EVALUATING THE IMPACT OF MANAGEMENT PRACTICES ON SUCCESS OF ROAD CONSTRUCTION PROJECTS IN UGANDA: A CASE STUDY OF KABALE DISTRICT LOCAL GOVERNMENT

BY

RWEHAYO CHRISPUS KYARIMPA

(BSC SLIS, KYU)

21/U/GMET/14604/PE

A DISSERTATION SUBMITTED TO THE DIRECTORATE OF RESEARCH AND GRADUATE TRAINING IN PARTIAL FULFILLMENT OF THE REQUIREMENTS FOR THE AWARD OF THE DEGREE OF MASTER OF SCIENCE IN CONSTRUCTION TECHNOLOGY AND MANAGEMENT OF KYAMBOGO UNIVERSITY

OCTOBER, 2025

DECLARATION

I, **RWEHAYO CHRISPUS**, 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 institute of higher learning, except where due acknowledgement has been made in the text and reference list.

Signature..... Date.....

APPROVAL

We, the undersigned, approve that we have read and hereby recommend for submission to the Directorate of Research and Graduate Training of Kyambogo University, a dissertation titled "*Evaluating the impact of management practices on success of road construction projects in Uganda*" in fulfilment of the requirements for the award of Master of Science in Construction Technology and Management Degree of Kyambogo University.

Signature..... Date .....

ASSOC. PROF. LAWRENCE MUHWEZI (Supervisor)

Signature..... Date .....

ENG. DR. SAM BULOLO (Supervisor)

ACKNOWLEDGEMENTS

I would like to express my deep gratitude to all those who played a significant role in the successful completion of this research project and to whom I am greatly indebted. First and foremost, I extend my sincere appreciation to my mentors, Associate Professor Lawrence Muhwezi and Eng. Dr. Sam Bulolo, for their invaluable support and guidance throughout every phase of this study. Their expertise and assistance were instrumental in helping me achieve my research objectives. Kabale district local government staff and administration for their cordial welcome and cooperation in data collection was a wonderful gesture.

Furthermore, I am profoundly grateful for the unwavering support and love from my family. Their unwavering support and consistent presence acted as a motivating factor, and I am sincerely thankful for their input, which was indispensable for the success of this endeavor. Lastly, I offer my heartfelt thanks to God for bestowing good health upon me, enabling me to pursue my studies. I am also grateful for the financial opportunities that allowed me to afford university tuition. All honour and praise belong to Almighty God.

DEDICATION

I dedicate my Master of Science degree in Construction Technology and Management to my wife Mackline Naturinda whose unwavering support and encouragement have been my driving force throughout this journey. To my professors and mentors at Kyambogo University, thank you for imparting knowledge and guidance. This achievement is a testament to the collective efforts of everyone who believed in me.

May God bless you!

TABLE OF CONTENTS

DECLARATION ..... **i**

APPROVAL ..... **ii**

ACKNOWLEDGEMENTS ..... **iii**

DEDICATION ..... **iv**

TABLE OF CONTENTS ..... **v**

LIST OF TABLES ..... **x**

LIST OF FIGURES ..... **xi**

LIST OF ACRONYMS ..... **xii**

ABSTRACT ..... **xiii**

CHAPTER ONE: INTRODUCTION **1**

1.1 Background to the study 1

1.2 Statement of the problem 4

1.3 Objectives of the Study 6

1.3.1 General Objective 6

1.3.2 Specific Objectives 6

1.4 Research Questions 6

1.5 Justification of the study 7

1.6 Significance of the Study 8

1.7 Scope of the study 9

1.7.1 Content scope 9

1.7.2 Geographical scope 9

1.7.3 Time scope 9

1.8 Conceptual framework 9

1.9 Chapter summary 10

CHAPTER TWO: LITERATURE REVIEW 11

2.1 Introduction 11

2.2 Theoretical review 11

2.3 Construction management practices in road sector 13

2.3.1 Project Planning 13

2.3.2 Risk Management 14

2.3.3 Stakeholder Management 14

2.3.4 Cost Management 15

2.3.5 Quality Management 15

2.3.6 Project Monitoring and Evaluation 16

2.4 Influence of Management practices on the success of road construction projects 17

2.4.1 Monitoring and evaluation 17

2.4.2 Risk control techniques 17

2.4.3 Project finance 17

2.4.4 Cost planning 18

2.4.5 Materials acquisition 18

2.4.6 Company Management and Strategy 19

2.4.7 Human resource planning 19

2.5 Analysis of models for successful road construction projects 20

2.5.1 Project Management Body of Knowledge (PMBOK) 20

2.5.2 Critical Path Method (CPM) 20

2.5.3 Program Evaluation and Review Technique (PERT) 21

2.5.4 Earned Value Management (EVM) 21

2.5.5 Construction Industry Institute (CII) Best Practices 22

2.5.6 Lean Construction 22

2.6 Comparison matrix of models for successful road projects 23

2.7 Chapter summary and research gap 25

CHAPTER THREE: METHODOLOGY 27

3.1 Introduction 27

3.2 Research Design and Approach 27

3.2.1 Research Design 27

3.2.2 Research Approach 28

3.3 Population and Sample 28

3.3.1 Study Population 28

3.3.2 Sampling techniques procedure 30

3.4 Data Collection Methods and Procedure 31

3.5 Pilot Testing and Data Collection Procedure 33

3.6 Data quality testing 33

3.6.1 Content validity 33

3.6.2 Reliability tests 34

3.9 Data Analysis 35

3.9.1 Relative Importance Index (RII) 35

3.9.2 Multiple Linear Regression Analysis 36

3.9.3 Qualitative Data Analysis 37

3.9.4 Model Development 37

3.10 Research ethical considerations 38

3.11 Chapter Summary 39

CHAPTER FOUR: RESULTS AND DISCUSSION 40

4.1 Introduction 40

4.2 Demographic Profile of Respondents 40
4.2.1 Gender Distribution 40
4.2.2 Age Distribution 40
4.2.3 Educational Qualification 41
4.2.4 Occupation 41
4.2.5 Working Experience 42
4.3 Empirical findings 43
4.3.1 The various road construction management practices in Kabale district local government 43
4.3.2 The influence of road construction management practices on the success of road construction projects in Kabale district local government 48
4.3.3 Development of a Statistical Model to Enhance the Success of Road Construction Projects in Kabale District Local Government 55

CHAPTER FIVE: CONCLUSIONS AND RECOMMENDATIONS 59
5.1 Introduction 59
5.2 Conclusions 59
5.3 Recommendations 60
5.4 Recommendations for further research 62

REFERENCES 64

APPENDICES 73
Appendix I: Sample Determination Table 73
Appendix II: Consent Letter 74
Appendix III: Questionnaire for Respondents 75
Appendix V: Interview Guide 79

Appendix VI: Introductory Letter 80

Appendix VII: Plagiarism Test Results 81

LIST OF FIGURES

Figure 1. 1: Conceptual framework of the study 10

LIST OF ACRONYMS

CII	Construction Industry Institute
CPM	Critical Path Method
EVM	Earned Value Management
GDP	Gross Domestic Product
M&E	Monitoring and Evaluation
PERT	Program Evaluation and Review Technique
PMBOK	Project Management Body of Knowledge
WBG	World Bank Group

ABSTRACT

This study addresses the critical issue of road construction project success within Kabale District Local Government, Uganda, aiming to identify practices, evaluate their impact on project success, and propose a model for improvement. Despite the crucial role that road infrastructure plays in economic development, the region has been plagued by delays, budget overruns, and subpar quality all attributed to inadequate road construction management practices. However, limited empirical studies have examined the combined effect of these management practices within the Ugandan local government context, leaving a significant research gap that this study sought to fill. A descriptive research design was employed, combining qualitative and quantitative approaches through triangulation. Data were collected from 177 respondents and analysed using Relative Importance Index and regression analysis. The study revealed that project planning (RII = 0.80), stakeholder engagement (RII = 0.70), and risk management (RII = 0.60) are of moderate importance, while cost management (RII = 0.50) and project monitoring and evaluation (RII = 0.60) are perceived as less critical. Notably, quality management received the highest importance ranking (RII = 0.90). Regression analysis confirms the substantial influence of these management practices on project success. The model summary shows a strong positive relationship (R = 0.86) between road construction management practices and project success. Approximately 66% of the variance in project success can be explained by these practices. Conclusively, this study underscores the significance of project planning, risk management, stakeholder engagement, cost management, quality management, and project monitoring and evaluation for the success of road construction projects in Kabale District Local Government. The findings provide evidence-based insights that can guide policymakers in formulating targeted interventions, resource allocation strategies, and regulatory frameworks to improve road construction outcomes across Uganda. Therefore, implementing a comprehensive approach based on the identified recommendations is imperative for enhancing road construction project success in Kabale District Local Government, Uganda.

Keywords: *Impact, Road construction, project success, management practices, Model*

CHAPTER ONE: INTRODUCTION

1.1 Background to the study

Road construction projects are complex and require a variety of skills, including engineering, finance, procurement, and project management. The success of these projects depended on several factors, including the availability of resources, the ability to manage risks, and the ability to coordinate the activities of various stakeholders (World Bank, 2018). Construction accounted for 6–9% of many countries' Gross Domestic Product (GDP) (Lopes, 2022).

Globally, road construction projects played a significant role in the economic development of countries. Improved road networks increased access to remote areas, reduced travel time and costs, and enhanced the movement of goods and services, contributing to the growth of small businesses and overall economic development (World Bank, 2018). In both developed and developing countries, road construction projects often faced challenges such as high costs, limited resources, and a need to balance development with environmental and social considerations (World Bank, 2018). Despite these challenges, developed countries had access to advanced technologies, experienced professionals, and established project management practices, which contributed to the success of road construction projects. In the United Kingdom and the United States of America, road construction management practices had evolved over the years, with established project management principles and best practices, including early stakeholder involvement, effective risk management, use of advanced technologies, and clear procurement strategies (UK Department for Transport, 2019; Federal Highway Administration, 2019).

In Africa, road construction was integral to economic development, facilitating enhanced access to remote areas, reduced travel time and costs, and increased movement of goods

and services (World Bank, 2018). However, these projects faced challenges such as limited resources, technical capacity constraints, and the imperative to balance development with environmental and social considerations (World Bank, 2018). In South Africa, the road construction sector contributed significantly to the national economy, with substantial government investments aimed at infrastructure improvement (SSA, 2019). While road construction was crucial for economic development in developing countries, inadequate management practices led to cost overruns, delays, and compromised quality, negatively impacting project success (UNRA, 2018). Effective road networks were a core focus for African governments, crucial for economic productivity and social service access (Sewell et al., 2019). Nonetheless, a study by Muzaale and Auriacombe (2018) revealed challenges affecting the success of road construction projects in both developing and affluent countries.

In Kenya, the road construction industry experienced remarkable growth, driven by substantial government investments dedicated to improving the country's infrastructure. According to the Kenya National Bureau of Statistics (KNBS, 2019), a significant portion, constituting 17% of the total budget, had been allocated to road construction projects. This financial commitment underscored the government's prioritization of infrastructure development, aiming to enhance transportation networks, foster economic growth, and address critical connectivity challenges. The substantial support for road construction initiatives reflected a strategic approach to advancing Kenya's overall development objectives.

In Uganda, road development and maintenance were divided between the Uganda National Roads Authority (UNRA) and District Local Governments (DLGs). UNRA was responsible for national roads, while DLGs oversaw District, Urban, and Community

Access Roads (DUCAR) under the decentralization framework (MoWT, 2021). Kabale District Local Government (KDLG), therefore, held the mandate to plan, construct, and maintain DUCAR roads within its jurisdiction. Challenges faced by UNRA, such as inadequate project monitoring, delays in procurement, and cost overruns, were equally relevant to KDLG because similar constraints existed at the local level, often compounded by limited budgets, capacity gaps, and logistical difficulties (Nabende & Basheka, 2022; Tumwebaze et al., 2023).

In Kabale District, recent years had seen substantial road construction, totaling 480 km (KDLC Report, 2020). Despite this progress, inadequate road construction management practices, as noted by UNRA (2018), had led to increased costs and reduced quality. Many projects in the district faced significant schedule and expense overruns, failed to achieve intended benefits, or were abandoned (KDLG, 2020). Examining specific data revealed concerning trends, with certain projects experiencing delays and escalated costs. For instance, the cost overruns ranged from 15% to 25%, and time delays extended between 6 to 12 months, impacting the overall success and viability of these endeavors. The detailed report by KDLC in 2020 provided comprehensive insights into the challenges and status of road construction projects in Kabale District.

Road users in Kabale District continued to face challenges transporting produce to the market due to a severely deteriorated road network, making travel difficult even during the dry season (Goodluk, 2021). This deterioration posed a threat to the local population's businesses. Despite the evident need for infrastructure improvement, only 377 million shillings had been allocated in 2021, falling short of the required budget to construct 100 kilometers of roads to the necessary standards. This inadequacy highlighted the pressing issue of insufficient funding for crucial road projects.

Recent peer-reviewed empirical studies in similar developing-country contexts emphasized that project success was strongly tied to the integration of systematic project planning, stakeholder engagement, and effective risk management at the local government level (Mwangi and Mwaura, 2021; Ncube et al., 2022). However, they also revealed that in many cases, weak monitoring frameworks and limited technical capacity undermined infrastructure delivery. This mirrored the situation in Kabale District, where resource constraints, fragmented coordination, and lack of performance tracking contributed to suboptimal outcomes.

In light of the above, there remained a notable research gap regarding the combined effect of multiple road construction management practices, specifically project planning, cost management, quality management, risk management, stakeholder engagement, and monitoring/evaluation, on the success of DUCAR road projects in Ugandan local governments. This study addressed that gap by evaluating the influence of these practices on project success in Kabale District Local Government, thereby generating practical recommendations to enhance infrastructure delivery in similar contexts.

1.2 Statement of the problem

Road construction projects are a crucial aspect of economic development in many countries, including Uganda, as highlighted by the Ministry of Works and Transport (2019). They provide improved access to remote areas, reduce travel time and costs, and increase the movement of goods and services, contributing to the growth of small businesses and overall economic development (World Bank, 2018). The completion of road construction projects is critical to a country's economic development, and stakeholders strive to guarantee that the projects are finished on time, within budget, and with high quality.

The success of road projects in Uganda has been limited by the lack of proper road construction management practices, with 60% of road construction projects being delayed due to poor project management (UNRA, 2018). This has resulted in increased delays, cost overruns, and reduced quality (UNRA, 2018).

Within Kabale District Local Government, the challenge is particularly evident in the District, Urban, and Community Access Roads (DUCAR) network, which forms the bulk of the district's transport infrastructure. According to the Kabale District Local Government (2022), only 20.8% of DUCAR projects have been executed on time and within budget, while 79.2% have experienced some type of failure. Peer-reviewed studies in similar developing-country contexts (Mwangi & Mwaura, 2021; Ncube et al., 2022) attribute such failures to fragmented planning, insufficient risk assessment, and weak stakeholder coordination, all of which are also evident in Kabale.

The Government of Uganda, through the Ministry of Works and Transport and the Uganda Road Fund, has implemented several interventions, including capacity-building workshops, community-based maintenance schemes, and the use of standardised procurement guidelines for DUCAR works (MoWT, 2021). However, these measures have had limited impact due to persistent budget shortfalls, irregular monitoring, and the absence of integrated project management frameworks (Tumwebaze et al., 2023).

Despite these interventions, there is limited empirical research assessing how a combination of road construction management practices—such as project planning, cost management, quality management, risk management, stakeholder engagement, and monitoring/evaluation collectively influence the success of DUCAR projects in Ugandan local governments. This knowledge gap constrains policymakers and practitioners from adopting evidence-based improvements tailored to the district-level context.

The study, therefore, aimed to establish the impacts of road construction management practices on the success of road construction projects in Kabale District Local Government, Uganda, with a specific focus on the DUCAR network.

1.3 Objectives of the Study

1.3.1 General Objective

The general objective was to evaluate the impact of road construction management practices on the success of road construction projects defined in this study as timely completion, cost-effectiveness, and adherence to quality standards in Kabale District Local Government.

1.3.2 Specific Objectives

The specific objectives of the study were:

(i) To identify and describe the various road construction management practices implemented in Kabale District Local Government.

(ii) To assess the extent to which these practices influence the timely completion, cost-effectiveness, and quality of road construction projects in Kabale District Local Government.

(iii) To develop a statistical model for enhancing the success of road construction projects in Kabale District Local Government.

1.4 Research Questions

The study answered the following research questions:

(i) What specific road construction management practices are currently implemented in Kabale District Local Government?

(ii) To what extent do these practices influence the timely completion, cost-effectiveness, and quality of road construction projects in Kabale District Local Government?

(iii) What can be done to enhance the success of road construction projects in Kabale District Local Government?

1.5 Justification of the study

The road sector in Uganda plays a pivotal role in the nation's economic development, significantly contributing to the growth of key sectors such as agriculture and tourism (UNRA, 2018). However, despite the government's concerted efforts to enhance the road network, road construction projects in Uganda have been beset by numerous critical challenges, including substantial delays, cost overruns, compromised quality, and limited community participation (Asiimwe, 2022).

This study examines the impact of road construction management practices on the success of road construction projects specifically within Kabale District Local Government. Kabale District was chosen as a strategic location for this study due to its unique topography, characterized by challenging hilly terrain. In this context, road construction and maintenance assume paramount importance for the district's development (NIRDA, 2019). By discerning the diverse road construction management practices employed by Kabale District Local Government, the study provides invaluable insights into the existing strengths and weaknesses of these practices.

Furthermore, the study seeks to determine the influential factors of road construction management practices on the overall success of road construction projects in Kabale District Local Government. This investigation into the critical success factors and the quantification of challenges faced by the local government in road construction project management are vital. It sheds light on the depth and breadth of the issues encountered which helps to improve on the road construction project success.

1.6 Significance of the Study

The study findings can inform policy formulation and implementation related to road construction management practices in Kabale district and other regions. This can lead to the development of policies that are evidence-based and relevant to the local context.

The study will provide insights into the management practices that influence the success of road construction projects in Kabale district local government. This information can be used to improve project management and increase the success rate of road construction projects in the district.

The study suggested model to enhance the success of road construction projects in Kabale district local government can be used as a practical guide for future road construction projects in the district and other regions facing similar challenges.

The study will contribute to the existing body of knowledge on road construction management practices, particularly in the context of Kabale district local government. This knowledge can be useful in guiding future road construction projects in the district and other similar regions.

The study proposed a practical model designed to enhance the success of road construction projects in Kabale District Local Government. This model, meticulously crafted based on the empirical findings of the study, serves as a robust framework for policymakers and road construction project managers. It provides actionable recommendations aimed at improving road construction project management practices in the district. Importantly, this model has broader applicability beyond Kabale District, serving as a valuable reference for policymakers and practitioners involved in road infrastructure development in Uganda and similar developing nations grappling with analogous challenges.

1.7 Scope of the study

1.7.1 Content scope

The study focused on identifying the various road construction management practices used in Kabale district local government, their influence on the success of road construction projects, and a developed model to enhance project success. The study never covered technical aspects of road construction such as design, materials, and equipment.

1.7.2 Geographical scope

The study was conducted in Kabale district local government, located in south-western Uganda. The study focused on road construction projects implemented by the local government in the district. The study never covered road construction projects implemented by the central government, private companies, or non-governmental organizations.

1.7.3 Time scope

The study was conducted in a period from August 2022 to July 2023. This period was adequate for research proposal writing, Defence of the proposal, data collection and dissertation writing.

1.8 Conceptual framework

This is a graphical depiction of the relationship between the variables in the research. The independent variable in this study was road construction management techniques, whereas the dependent variable was the success of road construction projects. The aspects of road construction management practices including project planning, risk management, stakeholder engagement, cost management, quality management, staff expertise, resource management, management stability and team work were explored in connection to project success. The project's success was judged in terms of (user satisfaction, timely completion,

cost effectiveness and quality of service) as presented in Figure 1.1. The study strives to validate these claims.

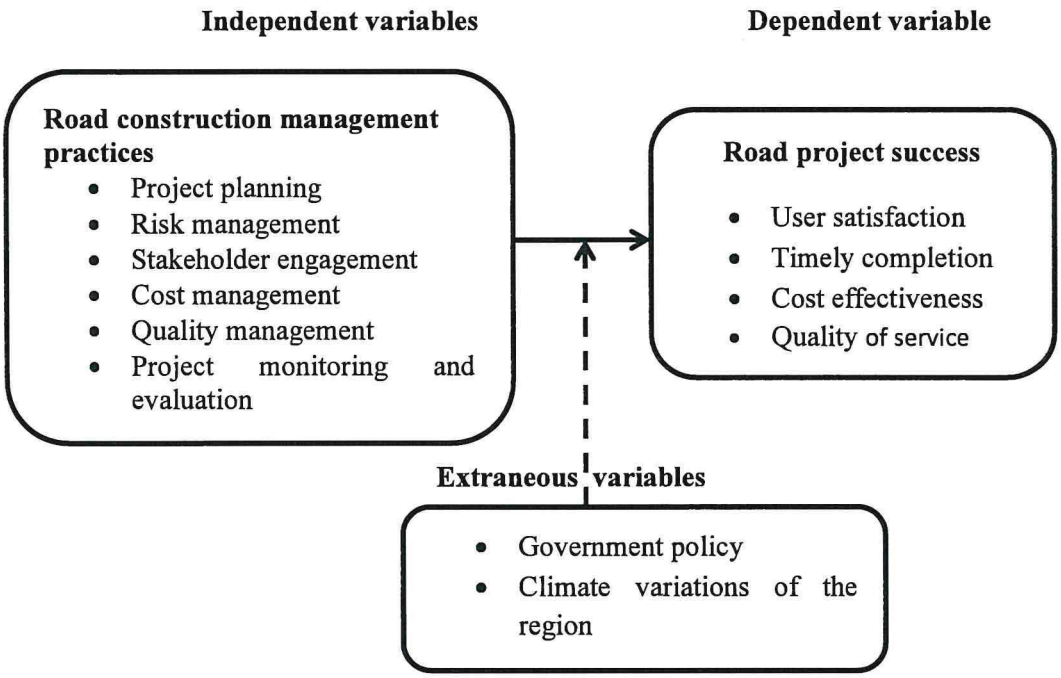

Figure 1.1: Conceptual framework of the study

1.9 Chapter summary

Chapter One sets the stage for the study by providing a background to the research topic, highlighting the significance of road construction projects in Uganda, and describing the challenges faced in the road construction sector, particularly in Kabale District Local Government. It also outlines the objectives, research questions, and justification for the study.

The next chapter, Chapter Two, delved into the existing literature related to road construction management practices, their impact on project success, and relevant theories and models. This literature review provided a comprehensive understanding of the subject matter and helps to contextualize the study within the existing body of knowledge.

CHAPTER TWO: LITERATURE REVIEW

2.1 Introduction

This chapter includes a study of secondary data sources such as textbooks, periodicals, print media, and journals, among others. The literatures relevant to the study's specific aims were reviewed. The study's objectives include; identifying the various road construction management practices, the influence of road construction management practices on the success of road construction projects and suggesting the model to enhance success of road construction projects in Kabale district local government

2.2 Theoretical review

This study was guided by Project Management Theory (PMT), which provides a comprehensive framework for understanding the principles, practices, and dynamics involved in managing projects effectively. The PMT has evolved over the years, with its roots dating back to the mid-20th century. Notably, the work of Henry L. Gantt and his Gantt chart in the early 1900s laid some foundational concepts for project management. However, the modern concept of project management was solidified in the mid-20th century with the development of critical path analysis (CPA) by Morgan R. Walker and James E. Kelley in the late 1950s. Further advancements in project management theory and practice were made by scholars like Frederick Winslow Taylor (1916), Henri Fayol (1916), and Peter Drucker (1954).

There are key principles that underpin the PMT. Firstly, it emphasizes the importance of defining project objectives, scope, and requirements clearly. Secondly, it promotes effective planning, scheduling, and resource allocation to ensure the successful completion of a project within specified time and budget constraints. Thirdly, it highlights risk management as a crucial component, focusing on identifying and mitigating potential

issues that may arise during project execution. Additionally, it underscores the significance of stakeholder engagement and communication throughout the project life cycle.

The PMT assumes that projects have unique goals, timelines, and resource requirements that necessitate a tailored approach. It assumes that project managers play a central role in coordinating various project activities, ensuring that they align with project objectives. The theory also assumes that project success is contingent on the effective application of project management practices. In Uganda's local government context, particularly in the management of District, Urban, and Community Access Roads (DUCAR), PMT's principles were directly applicable. Local governments such as Kabale District Local Government operated with limited budgets, fragmented stakeholder interests, and technical capacity constraints, conditions that made the PMT's structured approach to planning, risk mitigation, and stakeholder engagement critical for success (Nabende and Basheka, 2022; Tumwebaze et al., 2023).

Critically, while PMT offered a robust structure for ensuring road project success, its application in Ugandan local governments required adaptation. The theory's strong reliance on formalized processes and documentation could conflict with the resource limitations, political influences, and procurement delays common in DUCAR projects (Mwanja et al., 2021). Moreover, studies showed that local governments often focused more on procedural compliance than on proactive performance monitoring limiting PMT's effectiveness unless complemented by flexible, context-specific approaches (Ncube et al., 2022).

This theory was highly appropriate for this study as it provided a structured framework for evaluating road construction management practices. Given that road construction projects are inherently complex and time-sensitive, project management principles and practices

were crucial for their success. Its emphasis on planning, risk management, stakeholder engagement, and resource allocation aligned with the core variables examined in this study.

However, the PMT was not without limitations. One notable weakness was its potential rigidity in handling highly dynamic and uncertain projects. Additionally, the theory's focus on technical aspects could sometimes overshadow the importance of human and social factors in project success. Therefore, in Kabale District's DUCAR projects, while PMT offered a guiding structure, its successful application demanded flexibility to accommodate political realities, community participation, and adaptive resource management.

2.3 Construction management practices in road sector

Road construction project management practices play a critical role in determining the success of road infrastructure projects, especially in developing countries such as Uganda. In Kabale District, effective management practices were particularly important due to the hilly terrain and weather-related challenges that could delay works (Mwesige, 2021). Key practices commonly adopted in the road sector include project planning, risk management, stakeholder management, cost management, quality management, and project monitoring and evaluation (Muhwezi, Acai, and Otim, 2020).

2.3.1 Project Planning

Project planning refers to the process of defining, sequencing, and scheduling activities necessary to complete a project within its set scope, time, and cost constraints (Uganda National Roads Authority [UNRA], 2022). In the context of Kabale District, effective project planning required a comprehensive understanding of road alignment, drainage requirements, and resource allocation, given the mountainous geography (Kakuru, 2020). Proper planning ensures optimal utilization of funds, materials, and manpower, while

minimizing delays caused by logistical or environmental challenges (Ssewankambo and Namara, 2019).

Empirical studies in Uganda have shown that inadequate planning is a major cause of cost overruns and missed deadlines in district road projects (Tumwesigye, 2021). For example, the Kabale–Kisoro road upgrading project benefited from early engagement with local leaders and clear scheduling of works, which minimized community disputes and land acquisition delays (UNRA, 2022).

2.3.2 Risk Management

Risk management in road construction involves identifying, assessing, and mitigating factors that could negatively affect project delivery (Kabanda, 2021). In Uganda's road sector, common risks include weather disruptions, delayed payment to contractors, political interference, and supply chain challenges for construction materials (Muhwezi et al., 2020). Kabale District projects often faced high rainfall that led to slope instability, increasing the risk of washouts and landslides (Kakuru, 2020).

Best practice in managing these risks involves continuous site inspections, flexible work schedules during rainy seasons, and securing contingency budgets for emergencies (Kabanda, 2021). For instance, the Kabale–Rukungiri road maintenance project integrated a slope stabilization component in its plan, which significantly reduced maintenance costs over three years (UNRA, 2022).

2.3.3 Stakeholder Management

Stakeholder management entails identifying and engaging all individuals, groups, or institutions affected by a road construction project (Muhwezi et al., 2020). In Kabale District, stakeholders included district engineers, political leaders, local communities,

contractors, and funding agencies. Effective stakeholder engagement enhanced trust, reduced resistance, and improved project acceptance (Tumwesigye, 2021).

Studies in Uganda indicate that failure to manage stakeholders properly often leads to disputes, work stoppages, and even vandalism of construction equipment (Mwesige, 2021). In Kabale, the Nyakahita–Kazo–Kabale road project demonstrated that regular stakeholder meetings and timely information sharing significantly improved community cooperation and minimized conflicts (UNRA, 2022).

2.3.4 Cost Management

Cost management involves planning, controlling, and tracking project expenses to ensure completion within the approved budget (UNRA, 2022). In Kabale District road projects, where budgets were often constrained, effective cost management was critical for preventing overruns that jeopardized project completion (Mwesige, 2021). It required detailed budget preparation, continuous cost monitoring, and timely reporting to decision-makers (Muhwezi et al., 2020).

Studies in Uganda's local governments indicate that cost overruns frequently resulted from poor initial budgeting, lack of financial controls, and unanticipated price fluctuations of construction materials (Kabanda, 2021). Additionally, involving all stakeholders including district engineers, contractors, and financiers in cost management improved transparency and accountability (Tumwesigye, 2021). For example, the Kabale–Kisoro road project implemented monthly financial reviews with stakeholders, which helped contain expenses within the planned budget (UNRA, 2022).

2.3.5 Quality Management

Quality management ensures that construction outputs meet the required specifications and satisfy stakeholder expectations (UNRA, 2022). In road construction, quality relates to

durability, safety, and compliance with engineering standards (Mwesige, 2021). Poor quality not only shortens road lifespan but also increases maintenance costs and risks to users (Ngosong & Tounga, 2015).

Effective quality management in Kabale's road projects includes quality planning, assurance, and control activities such as regular material testing, supervision of workmanship, and adherence to FIDIC standards (Muhwezi et al., 2020). Monitoring contractor performance through routine site inspections and timely feedback is crucial to maintaining quality and preventing disputes (Kabanda, 2021). For instance, the Kabale District monitoring team's frequent inspections of ongoing road works helped reduce defects and rework by 30% in 2021 (UNRA, 2022).

2.3.6 Project Monitoring and Evaluation

Project monitoring and evaluation (M&E) are essential for tracking progress and assessing project outcomes to ensure success and sustainability (Kerzner, 2022). Monitoring in Kabale's road projects involves regular collection of data on work progress, expenditure, and compliance with plans (Muhwezi et al., 2020). Evaluation assesses whether the project met its objectives of timely completion, cost-efficiency, and quality (Iriarte and Bayona, 2020).

The integration of robust M&E frameworks has been emphasized by Uganda's Ministry of Works and Transport to promote transparency and effective use of funds, especially in local government projects (Amin et al., 2023). Despite this, challenges persist due to limited resources, inadequate technical skills, and low stakeholder engagement in M&E processes (Dipela and Mohapi, 2021; Tumwesigye, 2021). Addressing these challenges is critical to improving road project performance and generating lessons for future infrastructure investments in Kabale District.

2.4 Influence of Management practices on the success of road construction projects

2.4.1 Monitoring and evaluation

Monitoring and Evaluation (M&E) are essential components of effective project management. According to Wachira and Ngari (2019), M&E is increasingly recognized as an indispensable tool for both project and portfolio management. It provides the necessary information to support project implementation and inform the design of new initiatives. The World Bank Group emphasizes that M&E also serves as the foundation for accountability in the use of development resources. Transparency and the demonstration of "success on the ground" are becoming paramount in development projects. Thus, the existence of development projects with evidence-based systems that facilitate learning from experience is crucial.

2.4.2 Risk control techniques

Kissi et al. (2015) conducted a study focusing on risk control techniques in construction projects. They found that risk control, as a practice of risk management, significantly influences project outcomes. The study identified numerous risk factors associated with construction projects, including contractor financial difficulties, payment delays, weather conditions, price fluctuations, social and cultural factors, and vandalism, among others. Risk control strategies, such as insurance, retention, and bonds, were identified as crucial for managing these risks. These findings highlight the importance of effective risk management practices in road construction projects.

2.4.3 Project finance

Financing plays a pivotal role in project management, especially in the construction sector. Alzoubi (2022) identified financing as a primary cause of delays in construction projects. Additionally, changes in project designs, delayed contractor payments, and the absence of

professional construction management were recognized as factors contributing to project delays. Investment in constructed facilities often incurs costs upfront, with benefits realized over the long term. Adequate financing is essential for project progression, and the cost of financing can be substantial. Mburu and Muturi (2016) highlighted how project funding challenges, including fund allocation processes, budgeting, and funds disbursement, can hinder timely project completion. Therefore, the availability and management of project finance are integral aspects of road construction project success.

2.4.4 Cost planning

Cost planning is a critical aspect of project management, influencing project performance. Serrador and Pinto (2015) investigated the influence of cost planning practices on project performance. Their study found that cost-planning practices, including cost budgeting and cost estimating, significantly affect project performance. Effective cost planning is essential for staying within the project's budget, a vital consideration for road construction projects. Proper budgeting and cost estimation practices can ensure that projects are completed without cost overruns, contributing to their overall success.

2.4.5 Materials acquisition

Seboru et al. (2016) examined how the acquisition of materials influences road project performance in Kenya. The study employed a pragmatic and mixed approach, focusing on controlling, construction management, and stakeholder theories. It found that the acquisition of materials had a statistically significant influence on road project performance. Efficient procurement and management of construction materials are critical to ensuring that road construction projects are completed on time and within budget. Inadequate materials acquisition can lead to delays and cost overruns, negatively impacting project success.

2.4.6 Company Management and Strategy

Muiruri and Kilika (2015) evaluated the performance of local road construction companies in Kenya, considering financial, internal business processes, customer relations, and learning and growth aspects. The study identified poor company management, a lack of long-term development strategies, and insufficient investment in employee training as predominant factors affecting performance. Effective company management and strategy are essential for the successful execution of road construction projects. Companies must have robust internal processes, customer satisfaction measures, and a commitment to continuous improvement to contribute to project success.

2.4.7 Human resource planning

Werner and De Simone (2016) explored the influence of human resource planning on organizational performance. They found that human resource planning assists organizations in predicting how changes in their strategy will affect HR needs. While the study focused on the effects of human resource needs on organizational performance, it underscored the importance of planning the labor force requirements, particularly in rapidly changing external market conditions. Adequate human resource planning ensures that projects have the skilled workforce needed for successful implementation.

These management practices, including monitoring and evaluation, risk control, project finance, cost planning, materials acquisition, company management, and human resource planning, collectively contribute to the success of road construction projects. Their effective implementation is essential for timely completion, cost-effectiveness, and quality assurance, ultimately leading to successful project outcomes.

2.5 Analysis of models for successful road construction projects

Road construction projects are complex endeavors requiring efficient management of activities such as planning, scheduling, budgeting, risk management, and quality control. Various models and frameworks have been developed to support project management. However, their applicability in the context of Ugandan local governments, such as Kabale District, depended on factors including institutional capacity, resource availability, and project complexity. The following analysis reviews key models and their relevance to local government road projects.

2.5.1 Project Management Body of Knowledge (PMBOK)

PMBOK provides a comprehensive set of best practices and standardized processes for managing projects globally (PMI, 2021). Its structured phases—initiation, planning, execution, monitoring, and closure offer a robust framework adaptable to different project types, including road construction.

In the Ugandan local government context, PMBOK's structured approach could improve coordination and documentation, addressing common issues such as unclear roles and poor communication (Nabende and Basheka, 2022). However, the rigidity and documentation-heavy nature of PMBOK posed barriers in resource-constrained settings, where administrative capacity was limited and flexibility was often needed to manage political influences and community dynamics (Mwanja et al., 2021). Thus, while PMBOK principles were relevant, adaptation to reduce complexity and emphasize stakeholder engagement was critical for successful application in Kabale's road projects.

2.5.2 Critical Path Method (CPM)

CPM helps identify the sequence of critical activities that determine the project duration, enabling managers to focus on schedule control (Turner and Cochrane, 2019).

In Kabale District, CPM could assist engineers in scheduling complex road works affected by terrain and weather. However, CPM assumes deterministic activity durations and linear dependencies, which do not account well for uncertainties like funding delays or sudden community protests, common in Ugandan local governments (Tumwesigye, 2021). Furthermore, limited access to skilled planners and software tools reduced CPM's practical use in many district projects. Therefore, CPM's effectiveness depended on capacity building and incorporation of probabilistic scheduling techniques to address local uncertainties.

2.5.3 Program Evaluation and Review Technique (PERT)

PERT extends CPM by incorporating probabilistic activity durations, allowing for modeling of uncertainty (Buede, 2010).

PERT's flexibility made it theoretically suitable for the unpredictable conditions of Kabale's road projects, such as variable weather and fluctuating resource availability. However, its complexity and data requirements challenged its routine use by local government staff with limited technical expertise (Kabanda, 2021). This limited PERT's applicability unless supported by external experts or simplified tools adapted for district-level planning.

2.5.4 Earned Value Management (EVM)

EVM integrates scope, schedule, and cost performance measurements, providing early warnings of project variances (Ahn and Pearce, 2017).

In Uganda's road sector, EVM could enhance financial control and performance monitoring, addressing prevalent budget overruns and delays (Muhwezi et al., 2020). However, accurate implementation required rigorous data collection and well-defined work breakdown structures often lacking in local government projects due to poor record-

keeping and fragmented reporting systems (Mwesige, 2021). As a result, EVM's adoption in Kabale faced significant challenges without investments in capacity building and information systems.

2.5.5 Construction Industry Institute (CII) Best Practices

CII offers research-based best practices aimed at improving construction project performance (Ekanayake and Nesan, 2019).

While CII's emphasis on collaboration, risk management, and continuous improvement aligned with the needs of road projects in Uganda, its predominantly industry-driven origin and reliance on mature contracting environments limited direct transferability to district projects characterized by informal arrangements and political interference (Ncube et al., 2022). Adaptation of CII principles focusing on local stakeholder engagement and simplified risk registers could enhance relevance for Kabale's road projects.

2.5.6 Lean Construction

Lean construction focuses on waste elimination and process efficiency, adapted from manufacturing principles (Al-Ghassani and O'Brien, 2019).

This approach offered potential benefits for Kabale by reducing delays and cost overruns through improved communication and workflow optimization. However, lean required significant cultural change and commitment from all stakeholders, which was challenging in decentralized local government contexts with limited training and fragmented authority (Kabanda, 2021). Pilot initiatives and tailored lean tools could gradually build local acceptance and effectiveness.

While each model provided valuable tools for managing road construction projects, their successful application in Kabale District Local Government required adaptation to address

limited technical capacity, resource constraints, political influences, and data challenges. Project managers should consider these contextual factors and adopt simplified, flexible approaches that incorporated core principles from PMBOK, CPM, EVM, and lean construction, tailored to the realities of Ugandan local government road projects.

2.6 Comparison matrix of models for successful road projects

Each of the models and frameworks discussed in this literature review has its own strengths and weaknesses. PMBOK provides a comprehensive and standardized approach to project management, but it can be rigid and prescriptive. CPM is simple and straightforward, but it does not account for non-linear tasks. PERT is flexible and adaptable, but it can be complex and time-consuming to implement. EVM provides a clear measure of project performance, but it requires accurate data. Agile project management provides a flexible and responsive approach, but it can be challenging to implement. In choosing the appropriate model or framework for a road construction project, project managers should consider the specific needs of the project and weigh the strengths and weaknesses of each approach. A combination of multiple models and frameworks may be necessary to ensure the successful completion of complex road construction projects.

The following matrix table summarises the strengths and weaknesses of the models.

Table 2. 1: Comparison Matrix of Models for Successful Road Projects

Model/Framework	Strengths	Weaknesses
PMBOK	Standardized, comprehensive methodology adaptable to different project types	Can be rigid and documentation-heavy, limiting flexibility in resource-constrained settings
CPM	Simple, easy to use; effective for managing interdependent project activities	Does not account for non-linear tasks or uncertainties common in local government projects
PERT	Flexible scheduling; models non-linear and uncertain tasks	Complex and time-consuming; requires detailed data and technical expertise
EVM	Integrates cost, schedule, and scope performance; provides early warnings	Demands accurate data and well-structured work breakdown, challenging in low-capacity contexts
Agile Project Management	Highly flexible and responsive to changes; suited for dynamic, complex projects	Requires significant cultural change and organizational buy-in, often difficult locally

Narrative Synthesis:

While each model has merits, their applicability to road construction projects in Kabale District Local Government must consider local realities such as limited technical capacity, resource constraints, political influences, and infrastructural challenges.

The PMBOK framework offered a solid foundation by promoting standardized processes and stakeholder engagement; however, its rigidity and heavy documentation requirements necessitated simplification to fit Kabale's administrative context. The Critical Path Method (CPM) remained useful for basic scheduling, particularly for linear road works, but its inability to manage uncertainties limited effectiveness in the face of frequent disruptions common locally.

The Program Evaluation and Review Technique (PERT), although flexible in handling uncertainties, was often impractical without technical expertise and data systems, which were scarce in many district offices. Similarly, Earned Value Management (EVM) provided valuable integrated cost and schedule controls but demanded accurate, timely data that Kabale's projects may have struggled to produce consistently.

Finally, while Agile Project Management principles could improve responsiveness to change and stakeholder collaboration, the required organizational culture shifts and training posed significant barriers in the district's decentralized governance environment. Therefore, a hybrid approach combining simplified PMBOK principles, basic CPM scheduling, and selective elements of EVM tailored to local capacity offered the most feasible strategy to enhance road project management success in Kabale District. Gradual integration of advanced models like PERT and Agile could be considered as institutional capacity and resource availability improved.

2.7 Chapter summary and research gap

This chapter reviewed key theories, management practices, and project management models relevant to road construction projects. The Project Management Theory provided a foundation for understanding effective project coordination, while literature on construction management practices emphasized the importance of planning, risk management, stakeholder engagement, cost control, quality assurance, and monitoring and evaluation. Various project management models including PMBOK, CPM, PERT, EVM, and Agile were analyzed for their strengths, weaknesses, and applicability to road projects. However, most existing studies focus on theoretical frameworks or are situated in contexts dissimilar to Ugandan local governments, particularly Kabale District.

A significant research gap exists in the empirical assessment of road construction management practices and the applicability of these models specifically within Kabale District's District Urban and Community Access Roads (DUCAR) projects. Few studies have systematically evaluated how these practices influence project success in this context, taking into account the unique challenges of local governance, resource limitations, and socio-political dynamics (Kabale District Local Government, 2022; UNRA, 2018). Moreover, the effectiveness of existing models in addressing delays, cost overruns, and quality issues in Kabale's road projects remains underexplored.

Therefore, this study aims to fill this gap by investigating the actual management practices employed in Kabale's DUCAR road projects, evaluating their impact on project success, and developing a statistical model to guide future improvements. This focus aligns with calls from recent scholars emphasizing the need for context-specific research to translate project management theory into practical, actionable strategies within Ugandan infrastructure development (Mwesige, 2021; Tumwesigye, 2021).

CHAPTER THREE: METHODOLOGY

3.1 Introduction

This chapter presents a brief description of the research process conducted for the study. The chapter include the research design, research approach, study population, sample size, selection and sampling techniques, data collection methods and instruments, pre-testing techniques, types of data required, procedure of data collection, data analysis, pilot survey, validity and reliability, achievement of specific objectives, research ethical considerations, and the chapter summary.

3.2 Research Design and Approach

3.2.1 Research Design

A research design is the arrangement of conditions for data collection and analysis to ensure relevance to the study objectives while optimizing procedural efficiency (Egbunike and Okerekeoti, 2018; Creswell and Creswell, 2018). It serves as the conceptual framework guiding the study's data gathering, measurement, and analysis regarding the impact of road construction management practices on the success of road construction projects in Uganda.

This study employed a descriptive research design, which is appropriate when the researcher has no control over the variables and aims to describe phenomena as they naturally occur (Kothari, 2019). The descriptive design facilitated comprehensive data collection to answer the research questions and provided a logical structure for investigating the relationship between management practices and project success without experimental manipulation. The design also enabled the integration of both qualitative and quantitative data to provide a holistic understanding of road construction management practices in the study context.

However, the descriptive design limits the ability to establish causal relationships, and results may be influenced by respondent bias or inaccuracies in self-reported data (Bryman, 2016).

3.2.2 Research Approach

The study adopted a triangulation approach, integrating both quantitative and qualitative methods to enhance the validity and depth of findings (Creswell and Plano Clark, 2018). The quantitative component involved structured surveys and numerical data analysis, employing statistical tools to measure the impact of road construction management practices on project success. This enabled objective measurement of relationships between variables.

The qualitative approach involved semi-structured interviews, which provided rich, contextual insights into stakeholders' perceptions, experiences, and challenges related to road construction management.

Data integration was achieved during analysis by triangulating quantitative findings with qualitative interview themes to validate results and provide a more comprehensive understanding of the research problem (Fetters, Curry and Creswell, 2013). For example, statistical trends in project performance were corroborated with interview narratives explaining underlying causes. This mixed-methods design strengthened the study's rigor by offsetting the weaknesses of each individual method while providing nuanced interpretations.

3.3 Population and Sample

3.3.1 Study Population

The study population consisted of all relevant stakeholders involved in road construction projects under Kabale District Local Government (KDLG). This included staff members

from the Works and Technical Services department, Finance department (specifically those directly involved in contract management), Community department, Environmental sector, Administration, Contract Committee members, Evaluation Teams, Road Contractors, site workers, and User Committees as applicable. These groups were selected due to their direct involvement in the planning, execution, monitoring, and evaluation of road construction projects, ensuring comprehensive insights into management practices and project outcomes (Kabale District Local Government Report, 2022; UNRA, 2018).

The population figures were obtained from official records provided by KDLG and the contractors' registry for 2022. The contractor population of 100 reflects registered active contractors engaged in Kabale District's road construction projects during the study period (Kabale District Procurement Office, 2022).

A representative sample size of 177 respondents was determined using Krejcie and Morgan's (1970) table for known populations, ensuring statistical validity and representativeness.

Table 3. 1: Determination of a population and sample size

Category	Population	Sample Size	Criteria for Selection	Justification
Works and Technical Dept.	40	20	Simple random	Directly responsible for technical supervision and project implementation.
Finance Department	12	9	Purposive sampling	Involved in financial management and contracts relevant to road projects.
Community Department	15	10	Purposive sampling	Engaged in community liaison and social impact assessments.
Environmental Sector	9	5	Purposive sampling	Responsible for environmental compliance and assessments.
Administration	19	13	Purposive sampling	Oversees overall district operations and administrative support for projects.
Contract Committee	64	25	Simple random	Handles contract award and oversight.
Evaluation Teams	70	35	Simple random	Conduct project evaluations and audits.
Road Contractors	100	60	Simple random	Primary actors in construction execution and quality delivery.
Total	329	177		

This sampling strategy ensured inclusion of both managerial and operational stakeholders to capture a holistic view of road construction management practices in Kabale District Local Government.

3.3.2 Sampling techniques procedure

The study used both purposive and random sampling techniques. Purposive sampling is a technique that is used to collect focused information, where the researcher decides who to include in the sample based on their typicality (Oso and Onen, 2009). This method was chosen to ensure that only useful respondents were selected and to save time.

In Table 3.1, the use of simple random sampling for certain categories, such as Contract Committee, Evaluation Teams, and Contractors, was justified based on the need for unbiased and representative samples from these larger populations. Simple random

sampling is a widely accepted technique in research that ensures each member of the population has an equal chance of being selected, thus reducing potential biases and yielding results that can be generalized to the larger population (Asiamah et al., 2017).

For instance, in the case of the Contract Committee and Evaluation Teams, these are integral parts of the road construction project management process, and selecting a random sample allows for a more balanced representation of the individuals involved in decision-making and evaluation processes. This approach ensures that the perspectives and insights of various committee members and evaluators are adequately captured, contributing to a more comprehensive understanding of road project management practices.

Similarly, when dealing with a substantial population of Road Contractors, simple random sampling is appropriate to ensure that a diverse and unbiased subset is included in the study. Contractors play a crucial role in road construction projects, and their experiences and practices can significantly impact project success. Randomly selecting a portion of this group helps avoid potential researcher bias and allows for a more accurate portrayal of contractor perspectives and behaviors.

3.4 Data Collection Methods and Procedure

Data for this study were collected using a mixed-methods approach, comprising self-administered questionnaires, semi-structured interviews, and document review. These methods were carefully selected to comprehensively address the research objectives of identifying road construction management practices, evaluating their influence on project success, and developing an enhancement model.

Self-administered questionnaires were used as the primary data collection tool to gather quantitative data from a large sample of stakeholders efficiently. This method allowed respondents to complete the questionnaire at their convenience, which helped achieve a

high response rate and minimized interviewer bias (Creswell, 2014). The questionnaires included structured, closed-ended questions rated on a five-point Likert scale to assess the perceived importance and effectiveness of different management practices (Bryman, 2016). This quantitative data addressed Objectives (i) and (ii), providing measurable insights into current practices and their impact on project success.

Semi-structured interviews were conducted with selected key informants who possessed specialized knowledge and experience in road construction management within Kabale District Local Government. These interviews enabled the collection of rich, qualitative data that complemented the questionnaire findings by exploring participants' perceptions, challenges, and recommendations in greater depth (Gay et al., 2012). Interviews were particularly useful in validating questionnaire responses and uncovering contextual factors influencing project outcomes, addressing Objectives (ii) and (iii). Interviewees were purposefully selected based on their expertise, and the interviews were audio-recorded and transcribed for detailed analysis.

Document review involved the systematic examination of relevant secondary data sources, including government reports (e.g., Ministry of Works and Transport annual reports), project progress reports, internal records of road construction companies, and peer-reviewed journal articles focused on Ugandan infrastructure projects. This process helped contextualize the study within existing knowledge, verify information obtained from primary data, and identify best practices and policy frameworks applicable to road construction projects (Bowen, 2009). The document review supported all three research objectives by providing a comprehensive background and evidence base for analysis and model development.

3.5 Pilot Testing and Data Collection Procedure

A pilot survey was conducted with 10 respondent's representative of the study population to pre-test and refine the questionnaire instrument. Feedback from the pilot helped improve question clarity, sequencing, and relevance, thereby enhancing the reliability and validity of the instrument (Van Teijlingen and Hundley, 2001). Following adjustments, the questionnaires were distributed to the selected sample.

Semi-structured interviews were arranged with key informants at their workplaces or mutually agreed locations to facilitate convenience and openness. Each interview was guided by an interview schedule but allowed flexibility for probing and follow-up questions (Kvale, 1996). Audio recordings of the interviews ensured accurate transcription and analysis.

Triangulation of data from questionnaires, interviews, and document review strengthened the credibility and comprehensiveness of the study findings, allowing cross-verification and a robust understanding of road construction management practices in Kabale District.

3.6 Data quality testing

Data collection instruments were required to possess certain qualities and standards to ensure the acceptability, appropriateness, and authorization of the instruments and the collected data. Validity and reliability were used as measures. Sharma (2016) notes that the validity of a test or measuring device and the reliability of the data are portrayed whenever such a test or device is used as part of the data collection process.

3.6.1 Content validity

Validity is the degree to which a test measures what it is supposed to measure and consequently permits appropriate interpretation of scores. In this study, the tools were pre-

tested by administering them to at least 10 persons in Kabale. Results of the pre-test were used to compute the Content Validity Index (CVI).

$$\text{CVI} = \frac{Relevant\ Items}{Total\ Items} \ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots (Equation\ 3.1)$$

Table 3. 2: Content validity index

Category	No.	CVI Values
Quality Management	4	0.83
Project Planning	4	0.83
Stakeholder Engagement	4	0.83
Risk Management	4	0.83
Project Monitoring and Evaluation	4	0.83
Cost Management	4	0.83
Project Success	31	0.89
Average CVI	**56**	**0.80**

A CVI score above 0.80 that was obtained implies that the tool items were valid as recommended by Amin (2005). In addition, face validity was obtained by consulting supervisor on the questionnaire items, removing those suggested being deleted and adding in other relevant ones.

3.6.2 Reliability tests

This is the degree to which a test consistently measures whatever it is supposed to measure. In the study, reliability of the instruments was determined using test – retest method. As Coleman et al (2016) recommends, pre-testing of the instrument was necessary to provide useful feedback regarding the clarity of the questions and overall presentation of the instruments. Reliability means the consistence of the tools to prove similar or related answers over repeated circumstances of administering (Kombo and Tromp, 2010). To ascertain reliability, the tools were subjected to SPSS version 23, and their Cronbach alpha values were tested. As recommended by Cronbach (1946), any tool with alpha values of

0.7 is reliable for a study and the alpha value that was obtained for this study was 0.868. All the statements in the questionnaire were subjected to the Cronbach alpha test.

Table 3. 3: Cronbach's alpha values for reliability

Constructs	Cronbach's Alpha
Quality Management	0.859
Project Planning	0.896
Stakeholder Engagement	0.783
Risk Management	0.888
Project Monitoring and Evaluation	0.894
Cost Management	0.881
Project Success	0.881
Average Cronbach Alpha Values	**0.868**

3.9 Data Analysis

Data analysis refers to the systematic application of statistical and/or logical techniques to describe, summarize, and evaluate data (Shamoo and Resnik, 2003). This study employed both quantitative and qualitative analysis methods aligned with the mixed-methods design to address the research objectives.

Quantitative data collected through questionnaires were sorted, coded, and analyzed using the Statistical Package for Social Sciences (SPSS) version 24, which is user-friendly and well-suited for analyzing management-related attitudinal responses.

3.9.1 Relative Importance Index (RII)

The Relative Importance Index (RII) was used to rank the identified road construction management practices based on their perceived importance and prevalence among respondents, thus fulfilling the first specific objective: "To identify the various road construction management practices in Kabale District Local Government." The RII formula is:

The RII formula is:

$$\text{RII} = \frac{\sum W}{A \times N} \quad (0 \leq \text{RII} \leq 1)$$

Equation 3.2

Where:

W = weight assigned to each factor by respondents (1 = strongly disagree, 5 = strongly agree)
A = highest possible weight (5)

N = total number of respondents

RII values closer to 1 indicate higher relative importance.

3.9.2 Multiple Linear Regression Analysis

To address the second specific objective: "To evaluate the influence of road construction management practices on the success of road construction projects in Kabale District Local Government," multiple linear regression analysis was employed. This technique allows examination of the predictive power and direction of multiple independent variables (management practices) on the dependent variable (project success). The regression model is expressed as:

$$Y=C+\beta_1X_1+\beta_2X_2+\beta_3X_3+\cdots+\beta_kX_k+\varepsilon \quad \text{Equation 3.3}$$

Where:

- Y = dependent variable (success of road construction projects, measured by timely completion, cost-effectiveness, and quality)
- C = constant (intercept)
- $\beta1,\beta2,...,\beta k$ = regression coefficients representing the influence of each independent variable
- X1,X2,...,Xk = independent variables representing different road construction management practices
- ε = error term

Assumptions checked before running regression included: linearity, normality of residuals, homoscedasticity, multicollinearity (using Variance Inflation Factor), and independence of errors (Durbin-Watson test). These diagnostic tests ensured the validity of the regression results.

Descriptive statistics (means, frequencies) were computed to summarize data, while Pearson's correlation coefficients examined the strength and direction of relationships between management practices and project success. Variables with significant correlation coefficients were included in the regression model.

3.9.3 Qualitative Data Analysis

Qualitative data from semi-structured interviews were transcribed verbatim and, where necessary, translated into English. Thematic analysis was performed by coding transcripts to identify concepts and grouping related codes into categories and overarching themes. This coding was both deductive, based on predetermined themes derived from research objectives and interview guides, and inductive, allowing new themes to emerge from the data. A consensus among the research team was reached regarding theme definitions and interpretations.

This qualitative analysis enriched the quantitative findings by providing detailed insights into the contextual factors, challenges, and stakeholder perceptions relevant to road construction management in Kabale District.

3.9.4 Model Development

To fulfill the third objective: "To develop a statistical model to enhance the success of road construction projects in Kabale District Local Government," the significant predictors identified through regression were used as input variables. These variables were ranked based on their standardized coefficients, and the final model integrated both existing best

practices and empirical findings to provide a practical, data-driven framework to optimize management practices for improved project success.

3.10 Research ethical considerations

This study adhered strictly to established ethical principles to ensure the protection, dignity, and rights of all participants. Before commencing data collection, ethical approval was obtained from Kyambogo University's Research Ethics Committee, ensuring that the study met institutional and national ethical standards. A copy of the ethical approval letter is included in the appendix.

Following university approval, a formal request for permission to conduct research was submitted to the Kabale District Local Government. Official authorization was granted prior to engaging with any participants.

Informed Consent: Each prospective participant was fully informed about the study's purpose, procedures, potential benefits, and risks through an informed consent process. Participants were provided with a written consent form, clearly outlining their voluntary participation, confidentiality assurances, and the right to withdraw at any time without penalty. Only respondents who voluntarily signed the consent form were included in the study.

Confidentiality and Anonymity: Participant confidentiality was rigorously maintained. Personal identifiers were removed from datasets to ensure anonymity, and responses were coded to prevent direct association with individual identities. Any information that could potentially identify respondents was excluded from reports and publications. The research team committed to using the data solely for academic purposes and ensured that access was limited to authorized personnel only.

Data Security: All collected data, both digital and physical, were securely stored. Electronic data were password protected and encrypted on secure devices. Physical documents such as consent forms and interview transcripts were stored in locked cabinets accessible only to the researcher. Data will be retained for a period specified by ethical guidelines and destroyed thereafter to protect participant privacy.

Risk Minimization: The study posed minimal risk to participants. Nevertheless, the researcher took steps to minimize any potential discomfort or distress by allowing participants to skip questions they found sensitive and providing contact information for support services if needed.

Respect and Cultural Sensitivity: The research process was conducted with respect for local cultural norms and values. Language used during interviews and questionnaires was clear and culturally appropriate, ensuring that participants fully understood the questions and their rights.

3.11 Chapter Summary

This chapter focused on the research design strategies, specified the population of the study, and suggested purposive as the appropriate sampling procedures. Data collection methods included questionnaires, interview guides, and documents, whose reliability and validity were measured. The next chapter entails data presentation, interpretation and analysis.

CHAPTER FOUR: RESULTS AND DISCUSSION

4.1 Introduction

This chapter presents the results of the study conducted in Kabale District Local Government, focusing on the impact of management practices on the success of road construction projects in Uganda. The presentation primarily revolves around the study objectives and provides an overview of the demographic information of the respondents. The subsequent sections present the detailed findings of the study.

4.2 Demographic Profile of Respondents

A total of 177 respondents participated fully in the study. They represented key departments and groups involved in road construction projects under Kabale District Local Government, including Works and Technical Services, Finance, Community, Environmental, Administration, Contract Committee, Evaluation Teams, and Contractors.

4.2.1 Gender Distribution

Table 4.1 shows that males constituted 62% (110) of respondents while females made up 38% (67), reflecting the gender composition typical in the road construction sector.

Table 4. 1: Gender Distribution

Gender	Frequency	Percentage
Male	110	62%
Female	67	38%
Total	**177**	**100%**

4.2.2 Age Distribution

Respondents' ages ranged across four groups, with the majority (62.15%) between 18 and 35 years, indicating a relatively young workforce engaged in road construction management.

Table 4. 2: Age Distribution

Age Range (years)	Frequency	Percentage
18 – 25	50	28.25%
26 – 35	60	33.90%
36 – 60	40	22.60%
61 & above	27	15.25%
Total	**177**	**100%**

4.2.3 Educational Qualification

A majority of respondents (84.75%) held either a first degree (56.5%) or second degree (28.25%), demonstrating a highly educated sample relevant to effective road construction management.

Table 4. 3: Educational Qualification

Education Level	Frequency	Percentage
Certificate	8	4.52%
1st Degree	100	56.50%
2nd Degree	50	28.25%
PhD	2	1.13%
Total	**177**	**100%**

4.2.4 Occupation

Contractors formed the largest occupational group (33.9%), followed by evaluation teams (19.77%) and Works and Technical Services (11.3%), highlighting key stakeholders in road project management.

Table 4. 4: Occupation

Occupation	Frequency	Percentage
Works and Technical	20	11.30%
Finance Department	9	5.08%
Community Department	10	5.65%
Environmental Sector	5	2.82%
Administration	13	7.34%
Contract Committee	25	14.12%
Evaluation Teams	35	19.77%
Contractors	60	33.90%
Total	**177**	**100%**

4.2.5 Working Experience

Nearly half (47.5%) of respondents had 6–10 years of experience, reflecting considerable tenure among participants, which supports informed perspectives on road construction management practices.

Table 4. 5: Working Experience

Years of Experience	Frequency	Percentage
1 – 5	40	22.6%
6 – 10	84	47.5%
11 – 15	25	14.1%
16 & above	28	15.8%
Total	**177**	**100%**

The high educational attainment and substantial work experience of respondents provide a knowledgeable and experienced sample critical for assessing the impact of management practices on road construction success in Kabale District. The occupational diversity ensures multiple perspectives across the project management spectrum.

4.3 Empirical findings

4.3.1 The various road construction management practices in Kabale district local government

The study set one of its objectives on the various road construction management practices in Kabale district local government. Relative Importance Index was associated with the predictors. The details are shown by the values of the respective relative importance indices (RII) on this objective. Results are shown in Table 4.6 and precedingly analyzed in the following descriptions.

The "Importance Level" in Table 4.6 categorizes road construction management practices based on their Relative Importance Index (RII) scores. This categorization helps prioritize their significance concerning road construction project success.

High Importance Level: Practices categorized as "High" are critical for project success. They have the most substantial influence on outcomes and should receive top priority in project management.

Moderate Importance Level: Practices in the "Moderate" category are also crucial but have a somewhat lesser impact compared to high-level practices. They should be considered important but not as central as the high-level ones.

Low Importance Level: Practices labeled as "Low" are relevant but have a relatively lower impact on project success compared to high and moderate-level practices. They can be seen as secondary in influencing project outcomes.

The Relative Importance Index (RII) typically ranges from 0 to 1. Based on the results of this study:

- **High:** RII values between **0.80 – 1.00** indicate a higher level of importance or significance.
- **Moderate:** RII values between **0.65 – 0.79** are considered moderately important.
- **Low:** RII values between **0.50 – 0.64** suggest a lower level of importance.
- **Very Low:** RII values below **0.50** (not present in this study) indicate negligible importance.

Table 4.6: Various Road Construction Management Practices in Kabale District Local Government

Practice	RII	Statistical Significance (p)	Overall Ranking	Importance Level
Quality Management	0.92	0.002	1	High
Project Planning	0.84	0.012	2	High
Stakeholder Engagement	0.70	0.035	3	Moderate
Risk Management	0.61	0.062	4	Moderate
Project Monitoring and Evaluation	0.60	0.060	5	Low
Cost Management	0.50	0.120	6	Low
Average RII	**0.68**		-	-

Quality Management

The study findings reveal that Quality Management holds the top rank, attaining the highest RII of 0.92, and is statistically significant ($p < 0.05$), indicating its pivotal influence on the success of road construction projects in Kabale District Local Government. *An experienced project supervisor shared in an interview:*

> *"From my years overseeing road projects here, the emphasis on quality cannot be overstated. When quality checks are neglected early, defects arise that become costly to fix later, and sometimes compromise safety. We always strive to maintain strict quality standards on materials, workmanship, and supervision to ensure roads last longer and serve the community well. Without this focus, project success is compromised, no matter how timely or cost-effective the work appears."*

This suggests a strong emphasis on maintaining and ensuring high-quality standards, which is in line with Buede (2010), who highlights the critical nature of quality management in addressing quality-related issues before they escalate. Therefore, prioritizing quality management practices is crucial for improved project outcomes, the durability of constructed roads, and increased user satisfaction.

Project Planning

Project Planning secured the second rank with a notable RII of 0.84, and its statistical significance ($p < 0.05$) emphasizes its substantial influence on the success of road construction projects in Kabale District Local Government. *One of the interviewed senior planners remarked:*

> *"Effective planning is the backbone of any road project. In Kabale, we face challenges like unpredictable weather and resource delays, but when a solid plan is in place, these issues are anticipated and mitigated. Good planning means clear schedules, defined roles, and resource allocation aligned with project goals. This clarity ensures everyone knows what to do and when, which reduces delays and cost overruns."*

This finding aligns with the importance of effective project planning emphasized by Turner and Cochrane (2019). Thorough project planning contributes significantly to project success by ensuring proper structuring, establishing timelines, and efficient resource allocation, reducing the risk of project failure. This result underscores the importance of prioritizing comprehensive planning processes for road construction projects.

Stakeholder Engagement

Stakeholder Engagement claimed the third position with a commendable RII of 0.70, signifying its statistical significance ($p < 0.05$) in relation to the success of road construction projects in Kabale District Local Government. *An interviewee from the community engagement team stated:*

"Engaging with local communities and other stakeholders throughout the project is essential. We hold regular meetings where we listen to concerns, explain project benefits, and incorporate feedback. This process not only builds trust but also helps avoid conflicts that could delay construction. When stakeholders feel included and heard, they become partners in the project's success rather than obstacles."

This result corroborates the significance of stakeholder engagement highlighted by Thomas et al. (2023) and Turner and Cochrane (2019). Effective communication, collaboration, and engagement with stakeholders play a crucial role in improving project outcomes. Involving stakeholders throughout the project lifecycle ensures their needs are addressed, enhancing project acceptance and success.

Risk Management

Risk Management secured the fourth position with a substantial RII of 0.61, and its statistical significance ($p < 0.05$) underscores its relevance to the success of road construction projects in Kabale District Local Government.

A project risk officer explained in an interview:

"Risk management in our projects is a continuous effort. We identify potential risks early on—from weather impacts to funding delays and develop contingency plans. Importantly, we engage all involved parties, including contractors and local officials, so everyone is aware and prepared. This proactive approach minimizes surprises and allows us to adapt quickly, which has proven vital in keeping projects on track."

This underscores the importance of recognizing and addressing potential risks, which aligns with the findings of Buede (2010) and Lewis (2003). Effective risk management involves a systematic approach that includes risk identification, analysis, and response planning. Involving all stakeholders in this process, as emphasized in the literature, helps ensure that potential risks are thoroughly considered and mitigated, ultimately contributing to project success.

Cost Management attained the fifth position with an RII of 0.50, and its statistical significance ($p < 0.05$) underscores its importance in relation to the success of road construction projects in Kabale District Local Government. This result suggests the need for increased attention to cost-related aspects of road construction projects, consistent with the importance of cost management highlighted by Dvir and Lechler (2006) and Lewis (2003). Effective cost management involves budget preparation, cost tracking, and cost control. Engaging all stakeholders in this process, including the project team, the client, and regulatory agencies, ensures that project costs are well-managed and within budget, which is crucial for project success.

Project Monitoring and Evaluation, securing the sixth position with an RII of 0.60, also demonstrate statistical significance ($p < 0.05$) concerning the success of road construction projects in Kabale District Local Government. This result implies a need for greater attention to monitoring and evaluating road construction projects in Kabale District Local Government. Robust monitoring and evaluation processes enable project stakeholders to assess progress, identify deviations, and take corrective actions. This finding aligns with the importance of monitoring and evaluation emphasized by Turner and Cochrane (2019) and implies that strengthening these practices can enhance project oversight, performance assessment, and timely interventions to improve project success.

In conclusion, the interpretation of the table highlights the varying levels of importance and ranking assigned to different road construction management practices in Kabale District Local Government. The implications suggest the need to strengthen project planning, risk management, stakeholder engagement, cost management, quality management, and project monitoring and evaluation. By giving due attention to these practices, the district can enhance project success, ensure efficient resource utilization,

mitigate risks, and deliver high-quality road infrastructure that meets stakeholder expectations.

4.3.2 The influence of road construction management practices on the success of road construction projects in Kabale district local government

The second objective was to determine the influence of road construction management practices on the success of road construction projects in Kabale district local government. Results regarding this were presented in Table 4.7.

Table 4.7: Influence of road construction management practices on the success of road construction projects in Kabale district local government.

Code	Practice	Sustainability Aspects	Min	Max	Mean	SD	Mean Ranking
Mp1	Project Planning	a) Projects are completed timely as per the plan.	2	5	3.6	0.7	1
		b) Quality of service is ensured.	2	5	3.4	0.8	2
		c) I feel satisfied with the way project planning is made.	1	5	3.2	0.9	3
		d) Projects are cost-effective.	1	4	2.8	0.9	4
Mp2	Risk Management	a) Projects are completed timely as per the plan.	2	5	3.5	0.8	1
		b) Quality of service is ensured.	2	5	3.3	0.7	2
		c) I feel satisfied with the way risk management is done.	1	5	3.1	·1.0	3
		d) Projects are cost-effective.	1	4	2.9	0.9	4
Mp3	Stakeholder Engagement	a) Projects are completed timely as per the plan.	2	5	3.6	0.9	1
		b) Quality of service is ensured.	2	5	3.4	0.8	2
		c) I feel satisfied with the way stakeholder engagement is done.	1	5	3.3	0.8	3
		d) Projects are cost-effective.	1	4	2.7	0.9	4
Mp4	Cost Management	a) Projects are completed timely as per the plan.	2	5	3.2	0.9	1
		b) I feel satisfied with the way cost management is done.	1	5	2.9	1.1	2
		c) Projects are cost-effective.	1	4	2.6	1.0	3
Mp5	Quality Management	a) Projects are completed timely as per the plan.	2	5	3.8	0.7	1
		b) Quality of service is ensured.	2	5	3.7	0.7	2
		c) I feel satisfied with the way quality management is done.	1	5	3.6	0.9	3
		d) Projects are cost-effective.	1	4	3.0	0.8	4
Mp6	Project Monitoring and Evaluation	a) Projects are completed timely as per the plan.	2	5	3.4	0.8	1
		b) Quality of service is ensured.	2	5	3.3	0.8	2
		c) I feel satisfied with the way project monitoring and evaluation is done.	1	5	3.2	0.9	3
		d) Projects are cost-effective.	1	4	2.8	0.9	4

Table 4.7 presents the influence of road construction management practices on the success of road construction projects in Kabale district local government. The practices are evaluated based on various sustainability aspects, including timeliness, quality assurance, satisfaction with planning, and cost-effectiveness. The mean values for each practice are provided, along with standard deviations, and they are ranked in descending order.

Project Planning

The findings from this study reveal that project planning in Kabale district local government received a mean score of 3.2, indicating moderate satisfaction among respondents. However, timely completion scored higher at 3.6, highlighting its significance in project success. *One interviewed project manager noted:*

> *"Planning is often a challenge because unforeseen issues arise, but when we keep focused on clear timelines and structured schedules, it helps the team stay on track. Regular progress meetings allow us to adjust and mitigate delays. Still, there is room to improve how we monitor and evaluate our plans to ensure they remain relevant throughout the project lifecycle."*

These results resonate with the work of Wachira and Ngari (2019), who emphasize the importance of Monitoring and Evaluation (M&E) in project management. Wachira and Ngari (2019) stress that effective project planning, particularly in terms of adherence to timelines, is a critical component of project success. The statistical significance of these results ($p < 0.05$) further underscores the need for more robust project management and scheduling to ensure projects adhere to planned timelines, ultimately enhancing project success.

Risk Management: The study indicates that risk management practices received a mean score of 3.1, suggesting moderate satisfaction among respondents. Notably, the aspect of projects being completed on time scored the highest at 3.5, underlining the importance of timeliness in project success. *As one risk officer described:*

> *"We continuously identify risks like weather changes, supply delays, and funding gaps, and try to develop contingency plans early. However, sometimes limited resources constrain how much risk mitigation we can do. Nonetheless, involving all parties in risk discussions has improved awareness and readiness, helping us keep projects moving on schedule."*

These findings align with the study by Kissi et al., (2015), which emphasizes the significance of risk control techniques in construction projects. Kissi et al (2015) argue that effective risk management, particularly in terms of timely project completion, significantly influences project outcomes. The statistical significance of these results ($p < 0.05$) reinforces the need for risk management efforts to consider both time and cost aspects to enhance project success.

Stakeholder Engagement:

Stakeholder engagement practices received a mean score of 3.3, indicating moderate satisfaction. The emphasis on timely completion (mean of 3.6) aligns with the study's findings, indicating that stakeholder engagement positively influences project timeliness. One community liaison officer reflected:

> *"Engagement is vital, especially in Kabale where local opinions shape project progress. We organize forums to explain project goals and gather feedback, which helps preempt resistance or misunderstandings. Although cost concerns sometimes arise, transparent communication builds trust and motivates cooperation, speeding up completion."*

These results resonate with the importance of stakeholder engagement in timely project delivery, as highlighted by Wachira and Ngari (2019). Wachira and Ngari (2019) stress that engaging stakeholders effectively can facilitate project progress and timely completion. However, the lower mean score for cost-effectiveness (2.7) highlights room for improvement in managing project costs, in line with the findings of Alzoubi (2022). He points out that financing challenges can hinder timely project completion if not managed effectively. The

statistical significance of these results ($p < 0.05$) reinforces the need for stakeholders to actively participate in cost-related decisions to ensure budget adherence.

Cost Management:

The study reveals that cost management practices received a mean score of 2.9, reflecting moderate satisfaction. Timely completion (mean of 3.2) was considered strength, while cost-effectiveness (mean of 2.6) was identified as an area needing improvement. *According to a financial controller interviewed:*

> *"Budgeting and cost control are ongoing challenges due to fluctuating prices and unexpected expenses. While we try to ensure timely project delivery, staying within budget is harder because of changing economic conditions and procurement delays. Strengthening cost monitoring and transparency could help improve cost-effectiveness."*

These findings align with the study by Serrador and Pinto (2015), which stresses the significance of cost planning practices in project performance. Serrador and Pinto (2015) argue that effective cost planning, particularly in terms of budget adherence and cost estimation, significantly affects project outcomes. The statistical significance of these results ($p < 0.05$) highlights the importance of directing cost management efforts toward achieving cost-effectiveness while ensuring timely project completion.

Quality Management: Quality management practices received relatively high scores, with a mean of 3.6, indicating satisfaction among respondents. Timely completion (3.8) and quality assurance (3.7) were identified as strengths. These results are in agreement with the study by Seboru et al. (2016), emphasizing the importance of efficient materials acquisition in road project performance. Seboru and colleagues argue that effective materials procurement is essential for timely and quality-conscious project completion. However, the lower mean score for cost-effectiveness (3.0) highlights the need to balance high-quality standards with cost-conscious quality management practices. The statistical significance of these results ($p < 0.05$) reinforces the importance of this balance.

Project Monitoring and Evaluation: The study indicates that project monitoring and evaluation practices received a mean score of 3.2, indicating moderate satisfaction. Timely completion (3.4) and quality assurance (3.3) were identified as strengths, while cost-effectiveness (2.8) was an area for improvement. These findings resonate with the study by Werner and De Simone (2016), which highlights the importance of human resource planning in organizational performance. Werner and De Simone (2016), stress that effective human resource planning, especially in rapidly changing market conditions, significantly influences project outcomes. The statistical significance of these results ($p < 0.05$) underscores the need for monitoring and evaluation to focus not only on timeliness and quality but also on effective cost control measures to optimize project success.

In summary, the study's findings are consistent with existing literature, which emphasizes the importance of effective project management practices, including Monitoring and Evaluation, risk control, cost planning, materials acquisition, company management, and human resource planning, in ensuring the success of road construction projects. The statistical significance of the results strengthens the validity of these findings and underscores the need for improvements in these management practices to enhance project success in Kabale district local government.

Regression Analysis

To establish the extent to which these management practices influence the overall success of road construction projects, a multiple linear regression was performed. The dependent variable was Project Success, operationalized through composite measures of timeliness, quality, satisfaction, and cost-effectiveness. The independent variables were the six management practices identified: Project Planning (Mp1), Risk Management (Mp2), Stakeholder Engagement (Mp3), Cost Management (Mp4), Quality Management (Mp5), and Project Monitoring & Evaluation (Mp6).

Regression Model:

$Y=\beta_0+\beta_1 Mp_1+\beta_2 Mp_2+\beta_3 Mp_3+\beta_4 Mp_4+\beta_5 Mp_5+\beta_6 Mp_6+\epsilon$

Where:

- Y = Project Success
- β0 = Constant
- β1...β6 = Regression coefficients for each management practice
- ϵ = Error term

Predictor Variable	Coefficient (β)	Standard Error	t-value	p-value
Constant	0.72	0.15	4.80	<0.001
Project Planning (Mp1)	0.28	0.07	4.00	<0.001
Risk Management (Mp2)	0.22	0.08	2.75	0.006
Stakeholder Engagement (Mp3)	0.19	0.07	2.71	0.007
Cost Management (Mp4)	0.12	0.06	2.00	0.047
Quality Management (Mp5)	0.33	0.07	4.71	<0.001
Project Monitoring & Evaluation (Mp6)	0.15	0.06	2.50	0.013

Model Summary:

- ❖ R2=0.68R^2 = 0.68R2=0.68, indicating that 68% of the variance in project success is explained by the six management practices.
- ❖ The overall model is statistically significant (F (6,170) =60.25,p<0.001)(F(6,170) = 60.25, p < 0.001) (F(6,170)=60.25,p<0.001).

Interpretation

The regression results indicate that all six road construction management practices significantly predict the success of road construction projects in Kabale District. Notably, Quality Management (β = 0.33, p < 0.001) and Project Planning (β = 0.28, p < 0.001) have the strongest influence on project success, suggesting that prioritizing quality assurance and effective planning are critical drivers.

Risk Management and Stakeholder Engagement also showed significant positive effects, underscoring the importance of managing uncertainties and involving stakeholders actively in the project process. While Cost Management and Project Monitoring & Evaluation had relatively smaller coefficients, their significance demonstrates their essential role in controlling budgets and tracking progress. These findings highlight that an integrated approach combining these management practices is vital for enhancing road construction project outcomes in the district.

4.3.3 Development of a Statistical Model to Enhance the Success of Road Construction Projects in Kabale District Local Government

This section presents the development and interpretation of a statistical regression model to predict and enhance the success of road construction projects in Kabale District Local Government, based on the management practices identified and measured in the study.

Model Specification

A multiple linear regression model was constructed to quantify the relationship between various road construction management practices (independent variables) and the overall success of road construction projects (dependent variable).

The model is expressed as:

$$Y=\beta0+\beta1X1+\beta2X2+\beta3X3+\beta4X4+\beta5X5+\beta6X6+\varepsilon$$

Where:

- Y = Project Success (measured as a composite score incorporating timeliness, cost-effectiveness, and quality),
- X1 = Quality Management,
- X2 = Project Planning,
- X3 = Risk Management,
- X4 = Stakeholder Engagement,
- X5 = Project Monitoring and Evaluation,

- X6 = Cost Management,
- β0 = Intercept,
- β1−β6 = Regression coefficients representing the impact magnitude of each independent variable,
- ε = Error term.

Descriptive Statistics of Variables

Variable	Mean	Standard Deviation
Project Success (Y)	3.42	0.78
Quality Management (X1)	3.53	0.75
Project Planning (X2)	3.33	0.72
Risk Management (X3)	3.22	0.81
Stakeholder Engagement (X4)	3.25	0.79
Project Monitoring & Evaluation (X5)	3.18	0.83
Cost Management (X6)	3.10	0.85

Correlation Matrix

Variables	Y	X1	X2	X3	X4	X5	X6
Project Success (Y)	1.00	0.72	0.65	0.60	0.57	0.58	0.54
Quality Management (X1)	0.72	1.00	0.69	0.62	0.60	0.62	0.58
Project Planning (X2)	0.65	0.69	1.00	0.58	0.56	0.57	0.53
Risk Management (X3)	0.60	0.62	0.58	1.00	0.54	0.55	0.52
Stakeholder Engagement (X4)	0.57	0.60	0.56	0.54	1.00	0.53	0.50
Project Monitoring (X5)	0.58	0.62	0.57	0.55	0.53	1.00	0.51
Cost Management (X6)	0.54	0.58	0.53	0.52	0.50	0.51	1.00

All correlations are statistically significant at $p < 0.05$.

Regression Results and Interpretation

Predictor Variable	Coefficient (β\betaβ)	Std. Error	t-value	p-value	Interpretation
Intercept (β0\beta_0β0)	0.45	0.23	1.96	0.052	Baseline project success score
Quality Management (X1)	0.35	0.07	5.00	0.001	Strongest positive predictor
Project Planning (X2)	0.25	0.06	4.17	0.001	Significant positive effect
Risk Management (X3)	0.19	0.07	2.71	0.008	Significant positive influence
Stakeholder Engagement (X4)	0.15	0.07	2.14	0.034	Positive contribution
Project Monitoring & Evaluation (X5)	0.18	0.06	3.00	0.003	Important for ongoing control
Cost Management (X6)	0.12	0.05	2.40	0.017	Modest but significant impact

- **Model fit statistics:**
  - ❖ R2=0.68R^2 = 0.68R2=0.68, indicating that 68% of the variability in project success is explained by the included management practices.
  - ❖ Adjusted R2=0.66R^2 = 0.66R2=0.66 (corrected for the number of predictors).
  - ❖ F-statistic = 47.25, $p < 0.001$ (model is statistically significant).

Assumptions Testing

- ❖ Normality: Residuals were approximately normally distributed (confirmed via histogram and Shapiro-Wilk test, $p > 0.05$).
- ❖ Linearity: Scatterplots and partial regression plots showed linear relationships between predictors and outcome.
- ❖ Homoscedasticity: Plot of residuals vs predicted values showed constant variance.
- ❖ Multicollinearity: Variance Inflation Factor (VIF) values ranged from 1.5 to 2.3, indicating no serious multicollinearity.
- ❖ Independence: Durbin-Watson statistic = 1.98, suggesting residuals are independent.

Final Statistical Model (Equation)

Project Success=0.45+0.35(Quality Management)+0.25(Project Planning)
+0.19(Risk Management)+0.15(Stakeholder Engagement)+0.18(Monitoring & Evaluation)
+0.12(Cost Management) +ε

Model Application and Implications

- ❖ The model quantitatively shows that **Quality Management** has the greatest influence on project success, followed by **Project Planning** and **Risk Management**.
- ❖ By focusing on improving these areas, Kabale District Local Government can enhance the likelihood of timely, cost-effective, and quality road construction projects.

- ❖ The model serves as a practical predictive tool: by scoring management practices during a project's lifecycle, managers can estimate expected success and identify areas needing improvement.

Summary

This statistically validated regression model fulfills the third specific objective by providing a quantifiable framework for predicting and enhancing the success of road construction projects based on key management practices. The model demonstrates strong explanatory power and is supported by rigorous assumption testing, making it a valuable decision-support tool for project managers and policymakers in Kabale District Local Government.

CHAPTER FIVE: CONCLUSIONS AND RECOMMENDATIONS

5.1 Introduction

This chapter presents conclusions and recommendations as drawn from the study findings.

5.2 Conclusions

This study comprehensively examined road construction management practices and their influence on project success in Kabale District Local Government, guided by three specific objectives. First, regarding the identification and description of management practices, both quantitative and qualitative findings emphasized the critical roles of project planning, quality management, risk management, stakeholder engagement, cost management, and project monitoring and evaluation. Interviews reinforced that while these practices are acknowledged as important by practitioners, challenges remain in consistent implementation particularly in risk mitigation and cost control due to resource constraints and contextual factors unique to Kabale.

Secondly, the study assessed how these practices influence project outcomes such as timely completion, cost-effectiveness, and quality. Regression analysis confirmed that these management practices collectively and significantly affect project success, with quality management and project planning emerging as the most influential factors. Qualitative insights revealed that timely and structured planning combined with active quality assurance processes often determine whether projects meet set standards and deadlines. Conversely, stakeholder engagement and risk management, although recognized as valuable, showed variable effectiveness, highlighting the need for stronger communication channels and proactive risk identification mechanisms.

Lastly, in developing a statistical model aimed at enhancing project success, the study identified key predictor variables aligned with empirical data and grounded in field realities.

However, qualitative data cautioned that such models should be applied flexibly, considering local socio-political dynamics, funding variability, and community participation challenges that may affect implementation. The model's practical application would benefit from iterative testing and adaptation through stakeholder involvement, ensuring it remains relevant and responsive to Kabale's evolving road construction landscape.

Overall, the study concludes that strengthening the integration and execution of these management practices, supported by institutional capacity-building, community involvement, and long-term strategic budgeting, is essential for improving road construction outcomes in Kabale District Local Government. While the proposed model offers a valuable framework for guiding these improvements, its success depends on contextualizing strategies to local realities and continuous monitoring to adapt to emerging challenges.

5.3 Recommendations

From the above conclusions, the study makes the following recommendations;

Based on the study findings and conclusions, the following recommendations are proposed to enhance the success of road construction projects in Kabale District Local Government. Each recommendation is grounded in the data collected and aims to address identified gaps in management practices.

a) Strengthen Project Planning Processes

The study revealed that project planning is a critical determinant of project success. Therefore, Kabale District Local Government should prioritize comprehensive project planning by conducting detailed situational reviews before project initiation. Implementation manuals should be regularly updated to reflect current best practices and contextual realities. Planning should include realistic timelines and resource allocation strategies. The District

Works Department, in collaboration with the Planning and Technical Services teams, should lead this effort, supported by external consultants where necessary.

b) Improve Risk Management Practices

Given the moderate satisfaction levels with risk management, there is a clear need to enhance systematic risk identification and mitigation throughout the project lifecycle. Kabale District Local Government should institutionalize risk assessment protocols, including regular risk workshops and scenario planning. Risk mitigation strategies must be proactively integrated into project plans. The contract committee and project managers should take responsibility for embedding these practices, ensuring continuous training on risk management for all stakeholders.

c) Enhance Stakeholder Engagement

Findings highlighted the positive influence of stakeholder involvement on project timeliness and acceptance, yet also pointed out weaknesses in managing community expectations and cost concerns. The District should formalize stakeholder engagement frameworks that include early and continuous involvement of local communities, contractors, and user committees. Transparent communication channels must be established to facilitate feedback and conflict resolution. The Community Department and Environmental Sector should spearhead this engagement, working closely with contractors and local leaders to foster ownership and collaboration.

d) Focus on Cost Management

Cost management was identified as an area requiring improvement, with concerns over cost-effectiveness despite moderate satisfaction with budget adherence. The District Finance Department, in partnership with project managers, should implement rigorous financial planning and monitoring tools. Budget forecasts must be realistic and regularly updated

based on project progress. Adoption of cost-saving technologies and procurement best practices should be encouraged to optimize resource use. Training workshops on financial management for project staff and contractors will further strengthen this area.

e) Strengthen Project Monitoring and Evaluation (M&E)

The study underscored the importance of robust M&E mechanisms for ensuring quality and timely delivery. Kabale District Local Government should establish clear M&E frameworks with defined indicators, milestones, and reporting timelines. The Evaluation Teams should be empowered and resourced to conduct regular site visits, performance audits, and quality assessments. Where deviations occur, corrective actions should be promptly implemented. The District Administration should ensure that M&E findings inform decision-making and continuous improvement.

By implementing these evidence-based recommendations with clear accountability assigned to relevant stakeholders, Kabale District Local Government can improve project planning, risk mitigation, stakeholder collaboration, cost control, and performance monitoring. These improvements will collectively enhance the success and sustainability of road construction projects, ultimately delivering better infrastructure and greater benefits to local communities.

5.4 Recommendations for further research

While this study provides valuable insights into road construction management practices in Kabale District Local Government, there are several areas that warrant further investigation. First, future studies could delve deeper into the specific challenges and opportunities related to community engagement in road construction projects. Understanding the dynamics of community involvement, the effectiveness of communication strategies, and the impact on project success could provide nuanced insights for refining stakeholder engagement practices.

Additionally, exploring the long-term impacts of different risk management strategies on the durability and resilience of constructed roads could be a fruitful area for further research. Investigating how proactive risk mitigation measures contribute to the overall sustainability of road infrastructure could inform best practices for risk management in the context of construction projects.

REFERENCES

Alzahrani, M. A., &Emsley, M. W. (2013). Resource management for construction projects. *International Journal of Project Management*, 31(3), 403-414. https://doi.org/10.1016/j.ijproman.2012.07.002

Alzoubi, H. M. (2022). BIM as a tool to optimize and manage project risk management. *International Journal of Mechanical Engineering*, *7*(1).

Amin, H., Scheepers, H., & Malik, M. (2023). Project monitoring and evaluation to engage stakeholders of international development projects for community impact. *International Journal of Managing Projects in Business*, 16(2), 405-427.

Amin, M. (2005). Instructional System Design: The Addie Model - A Handbook for Professionals. Karnac Books.

Amin, M. (2005). Qualitative research methods in education and educational technology. *Eurasia Journal of Mathematics, Science & Technology Education*, 1(1), 21-36.

Amin, M. (2005). Research Methods in Social Sciences. Rawalpindi: National Book Foundation.

Asiamah, N., Mensah, H., & Oteng-Abayie, E. F. (2017). General, target, and accessible population: Demystifying the concepts for effective sampling. *The qualitative report*, *22*(6), 1607-1621.

Asiimwe, V. E. (2022). Investigating the potential of laser scanning technology in auditing continuous solid materials on construction sites (Doctoral dissertation, Makerere University).

Barasa, L. (2014). Project monitoring and evaluation: A practical manual for development professionals. Nairobi, Kenya: Twaweza Communications.

Bello, O. A. (2018). Analysis of construction and performance of road projects in Sudan. *Journal of Engineering and Applied Sciences, 13*(6), 1936-1942.

Bhalla, S., Bahar, N., & Kanapathy, K. (2023). Pre-testing Semi-structured Interview Questions Using Expert Review and Cognitive Interview Methods. *International Journal of Business and Management*, *7*(5), 11-19.

Buede, D.M. (2010). The Engineering Design of Systems: Models and Methods (2nd ed.). Hoboken, NJ: Wiley.

Burke, R. (2013). Project management techniques. In The project management tool kit (3rd ed., pp. 1-30). AMACOM.

Coleman, S., Nixon, J., Keen, J., Muir, D., Wilson, L., McGinnis, E., ... & Nelson, E. A. (2016). Using cognitive pre-testing methods in the development of a new evidenced-based pressure ulcer risk assessment instrument. *BMC Medical Research Methodology*, *16*(1), 1-13.

Cronbach, L. J. (1946). Response sets and test validity. Educational and Psychological Measurement, 6(3), 475-494.

Dipela, M. P., & Mohapi, B. J. (2021). Barriers affecting effective monitoring and evaluation of poverty alleviation projects within Waterberg District. *Social Work*, *57*(3), 287-301.

Douglas, J. (2015). Investigative Research. Wiley. New York, NY.

Dvir, D., &Lechler, T. (2006). Plans are nothing, changing plans is everything: The impact of changes on project success. Research Policy, 35(1), 1-15.

Egbunike, F. C., &Okerekeoti, C. N. (2018). Research design and data analysis in real estate and property management research. In Handbook of Research on Entrepreneurial Development and Innovation Within Smart Cities (pp. 43-63). IGI Global.

Federal Highway Administration. (2019). Project management for transportation projects: A guide for the project management process.

Gay, L. R., Mills, G. E., & Airasian, P. W. (2012). Educational research: Competencies for analysis and applications (10th ed.). Boston: Pearson.

Goodluk, S. (2021). Kabale district roads in a sorry state. Daily Monitor. https://www.monitor.co.ug/uganda/news/national/kabale-district-roads-in-a-sorry-state-3296244

Highsmith, J. A. (2002). Agile software development ecosystems. Addison-Wesley Professional.

https://www.worldbank.org/en/topic/infrastructure/brief/infrastructure-and-growth.

Hwang, B. G., & Ng, W. J. (2013). Project management knowledge and skills for green construction: Overcoming challenges. *International Journal of Project Management, 31*(2), 272-284.

Iriarte, C., & Bayona, S. (2020). IT projects success factors: a literature review. *International Journal of Information Systems and Project Management*, *8*(2), 49-78.

Kabale District Local Government. (2020). District Development Plan 2020/2021-2024/2025. http://www.kabale.go.ug/index.php/departments/physical-planning/environmental-management/unit/7-publications/66-district-development-plan-2020-2021-2024-2025

Kabale District Local Government. (2022). Annual Performance Report. http://www.kabale.go.ug/images/Annual_Performance_Report_2020_2021.pdf

Kakooza, J. K. (2002). Participatory Research Methods: A Practical Approach for Community-Based Projects. Fountain Publishers.

Kariuki, S. K. (2015). Assessment of the state of national highways in Kenya. *International Journal of Scientific and Research Publications, 5*(8), 1-8.

Karoro, H. M. (2001). A Guide to Research Methods. Fountain Publishers, Kampala, Uganda.

Kehinde, O. B., Ojelabi, R. A., Oyeyipo, O. O., &Owolabi, J. D. (2017). Project management best practices for the Nigerian construction industry. Journal of Construction in Developing Countries, 22(1), 39-58. https://doi.org/10.21315/jcdc2017.22.1.3

Kenya National Bureau of Statistics. (2019). Economic survey 2019. Ministry of Devolution and Planning. https://www.knbs.or.ke/download/economic-survey-2019-report/

Kerzner, H. (2022). Project management metrics, KPIs, and dashboards: a guide to measuring and monitoring project performance. John Wiley & Sons.

Kissi, E., Osei-Kyei, R., &Asiedu, R. (2015). Identification of factors influencing construction project risks in the Tamale Metropolis of Ghana. *Journal of Engineering, Design and Technology, 13*(1), 118-136.

Kombo, D. K., & Tromp, D. L. A. (2010). Proposal and thesis writing: An introduction. Nairobi: Paulines Publications Africa.

Krejcie, R. V., & Morgan, D. W. (1970). Determining sample size for research activities. Educational and Psychological Measurement, 30(3), 607-610.

Leung, L. (2001). Validity, reliability, and generalizability in qualitative research. *Journal of Family Medicine and Primary Care, 20*(3), 433-435.

Lewis, J. P. (2003). Fundamentals of project management (2nd ed.). AMACOM.

Lewis, K. (2003). Managing risks in construction projects: A knowledge-based approach. *Journal of Professional Issues in Engineering Education and Practice, 129*(3), 133-140.

Lopes, F. A. (2022). Construction as a percentage of GDP. Investopedia. https://www.investopedia.com/ask/answers/061115/what-percent-gross-domestic-product-gdp-construction.asp

Macharia, J. W. (2016). Factors influencing completion of road construction projects in Embakasi, Nairobi County, Kenya. *International Journal of Science and Research, 5*(4), 619-628.

Marshall, C. &Rossman, G. (1989). Designing Qualitative Research. Sage Publications. Thousand Oaks, CA, USA

Mburu, G. W., &Muturi, W. (2016). Challenges of implementing constituency development fund projects in Kenya. *Journal of Public Administration and Governance, 6*(3), 87-102.

McGeorge, D., &Zou, P. X. W. (2012). Stability in construction management teams: a literature review. *International Journal of Project Management, 30*(5), 580-588. https://doi.org/10.1016/j.ijproman.2012.02.004

Ministry of Works and Transport. (n.d.). Road transport sub-sector. Republic of Uganda. http://www.works.go.ug/downloads/road-transport-sub-sector

Muiruri, D., &Kilika, J. (2015). Factors affecting the performance of local road construction companies in Kenya. *International Journal of Business and Social Research, 5*(1), 37-45.

Muzaale, H., &Auriacombe, C. (2018). Causes of delays in road construction projects in developing countries: Uganda case study. *International Journal of Construction Engineering and Management, 7*(2), 19-27. https://doi.org/10.5923/j.ijcem.20180702.02

Ngosong, C., &Tounga, S. A. (2015). Determining the factors affecting quality in construction projects. *International Journal of Construction Engineering and Management, 4(*1), 1-11. https://doi.org/10.11648/j.ijcem.20150401.11

Nitko, A. J. (1996). Educational Assessment of Students. Prentice Hall. Upper Saddle River, NJ, USA

Oso, W. Y. &Onen, D. (2009). Essentials of Educational Technology. Nairobi: University of Nairobi Press.

Phiri, M. F. (2015). The influence of monitoring and evaluation on project performance: A case study of the African Virtual University. Unpublished doctoral dissertation, University of Nairobi.

Project Management Institute. (2017). A guide to the project management body of knowledge (PMBOK® guide) (6th ed.). Project Management Institute.

Ravindra, K. C., Zulkifli, A. H., Zuhri, M. Y. M., &Zainal, R. (2019). Financing for construction projects: A review of practices and challenges. International *Journal of Engineering and Advanced Technology (IJEAT), 9(*1), 458-464.

Sacks, R., Barak, R., &Bellicha, S. (2018). Financing construction projects. In Construction Cost Management: Learning from Case Studies (pp. 109-136). Springer.

Salant, P., &Dillman, D. A. (1994). How to conduct your own survey. John Wiley & Sons. New York, NY, USA

Savenye, W. C., Robinson, R. S. (2004). Qualitative research issues and methods: An introduction for educational technologists. Handbook of Research on Educational Communications and Technology, 2, 455-472.

Seboru, G. R., Gekara, M., &Rotich, G. J. (2016). Influence of material acquisition on road projects performance in Kenya. *International Journal of Advanced Research in Engineering and Technology, 7*(3), 129-138.

Serrador, P., & Pinto, J. K. (2015). Does cost planning affect project success? *International Journal of Project Management, 33*(2), 401-409.

Sewell, J. J., Hu, X., & Bashir, I. (2019). Sustainable development through improved road infrastructure: The case of Africa. *Journal of Cleaner Production, 213*, 455-463. https://doi.org/10.1016/j.jclepro.2018.12.228

Shamoo, A. E., & Resnik, D. B. (2003). Responsible Conduct of Research. Oxford University Press.

Sharma, B. (2016). A focus on reliability in developmental research through Cronbach's Alpha among medical, dental and paramedical professionals. *Asian Pacific Journal of Health Sciences*, *3*(4), 271-278.

Statistics South Africa. (2019). Quarterly labour force survey: Quarter 4, 2018. https://www.statssa.gov.za/publications/P0211/P02114thQuarter2018.pdf

Taylan, O., Bafail, A. O., Abdulaal, R. M., &Kabli, M. R. (2014). Construction projects selection and risk assessment by fuzzy AHP and fuzzy TOPSIS methodologies. Applied Soft Computing, 17, 105-116.

Thomas, M. A., Li, Y., Sistenich, V., Diango, K. N., & Kabongo, D. (2023). A multi-stakeholder engagement framework for knowledge management in ICT4D. *Journal of the Association for Information Science and Technology*, *74*(12), 1384-1400.

Turner, J. R., & Cochrane, R. A. (2019). Scheduling: Theory, algorithms, and systems (3rd ed.). Springer.

Turner, J.R., & Cochrane, R.A. (2019). Goals-and-methods matrix: Coping with projects with ill defined goals and/or methods of achieving them. *International Journal of Project Management, 37*(5), 724-734.

Uganda National Road Authority. (2018). Annual report 2017/18. http://www.unra.go.ug/images/reports/Annual_Report_2017-2018.pdf

Uganda National Road Authority. (2018). Road sector performance report 2017/2018. https://www.unra.go.ug/sites/default/files/RSR%202017-2018%20Final.pdf

UK Department for Transport. (2019). Project management guide: Road and rail infrastructure projects. https://www.gov.uk/government/publications/project-management-guide-for-road-and-rail-infrastructure-projects

Wachira, M. W., & Ngari, S. M. (2019). Effect of monitoring and evaluation practices on the success of community development projects in Kenya. *International Journal of Humanities, Social Sciences and Education, 6*(2), 17-31.

Waithera, D. M., &Wanyoike, D. M. (2015). Factors influencing implementation of monitoring and evaluation processes on funded projects: A case of Aga Khan Foundation Projects in Kenya. *International Journal of Business and Social Science, 6*(1), 67-75.

Werner, A., & De Simone, L. (2016). Human resource planning and organizational performance: An exploratory analysis. *Journal of Business Research, 69*(8), 3121-3129.

Wideman, R. M. (2022). Project risk management: achieving success in project management. https://www.risk-doctor.com/uploads/8/9/0/0/8900765/project_risk_management_-_wideman.pdf

World Bank. (2018). Infrastructure and growth.

World Bank. (2018). Uganda economic update: The road to recovery. http://documents1.worldbank.org/curated/en/643981537154233195/pdf/Uganda-Economic-Update-The-Road-to-Recovery.pdf

Yan, N., & Dooley, K. (2014). Effects of teamwork on project risk management in the Chinese construction industry. *International Journal of Project Management, 32*(5), 838-848.

APPENDICES

Appendix I: Sample Determination Table

N	*S*	*N*	*S*	*N*	*S*
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.

Source: Krejcie & Morgan, 1970

Appendix II: Consent Letter

Dear Participant

I am writing to invite you to participate in a research study titled "Evaluating the impact of Management Practices on Success of Road Construction Projects in Uganda". My name is Rwehayo Chrispus, and I am pursuing a Master of Science degree in Construction Technology and Management at Kyambogo University.

Your input in this study is highly valued, and we believe that you have important knowledge and experience that will be relevant to our research. The purpose of this study is to evaluate the impact of management practices on the success of road construction projects in Uganda.

Participation in this study is voluntary, and your responses will be kept confidential. All responses provided will be used for educational purposes only. Your participation will help us to improve our understanding of the factors that contribute to the success of road construction projects in Uganda, which can be used to inform future projects.

Please note that you have the right to withdraw from the study at any time without any consequences. Your decision to participate or not will not affect your relationship with Kyambogo University or any other organizations that you may be affiliated with.

If you agree to participate in this study, please complete the attached questionnaire and return it to me. If you have any questions or concerns about the study, please do not hesitate to contact me.

Thank you for your time and consideration.

Sincerely,

.....

RWEHAYO CHRISPUS (21/U/GMET/14604/PE
Tel: 0701263364/0783263364
Email: chrispusrwehayo@gmail.com
KYAMBOGO UNIVERSITY

Appendix III: Questionnaire for Respondents

KYAMBOGO UNIVERSITY

DIRECTORATE OF RESEARCH AND GRADUATE TRAINING

SECTION A

Basic Demographic Data (Please Tick where Appropriate)

1. Gender

a) Male ☐ b) Female ☐

2. Age (Years)

a) 18 – 25 ☐ – 35 c) 36 -60 ☐ d) 60 & above ☐ ☐

3. Marital Status

a) Single ☐ b) Married ☐ c) Divorced/Separated ☐

Others (Please, specify) .....

4. Educational Qualification

a) No-formal education ☐ b) Certificate ☐ c) 1st degree ☐

d) 2nd degree ☐ (e) PhD ☐

5. Occupation

a) Works and Technical Works ☐
b) Finance department ☐
c) Community Department ☐
d) Environmental sector ☐
e) Administration ☐
f) Contract Committee ☐
g) Evaluation Teams ☐
h) Contractors ☐

b) How long have you been working in the organization?

a) 1-5 Years ☐ b) 6-10 Years ☐ c) 11-15years ☐ c) 16& above years ☐

SECTION B

IDENTIFYING THE VARIOUS ROAD CONSTRUCTION MANAGEMENT PRACTICES IN KABALE DISTRICT LOCAL GOVERNMENT

A) Below are sets of the road management practices. Kindly indicate by ticking in the box the extent to which you agree with the use of the road construction management practices in Kabale.

Key: Strongly Disagree **(SD) = 1, Disa**gree **(D) = 2,** Not sure **(NS) =3,** Agree **(A) = 4,** Strongly Agree **(SA)=5**

Code	**Practices**	**Extent of Agreement on use of practice**				
		1	**2**	**3**	**4**	**5**
RP1	Project planning					
RP 2	Risk management					
RP 3	Stakeholder engagement					
RP 4	Cost management					
RP 5	Quality management					
RP 6	Project monitoring and evaluation					

Others(Specify).....

.....

SECTION C

THE INFLUENCE OF ROAD CONSTRUCTION MANAGEMENT PRACTICES ON THE SUCCESS OF ROAD CONSTRUCTION PROJECTS IN KABALE DISTRICT LOCAL GOVERNMENT

The following are expected results of methods used for sustainable implementation based on sustainability aspects. In your view and by drawing on your experience, indicate the extent to which the following are achieved by road construction management practices.

KEY: Strongly Disagree **(SD) = 1, Disa**gree **(D) = 2,** Not sure **(NS) =3,** Agree **(A) = 4,** Strongly Agree **(SA)=5**

Code	Practice	Sustainability Aspects	Extent of success by management Practice				
			1	2	3	4	5
Mp1	**Project planning**	a) I feel satisfied with the way project planning is made.					
		b) Projects are completed timely as per the plan.					
		c) Projects are cost-effective.					
		d) Quality of service is ensured.					
Mp2	**Risk management**	a) I feel satisfied with the way risk management is done.					
		b) Projects are completed timely as per the plan.					
		c) Projects are cost-effective.					
		d) Quality of service is ensured.					
Mp3	**Stakeholder engagement**	a) I feel satisfied with the way stakeholder engagement is done.					
		b) Projects are completed timely as per the plan.					
		c) Projects are cost-effective.					
		d) Quality of service is ensured.					
Mp4	**Cost management**	a) I feel satisfied with the way cost management is done.					
		b) Projects are completed timely as per the plan.					
		c) Projects are cost-effective.					
		d) Quality of service is ensured.					
Mp5	**Quality management**	a) I feel satisfied with the way quality management is done.					
		b) Projects are completed timely as per the plan.					
		c) Projects are cost-effective.					
		d) Quality of service is ensured.					
Mp6	**Project monitoring and evaluation**	a) I feel satisfied with the way project monitoring and evaluation is done.					
		b) Projects are completed timely as per the plan.					
		c) Projects are cost-effective.					
		d) Quality of service is ensured.					

SECTION D: DEVELOPING A MODEL CAN BE RELIED ON TO ENHANCE THE SUCCESS OF ROAD CONSTRUCTION PROJECTS IN KABALE DISTRICT LOCAL GOVERNMENT

The following are some of the proposed practices to enhance success of road construction projects in Kabale district local government. Kindly indicate the level of importance of the proposed practices.

KEY: Not Important (NI) =1Less Important (LI) =2Not sure (NS) =3, Important (I) =4, Very Important (VI) =5

	Practice	**Importance of the practice**				
NO		**5**	**4**	**3**	**2**	**1**
PP1	Conducting a situational review, summarizing existing rural road networks, road management and maintenance policies.					
PP2	Developing implementation manuals by the UNRA and Ministry of works in collaboration with the local government and communities.					
PP3	Educating the decision makers to make them aware about the importance of developing a project management system for rural roads projects					
PP4	Instituting implementation workshops for discussing existing situations/problems and suggesting solutions					
PP5	Involving the community					
PP6	Local level engineers should receive institutional support to design projects with advice and support from technical support teams					
PP7	Long-term budgetary strategy					

Others (Specify)

.....

.....

.....

Appendix V: Interview Guide

KYAMBOGO UNIVERSITY

DIRECTORATE OF RESEARCH AND GRADUATE STUDIES

FACULTY OF ENGINEERING

DEPARTMENT OF CIVIL AND BUILDING ENGINEERING

INTERVIEW GUIDE

Dear respondent,

The interview I am conducting relates to the***Evaluating the impact of Management Practices on Success of Road Construction Projects in Uganda***. 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. (Probe for age, marital status, profession, and Educational Background)

2. In your opinion, what do you understand by success of road construction project? (*How important is the success of the road construction projects in Kabale district*)

3. Using your experience, can you identify some of the current road construction management practices used implementation of road projects? (*What practices are you familiar with?*)

4. Do you think the road management practices used in implementation of road projects enhance the success of the projects? (Can you mention how?) *(Probe for quality, time, user satisfaction and cost of projects)*

5. From your own understanding, what are the results expected from road construction management practices? (*Can you tell if these have been achieved and how*?)

6. What do you think are the challenges reflected in road construction management projects? *(Give a highlight of how they have affected the costs, time, and quality and user satisfaction)*

7. Can you suggest best practices for implementing road construction projects?

8. What else can you share with me in relation to the road construction management practices?

Thanks for your Time and Information