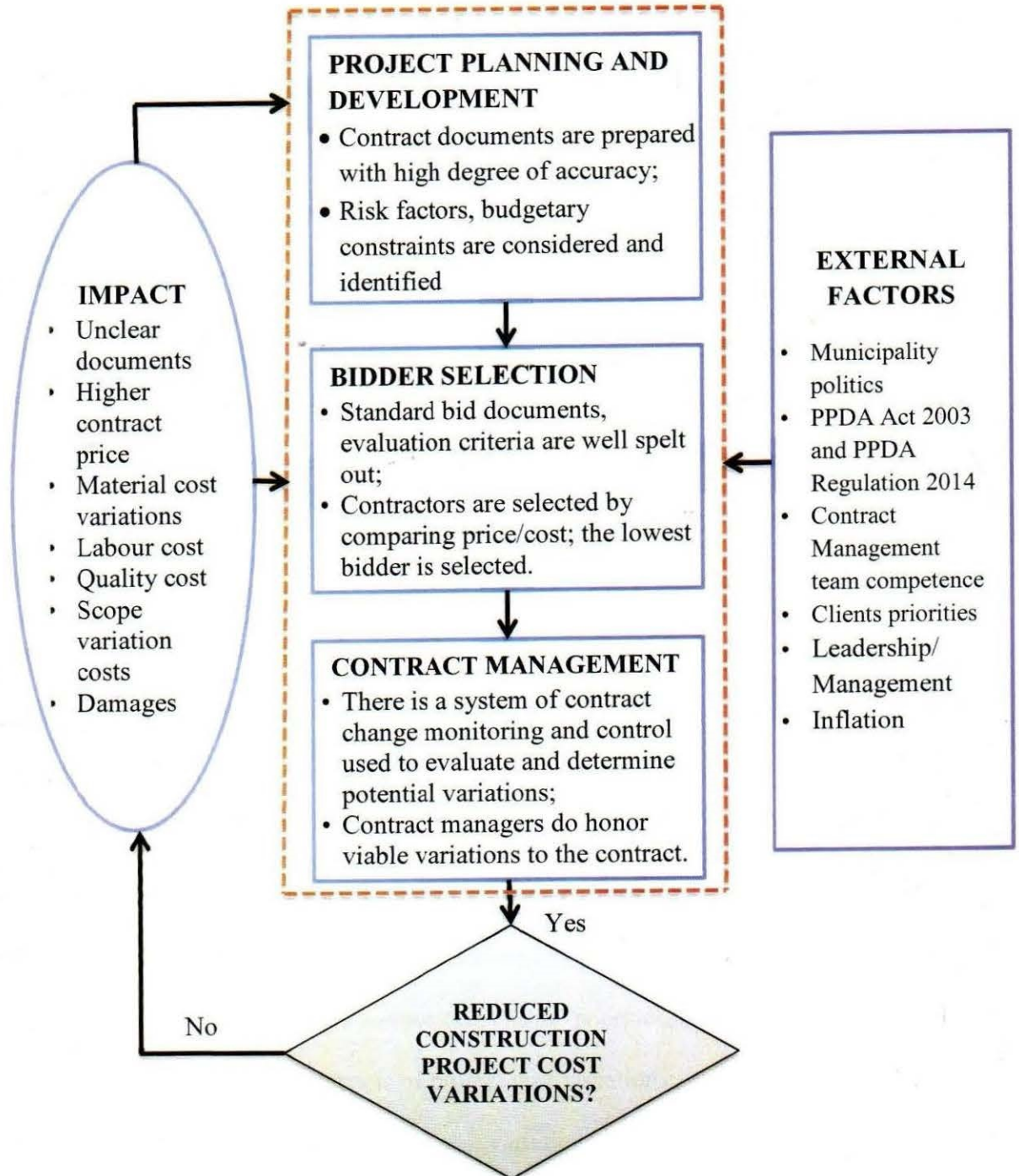
management. This indicates that on the whole, project planning and management, bidder selection and contract management stages have a moderate combined influence on construction project cost variations.

#### **4.3.9 Procurement process management framework for best practice on construction projects**

Highly ranked variables from each procurement process management stage were used to develop a procurement management framework for best practice as seen in Figure 4.3. Two highly ranked variables at each stage were selected and used as predictors of construction project costs variations. The following statements were selected and modified to develop the framework:

- (i) There are competent staff in Mbarara Municipal Council who prepare contract documents with very high degree of accuracy and are checked by higher managers before final submission;
- (ii) Risk factors and budgetary constraints are considered and identified at the planning stage;
- (iii) Standard bid documents, tools and techniques in selection and evaluation criteria are well spelt out in the documents;
- (iv) Selection process involves comparing and contrasting vendors' advantages in terms of price/cost; the lowest bidder is considered;
- (v) A centralized system of contract change monitoring and control is used to evaluate and determine whether potential changes to contracts are needed
- (vi) Contract managers tend to honor the changes in the contract that cause project cost variations

### PROOCUREMENT PROCESS MANAGEMENT STAGES



**Figure 4.3:** Management framework for best practice in procurement process (Researcher 2021)

#### **4.4 Operation of the developed framework**

From Figure 4.3, construction cost variations were as a result of shortfalls in procurement process at different stages. In order to reduce construction project cost variations at project planning and development stage, contract documents have to be well prepared with a high degree of accuracy with all the necessary documents required in place. Also all risk factors and budgetary constraints must be identified and mitigated.

At bidder selection stage, the cost variations will be reduced if standard bid documents are followed, evaluation criteria well spelt out and contractors selected by comparing price/cost with the lowest bidder being selected to take up the contraction contract. The figure also shows that to reduce construction project cost variations at contract management stage, there should be a system of contract change monitoring and control used to evaluate and determine potential variations in the contract and contract managers should be able to identify and evaluate the changes before they honor variations to the contract that are considered viable.

The framework furthermore shows that there are other external factors that may affect the procurement process management such as Municipality politics, PPDA Act 2003 and Regulation 2014, contract management team's competence, clients' priorities, leadership/ management and inflation among others. The impacts of project cost variations include: higher final contract price with no value for money, material cost variations, additional labour cost, quality cost, scope variation costs and damages.

Monitoring of public procurement should start right from project planning and development stage and be a continuous process throughout project life cycle to ensure that a procurement system in use is properly implemented to avoid cost variations. Monitoring at strategic level should include an engineer to carry out the periodic measurement of higher level out come and impact, enough research concerning the monitoring of procurement before the selection of the supplier/contractor should be made so as to improve on the performance of the Local Governments in terms of cost, quality, timeliness, efficiency and effectiveness and monitoring should be considered a management tool in the Local Governments. This is in agreement with Camillus and Rosenthal, (2010) who stated that good management and supervision of contracts requires follow up, feedback and enough awareness of what is occurring to eliminate surprises. Nyeko, (2014) added that effective contract performance monitoring and management requires the contract manager to regularly check progress, carry out random checks and check compliance to the specifications; the contract manager should be aware of breaches of contract and be prepared to take action.

#### **4.5 Qualitative Data Analysis**

An interview guide (Appendix III) was used to collect qualitative data from Heads of Departments who were in position to provide in-depth information through probing during the face-to-face interview, (Mugenda and Mugenda, 1999). The 5 interviewees included: The Deputy Town Clerk, the Senior Procurement Officer, the Municipal Engineer, the Head of Finance and the Chairman Contracts committee.

In regard to the first objective on project planning and development stage, the Municipal Engineer asserted that for all projects, designs and drawings are prepared together with terms of references, specifications and bills of quantities before the procurement requisition forms are prepared to the Accounting Officer. However, sometimes time for accurate preparation of these documents is limited considering that the department is understaffed with less than 50% of the required staff. This affects the planning of the projects which may later cause extra works and variations. The Senior Procurement Officer affirmed that the procurement process is well followed as per PPDA Act (2003) and procurement plans are followed after accurate market price assessment.

For the second objective on bidder selection stage, it was found that there is a positive effect of bidding selection improvement on projects cost variation reduction based on the following the statements by the Deputy Town Clerk:

- *There are competent teams to manage the selection;*
- *Selection done in line with guidelines;*
- *There are steps followed in the selection process;*
- *There are no common variations in the project costs when the selection process is well managed;*
- *The selected contractors are always competent which reduces costs variations of the projects;*

With regard to the third objective of determining the effect of contract management on project cost variations, it was found that there is a positive effect of effective project management on projects cost variations based on the following statements from the key informants:

- *There will be no variations when contracts are well managed;*
- *There is always good contract monitoring by auditors which reduces the possibility of variations;*
- *Stakeholders are well engaged in monitoring contracts such as the Resident District Commissioner (RDC), political leaders and Municipal Development Forum (MDFs);*
- *There is always open communication in case any changes come up to determine the impact of the variations in scope on cost of the project.*

Concerning the fourth objective, most of the key informants noted that most of the variations that occur in the projects in Mbarara Municipality originate from inadequate planning at the project planning and development stage. These variations are caused by unclear specifications, poor project designs, lack of clear drawings and unclear scope of works. The Deputy Town Clerk suggested that more effort is needed in the Works Department to enhance the proper preparation of project documents at planning level. This requires filling staffing gaps in the department especially recruitment of substantive registered District and Municipal Engineers in Local Governments.

#### **4.6: Chapter Summary**

In this chapter, the results from responses as obtained from the questionnaires and key informants were presented, analyzed both quantitatively and qualitatively and discussed. Qualitative analysis was done using SPSS software and regression models obtained to interpret the results coefficients of determination to analyze the extent of the effect of independent variables on dependent variables. The qualitative analysis was done by assessing statements as obtained from the key informants and their views discussed. The above finding showed that all the positive statement about cost variations had positive responses mostly strongly agree and agree. From the above analysis, the project cost variations originated mostly from contract management stage in the procurement process. The findings from this chapter helped in drawing conclusions and making recommendations in Chapter five.

The developed framework for best practice will be employed in the Local Governments in Uganda to improve on the procurement process management while reducing construction project cost variations. This study thus suggests that relevant staff in Mbarara Municipality, mainly engineers, auditors, procurement unit officials and contracts committee members should be in charge of their contract preparation and approvals. This will ultimately ensure efficiency, effectiveness and timely accomplishment of contracts. Therefore, those endowed with skill and experience in the area should spearhead the procurement process management.



## **CHAPTER FIVE**

### **CONCLUSIONS AND RECOMMENDATIONS**

#### **5.1 Introduction**

This chapter presents the summary of the study findings, conclusions that have been drawn from the research findings. Recommendations of the study were generated from conclusions of the study which finally ensued into the suggestions for further research.

#### **5.2 Conclusions**

##### **5.2.1 Project planning and development stage management on project cost variations**

The study concluded that there is a moderate impact of project planning and development stage on project cost variations which were shown by the general agreement by the respondents in this study. Project planning serves as a road map in procurement management which was shown by the fact that majority of the respondents were in agreement. Project cost estimating is done based on the amounts in budget and procurement plans. This means some projects are not well estimated since Mbarara Municipality operates on a fixed budget leading to cost variations at their implementation.

##### **5.2.2 Bidder selection stage management on project cost variation**

The study concluded that bidder selection stage in the procurement process management moderately impacts on the variations in the construction project costs. Some incompetent

contractors are selected because they have well prepared documents and lowest prices but lack knowledge and expertise in construction projects which leads inability to identify deficiencies in the documents that may lead to variations later during implementation. According to PPDA Act 2003, a bidder is selected according the set evaluation criteria usually the one with the lowest price after complying with the preliminary and commercial responsiveness.

### **5.2.3 Contract management on project cost variations**

From the study it was concluded that the extent contract management predicts project cost variation was high. It implies that there were deficiencies in contract management that could result in project cost variations. There were weaknesses in contract management files as revealed from documentary review where some important documents such as contract management plans were missing. The managers, decision makers and practitioners at Mbarara Municipality need to pay considerable attention to management of project work schedules and cost controls if construction cost variations are to be reduced and achieve value for money.

### **5.2.4 Procurement process management framework for best practice on construction projects**

The study concluded that the project cost variations originated mostly from contract management stage in the procurement process. Attention should therefore be focused on proper contract management stage if variations are to be reduced. Contract managers

must stick to the original components in the contract such as designs, scope, quality, terms of reference and specifications, conditions of contract among others if construction cost variations are to be reduced.

Mbarara Municipal Council is quite commendable as regards to contract management and the activities of the Municipality are dependent on the monitoring and contract management plans by relevant organs and ultimately, it is the user departments that participate mostly in contract preparation and management who are responsible for efficiency and effectiveness of the projects. However, although the procurement process management practices in Mbarara Municipality are quite commendable, its performance remains average and project cost variations are always present. This is an indicator that there are other factors that cause variations in construction projects in Local Governments in Uganda besides procurement process management.

There are loopholes in the procurement process management which need to be improved upon for instance; there is lack of enough research concerning the monitoring of procurement at planning and contract management stage. Technical internal audits and verifications are not carried out at every stage in the procurement process.

### **5.3 Recommendations**

Procurement process management is very vital for the proper running of any project because it helps to determine the direction of the Local Governments and in turn encourages optimal use of resources. Therefore, more attention should be paid to the

procurement process management in in Local Governments in Uganda if project cost variations are to be eliminated.

In regards to contract management, relevant staff, perhaps the Engineers, technical auditors, procurement unit and contracts committee should be in charge of their preparation and approval. This is because they play a vital role in ensuring efficiency, effectiveness, timeliness and value for money. Therefore, those who have due skill and experience in the area should spear head the contract management planning process. However, all workers including the user department should be involved in the process as well because it is they who know what happens on ground and know best what is required in their departments. This improves the quality of performance of the Local Governments and reduces cost variations because more informed decisions are made at an appropriate time.

Equally, management of procurement process should be administered by qualified, competent and experienced procurement professionals. This will not only help maintain good procurement standards but also will help achieve high levels of efficiency and effectiveness while reducing project cost variations.

To avoid delays in project delivery and provision of services, timelines have to be respected since most projects would have time and cost overruns. For the success of the contracts under execution, the management of Local Governments should ensure that proper mechanisms for project monitoring and evaluation are put in place with the input

of procurement personnel and the user department with progress reports thereon escalated for necessary action.

All projects should provide a frame work by which the organization manages and mitigates risks and should also aim at ensuring that works are delivered on time, within the scope, at an agreed cost and with specified requirements.

#### **5.4 Areas for further studies**

Procurement process management being a wide macro-economic concept, many issues had to be ascertained to come up with most viable conclusion. However, due to time, financial and data constraints, not all essential issues were analyzed. For this reason, further areas for research are suggested;

The impact of procurement process management on the performance of the Central Government Entities in Uganda should be studied. This is because the local government entities operate in a different environment from the central government entities when it comes to procurement processes.

Secondly the impact of fraud and corruption in procurement process on project costs in Uganda needs to be studied as practices such as collusion, influence peddling, inflating of costs and many other such practices affect project costs.

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## APPENDICES

### APPENDIX I: INTERVIEW GUIDE

Dear respondent,

The interview I am conducting relates to a study titled“ *Effect of Procurement Process Management on Construction Project Cost Variations in Local Governments of Uganda: a case of MBARARA Municipality*”. You have been selected to share with us your experience and make this study successful. The Interview I am conducting is basically aimed at obtaining qualitative information and the information given will be treated with utmost confidentiality.

1. Could kindly participate in sharing information for this research? (*Consent required*)
2. Could you share with me some of personal information (*Probe for age bracket, education level, position and marital status*).
3. In your understanding, what can you say about procurement process management? (*What stages do you follow in the procurement process management in Mbarara Municipality?*).
4. Have you been involved in project planning & development stage management in Mbarara Municipality?,*(if yes, Please share with me, what is involved in project planning & development stage management)*.
5. In your opinion, how do activities in project planning and development stage management impact project cost variations?

6. Have you been involved in the bidder selection stage management in Mbarara Municipality? *If yes, please share with me, what is involved in the bidder selection stage management?*

7. Basing on what is involved in the bidder selection stage management, *how do they impact project cost variations?*

8. *Have you been involved in the contract management stage in Mbarara Municipality? (If yes please share with me what is involved in the contract management stage in Mbarara Municipality).*

9. Basing on what is involved in the contract management stage, *how do they impact project cost variations?*

10. Can you suggest best practices for enhancing a better procurement management process in Mbarara Municipality? *(Suggest practices to be considered?)*

11. What else can you share with me in relation to the choice of a procurement management process and the project cost variations in local government?

***Thanks for your Time and Information***

**APPENDIX II: QUESTIONNAIRE**

Dear sir/Madam,

I am Aggrey Atukwasa from Kyambogo University. I am carrying out a study as part of my Masters Degree in Construction Technology and Management on **“The effect of Procurement process management on construction project cost in Local Governments in Uganda; A case of Mbarara Municipality”**. This study is carried out exclusively for academic purposes and your responses to questions will be treated with utmost anonymity. Your participation in the study is of high value and confidentiality in regard to your response is guaranteed.

Thank you.

Could kindly participate in sharing information for this research? Yes  No

**SECTION A****BACKGROUND OF THE RESPONDENT**

1. Designation of

respondent.....

2. Gender of respondent

(i) Male  (ii) Female

3. Age group (years)

(i) 18 – 24  (ii) 25 – 34  (iii) 35 – 44

(iv) 45 – 54  (v) 55 – 59

4. Level of education

(i) Diploma  Bachelors  Masters  Others

Specify.....

5. Employment terms

(i) Permanent  (ii) Contract

6. Position held

(i) Senior Management Level  (ii) Head of Section  (iii) Others   
Specify.....

7. Profession

.....

8. Department

(i) Administration  (ii) Procurement  (iii) Accounting and Finance   
(iv) Works & Technical Services  (v) Audit  (vi) Education  Ar  her  
specify.....

9. Experience of respondent in construction projects:

(i) Less than 5 years  (ii) 6-10 years  (iii) 11-15 years  above 15 years

**SECTION B**

**IMPACT OF PROJECT PLANNING AND DEVELOPMENT STAGE MANAGEMENT ON PROJECT COST VARIATIONS**

A) Are you well informed about project planning and development stage management in Local Governments?

(i) Yes (ii)

B) If yes, to what extent do you agree with the following statements regarding impact of project planning and development stage management on project cost variations in Mbarara Municipality. Kindly indicate by ticking in the box the level of agreement.



**Scale:** Strongly agree (SA) = 5, Agree (A) = 4, Neutral (N) =3, Disagree (D) =2  
Strongly Disagree (SD) = 1

S/ N	Statements on project planning and development stage management	Level of Agreement				
		5	4	3	2	1
1	A needs assessment is prepared at this stage for proper resource allocation.					
2	Procurement plans and budget are followed each financial year					
3	Market price assessment is carried out to guide preparation of bidding documents and project designs.					
4	Documents such as designs, specifications, terms of references and bills of quantities are prepared at the planning stage and are always prepared for all the projects.					
5	There are competent staff in Mbarara Municipal Council who prepare contract documents with very high degree of accuracy and are checked by higher managers before final submission.					
6	Selection matrix is stipulated based on the project's size and complexity plus scope, schedule, and requirements.					
7	Risk factors and budgetary constraints are considered and identified at the planning stage.					

S/ N	Statements on project planning and development stage management	Level of Agreement				
		5	4	3	2	1
8	Estimating is done based on the amounts in budget and procurement plans.					
9	There is always influence peddling at planning stage by some officers which may lead to inflating the project cost					

Others (Please Specify)

**SECTION C: IMPACT OF BIDDER SELECTION STAGE MANAGEMENT ON PROJECT COST VARIATION**

A) Are you well informed about bidder selection stage management in Local Governments?

(i) Yes  (ii) No

B) The following are statements regarding the bidder selection stage management. In your opinion kindly indicate by ticking in the box the level of agreement with the statements in regard to Mbarara Municipality.

**Scale:** Strongly agree (SA) = 5, Agree (A) = 4, Neutral (N) =3, Disagree (D) =2  
Strongly Disagree (SD) = 1

NO	Statements on bidder selection stage management	Level of agreement				
		5	4	3	2	1
1	Selection process involves comparing and contrasting vendors' advantages in terms of price/cost; the lowest bidder is considered					
2	Other technical and commercial responsiveness are also considered in selection of the best bidder					
3	Standard bid documents, tools and techniques in selection and evaluation criteria are well spelt out in the documents.					
4	Bids are closed and opened in presence of bidders who may wish to attend.					
5	The best evaluated bidder is displayed as required by PPDA.					
6	Bidders prepare the bids already aware of the Engineer's estimates and adjust their bids to be lower.					
7	Procurement contracts are decided and awarded through careful bid evaluation and collaborations between various managers selected as evaluation committees and Contracts committees.					
8	Evaluation and contracts committees are selected to serve the interests of top managers.					

NO	Statements on bidder selection stage management	Level of agreement				
		5	4	3	2	1
9	Some incompetent members are found on Evaluation and contracts committees.					
10	There is a tendency of bidders creating arithmetic errors at this stage which may affect the project cost later if not detected.					
11	Connivance between bidders and selection managers cause cost variations in project implementation.					

Others, (please Specify)

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**SECTION D: IMPACT OF CONTRACT MANAGEMENT STAGE ON PROJECT COST VARIATIONS**

A) Are you well informed about contract management stage in Local Governments?

(i) Yes  (ii) No

B) If yes, to what extent do you agree with the following statements regarding contract management stage in Mbarara Municipality. Kindly indicate by ticking in the box the level of agreement.

**Scale:** strongly agree (SA) = 5, Agree (A) = 4, Neutral (N) =3, Disagree (D) =2 Strongly Disagree (SD) = 1

NO	Statements on contract management stage	Responses				
		5	4	3	2	1
1	Contract managers are carefully selected and approved by the Accounting Officer					
2	Contracts of the Mbarara Municipal Council are managed fairly and justly by officers who understand contract management well.					
3	Regular progress reports, site meetings, quality control and site diary are maintained on all project management file.					
4	Non-conformity to specifications by the contractors is penalized.					
5	There is continual creation of project requirements that may drive project changes in scope and schedule.					
6	A centralized system of contract change monitoring and control is used to evaluate and determine whether potential changes to contracts are needed.					
7	There are formal physical inspections, internal audits and reviews of procurement operations.					
8	Most projects are not completed on schedule and planned costs					

NO	Statements on contract management stage	Responses				
		5	4	3	2	1
9	Contractor managers tend to honor the changes in the contract that cause project cost variations.					

**Others(Please,**

**specify).....**

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**SECTION E: PROJECT COST VARIATION**

**A)** Are you well informed about project cost variation in Mbarara Municipality?

(iii) Yes  (ii) No

**B)** To which extent do you agree with the following statements regarding cost variations in Mbarara Municipality?

**Key: 5 = Strongly Agree 4 = Agree, 3= Not sure, 2= Disagree, 1 = Strongly Disagree**

Item	Statements	5	4	3	2	1
1	The contractors complete projects within the budget estimates as per the Engineer's estimates					
2	The cost variations from the budget are averagely low					
3	Stakeholders are relatively satisfied with the cost of the work					
4	The project cost variations originated mostly from planning and development stage in the procurement process					
5	The project cost variations originated mostly from bidder selection stage in the procurement process					
6	The project cost variations originated mostly from contract management stage in the procurement process					
7	The project cost variations affect service delivery and value for money					

Others (please specify)

.....

**End**

**Thank You for Cooperation. God bless you!**

## APPENDIX III: COST VARIATIONS IN MBARARA MUNICIPALITY

S/ N	Project name	Financial Year	Engineer 's Estimate (a)	Original Contract price (b)	Final project cost (c)	Variance 1 Var 1 = (b-a)	% Var 1 (b-a)/a	Variance 2 Var 2 = (c-b)	% Var 2 (c- b)/b	Reason for Variance
1	Rehabilitation of AkiikiNyabongo road (0.564km), McAllister and Constantino Lobo (1.11km) and Bulemba road (1.75km) under USMID	2015/2016	17,500,965,130	17,880,965,130	19,766,707,362	380,000,000	2.17%	1,885,742,232	10.55%	Change in scope of work
2	Construction of a classroom block at Karama Primary School	2015/2016	419,398,054	424,862,540	425,717,521	5,464,486	1.30%	854,981	0.20%	Change in reinforcement
3	Design and construction works for landscaping and beautification	2015/2016	350,000,000	379,921,261	512,675,450	29,921,261	8.55%	132,754,189	34.94%	Change in scope of work
4	Installation of Solar Street Lighting in Mbarara Town – Mbarara Municipality (Phase 1)	2016/2017	490,800,500	497,894,150	497,894,150	7,093,650	1.45%	0	0.00%	
5	Repair of Katete wooden bridge	2016/2017	167,203,050	158,000,000	186,440,000	9,203,050	-5.50%	28,440,000	18.00%	Variation of timber sizes
6	Construction of a classroom block at Karama Primary School - phase 2	2016/2017	382,550,750	387,384,678	418,462,220	4,833,928	1.26%	31,077,542	8.02%	Change in steel reinforcement



S/N	Project name	Financial Year	Engineer's Estimate (a)	Original Contract price (b)	Final project cost (c)	Variance 1 Var 1 = (b-a)	% Var 1 (b-a)/a	Variance 2 Var 2 = (c-b)	% Var 2 (c-b)/b	Reason for Variance
7	Construction of road works on Bishop Wills (0.628km), Bucunku (0.43km), and Mbaguta(0.711km). Markhan Singh road (0.28km) under USMID	2017/2018	12,549,674,600	13,906,947,723	15,873,164,365	1,357,273,123	10.82%	1,966,216,642	14.14%	Change in scope of work
8	Installation of solar street lights lighting in Mbarara Municipality (phase ii) along Mbarara – Kabale Road	2017/2018	160,000,000	157,600,800	135,340,800	2,399,200	1.50%	22,260,000	14.12%	
9	Construction of a classroom block at Karama Primary School - phase 3	2018/2019	542,957,779	635,841,537	743,430,297	92,883,758	17.11%	107,588,760	16.92%	Change in roof structure
10	Construction of a 3 – staff house at Rwebishuri Primary school – Kakiika Division	2018/2019	127,534,058	134,561,276	132,301,694	7,027,218	5.51%	2,259,582	-1.68%	

**APPENDIX IV: SAMPLE SIZE DETERMINATION**

*Table for Determining Sample Size from a Given Population*

<i>N</i>	<i>S</i>	<i>N</i>	<i>S</i>	<i>N</i>	<i>S</i>
10	10	220	140	1200	291
15	14	230	144	1300	297
20	19	240	148	1400	302
25	24	250	152	1500	306
30	28	260	155	1600	310
35	32	270	159	1700	313
40	36	280	162	1800	317
45	40	290	165	1900	320
50	44	300	169	2000	322
55	48	320	175	2200	327
60	52	340	181	2400	331
65	56	360	186	2600	335
70	59	380	191	2800	338
75	63	400	196	3000	341
80	66	420	201	3500	346
85	70	440	205	4000	351
90	73	460	210	4500	354
95	76	480	214	5000	357
100	80	500	217	6000	361
110	86	550	226	7000	364
120	92	600	234	8000	367
130	97	650	242	9000	368
140	103	700	248	10000	370
150	108	750	254	15000	375
160	113	800	260	20000	377
170	118	850	265	30000	379
180	123	900	269	40000	380
190	127	950	274	50000	381
200	132	1000	278	75000	382
210	136	1100	285	1000000	384

Note.—*N* is population size.

*S* is sample size.