EFFECTS OF PLANNING ON THE SUCCESSFUL IMPLEMENTATION OF FEEDER ROAD PROJECTS IN ZAMBIA

By

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DECLARATION

I, **Changala Kanchule**, do hereby declare that the work presented in this dissertation is the result of my research work except to the extent indicated in the Acknowledgements and references and comments included in the report and that it has not previously been submitted for any degree at this or another University.

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CERTIFICATE OF APPROVAL

This dissertation of **Changala Kanchule** is approved by the University of Zambia in partial fulfilment of the requirements for the award of the degree of Master of Engineering in Construction Management.

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ABSTRACT

Of the many studies that have been done in the Zambian Construction Industry particularly the road construction sector, very little attention has been paid to planning and its effects to the overall implementation of the feeder road projects. The success of any construction project is seen when the implementation and subsequent handover of the final product for use are in accordance with the planned budget, implementation period, desired quality, and answers the set objectives. However, feeder road projects in Zambia have been known to take longer than planned, incur cost overruns due to variations, and rarely completed to the satisfaction of the stakeholders. The main aim of this research was to propose a Model with planning practices that would improve the management of feeder road projects in Zambia as a means of minimizing project implementation failure. This was done by assessing the planning practices that were in place and identifying the key bottlenecks. The study was limited to feeder road construction projects within Zambia. The research was conducted using the cross-sectional study design and the study population of interviewees and questionnaire respondents comprised professionals involved in feeder road construction project planning at national, provincial and district levels. The methodological approach used was in three angles starting with structured interviews which led to the development of a questionnaire and then three case studies. This was preceded by a detailed literature review. Results revealed some constraints in the manner in which feeder road projects were planned. Amongst the identified problems were, non-adherence to institutional strategic plans where more than 66% of respondents attested to this, political interference in the planning processes ranked highest during analysis of external interference with a mean score of 4.07, improper project prioritization, uncoordinated and non-detailed contract procurement, over procurement as was observed from the projects under MLGRD whose contract sum was more than 500% above budget. Evaluation of bidders not being robust enough was another issue. Projects analyzed under MLGRD also reviewed that more than 90% neither had a design or supervision consultant engaged. The analysis further reviewed that only 8.3% of projects were completed out of the 210 that were procured under MLGRD between 2016 and 2021. After case studies, a model was developed and proposed to be used in enhancing feeder road project planning in Zambia. It was established that the lapses in the project planning processes had a negative impact on project delivery resulting in situations like cost overruns, project delays and quality shortfalls. The researcher therefore recommended the adoption of the developed model for use by implementing institutions even as other researchers considered developing it further. The findings from this study were expected to enhance feeder road project planning in Zambia.

Keywords: *project planning; feeder road projects; contracts; planning model*

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TABLE OF CONTENTS

LIST OF TABLES

LIST OF FIGURES

LIST OF ABREVIATIONS

7NDP- Seventh National Development Plan

8NDP- Eighth National Development Plan

AfDB- African Development Bank

BOQ- Bill of Quantities

CBP- Community Based Projects

CDF- Community Development Funds

CEO- Chief Executive Officer

CRN- Core Road Network

FNDP- Fifth National Development Plan

GDP- Gross Domestic Product

GRZ- Government of the Republic of Zambia

LRA- Local Road Authorities

MLGH- Ministry of Local Government and Housing

MLGRD- Ministry of Local Government and Rural Development

MoU- Memorandum of Understanding

NCC- National Council for Construction

NRFA- National Road Fund Agency

RDA- Road Development Agency

RMI- Road Management Initiative

ROADSIP- Road Sector Investment Programme

RSNDP- Revised Sixth National Development Plan

SNDP- Sixth National Development Plan

ZMW- Zambian Kwacha (Rebased)

CHAPTER ONE: INTRODUCTION

1.0 BACKGROUND

A good and well-maintained public infrastructure plays a major role in the economic development of any country. Construction is a major industry in Infrastructure development with a significant contribution to the Gross Domestic Product (GDP) and the development strategy especially of developing countries (Muya et al., 2006). Foster and Dominguez (2011) noted that infrastructure improvements contributed 0.6 percentage points to the annual per capita growth of Zambia's GDP over the period 2000 to 2010. Further, the African Development Bank (AfDB) (2015) estimated the contribution of the construction industry in Zambia at 15.1 percent of the GDP in 2017.

In the year 2019, the construction industry comprised 29 percent of the national GDP while growing faster than the already rapidly expanding Zambian economy. The Government of the Republic of Zambia (GRZ) in its 2018 National Budget proposed to spend ZMW8.6billion on road infrastructure alone. This was the single sector with the highest allocation of 12.1percent of the total ZMW 71.6 billion budget expenditure. The increased investment towards development in the entire economic and social sector especially infrastructure in the last 10 years has led to the growth of the construction industry at a very fast rate. This is evidenced by the continuous increase in the number of new contractors registered by the National Council for Construction (NCC) between the years 2015 and 2019. There was also an increase in GDP from construction in Zambia to ZMW3.920 million in the third quarter of 2019 from ZMW3.723 million in the second quarter of the same year, signifying approximately 5 percent increase. According to the Seventh National Development Plan (7NDP) Report (2017) the industry continued to grow over the previous 12 years at a steady annual average rate of 17.5 percent (Wijesena and Hartrich, 2014).

Roads make up a bigger component of the infrastructure development programs being funded by the government in Zambia. One class of the roads which is heavily financed by the government is the Rural Roads. Zambia has a total classified network of 67,671km of public roads comprising Trunk, Main, District, Primary, Secondary and Tertiary Feeder, Urban and Park Roads. Out of the classified network, 40,454 km comprises the Core Road Network (CRN). The CRN consists of the Paved and Unpaved Trunk, Main and District (TMDs), Paved and Unpaved Urban and Primary Feeder Roads (PFRs). (Road Sector Annual Report, 2019)

Of the total 40, 454km core road network, 14,333km which is about 35percent of the CRN is Primary Feeder roads. According to the Road Sector Report (2019), the 2015 CRN survey reviewed that, 82 percent of Primary Feeder Roads required immediate maintenance as it was in poor condition. Maintenance would ensure sustainable condition of PFRs and subsequently create an enabling environment for movement of people, goods and services especially in agriculture production areas. This was vital considering that the Seventh National Development Plan (SNDP) for the period 2016 to 2021 focused on Agriculture. Government, through the Ministry of Local Government (MLG) together with the Roads Development Agency (RDA) rolled out an accelerated program to work on the entire network of the Primary Feeder Roads. While the country's economy is traditionally highly dependent on copper production, the agriculture sector is by far the highest contributor to employment, currently employing 70 percent of the total population (World Bank, 2015). The revised Sixth National Development Plan (2013-2016) identified poor infrastructure as one of the major reasons why Zambia's potential in agriculture and agribusinesses remained largely unexploited. It further stated that many rural areas were difficult to access, particularly during the rainy season when vital farming inputs should be delivered.

It is owing to the above background that for the past 6 years from 2016 to 2021, government has through the Ministry of Local Government (MLG) contracted out works on about 7900Km of feeder roads amounting to ZMW10, 450,474,137.80 in what was called the MLG-Accelerated Feeder Roads Programme under GRZ financing. The government further through RDA rolled out the Output and Performance Based Road Contracts (OPRCs) in what was called the Improved Rural

Connectivity Project (IRCP) on a targeted initial 4,800km of rural roads under World Bank financing. This project was launched in August 2018 by the Republican President. In spite of all these interventions and investment, it was noted that the existing rural roads network was still in a poor condition and the rural population continued facing almost the same challenges as before. The question that remained unanswered was why the much investment in the road sector was not able to change the narrative particularly in the rural road network. If resources had adequately been provided to improve the condition of the rural road network as earlier alluded, then what was not done right?

The Road Sector Annual Report (2019), revealed that ongoing road projects during the period under review had undergone variations amounting to a total of **ZMW23.05 billion** above the original total contract sums. On 15thJanuary, 2022, in his closing remarks for the capacity building workshop for Local Road Authorities (LRAs) in Southern province, National Road Fund Agency Chief Executive Officer cited uncoordinated implementation of road projects in relation to initial plans as a major cause of project cost overruns (Times of Zambia, 2022).

Revelations by the Minster of Local Government and Rural Development in his ministerial statement to parliament on 5th December 2021 further indicated that a total of **ZMW13 billion** worth of feeder road projects was contracted under his Ministry across the country for the period 2014 to 2021 covering a total stretch of 9,084 kilometers. This was against the approved budget figure of only **ZMW 1.2 billion**.

In view of the above, could lack of adequate ***planning*** be a major factor in the challenges being faced in the Feeder Roads sub sector?

Planning is one of the key functions in project management if a project manager is to realize the project objectives of economic development, generation of additional capital, and so on. Project management has different phases and processes within it (PMBok Guide, 2017). Each phase contains rigorous and comprehensive activities to be performed. The success of any project is measured by its ability to be completed within time, within budget and most importantly the end product meeting the objective in performance based on the original plan. Therefore, planning plays a very important

role on the success of any project. Research has in the past shown that poor project planning is one of the major reasons for project failure. Moreover, research has also discovered that there is positive interaction between project planning and project success (Aladwani, 2002; Dvir et al., 2003). Adeyemi and Idoko (2008) showed that project failure in developing countries is significant and involves considerable time and cost overrun. Could lack of proper planning or its absence be the reason for failure in the implementation of feeder road projects in Zambia?

1.1 PROBLEM STATEMENT

It has been acknowledged that rural roads should be treated as the last link of the transport network. Despite this, they often form the most important link in terms of providing access for the rural population who are in the majority in Zambia. Their permanent or seasonal absence acts as a crucial factor in terms of the access of rural communities to basic services such as education, primary health care, water supply, local markets and economic opportunities (Donnges, 2003). In a study done in Ethiopia on 15 villages that were surveyed between 1994 and 2004, Dercon et al., (2008) concluded that access to all weather rural roads reduced poverty by 6.9 per cent and increased consumption growth by 16.3 percent. Dercon and Hoddinott (2005) also found that, in Ethiopia, an increase of 10 km in the distance from the rural village to the closest market town had a dramatic effect on the likelihood that the household purchased inputs. Mu and Walle (2007) showed that markets in Vietnam were more likely to develop as a result of rural road improvements where communities had access to extended networks of transport infrastructure.

It is against this background that rural roads projects need to be successfully implemented especially in developing countries where a large population lives in rural areas and largely depend on agriculture. In Zambia, rural roads (mostly gravel roads) are the most vulnerable yet the most important economically. The success of rural roads projects in Zambia has been questioned by different stakeholders and researchers. Silungwe (2015), highlights that the construction industry in Zambia has repeatedly suffered the consequences of failure to manage risk such as design failure, cost overruns and delayed completion. This is further supported by Chilongo (2017) who concludes that construction projects in Zambia often have many realistic reasons such

as closures, amendment of drawings and amendment of the design which lead to failures. The government initiated programmes like the MLG-Accelerated Feeder Roads Programme from 2016 and the Improved Rural Connectivity Project (IRCP) from 2018 together targeting about 12,000km of the 14,333km Primary Feeder roads.

Feeder Roads are under MLGRD implemented through the various LRAs as delegated by the RDA. It was however observed that the level of planning of these roads in the various LRAs never followed any standard format as it varied considerably from district to district. It was government's hope that with the emphasis on decentralization and devolution policies, these districts would improve service delivery in as far as planning for projects was concerned. The funding for Feeder Roads for all the districts was done centrally through the Road Fund under the management of the National Road Fund Agency (NRFA). The guiding principles for the distribution of funds to districts through MLGRD which was to include transparency and predictability based on robust information was however nonexistent as allocation of funding for projects was usually based on who had more influence among the interested parties as evidenced by the distribution of ongoing projects at the time the research was being conducted. Review of projects at MLGRD indicated that Eastern Province had fifty-six ongoing projects which was the highest in the country as compared to Western, Southern and Northwestern which had four, two, and zero respectively.

With the foregoing, it was noted that the existing rural roads network was still in a poor condition and the rural population was still facing the same challenges as before. It was against this background that the research was undertaken to establish whether planning affected successful implementation and completion of projects in the Zambian Construction Industry (ZCI).

1.2 AIM OF THE STUDY

The main aim of this research was to propose a Model with planning practices that would improve the management of feeder road projects in Zambia as a means of minimizing project implementation failure.

1.3 OBJECTIVES OF THE STUDY

The objectives of the study are:

- To determine whether adequate planning is done before the implementation of the feeder road projects in Zambia
- To examine the level of importance that government institutions attach to planning before feeder road projects are implemented
- To establish the success rate of feeder/rural road projects in accordance with the set objectives

1.4 RESEARCH QUESTIONS

- Is adequate planning done before the implementation of feeder road projects?
- What is the general perception of government institutions responsible for feeder roads towards project planning?
- Is there any evidence of any feeder road projects having a high success rate as a result of effective planning?

1.5 METHODOLOGY

A review through the desk research method on the studies in Planning and Feeder roads Survey was done. However, there was no sufficient qualitative data reporting on the issue. Therefore, qualitative approach was considered as the first line of approach in the study.

The qualitative enquiry focused on describing, understanding, exploring, and interpreting the collected data in order to understand the planning practices in place and how they effectively contribute to feeder road projects. The value of qualitative research assumes that there is no one concrete measurable truth, but a multitude of dimensions that emerge from social interactions, in this case with professionals who had vast experience in the sector. Thus, to look at this multiplicity, the self as a researcher was so cardinal in asking the right questions while interacting with research participants. The qualitative findings made quantitative collection of data very easy as the issues that emerged during qualitative data collection were further probed through quantitative means. This study also used the case study method to enrich the findings collected through qualitative and quantitative methods.

1.6 SIGNIFICANCE OF THE STUDY

Infrastructure development is undoubtedly critical for a country's long-term economic growth and competitiveness as it impacts economic activities by increasing productivity, facilitating trade, and promoting innovation (Lin, 2018).

A good rural road network plays an important role in poverty alleviation in rural areas as it enables transportation of people, material and goods leading to enhanced agricultural and other economic activities which trigger rural as well as overall economic growth of the country. Thus, a good rural road network forms the backbone of any country's economic growth and finding ways of successfully implementing the rehabilitation and maintenance of this asset is of greater importance to the country's macro and micro economy.

In Zambia, a good feeder road network is no doubt an assurance of continued economic activity hence if maintained in good condition, the country can be assured of continued productivity from our rural society which is the greatest driver of the agricultural sector. On the contrary, despite the continued increase of government budgetary allocation to the sector, implementation of feeder roads continued to yield unsatisfactory results as the network still remained in poor state. According to the RDA Road Condition Survey Report (2015), the budgetary allocation to the sector steadily increased from ZMW 3,043,988.00 in 2011 to ZMW 5,435,825.39 in 2015 signifying an overall increase of 78.6% in 5 years yet the network of the Primary Feeder Road which was in poor state increased from 77% to 82% in the same period.

It is therefore expected that the results and recommendations from this research will help government institutions charged with the responsibility of maintaining the condition of rural roads in putting up measures that would improve rural roads project planning. It is anticipated that the findings of this research will bring out measures that will enhance the implementation of rural road projects.

1.7 SCOPE OF THE STUDY

To achieve the objective of economic diversification and poverty reduction in Zambia, the study concentrates on the planning aspect of the implementation process of Feeder

Road projects under the Ministry of Local Government and Rural Development being executed in conjunction with the Local Road Authorities (LRAs).

A number of projects were sampled across the country for purposes of diversification. However, the projects that this research focused on were those that had already past their initial completion date but not yet completed as well as those that had or were undergoing termination without being completed. The other category was completed projects that went beyond initial completion period and budget. The projects considered in this study were those that were procured within the last 10 years.

1.8 ETHICAL CONSIDERATIONS

In line with ethical considerations, every participant in this study was treated with utmost respect and always ensured consent was obtained before engaging them to participate in the study. Participants were made to fully understand what the research was all about.

It must also be stated that clearance was obtained from the University of Zambia Natural and Applied Science Research Ethics Committee prior to any interactions with participants.

1.9 LAYOUT OF DISSERTATION

The study is divided into the following chapters:

Chapter One: Outlines the background, problem statement and objectives of the study. It also presents the methodology used and the significance of the study.

Chapter Two: Presents the literature by various authors on the study area.

Chapter Three: Discusses the study methodology.

Chapter Four: Presents findings

Chapter Five: Validates findings through Case Studies

Chapter Six: Proposes the Feeder Road Planning Model

Chapter Seven: Concludes the Study

1.10 CHAPTER SUMMARY

The chapter introduced the research. It presented the background of the study and outlined the research objectives. The following chapter presents literature from various authors on the research area.

CHAPTER TWO: LITERATURE REVIEW

2.0 INTRODUCTION

The previous chapter outlined the background to the study. This chapter presents review of related literature. It reviews information on planning in Zambia as a country and how road infrastructure has been incorporated in these plans. It also reviews literature pertaining to the Zambian Road Sector and how it has evolved over the years, further reviews how Feeder Roads are managed in Zambia. Other literature reviewed regards adequate planning done before implementation of projects, Government institutions importance in planning and the success rate of feeder rural road projects while looking at Zambia's literature as well as that on other countries.

2.1 DEFINITION OF PROJECT PLANNING

To understand and fully assess how the planning cycle affects road construction projects, planning and planning cycle need to be defined independently. Mintzberg (1981) defines planning as the process of deciding what to do, when and how to do it prior to the actual doing. Project planning is a continuous process that involves the project team and all the stakeholders. This plan becomes the reference for any works to be carried out during project implementation and therefore collaborative planning increases chances of project acceptability and success. Project planning can be categorized into the following three planning horizons;

2.1.1 MASTER PLANNING

This is a long-term perspective of what the project is all about which clearly describes the goal to all members as well as the way to attaining it. Master Planning is done at the very beginning of the project in order to better define and unify the vision for the undertaking.

2.1.2 LOOK AHEAD PLANNING

This is the medium-term perspective of the project which elaborates what has to be done after completing the next step. This process helps in the creation of workable backlog of tasks.

2.1.3 ACTION PLANNING

This is the short-term perspective of the project which describes in detail what has to be done in the immediate future. This can either be the next days, next weeks or even months. It can simply be defined as a detailed and systematic description, map or diagram of one's intention to do something (Laufer et. al. 1993). The above definitions entail that project planning encompasses all aspects of conceptualizing, defining the scope, estimating required resources, determining means of securing resource sourcing, identifying means of monitoring resource application and implementation of activities as well as evaluating outcomes resulting from the undertaking.

In general, project planning is the task of balancing costs and benefits in order to arrive at the project intended goal (Kerzner, 2009).

2.2 PURPOSE OF PROJECT PLANNING

According to Anderson (2010), the aim of project planning is mainly to identify possible risks to a project and thereby finding possible solutions of dealing with these risks throughout the duration of the project. There are three major benefits of project planning as outlined by Maylor (2010). He states that to begin with, it helps in avoiding chaos that usually results from unplanned activities. He further argues that project planning provides a baseline for evaluation of several alternatives that may be available in order to remain with those that are economically viable. He finally stresses the fact that project planning gives the project team an opportunity to identify problems at an early stage hence giving the team insight into coming up with appropriate counter measures.

The main objective of project planning according to Kerzner (2009) is to completely define the project scope so that it is well understood and followed by the project team and the stakeholders. A project plan is vital to the success of implementation and serves as a guide to the project team throughout the duration of the project with acceptable

regular revisions. Therefore, Kerzner (2009) states that a good project plan must endeavor to;

i. Enable the project team and its stakeholders identify areas of the project that may be problematic in order to avoid detrimental effects during implementation by managing the risks in time;
ii. Avail tools that will ensure the project team understands the client's requirements and objectives;
iii. Present a standard communications tool that will be in use throughout the period of the project;
iv. Distinguish roles of functional managers from that of program managers; and
v. Eliminate conflict between functional managers.

Other than the aspect of risk control, Naylor (1994) stresses the fact that there are more fundamental reasons for planning which are, to determine at the end of the project whether it was a success or failure. This he says can be measured by determining whether the cost of the project was within the client's budget and whether the project was completed within the initially specified period.

2.3 BENEFITS OF PROJECT PLANNING

Project planning is not just another stage in project management but rather one of the most critical stages in the whole process. The following are the reasons why project planning is so important and beneficial to all stakeholders.

2.3.1 STAKEHOLDER INVOLVEMENT

Stakeholders are people, groups, or institutions which are likely to be affected by a proposed intervention (either negatively or positively), or those which can affect the outcome of the intervention.

Ward (2001), in his study to evaluate the participation of diverse stakeholders in the planning of Urban Transport Systems concluded that increasing the participation of diverse stakeholders in the planning process increases the diversity of problem definitions and innovations. He however noticed in his study that there is greater temptation by project planners to leave decision making at planning stage in the hands

of a few stakeholders with power which should be mitigated against by ensuring democratic structures are set up to give all stakeholders a voice.

Baker et. al (2010), also stressed the need to overcome the perception about which groups hold the power and influence on the eventual outcomes of consultation exercises during project planning stage in order to encourage the participation a wider range of groups and stakeholders.

Stakeholder engagement is an important aspect of project planning and therefore every planner must look out for the following factors that might hinder meaningful engagement;

i. *Poverty* – involvement means time spent away from income producing tasks, and favors the wealthy;
ii. *Remote and rural settings* – increased or dispersed settlement distances make communication more difficult and expensive;
iii. *Illiteracy* – involvement will not occur if print media is used;
iv. *Local values/culture* – behavioral norms or cultural traditions can act as a barrier to public involvement or exclude those who do not want to disagree publicly with dominant groups;
v. *Languages* – in some countries a number of different languages or dialects may be spoken, making communication difficult;
vi. *Legal systems* – may be in conflict with traditional systems and cause confusion about rights and responsibilities over resource use and access;
vii. *Interest groups* – bring conflicting and divergent views and vested interests; and
viii. *Confidentiality* – may be important for the proponent, and may weigh against early involvement and consideration of alternatives.

The figure below shows stakeholder involvement and the levels of engagement in which each stakeholder undergoes. Inputs, tools & techniques and Outputs are clearly defined throughout each stage.

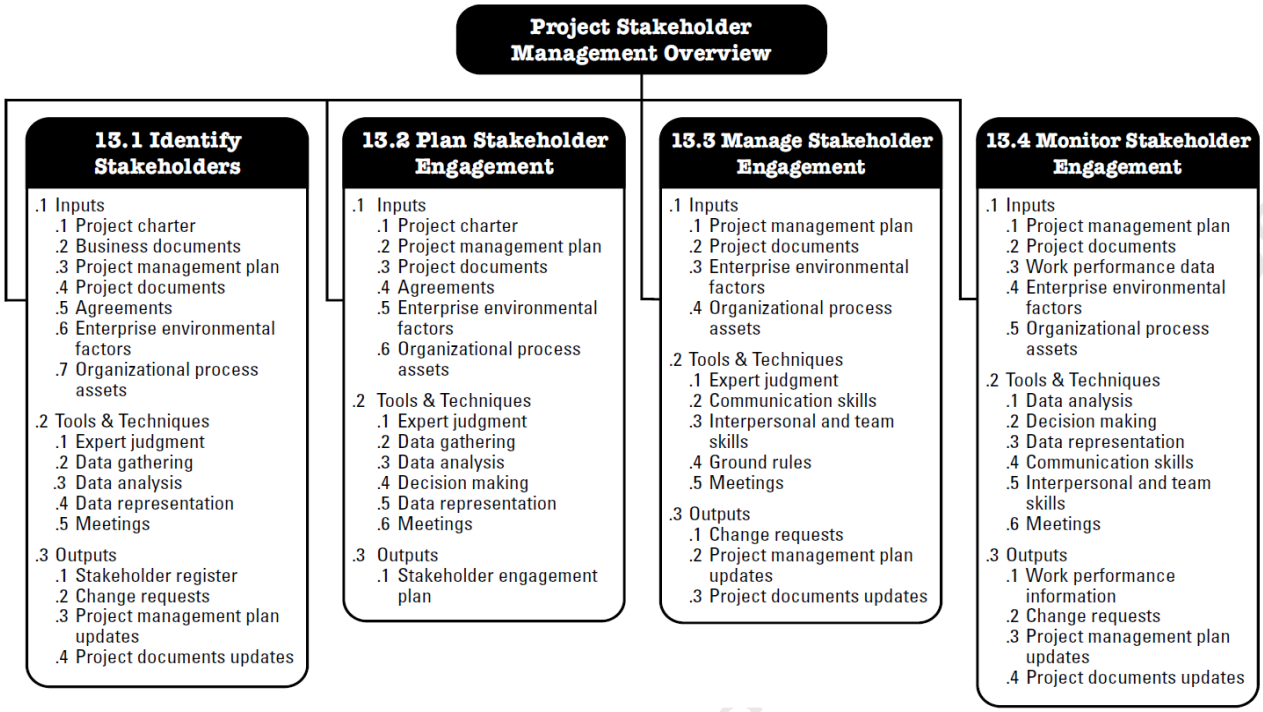

Figure 1: Stakeholder Management Overview (PMBoK, 2006)

2.3.2 INCORPORATION OF MULTI-SECTORAL PROFESSIONS

Involvement of various professions in dealing with the concerns raised from public submissions and design entails proper project planning and consequently makes the implementation much easier.

Sousa and Rodrigues (2012), in their study concluded that professionals struggle to have their contributions recognized on most of the public projects. No matter how hard they work, their works are seldom compensated by outcomes that reflect the vast effort and consequently, professionals feel frustrated and incompetent which makes them become disempowered. In their study, they proposed that professionals need to assume a more collaborative approach if they are to become (re)empowered.

Professional collaboration is important in that when different professions come together for a common goal, processes and goals become more aligned leading the group towards a higher success rate of achieving their goal.

2.3.3 BETTER SCOPE DEFINITION

Scope definition is part of the planning process and therefore, a well-defined scope which arises at the planning stage enables the monitoring team to easily identify and follow the expected deliverables as the scope clearly outlines the milestones. A fully defined scope makes it easier for the team to tell whether the project is headed for success or not.

2.4 THE NATIONAL LONG-TERM DEVELOPMENT PLAN FOR ZAMBIA

Zambia launched its first long range plan called the Vision 2030 in December 2006, following a broad national consultation process. The vision was to become a prosperous middle-income country by the year 2030. This expressed the country's aspirations to be realized by the year 2030. This plan was set to be achieved by having concurrent five-year plans called the National Development plans as well as annual budgets that would set out shorter-term targets for the achievement of these aspirations. The objectives of the socio-economic development enshrined were:

- Annual growth of at least six per cent from 2006-10, eight per cent 2011-15, nine per cent 2016-20, and ten per cent 2021-30
- Annual inflation rate of less than five per cent
- The proportion of the national population living in poverty to be reduced to less than 20 per cent
- Access to an improved water source and adequate sanitation facilities delivered to 100 per cent of the entire population
- Education for all
- Equitable access to quality health care for all.

2.4.1 NATIONAL DEVELOPMENT PLANS

In a bid to realize the objectives of the socio-economic development enshrined in the vision 2030, Zambia has so far had four National Development Plans to date with the Eighth National Development Plan (8NDP) being the current one (2022-2026).

2.4.1.1 FIFTH NATIONAL DEVELOPMENT PLAN (2006-2011)

The Fifth National Development Plan (FNDP) recognized plays a crucial role in the socio-economic recovery Programme of Zambia which was aimed at improving the well-being of the its people. It further emphasized that the infrastructure sector was required to play largely a facilitative role in the provision of socio-economic infrastructural and other services if the stimulation of socio-economic growth, particularly in the identified four main economic growth sectors of agriculture, tourism, mining and manufacturing were to be achieved.

The FNDP therefore, identified two critical areas where spending was to be focused if the acceleration of growth was to be achieved. These were:

i. Strengthening the relevant economic and social infrastructure, especially roads, schools and hospitals; and
ii. Enhancing agriculture and rural development.

Therefore, during the FNDP period, the government planned that roads in maintainable condition were to improve from 51 percent in 2005 to 90 percent by the year 2010. Further, it was planned that spending on rural feeder roads, in particular, was to be enhanced to widen access to market on a large scale. The Government also targeted to raise spending on road infrastructure from both GRZ and donors to at least 2.8 percent of GDP by 2010 from 2.5 percent in 2006. Spending was programmed to be raised to 1.8 percent of GDP by 2010 from 1.1 percent in 2006 in order to allow for road infrastructure development and maintenance. As a proportion of the Government budget, spending on roads was planned to be raised to 5.3 percent by 2009 and maintained at that level going forward.

2.4.1.2 SIXTH NATIONAL DEVELOPMENT PLAN (2011-2015)

The Sixth National Development Plan (SNDP) recognized the fact that economic growth experienced during the previous decade did not translate into significant reduction in poverty neither was much seen in as far as improved general living conditions of the majority of Zambians was concerned. Among the factors which attributed to this phenomenon was poor infrastructure among others. Inadequacy in the growth-enhancing infrastructure emerged as one of the major constraints. It was realized that critical infrastructure such as electricity, transportation and water and sanitation remained in a poor condition and limited especially in the rural areas. It brought out the extent to which poor transport infrastructure adversely affected the productivity and competitiveness of the economy.

The SNDP therefore directed its efforts to build on the successes as well as address the challenges identified during the FNDP period. The SNDP was seeking to attain the following objectives:

i. Acceleration infrastructure development, economic growth and diversification
ii. Promotion of rural investment and accelerate poverty reduction
iii. Enhancement of human development.

The plan further put great emphasis on rural development in order to reduce the high poverty levels in the rural areas as well as promote rural development. In achieving this, the focus was on stimulating agriculture productivity and promotion of agro-businesses, improving the provision of basic services like water and sanitation, health, education and skills development. The goal was therefore to concentrate on investment in key economic infrastructure such as feeder roads, water canals, tourist access roads and electricity access.

2.4.1.3 REVISED SIXTH NATIONAL DEVELOPMENT PLAN (2013-2016)

The SNDP was however short-lived as it only lasted two years as opposed to the planned five years. This was because after change of government in 2011, the new government undertook its own consultations which led to the plan being revised in what gave birth to the Revised Sixth National Development Plan (R-SNDP). The R-

SNDP was primarily the government's investment plan which focused more on capital investment areas as this was thought to be the sure way out of poverty for the country. The R-SNDP was therefore a bias to rural development and job creation. The approach therefore identified the main growth areas as being Skills Development, Science and Technology, Agriculture, Livestock and Fisheries, Energy, and infrastructural development with particular emphasis on transport infrastructure.

The R-SNDP focused specifically on Rural Roads. It stated that only 1,371.3 kilometers of feeder roads were graded in 2012 against the targeted 3,791.1 kilometers which represented a 36.1 percent target performance. This showed a drop from 57 percent achieved in 2011 bringing an average achievement for 2011 and 2012 on feeder roads to 52.2 percent for construction, 71.8 percent rehabilitation and 41.8 percent for grading in the two years that the SNDP ran.

It was therefore anticipated that in the R-SNDP, the narrative would change as this had put much emphasis on the sector.

2.4.1.4 SEVENTH NATIONAL DEVELOPMENT PLAN (2017-2021)

The Seventh National Development Plan (7NDP) came at the time when the country had already undergone three development plans since the reintroduction of the medium-term development planning process in the 2000s as already discussed above. All of these Plans were formulated with the view of meeting the national aspirations of transforming the country from a primary product-dependent economy to a strong and dynamic industrialized middle-income country by the year 2030 as enshrined the Vision 2030.

The government had however realized that little progress was made after the first three development plans which prompted an introspection before the formulation of the 7NDP. A detailed analysis of the FNDP and SNDP/R-SNDP revealed that these plans were mostly supported through the annual budgets. The amounts and unpredictability of budgetary releases did not work in tandem with the plans as they negatively affected Programme implementation which in turn affected the realization of desired outputs and outcomes. The analysis of the expenditure part further revealed that funding was not being done in accordance with what was provided for in the Plans. This was

partially due to untimely availability of funds to Ministries, Provinces and other Spending Agencies (MPSAs). Additionally, there was a clear mismatch between the programmers contained in the annual budgets and the ones in the plans which led to resources being expended on non-core activities. In some instances, despite the Plans having increased allocations to some sectors, budgets were not sufficient to implement most of these programmers.

The other aspect is that in the FNDP, SNDP and R-SNDP the structure was in form of both policy and investment plans. However, they carried too many designated priority sectors which resulted in finely spreading of resources which had little impact. This together with the weak inter-sectoral coordination led to poor implementation sequencing and ultimately, waste of resources.

The summary of the analysis of the first three plans brought out a clear picture of Zambia's economy from the year 2000 to 2015 which guided the formation of the 7NDP. During the period 2000 to 2005 the economy grew at an annual average of about 5.8 percent with this figure rising to 6.9 percent in the period between 2006 and 2015 which was more sustainable. However, Zambia as country still continued to depend mainly on the copper industry even after putting great effort into diversifying the economy. This made it vulnerable to commodity price fluctuations.

Following the analysis of FNDP, SNDP and R-SNDP and subsequent expiry of the R-SNDP in 2016, the Government then spearheaded the formulation of the 7NDP which was to cover the period from 2017 to 2021. The Plan was designed to depart from sector-based planning to an integrated (multi-sectoral) approach. The 7NDP was developed under the theme “Accelerating development efforts towards Vision 2030 without leaving anyone behind”.

Part 4 of the 7NDP which is titled Strategic Areas outlined the key development outcomes for the plan. Development outcome number 6 was Improved Transport Systems which pointed out the fact that the plan’s focus would be on construction and maintenance of road infrastructure to guarantee enhanced connectivity across the country and to preserve road asset investments. Further, it was also going to focus on upgrading and rehabilitating of roads and bridges to foster trade and development,

facilitate movement of goods and services and reduce travel times. Key programmes to be implemented in the sector during the period of the plan were to include Link Zambia 8000, Pave Zambia, Feeder Road Rehabilitation and the C400, among others. Development of tolls and collection of road user charges to finance the road sub-sector was to continue not ignoring PPPs as a financing mechanism for road construction. The government was very optimistic that this Plan was going to enhance economic diversification.

2.4.1.5 EIGHTH NATIONAL DEVELOPMENT PLAN (2022-2026)

The Eighth National Development Plan (8NDP) was a successor to the 7NDP and it set out Zambia's strategic direction development priorities and implementation strategies for the period 2022 to 2026. This Plan came at a time when the country just underwent political transition following the 2021 General Elections.

The government in this Plan tried to build on the lessons learnt from the successes and failures of the previous Plans. One major shift that was seen in the 8NDP from the previous ones was the emphasis on decentralization. The government attributed failure to realize most of the intended goals in the past Plans was the inability to let decisions come from the real beneficiaries as well as availing resources for these programmers to them.

As seen in the other Plans, the 8NDP also put emphasis on economic diversification as the key towards achieving the aspirations of the Vision 2030. Section 5.4 under Chapter 5 of the Plan which is titled "Development Outcome 1: Industrialized and Diversified Economy" looked at creating of a diversified and industrialized economy as being the key development outcome in the 8NDP. To achieve this, Government intended to implement a number of strategies which included increasing agriculture production and productivity, promoting mining of traditional and non-traditional minerals, promoting value addition and manufacturing, and promoting rural industrialization among others. All these strategies needed a well-connected country in order to be realized and that's why the strategy for improving Transport and Logistics was important.

At the time this report was being done, the government had just begun the implementation of this Plan and within a few months of implementation, the key focus

of this Plan which was decentralization was beginning to show. This was evident when government in its 2022 Budget announced the increase in the Constituency Development Fund (CDF) from ZMW 1.6 Million to ZMW 25.7 Million per constituency. This gave hope to the rural areas in terms of driving their own developmental agenda. The government was optimistic that the 8NDP will bring the needed results in as far as achieving the aspirations of the Vision 2030 was concerned.

2.5 THE ZAMBIAN ROAD SECTOR

2.5.1 MANAGEMENT OF THE ROAD NETWORK IN ZAMBIA

According to the Zambian Local Roads Authorities Procedures Manual (ZLRAPM) (2015), Zambia has a total road network of about 67,701km of roads within which 40,113km is the Core Road Network (CRN). The 2019 Road Sector Annual Report (RSAR) as produced by the Road Sector Agencies stated that the CRN consisted of the Paved and Unpaved Trunk, Main and District (TMDs), Paved and Unpaved Urban and Primary Feeder Roads (PFRs). The Public Road Act No 12 of 2002 established the Road Development Agency (RDA) to replace the Roads Department and gave the Agency the mandate to plan, manage and coordinate the entire road network in the country. Part 2, subsection 2 of the same Act outlined the functions of RDA among which one of the functions was to '*recommend to the Minister the appointment of any person or institution as a road authority'*, the function that saw RDA delegate some of its functions to the Local Authorities (City, Municipal, and District Councils).

LRAPM (2015), further indicated that the planning, maintenance and management of the Urban and Feeder Roads was delegated to the Local Authorities (LAs) which fell under the Ministry of Local Government on 2nd February, 2007. This then left RDA in charge of Trunk, Main and District Roads only. The Ministry of Works and Supply (MWS) where RDA fell then signed a Memorandum of Understanding (MoU) with the Ministry of Local Government and Housing (MLGH) in 2008. The MoU spelt out the working relationships for RDA, MLGH, and the LAs. It was however noted in this manual that the MoU had not been entirely effective due to the following challenges:

- Uncoordinated planning for maintenance and rehabilitation of Urban and feeder Roads

- Lack of capacity of some of the appointed Local Road Authorities (LRAs)
- The MoU did not impose any legal implications on either party in case of default and
- Lack of maintenance standards, manuals and procedures for the urban and feeder roads

The CRN which is managed by RDA and LRAs under MLGRD comprises of Trunk (8 percent), Main (9 percent), District (34 percent), Urban (13 percent) and Primary Feeder Roads (36 percent). Table 1 below summarizes the estimated network lengths:

Table 1: Summary of the Zambian Road Network by Function

Road Function	**Total Estimated**	**Of which is Core Road Network (km)**
Trunk (T)	3,088	3,088 (100%)
Main (M)	3,691	3,691 (100%)
District (D)	13,707	13,707 (100%)
Urban	5,294	5,294 (100%)
Primary Feeder/Rural	15,800	14,333 (91%)
Primary Tourist	-	-
Secondary Feeder/Rural	10,060	-
Tertiary Feeder/Rural	4,424	-
Park Roads	6,607	-
Community Roads	5,000	-
Total	**67,671**	**40,113 (59%)**

Source: ROADSIP (2011)

2.5.2 PLANNING IN THE ROAD SECTOR

Raballand and Whitworth, (2012) stated that most of the Zambian roads were constructed after independence (between 1964 and late 1970s). This was the time when the country had one of the most prosperous economies in Africa. It was classified as a Middle-Income Country. They however noted also that since their construction, these roads hardly received any maintenance which led to the infrastructure deteriorating to unacceptable levels.

This was evidenced by the road condition survey which was conducted in 1995 by the World Bank team on 8,800 km of Trunk, Main and District (TMD) roads which revealed that only 20 per cent were in 'good' condition, 29 per cent 'fair' and 51 per cent 'poor'. World Bank, (1997). The same report also revealed that 90 per cent of feeder roads were in 'poor' condition. This prompted government to undertake some maintenance and rehabilitation interventions on the network to improve its condition.

In 2013, the Road Development Agency undertook another condition survey on 40,454 km of the CRN which gave a slightly improved picture as it revealed that 72 per cent of Primary Feeder Roads (PFR) was in poor condition while the composite condition of the TMD network had improved to 56 per cent good, 21.5 per cent fair and 22.5 per cent poor. (RDA Condition Survey Report, 2013).

Working arrangements in the Road Sector were largely drawn from the global World Bank initiative of the mid 1980's which was intended to assist Sub-Saharan African Countries improve and sustain their road network and transport infrastructure. The initiative is what gave birth to what came to be known as the Road Management Initiative (RMI) which was formulated by the Zambian Government to address bottlenecks in the road sector. Major components of the RMI included taking responsibility for internal transport policy, internal financing arrangements and institutional arrangements as well as improving capacity for the road sector.

The main outcome of the RMI was the formulation of the Road Sector Investment Programme (RoadSIP) and the creation of the following three road sector Agencies;

• The Road Transport and Safety Agency (RTSA) established under the ***Road Traffic Act No. 11*** **of 2002** to manage road transport, road traffic and road safety in the country.

• The Road Development Agency (RDA) established under the ***Public Roads Act No. 12 of 2002*** to develop and manage the road infrastructure and

• The National Road Fund Agency (NRFA) established under the ***National Road Fund Act No. 13 of 2002*** to mobilize and manage the road fund.

The road sector has since the 1990s been drawing its programmes from the RoadSIP 1,2, and 3 whose principle purpose was to substantially improve the CRN. This Programme is aligned with other government policies including the earlier discussed National Development Plan.

2.5.2.1 ROAD SECTOR INVESTMENT PROGRAMME I (1997-2002)

ROADSIP I was the first in the series and was launched in 1997 to bring about total quality management of the road sector. It had a total budget of US$500million which was funded from the National Budget, Road User fees, and cooperating partners for the sole purpose of maintaining 35,000km of the CRN. RoadSIP I came to an end in 2002 and had its successes and challenges.

2.5.2.2 ROAD SECTOR INVESTMENT PROGRAMME II (2004-2013)

Building on the successes of the ROADSIP I and considering the challenges faced, the sector developed ROADSIP II which was launched in 2004. It had a total budget of US$1,642 million and the total kilometers of focus this time was increased from 35,000km in ROADSIP I to 40,454km in ROADSIP II. This was in line with the NDP to keep the entire CRN in a maintainable condition in a bid to stimulate poverty reduction, agriculture production, and economic diversification. The Programme also incorporated road users, transparency in tendering and use of Public Private Partnership (PPP) in road development. ROADSIP II came to an end in 2013.

2.5.2.3 ROAD SECTOR INVESTMENT PROGRAMME III (2019-2030)

What was evidently a progressive Programme in ROADSIP I and II underwent a major drawback. This is because after the expiration of ROADSIP II in 2013, the road sector did not have an Investment Programme (Bankable Document). This meant that the sector Programmes now had to be drawn from the Annual Work Plans as derived by political will, or urgency of the matter at hand. This arrangement brought crisis in the sector as there was no guiding plan and this led the country in serious liquidity crisis,

particularly affecting the road sector. Consequently, when this rising crisis was observed, the road sector players decided to embark on the formulation of ROADSIP III. However, ROADSIP III had a variation in the concepts followed in the two predecessor Programmes as this time, the sector had to deal with the repayment of debt which was the biggest problem. The sector also considered re-negotiation of debt which was already underway at the time. The problem of delayed payments to contractors which was as a result of over contracting was another thing that ROADSIP III had to address. At the time this report was being done, ROADSIP III was under implementation.

2.6 PLANNING IN THE ZAMBIAN LOCAL AUTHORITIES

According to the LRAPM (2015), some districts were reported to have been producing comprehensive District Development Plans (DDPs) and Road Sector Annual Work Plans (RSAWPs) that have quite adequately served as a basis for road improvement while other districts lacked such plans. These plans are the basis on which MLGRD consolidates the National Feeder Road Annual Work Plans in accordance with the way the roads are prioritized in the individual district plans as submitted by the LRAs. The manual further stated that these plans were based on situational analysis. The challenges that many districts faced was lack of resources and capacity required to produce a Work Plan that adequately served as a basis for investment. A review of one of the district plans was done and the district under consideration was Gwembe district.

2.6.1 DISTRICT INTERGRATED DEVELOPMENT PLAN (IDP)

The district Integrated Development Plan (IDP) is a document developed in line with requirement and mandate by legislation in accordance with the provisions of the Urban and Regional Planning Act No.3 of 2015 as the principal strategic framework that would guide decision-making within the district. This is a document that is supposed to be developed by every Local Authority (LA) for their district and should contain the strategic course that the district would follow, aligned to its strategic service delivery and economic development agenda framework, for the entire period of the plan.

To understand what is contained in this document, the Gwembe district IDP was reviewed as this is one of the districts that was found to have successfully developed

one. The first generation Gwembe Integrated Development Plan (IDP) which was scheduled to run from 2021 to 2030 contained the strategic course that the district was supposed to follow. This Plan was a product of a consultative process undertaken by Gwembe Town Council with various stakeholders under the Enhancing Local Government Capacity for Development project with support from the Ministry of Local Government and Gesellschaft fuer Internationale Zusammenarbeit (GIZ). Integrated development planning is an instrument that represents the driving force for making districts or Councils more strategic, inclusive, responsive and performance driven in character.

The IDP under review was the consolidated long-term developmental strategy of all the other strategic documents that existed at district level, such as the sector plans, ward-based plans and the various master plans. It included priority plans of the district that addressed the needs and sought for targeted investment in government and other resources to address inequalities and the needs of the community. It also served as a framework for the district to prioritize its actions in meeting urgent needs, while maintaining the overall economic, district and social infrastructure already in place. The plan was seen to be a vital tool that would ensure the integration of the district's activities with other spheres of development planning at provincial, national and international levels, by serving as a basis for communication, resource mobilization and interaction. The IDP document under review consisted of eighteen parts as follows;

i. **Background:** Gave a description of the district, its location and how the entire document was developed;
ii. **Planning and Survey Issues:** Gave a description of the existing state of development and also looked at things like the topology of the district, geological formation of the underlying ground as well as the hydrology and drainage of the district. It also described the dominant vegetation cover, forests and protected areas;
iii. **Demographic Analysis:** Gave a description and figures of the population of the district as well as the population characteristics. The section goes further to also project the population growth during the period of the IDP in order to align the activities of the document with the growth rate;

iv. **Built Environment:** Described the area and what it is consisted of in terms of land with the extent of disturbance and where this is concentrated especially in the three townships that have built structures. Also describes the standard of structures that are in the district;

v. **Gender Issues:** Brought out the prevailing idea of gender inequality in the district based on deep-rooted social and cultural norms. Also described how the district attempted to find a solution to this inequality by adopting and implementing the Gender Policy;

vi. **Poverty Assessment:** Described the state of development stating poverty as the most profound challenge that the district faced at the time and relating it to gender inequalities. Here, poverty was defined as deprivation of a long healthy life, educational opportunities, access to resources for a decent standard of living and lack of freedom to exercise choice on anything in society;

vii. **Demand for Future Services**: In order to ensure that the IDP meets the aspiration of the masses, community consultations were done which revealed a number of challenges in the fourteen wards of the district. The communities through these consultations identified a number of issues ranging from education, health, roads, water, electricity, solid waste and many more as well as the needed interventions for them to operate at optimum capacity;

viii. **Education:** This section brought out the existing educational facilities and how many are private or public run. However, it revealed that though these facilities existed, they were distant from area to area which left many people to trek long distances to access schools;

ix. **Health:** Key government priorities in the health sector were brought out in this section with emphasis of implementing them at Local level. Some of these priorities were;

- Community sensitization on Malaria prevention, voluntary male circumcision, HIV/AIDS testing
- Solar electrification of health posts that operated in remote parts on the district.

- Health education in all wards within the district on reproductive health and proper nutrition

x. **Water and Sanitation**: Key government priorities in the water and sanitation sector were brought out in this section with emphasis of implementing them at Local level. Some of these priorities were;

- Develop and implement strategies to achieve appropriate household sanitation to eradicate open defecation on a sustainable basis.
- Promote public-private partnerships in development and maintenance; ADRA, UNICEF and World vision are rehabilitating and drilling of new boreholes
- Ensure women participation in the construction and drilling of new boreholes at community level in order to facilitate their decision making in the sector

xi. **Roads and Transportation:** The IDP outlined the several well-defined roads in the district stating that the district had two D-Roads measuring 174 Km of which the D375 required to be upgraded to bituminous standard while the D500 just needed periodic maintenance. The IDP Area also had fifteen PFRs measuring approximately 202 km that needed to be rehabilitated and if possible upgraded to bituminous standard. Of the 202 km PFRs, about 25% were gravel and the rest earth roads. The barest minimum intervention of the PRFs in the IDP was rehabilitation to gravel standard.

xii. **Energy:** Key government priorities in the energy sector were brought out in this section with emphasis of implementing them at Local level. Some of these priorities were;

- To improve the supply of electricity to rural areas by working with ZESCO through the Rural Electrification Agency (REA) in implementing the Rural Electrification Project in the district.
- To extend the Power lines within the urban center by ZESCO.
- Promote renewable and alternative energy sources

xiii. **Communication**: Key government priorities in the communication sector were brought out in this section with emphasis of implementing them at Local level. Some of these priorities were;

- Improvement of access to information in order to promote citizen participation in socioeconomic development.
- Construction and rehabilitation of bridges and crossing points.
- Construction and rehabilitation of road network.

xiv. **Solid Waste**: With the coal mine that was about to be established, it was reality that the generation of solid waste was going to increase as the population and human migration into the district was expected to increase. Therefore, the IDP looked at enhancing the solid waste management in the district during the plan by looking at the following key areas;

- Need for proper solid waste management
- Looking at having adequate garbage collection mechanisms
- Need for engineered dumpsites

xv. **Other Services**: In this section, the IDP outlined other services which were a priority to be implemented at the Local level. Some of these services were;

- Creation of designated burial sites
- Putting up of street lights
- Construction of a police post in administrative center (Munyumbwe)
- Construction of market shelters in each ward
- Construction of housing units for government workers

xvi. **Mining Sector**: It was envisioned that with an open coal mine which was earmarked to be established in the district, there would be complex effects that needed to be addressed. The effects and remedies were addressed in this section;

xvii. **Summary of Core Problems:** This section basically summarized the key issues affecting the district; and

xviii. **Development Framework**: The last section of the IDP outlined the development framework that was formulated through participatory approaches by all stakeholders in Gwembe district the entire ten-year period. It also presented the spatial development framework.

From the review of the Gwembe IDP, it is clear to see that meaningful development can only be achieved when a detailed plan that speaks to all sectors of society is in place. This makes resource mobilization as well as coordination easy which in turn gives the implementers of various projects clear Key Performance Indicators (KPIs).

2.7 NEED FOR ADEQUATE PLANNING BEFORE PROJECT IMPLEMENTATION

Murithi, et. al. (2017) assessed the factors affecting timely completion of public construction projects in Trans-Nzoia County, Kenya. The study adopted a descriptive survey research design. The results of the study showed that project resource allocation had a significant influence on timely completion of public construction projects. The study found that allocation of adequate resources affected project success. Financial problems and delays payment of completed work had actually led to project delays. Lack of adequate resources led to delays in procuring construction materials. The study recommended that the county government should ensure adequate resource allocation for all the projects they are undertaking.

Pieter (2021) assessed the livelihood effects of Social Networks in Rural Communities after improving rural mobility and accessibility in Ethiopia. The research showed how social networks operated and how they were influenced by newly constructed roads. This was a case study of a village in the Northern Ethiopian Tigray region. The findings were based on 3 focus-group discussions with network members, 31 semi-structured interviews with inhabitants of the village that participated in various networks and 11 interviews with leaders of networks and government officials.

It was reviewed that although people were generally satisfied about the newly constructed roads in their village, the effect of the roads on social networks appeared limited. The data did not indicate the creation of any new networks or disappearance of old ones because of the road construction neither did it suggest any major changes in the way the existing networks operated

After critically reviewing the results, the researcher concluded that the social aspect in general and more specifically social networks should be included as a factor in rural road appraisal at planning stage. Roads may be an infrastructure but the social aspect

especially in rural areas is vital in realizing the long-term benefits. The transport disadvantage and advantages of every class of the community should be continuously considered during assessments.

Jin-Kyung Lee (2008), tried to establish the causes of project cost overruns in the Korean Social Overhead Capital (SOC) projects. In his study, the aim was to establish the cost overruns relating to transport policy in an institutional context and discuss their general causes in a bid to identify possibilities of reducing them. The study was conducted through sampling of projects whose selection was based on the available data on projects undertaken during the period between 1985 and 2005. The projects that were included in the sample were those whose construction cost development data was available. The study revealed that cost overruns were caused by several factors grouped into the following categories; Changes in the scope of the project, unreasonable estimation, construction delays, adjustment of the project cost, and no practical use of the earned value management systems. There was also overwhelming empirical evidence which showed that many psychological, political, and economic reasons are not fully reflected as risk factors at the time of project budgeting. Recommendations from the study were that the decision makers of SOC projects must all work within the same framework. With the fact that roles of different players in the decision-making process and individual interests can lead to the involvement of other particular political agendas, it was important that in order to achieve successful public SOC management, an institutional setting was required for the implementation of an effective integrated system which should include appraisal, monitoring, and evaluation. For this system to be effective, there was need for the total project cost to be initially redefined as the life cycle cost, which is the total cost throughout the entire life cycle of a project, including planning, design, acquisition, support, and any additional costs directly linked to owning or using the asset, rather than just simple construction cost. It was also recommended that people charged with the responsibility of overseeing SOC projects must provide guidance for appraisal manuals. This entailed putting up a system that should monitor every phase of the project with special attention given to the impact analysis and post completion project evaluation. The final recommendation was for line ministries to structure and build a public information and data management

system for cataloging data from all phases of the project. This was going to make it easy for decision makers and researchers to use this information to realistically estimate the cost of new projects and hence effectively manage public investment.

Adek (2016) tried to figure out the determinants of fruitful tasks execution in Mombasa County. A descriptive research design was utilized. The investigation discovered that projects essentially affected the execution of activities in the district. The study found that money given by the provincial government to skill and the whole execution process was not sufficient and that compensations paid to region projects workers were not adequate. The review featured that district state run administrations had relatively restricted assets and more noteworthy trouble in getting to financing sources, they were likewise more reliant upon help from the focal government, had low pay sources from the duties at province level, they had restricted development in obtaining for additional assets, had less sufficient spending plan control framework, utilized less or non-experienced staff and needed economies of scale in their activities. This thus had restricted their activities, nature of conveyance and adequacy in projects conveyed.

Effects of project resource mobilization was explored by Maendo et.al (2018), in the Lake Basin Region in Kenya, where 41 streets where development projects were attempted by a nearby firm. The investigation discovered that preparation of monetary assets had critical positive outcomes on achievement of streets development projects. The outcomes further uncovered that neighborhood firms couldn't assemble assets to the street projects due to monetary compel. This study presumed that asset accessibility was a vital factor for outcome of the street development project. The review suggested that administration abilities and right utilization of the assets assumes a significant part to guarantee culmination of the project inside the given financial plan cost.

Zhang and Li (2016) undertook a study to establish the effects of multi scalar planning processes as regards social contestation. The research was done on the Enning Road Project (ERP), in Guanzough, China. This was part of the projects in the restless redevelopment in the Chinese cities. However, this project was situated in a rescaled urban territory in which a tiered planning system was embedded which called for critical reflection during the planning process of the project. To explore the link

between a tiered planning system and social responses to urban redevelopment on the ERP, a qualitative approach was taken in this study aimed at demonstrating how controversial this project had been shaped by the scalar politics between a top-down planning system and social contestation from below. From the data collected on this project, it was established that the project attracted a lot of criticism because the objectives and details of the ERP redevelopment plan had for a long time remained obscure and this was evident in the fact that there was no institutionalized mechanism for local governments such as Liwan District to follow for devising a redevelopment plan at the neighborhood level. Secondly, under the prevailing Chinese planning system at the time, the closest point at which urban redevelopment projects could be integrated with statutory planning processes would be below the spatial scale of Detailed Development Control Plan (DDCP). This further made the planning of this project even more complicated as the powers for examining, approving and revising a DDCP within a city were held by the municipal government. From the analysis made in the study of this particular redevelopment project, it was more complicated to fully plan for a project in an environment that has multi scalar planning processes as this entangles the project in the intricate politics internal to the multiple levels and functions of the different levels of power. Therefore, it is important to have established planning institutions and rules that regulate developmental programs. Because of such contestations on different projects, Guangzhou made a deliberate move to have a more established planning system that would have a coordinated flow of processes which it has achieved in the recent past.

Onyango et.al (2017) surveyed the basic factors that affected the accomplishment of public street development projects in Kenya on account of Thika Sub-County. The review utilized an illustrative study research plan. The investigation discovered that the funding process essentially impacted the execution of the projects under study. The review featured that it was vital for the funding system to think about a planning plan for relief of dangers and externalities. The concentrate likewise underlined that long-haul achievement and supportability of the project funding lay with the commitment of project specialists and the immediate recipients and that funding processes that

considered partners for the time being and long haul prompted compelling execution of the projects.

The investigation additionally discovered that responsibility and progression of lead agent of a project decided its execution speed and quality. Moreover, clear portrayal, testing and outer approval of public framework funds decided its true capacity and that adjusting project funding interaction to monetary and ecological advantages empowered smooth execution. The review suggested that for full execution of the projects, the funding process should have been thought about with explicit blueprints on the principal funding source, the minor and the crisis funds for the project. The use of these funds additionally should have been very much framed in the funding system to check on abuse and under or over spending by overeager project board implementers.

Abdalla and Otieno (2017) explored the determinants of accomplishment of area government projects utilizing an instance of infrastructural projects in Kilifi County, Kenya. The concentrate on embraced a spellbinding review plan. The discoveries showed that project funding level had a critical relationship with execution of the foundation projects in the area.

This should have been visible as either funds being benefited in great times, being sufficient to fund the project as well as great progression of funds in the projects to back project exercises. The review featured that lack of capital, delays in getting the settlement ahead of time, monetary asset the executives, progress installment behind time and postponements in the installment of finished works impacted the execution of the projects. The investigation discovered that project workers didn't have strong financial background to keep the work in progress and therefore, when the contractors' cash flow was significantly affected, it led to delay in procurement of resources which consequently affected the time and cost performance of projects and hence adversely affected the implementation of the projects.

2.8 IMPORTANCE OF GOVERNMENT INSTITUTIONS IN THE PLANNING PROCESS

Kinyanjui et.al (2016) looked to figure out the degree in which governance impacted the execution of the Constituency Development Fund (CDF) projects in Kiharu Constituency. The review utilized an engaging examination plan. The investigation discovered that governance norms essentially impacted the execution of CDF projects in the voting public. The investigation discovered that individuals from the neighborhood networks were given a free hand to decide the projects to be embraced in their territories. It was likewise found that CDF gave incredible thought to the nearby requirements as a reason of decision making concerning the projects embraced in the regions. The research further found that neighborhood networks much of the time adopted a typical strategy in respect to the project decision in this manner, a sign of the way that collective interests were the directing boundary in project decision assurance. Nearby people group were self-assured to the point of promptly partaking in open gatherings to decide the projects to be embraced and this improved the networks' responsibility for programs. Neighborhood people group were properly participated in the dynamic cycles in the projects completed to guarantee effective execution. Investment by nearby networks assumed an extraordinary part in improving social review limit in the wake of guaranteeing the conveyance of sound projects. The governance practices of CDF ought to similarly be completely executed with respect to the arrangements specified in the demonstration. Accentuation ought to be put on improving the partner investment by means of public discussions really promoted for one and all.

Zhiliang et. al. (2004) undertook a study on how client institutions in Hong Kong, China can better monitor construction projects which typically involve many participants such as the owner, contractors and engineers among others by better utilizing electronically exchanged documents among project participants as a decision-making tool. Government institutions largely carry out the role of coordination on most the projects and therefore management of these projects from their end largely depends on the large amount of information exchanged among project participants which is usually in form of documents, oral messages, meetings minutes, reports, claims,

requests, etc. Among the exchanged information, documents, either in paper or electronic form, are the carrier of most important management information pertaining to important aspects of construction project management. In order to utilize the accumulated documents to support the decision-making processes during the project life, the study was undertaken in order to come up with a method which could extract useful information from the accumulated documents through the use of data warehousing technique. This study gave birth to a prototypical system called EXPLYZER which was developed as a data warehousing tool of electronic documents in construction projects. This software could search across different kinds of electronic documents and present the search results in tabular forms which made it easier for government institutions as project managers to have relevant information at the time of need. The developed software was further used to analyze documents from a live construction project of a five-storey dormitory building. On this project, around 200 electronic documents were accumulated and management of the project was done using Explyzer which was found to be more efficient and accurate. This made the management of this particular project very efficient and effective. It was therefore established that institutions charged with management of construction projects especially line Ministries and agencies ought to have proper information management systems in place if the management of these projects is to be made easier.

Adek (2016) sought to establish the influence of governance in the implementation of infrastructural projects in Mombasa County. A descriptive study design was applied. The study found that governance significantly affected the implementation of the projects under study. The study found that politicians were very central in the procurement, resources allocation, mobilizing people and many more for their personal gains. Others were said to have promoted favoritism, nepotism and even biased hiring that at the end of the day, nonqualified personnel were employed in the department. Based on the responses given, it was found that in essence powerful stakeholders, who were politically, socially and economically dominant, for their own interests thwarted the participation of their counterparts, and influenced the selection and planning of projects to favor their personal interests. The study recommended that the local

politicians, the local and national leaders should keep politics, nepotism, tribalism and corruption out of projects.

Zakayo (2017) evaluated the elements affecting the execution of water projects under the regressed arrangement of governance in Kenya, utilizing an instance of Meru County Government. The concentration was on utilized clear study research plan. The review laid out that political generosity impacted the execution of water projects under study. That's what the review uncovered administration in offering was significant impediment to the execution of water projects in Meru County, some water projects in Meru County had slowed down as consequence of political support. The investigation discovered that elevated degrees of administrative propensities in the distinguishing proof of water project workers for hire described by client affected the execution of water projects. In this way, the review of major areas of strength suggested that it would assist with controlling political self-centeredness which obstructed execution of water projects under the reverted framework.

Sadic and Selih (2015) undertook a study on how institutional stakeholders contributed to the delays that were being experienced on most construction projects in Slovenia. The research observed that during execution of various construction projects in that country, the works after sometime started proceeded at a slower pace than initially planned and the delays would mostly occur. This usually resulted in additional costs, conflicts among project participants which in worst case scenario led to litigations. An online survey data on various construction projects under the study indicated that even after plans are prepared with due diligence, uncertainties still appeared during project execution. After analyzing the different types of delays, the study established that often, delays that appeared during the implementation phase would already have shown signs in the initial stages of the projects such as the stage of the preparation of the general plans. It was therefore concluded the construction process itself is frequently delayed already at its start. It was therefore recommended that special attention ought to be placed to the preparation stage of the projects by the project originators who in most cases are government institutions in case of public projects to ensure that adequately detailed documentation is available from the very beginning. If more attention is paid to the processes that are taking place prior to construction such as production of

adequate designs and documentation, there would be less claims from both the client and contractors' end. Delays are a major cause of unsuccessful implementation of construction projects as they breed unforeseen cost and time overruns. Well planned projects usually have less delays especially if the client thoroughly takes care of details like site conditions during design, and preparation of documents to be used during the implementation of the project.

Maritim (2013) did an examination in to the elements impacting the execution of CDF funded projects in Bureti Constituency, Kenya. The review took on a graphic review research plan. The review laid out that governance had critical impact on execution of the projects. The review uncovered that PMC initiative had solid commitment on execution advancement projects. This regardless, the review found out that most projects didn't portray compelling initiative styles, for over portion of the projects seldom led ordinary races. The review suggested that the division of social advancement expected to fortify administrative measures to guarantee that bunch races were being directed yearly. This would empower project individuals to supplant inadequate pioneers so that when chosen in office, authorities would endeavor to perform well to be re - chosen.

Ogeno (2016) assessed the elements affecting fulfillment of development projects in Kenya on account of government structures development projects in Nairobi County, Kenya. The review figured out that the political impedance, political hand in funds dispensed per project and the board independence played a basic however ineffectively comprehended job in deciding the achievement or disappointment of the consummation of development projects. The investigation discovered that government officials were chosen by residents to choose public approach, including the conveyance of public projects. In any case, the partners depended upon by the project likewise had their own plan and inclinations for partaking in the project.

The relationships to the project by these stakeholders can vary from very supportive to antagonistic, but depending on their field of influence, must be considered and managed. The study found that political turmoil led to disruption of the project. The study recommended that politicians and leaders should offer the necessary support and

goodwill to enhance timely completion of construction projects. White elephant projects and unnecessary influence and political interference on project completion should be deterred.

Adan (2017) evaluated the factors that affected the achievement of road project in Isiolo County. The study adopted a descriptive survey design. The study found that politics had a strong negative effect on the achievement of these road projects. The study found that politicians were keen to influence the awarding of tenders by receiving bribes for the tenders to be awarded to the bribe giver or pressuring the government to award the tenders to specific individuals. This led to complications in the monitoring and evaluation processes, payment for work done and holding the contractor accountable for the final product of the project. The study found that politics were prevalent in all the phases of the project right from the advertisement to completion. The end result of political interference was poorly constructed roads that did not offer the residents value for their money.

Monyoncho (2015) assessed the determinants of implementation of government funded construction projects in Lamu County, Kenya. The study adopted a descriptive survey design. The study found out that good governance was essential in the implementation of projects in Lamu County. The study highlighted that project governance set a firm framework which guided project success, creating transparency and confidence in decision making, clarity of roles and responsibilities and consideration of stakeholder interests. The study found that poor governance from the side of project managers led to engaging less qualified project teams, imprudent use of resources and hence compromise on project implementation.

2.9 SUCCESS RATE OF FEEDER/ RURAL ROAD PROJECTS IN OTHER AFRICAN COUNTRIES

A review was concluded by Karuti (2015) who investigated the advantages of compelling checking and assessment of Kiabaibate-Nchura (in Tigania) West Sub-County road project in Kenya. The investigation discovered that recipient investment (estimated by recipient's degree of information on objectives and targets, exercises ID, distinguishing proof of estimations of progress and investment in announcing of

results) were essentially connected with the observing and assessment of the projects under study. The investigation anyway discovered that recipients' interest in the project exercises was low. Recipient investment in the project exercises was viewed as fundamental for the supportability of the project. The review suggested that the administration ought to, on customary premise, open the recipients to the monetary reports for expanded straightforwardness and responsibility. It was guessed that data accumulated would empower networks figure out the idea of CBPs and further help the board panels, the government and benefactors in the adding esteem in the manner by which they drew in with the CBPs.

Ngondo (2014) examined CDF projects in Kenya about administration interaction and time utilized to finish the projects. As indicated by the discoveries the most elevated impact on convenient fruition was execution of project, trailed by project recognizable proof, while project observing and assessment had minimal impact of ideal fulfillment. The review uncovered that navigation was helped by a center gathering to perceive the issue and what was required for development. The review presumed that update and progress was not conveyed by the project execution group and they were not answering to the CDF projects arranging and execution group.

Mwobobia (2013) assessed the impact of neighborhood local area association in project anticipating the supportability of projects in Embu County, Kenya. An engaging report plan was taken on. The investigation discovered that individuals who were associated with spring up with objective of the project were backers, chiefs and project laborers. The concentrate additionally divulged that the local area was not associated with the spring up of the project and its particular outcome. This showed that there could have been no legitimate correspondence between the local area and the project supervisory group in Embu County. It additionally showed that they did exclude the local area part during assets activation for completing of the project. The main assets they added to the local area were labor, unrefined substance and monetary assets in little part. This flowed adverse consequence inside the project in Embu County. The outcome found that due to not including the local area it prompted late finish of the project, shortcoming utilization of the assets and absence of fulfillment of main stakeholders (local area individuals) in all angles expected and thus adverse consequences on project

maintainability. The review prescribed that there is a need to include the local area individuals at all periods of the project and in asset assembly and the requirement for partner needs examination as project success is largely dependent on stakeholder satisfaction.

In their review, Ndunda et.al (2017) inspected the impact of partner exercises on execution of rustic street projects in Machakos County. They decided the impact of project recipient help on the execution of street projects in the area. A clear review configuration was embraced. The investigation discovered that project recipient support emphatically and essentially impacted the accomplishment of street projects in the province. The investigation discovered that recipient support prompted high project adequacy which prompted the projects being finished at the necessary time limit. It likewise prompted inclusion of the recipients in the dynamic cycles guaranteeing that their necessities are taken into thought. This made it simple to execute street projects.

Ibanga et.al (2016) looked to find out "the impact of recipient help with project checking and assessment on project achievement utilizing the instance of KWAMP project in Kirehe locale, Rwanda. The review utilized an unmistakable exploration plan. Most individuals knew about the objectives and goals of the project and somewhat better than expected partook in many exercises besides in creating rule utilized in announcing and in detailing the project execution. Most individuals completely and effectively took an interest in observing and assessing how the funds implied for their project were being utilized. Such recipients' interest was found to altogether influence the project accomplishment as it improved straightforwardness and responsibility among every one of the gatherings" in question.

Barasa (2014) researched the impact of observing and assessment devices on project finish in Kenya utilizing an instance of voting demographic advancement fund projects in Kakamega Area, Kenya. The discoveries showed that observing and assessment apparatuses had an impact on project completion. Definitively, the review noticed that smart course of action, coherent structure, spending plan and partner investigation affected the completion of projects under study. The review presumed that there was need to integrate these devices in the project board.

Jha and Iyer (2016) surveyed the "basic variables influencing quality execution in development projects in India. An illustrative review configuration was applied. What the investigation discovered is that legitimate checking and convenient criticism helped in controlling the workmanship and they improved the nature of a project. Assuming each piece of the movement of a project was checked actually and occasions of unfortunate workmanship and ill-advised utilization of assets be it material, work, plant and hardware were accounted for speedily, it supports accomplishing the needed quality level. Serious members would adhere to the quality arrangement and they would follow the acknowledged specialized practices to do the different project exercises.

Mwangu and Iravo (2015) examined how checking and assessment contributed in progress of Constituency Development Fund Projects in Kenya on account of Gatanga Constituency. The after effects of the review uncovered that the monotony of the project bosses who directed site visits and gatherings and arranged break valuations and fiscal summaries were influential on project results/achievement. The discoveries showed that projects in Gatanga Voting demographic were acutely checked and assessed which prompted the greater part of them being finished inside the specified period and spending plan while measuring up to partner's assumptions. Nevertheless, the review suggested that a system and observing apparatuses ought to be formed to make this activity and that more powerful checking of projects by pertinent bodies were fundamental and of most noteworthy advantage on account of the superior knowledge they gave concerning project consummation status.

Sialala (2016) analyzed the impact of checking and assessment incorporation on fulfillment of feeder street projects on account of Kajiado County in Kenya. The review was taken on a spell binding examination plan. The investigation discovered that practicality, designation of adequate spending plan for M&E interaction and nature of M&E mix decidedly impacted the culmination of projects under study. The investigation discovered that idealness of M&E coordination uncovered confusions and offered ways of gaining and upgrades and permitted it to gain from each other's encounters, expanding on aptitude and information. The examination uncovered that project financial plan expected to give an unmistakable and satisfactory arrangement

for observing and assessment exercises. The review showed that observing gave data on where a strategy, program, or project was at some random time (and after some time) comparative with individual targets and results.

Gichaiya (2016) investigated the impacts of observing and assessment devices on execution of remote organization projects in establishments of higher learning in Kenya utilizing a contextual analysis of JKUAT lobbies of home. An enlightening report configuration was utilized. That's what the investigation discovered observing and assessment altogether affected project execution. It was found that ceaseless checking and assessment over the project lifecycle altogether contributed to a project working inside the booked time period. The investigation likewise discovered that, review follow ups during observing and assessment altogether added to meeting set quality norms during project execution. That observing and assessment of project could essentially add to manageability and which was a critical mark of fruitful project execution. The review suggested that the administration of organizations ought to standardize proposals from follow up reviews and criticisms from partners in request to diminish the hole between genuine project execution and the normal execution which would somehow or another carry weakness to the accomplishment of the expected project objectives.

Biwott et.al (2017) assessed the job of observing and assessment on the supportability of Kenya Government Constituency Development Fund (CDF) projects in Kenya in view of a work area study. The investigation discovered that observing gave constant input on the project execution as it recognized likely victories and requirements that could direct the project teams into convenient choices. Assessment then again was found to aid deciding the level of accomplishment of the goals; deciding and recognizing the problems associated with Programme planning and implementation; generating data that allowed for cumulative learning which, in turn, contributed to better designed programmes, improved management and a better assessment of their impact. It also assisted in the reformulation of objectives, policies, and strategies in projects/programmes. The study also discovered that evaluation was a process that determined the viability of programmes / projects and facilitated decisions on further resource commitment. The study recommended further training be given to many CDF

project managers in aspects of monitoring and evaluation so as to encourage them to use these tools often and correctly to inculcate sustainability of the intention of the projects being implemented.

2.10 RELATED STUDIES

Globally, the study on the impact of the roads mainly focused on the expansion of road in urban areas. Some papers addressed the impact of the road construction on ecology such as Forman and Alexander (1998). The study led to the conclusion that the major ecological impacts of a road network at the landscape scale are the disruption of landscape processes and loss of biodiversity, which conclusions are similar to Harris, et al., (1996) who stated that roads interrupt horizontal natural processes, such as groundwater flow, stream flow, fire spread, foraging, and dispersal, fundamentally alters the way the landscape works.

Mo, et al., (2017) studied the impacts of road network expansion on ecological risk in the urban landscape in a megacity of China, a case study of Beijing by employing spatial analysis toolset of Geographic Information System technology. The study showed that there was dynamic change in landscape pattern, and the changes in landscape were related to land use type. The changes in a time series, the expansion of the road kernel area was consistent with the extension of the sub-low-risk area in the urban center, but there were some differences during different stages of development. For the spatial position, the expanding changes in the road kernel area were consistent with the grade changes of the urban central ecological risk. The influence of road network expansion on the ecological risk in the study area had obvious spatial differences, which may be closely associated with the distribution of ecosystem types. There are few researchers interested in studying the impact of the road expansion on the overall natural landscape structure. Liu, et. al., (2008) brought this view into the discussion through the study of the influence of roads on landscape within Lancang River Valley of Southwest China. The results showed that forest and shrub land decreased while farmland and constructed land increased in the past 20 years in the study area. Also, the ecosystem's change rate near roads increased while the diversity evenness, patch density and human disturbance indices all decreased.

Different aspects of road development had different negative consequences for the environment. In Laos, there are few studies on the impact of the road expansion and most of papers published are focused on raising the positive effects of the road project on livelihood in terms of transportation or accessibility, Warr, (2006) studied the impact of road development on poverty in the Lao PDR based on evidence suggesting that road improvement in rural areas can contribute significantly to lowering the incidence of poverty, improving educational participation of primary school aged children, and reducing rates of illness. He pointed out that the most important form of road improvement to effect poverty reduction is conversion of dry season access roads to all season access. Syviengxay Oraboune (2008) also said that the improvement of all-weather road in Lao PDR has significantly contributed to poverty reduction as the consumption expenditure increased. Rural roads provide opportunities to access to market by peasants. Access to markets could help peasants diversifying their income sources. In terms of farming, systems could also be improved when access to market is available. He believes that this ensures a stable income; improved living standards, and reduction in poverty.

Pearse, (2006) studied the social and economic impact of the construction of the Nam Ham and Nam Ven roads, Huaphan province, Lao PDR to investigate the benefits provided by good accessibility to the village. The study found that the livelihood had greatly improved since the roads were built. The main reasons were ease of travelling, reducing travel time, availability of bus services, personal transport, etc. The research also found that good accessibility by the roads brought villages out of isolation, supported off farm employment opportunities. The case study aimed at analyzing the impacts of the road construction on natural landscape structure by focusing on the changes in land use and land cover composition and the impact of those changes in landscape on local livelihood in remote areas where villagers rely on an agricultural based economy. Therefore, the core context was on the relation of agricultural land use and agricultural production practices on livelihood.

There are other several studies that were used to shape our conceptual framework such as the study by Lambin, et al., (2001) which focused on the causes of land use and land cover change by examining each of the classes, namely, tropical deforestation,

rangeland modification, agricultural intensification, and urbanization. His study revealed that neither population nor poverty alone constitute the sole and major underlying causes of land-cover change worldwide, but peoples' responses to economic opportunities drive land-cover changes. The opportunities and constraints for new land uses are created by local as well as national markets and policies. Global forces become the main determinants of land-use change, as they amplify or attenuate local factors. A research studied by Thongmanivong and Fujita (2006) on land use and livelihood transition (1993 to 2000 in 4 Northern provinces of Lao PDR: Luang Prabang, Oudomxay, Bokeo, and Luang Namtha) found that agro-ecological landscape of the upland areas was undergoing rapid transformation from subsistence and Swidden-based landscapes to commercial and multifunctional use of the uplands. The government policy of restricting the expansion of shifting cultivation has induced farmers to seek alternatives, which has been further driven by integration into the market economy and the development of road networks. As the road links are improved and regional trade is institutionalized, one could foresee the increased commercialization of agricultural production and natural resource use in northern Laos. Keophoxay, et al., (2011) studied on the impact of maize expansion on household economy and production system in Xiengkhor district (Huaphan Province) and in Kham and Nonghet districts (Xiangkhuang Province), northern Lao PDR. His study revealed that maize had rapidly spread in the areas because of government policies and investment in infrastructure and pulled by the growing Vietnamese market. Maize became the main source of income and had tremendous impact on local communities, widening farmer's differentiation and changing in social networks in favor of powerful middlemen and traders. Besides, it led to the spread of credit system and emerging of local institutions.

2.11 DISCUSSION OF THE REVIEWED LITERATURE

2.11.1 Poor Planning

It was noticed throughout the review of literature that projects that started implementation without fully defining the work to be done, by who and when were usually destined for problems. By the time such projects were reaching the stage where the project team realized they were no longer in line with the sponsor's requirements,

it was very difficult to get back on track within the allocated budget and timeframe. According to the FIDIC (2010), poor planning may include any of the following:

i. Lack of communication;

ii. Not breaking down development into phases or steps;

iii. Not prioritizing operational activities' objectives;

iv. Not obtaining stakeholder approval;

v. No business plan or inadequate business plan;

vi. Unrealistic expectations set, e.g., financial investment, time required, set-up costs;

vii. Inadequate funding/capital or poor use of funds/capital;

viii. Lack of time commitment; and

It is clear looking at the planning practices of some government institutions that were reviewed that the planning process needs to be subjected to a radical change as most of the attributes of poor planning listed above were observed.

2.11.2 Effects of Poor Planning

It was seen that poorly planned projects in most cases exhibited implementation problems which in some cases resulted in failure. Where a proper project plan was not in place, resources could not be well managed which made mitigation of risks very difficult. Poor project planning and definition can cause many serious problems along the path of implementation which among others may include lack of support, poor estimates, and poor scope control.

2.11.3 Prioritizing of Roads for Development

It was observed in some studies in Africa that poor prioritization of developmental projects was one of the problems affecting planning. Several times either none important or urgent projects were fronted instead of crucial ones which would address the outstanding problems. Worse off it was recorded that sometimes a same project might have parallel implementing structures resulting in duplication and this was sometimes the case between MLGRD and RDA especially on feeder roads. It was found that the same road in Mbala and another one in Luwingu were on both the MLG-

Accelerated Feeder Road Programme as well as on the RDA Improved Rural Connectivity Project.

2.11.4 Procurement of contractors and consultants

In most cases, implementing institutions procure contractors to implement various projects even before financing was assured and in some cases beyond the budget figures as was seen in the case of the MLG-FRP.

The Zambia Public Procurement Act and the Public Financial Management Act only authorize a procuring entity to proceed with the procurement process upon ensuring the availability of funds to meet the obligations. However, some procuring entities have not stuck to this hence the resulting problems. This was the case even is some other countries. This shows serious weakness in the manner projects are planned which begs attention from relevant stakeholders.

2.11.5 Political interference on road projects

Most road infrastructural development projects were seen to be initiated by politicians with a major view of gaining political mileage. This situation creates natural tension because delivery times for projects sometimes run beyond the election cycle, meaning that any future payoff might accrue to political opponents. The politicians would be in a hurry to initiate and launch a project before all necessary studies to weigh the pros and cons as well as planning for the risks are conducted. This only results in a rushed project planning process just so as to meet election deadlines thereby affecting the entire project implementation negatively. Politicians would be skeptical to support financing of the project planning process whose outcome would only be seen beyond their term of office as they fear contributing to the prosperity of future office bearers. It is unfortunate that most institutions put politicians at the center when planning for projects.

2.11.6 National Plans vs Institutional Plans

Various National Development and institutional plans were reviewed and it was observed that the planning at national level was consistent with the vision set out by the global community. However, institutions lacked the plans that fed to the national vision and this made implementation of projects in accordance with this vision very

difficult. It was either the plans in the implementing institutions were going the wrong direction or there was no plan at all. Planning was seen to be very weak especially at institutional levels.

2.11.7 Opinion on what ought to be Done

The planning process needs an overhaul as it is worthy investing resources on properly planned projects with precise initial estimates than paying the higher costs later on. It is good practice before deciding to proceed with the project to ensure that preparation, planning, authorizations and all evaluations are done in such ways that problems are negotiated and eliminated before implementation. In a similar manner, after the decision to go ahead with the project, it is of crucial importance that the project organization and project management are set up and operated in ways that minimize the risk of delays.

A study on schedule overrun and quality shortfalls on construction projects in Zambia identified a number of causal factors. The study identified inadequate project planning as one of the frequent and severe causal factors for schedule overrun as well as low quality of products. Many other factors identified as causal factors could be related to the project planning cycle (Kaliba, 2010).

Another research by Mwiya (2015) listed 25 factors that affected project costs in Zambia's road construction industry after a pareto analysis. Of the 25 identified influential factors, project planning was ranked fourth.

2.12 CONTENT ANALYSIS OF THE REVIEWED LITERATURE

Table 2: Content Analysis of Literature Reviewed

S/N	Author	Year	Objectives	Methodology	Conclusion
1	Aigbavboa, C	2014	To assess the construction professionals' perception on the major causes of construction project delays and their consequential effects in the construction industry	Literature review Questionnaire survey	The study identified ineffective project planning and scheduling among the leading causes for construction project delays in Lusaka
2	Chileshe, N & Berko D.P	2010	To assess the main factors that influence the project cost overruns and examine their relative importance	Questionnaire survey	The duo argue that most contractors consider their lowest offer as the most important criterion for evaluation and so aim at submitting the lowest bid at the expense of economics as well as feasibility.
3	Jah & Iver	2016	Survey of the basic variables that influence quality execution of development projects in India	Illustrative review configuration	Legitimate and convenient criticism helps in controlling the workmanship thereby improving the nature of project delivery
4	Jin Kyung Lee	2008	To establish the causes of project cost overruns in the Korean Social Overhead Capital Projects	Questionnaire Surveys Personal Interviews	The study concluded that cost overruns were caused by several factors categorized as follows; Unreasonable estimates, construction delays, changes in project scope, adjustment of project scope

5	Kaliba, C	2010	To establish significant causes of cost escalation, schedule overruns, and quality shortfalls in proposing mechanisms that could be used to systematically address the causal factors	Literature review Questionnaire survey	The study justifies the need to look into project planning as an independent causal factor
6	Lartey, E.W	2011	To evaluate the planning processes of donor funded social service infrastructure projects and the involvement of beneficiaries	Questionnaire surveys Personal interviews	The study identified serious problems with the planning process in that it had not been efficient and effective thereby negatively affecting project schedules and costs.
7	Litman, T	2012	To describe principles for comprehensive transportation planning	Literature review	The report suggests that for planning to be efficient, it is advised that the process incorporates the two important principles among others; comprehensive analysis and neutrality. It concludes that the absence of these two important principles would bring about planning distortions.
8	Mahamid, I	2013	To develop simple conceptual cost estimation models for contracted road construction projects that can be handled using a simple computer program	Literature review	The findings reveal that the models that used bid quantities as independent variables are more accurate than those that used road length and width as independent variables

9	Murithi,Makokha & Otieno	2017	Assessment of factors that affect timely completion of public construction projects in Trans-Nzola county in Kenya	Descriptive survey	Inadequate allocation of resources leads to project delays
10	Mwiya, B et al.	2015	To identify the essential factors that affect unit cost estimation and their breakdown using artificial neutral networks	Literature review Questionnaire survey	The paper listed 25 factors that affected project costs in Zambia's road construction industry after pareto analysis
11	Olalusi, O & Otunola A	2012	To investigate factors that lead to construction projects being abandoned in Nigeria.	Personal interviews	The study highlighted incorrect estimation, lack of skilled personnel, inadequate planning and poo risk management.
12	Public Accounts Committee	2022	To interrogate further the queries raised by the Auditor General on the management of feeder road projects under the Ministry of Local Government and Rural Development	Literature review Personal interviews	The report on feeder road projects in MLGRD by the parliamentary public accounts committee affirmed the presence of political interference especially at procurement stage of feeder road projects
13	Raballand, G et al.	2013	To assess whether political interference in a low-governance environment has diminished after semi-autonomous road agency model was set in Zambia	Personal Interviews	The study concluded that the institution of the semi-autonomous agency model has not minimized the selection or supervision of projects and that there was an increase in the lack of accountability of civil servants in this sector.

14	Ranganathan, R	2011	To identify the main gaps in the regional infrastructure backbones	Workshops	The study listed Zambia amongst the countries which have allowed 30 to 60 percent of their infrastructure stocks to drop into the poor condition category
15	Zhiliang et. al	2004	Establish how client institutions can better monitor construction projects which involve many participants like owner, contractors, engineers, etc	Review of live projects	This study concluded that institutions charged with the management of construction projects ought to have proper Information Management Systems for effective project management
16	Zuofa, T. & Ochineng, E.G	2014	To identify the main factors responsible for project failure and suggest strategies aimed at curbing project failure	Focus Groups	The study revealed that the Nigerian law only permits a procuring entity to proceed with procurement upon confirmation of availability of funds

2.13 CHAPTER SUMMARY

A summary of literature reviewed is shown in Table 2. From the above review of literature, it is easy to realize that project planning is quite a vital stage in the project management cycle and if mishandled can bring about adverse effects. In their study, Murithi, et. al. (2017) highlighted incorrect estimation, lack of skilled personnel, inadequate planning, poor risk management, misunderstanding project scope and corruption as some of the leading reasons for failed construction projects in Kenya. This justifies the need for an inquiry into the feeder road construction project planning procedures especially that no studies of this specific sort have been conducted in Zambia. The following chapter discusses the methods adopted to achieve the objectives of the research.

CHAPTER THREE: METHODOLOGY

3.0 INTRODUCTION

The previous Chapter presented the literature reviewed in relation to the subject under study. It illustrated different issues related to project planning and how this affected projects and institutions charged with project planning in different regions of the world. In its conclusion, the chapter uncovered the fact that despite some related studies having been conducted in Zambia and different regions of the planet, no studies especially connecting with the Zambian feeder road sector have been done before thus supporting the need for this research.

Chapter three endeavors to frame the systems and methods the researcher utilized in conducting the research.

3.1 RESEARCH APPROACH

In general terms there are two main approaches to research namely qualitative and quantitative research. Quantitative research is usually associated with positivist or post positivity paradigm. It is more concerned with the collection and conversion of data into numerical formats so that analyses and conclusions can be easily made. Objectivity is very important in this kind of research and therefore the researcher takes extra care to ensure that their own presence, behavior or attitudes are distanced from the study. This approach emphasizes on the deductive process of moving from a more generalized picture to the specific portion of the study area sometimes referred to as the top down approach (Cooper & White, 2012).

Qualitative approach as the term suggests is more concerned with the social constructivism paradigm which promotes the socially constructed nature of reality. It aims at understanding and exposing certain human behavior and experience together with contradictory beliefs and norms. The approach is a direct opposite of the former in that it is inductive in nature meaning it aims at moving from the specific to the more general scenario. This approach does not emphasize on the numerical form of data and usually does not analyze data by use of statistical means (ibid).

This study used both approaches to form what some researchers refer to as pragmatic approach to research or mixed methods. The researcher realized that both methods had pros and cons which could complement each other to the success of the study.

3.2 RESEARCH TECHNIQUES

Various research techniques are considered before one proceeds with their study. These are basically main categories under which the researcher places their study which could be; a survey, case study, observation or literature review. These techniques are briefly described below except for literature review which was exhaustibly discussed in the preceding chapter.

3.2.1 SURVEYS

These involve asking questions to a selected number of people about their skills, experiences and perception with regards to the topic under study. Mostly questionnaires and interviews are used as well as structured observations. The main advantage of a survey is that it easily enables dealing with a large group. On the contrary, they are time consuming and results are highly dependent on the respondent's willingness (Banda, 2014).

This study incorporates a questionnaire survey as well as a structured interview survey in its data collection.

3.2.2 CASE STUDY

A case study involves treating the whole study population as a single entity. A case could be an individual, organization, a group, a community or an institution which is considered a bounded system in itself. The assumption around case studies is that the selected case represents many other similar cases and therefore any deduction generated from it will be representative. It is very useful in exploring an area where very little is known or understanding a phenomenon in greater depth (Gilbert, 2008). Case studies have an advantage of acquiring detailed information about a particular topic under study. The main limitation is that the analysis and reporting of findings highly depends on the researcher's objectivity hence its prone to unreliability.

3.2.3 OBSERVATION

This involves the researcher being part of the population under study at the same time collecting the necessary data. The researcher can either participate anonymously or by disclosing his intentions and the purpose of study. The main advantage is that the researcher gets a deeper and better understanding of the phenomenon as they interact with the group. There is however a danger that along the way the researcher might lose objectivity.

This research made use of this approach by considering a selected number of project sites and interacting with the project team as well as looking at the actual project progress.

3.3 METHODOLOGY TYPES

Research methodology is the systematic and logical layout of how the researcher conducts their study. It involves outlining the procedures adopted in answering research questions, how tasks are carried out and explaining the "DOs" and "DONTs". Outlined below are some of the research methodology types.

3.3.1 EXPERIMENTAL

In this type of methodology, participants are randomly assigned to one of the several treatments. The methodology is formed on a basis that there should be a group that is exposed to some kind of treatment (experimental group) and another group that is not assigned any treatment (control group). If some significant differences are noticed between the two groups which did not exist before treating the experimental group, then the researcher conclude that the differences are as a result of the manipulation. The main advantage of this methodology is that conclusions about causality can be drawn. However, there is a constraint of usually failing to represent the real natural environments.

3.3.2 QUASI – EXPERIMENTAL

This methodology involves comparing a group that has received a particular intervention with another one of similar characteristics that has not been exposed to the intervention. The key principle here is that there is no random assignment as the groups are preselected. This methodology has an advantage of the ability to simulate real

natural situations. There is a disadvantage of challenges in identifying and justifying causal conclusions

3.3.3 CORRELATIONAL

Research aims at quantitatively analyzing the strength of relationships amongst variables. The researchers who employ this method do not manipulate the variables but rather make comparisons based on the existing scenarios. The main advantage of correlation is that it helps to analyze complex relationships amongst many variables. On the negative side the methodology is not able to bring out conclusions about casualty of a particular phenomenon.

3.3.4. QUALITATIVE

This methodology aims at detailed description of a problem, situation, event or phenomenon without much emphasis on quantification. Normally scenarios are described as they are by use of observations, interviews as well as literature reviews. Qualitative methodology is able to provide detailed in depth understanding of the topic under study. The main disadvantage is that the methodology can be very time consuming in terms of both data collection and analysis.

3.3.5 CROSS-SECTIONAL

Here the researcher attempts to investigate matters as they are at that particular period of time meaning that data is collected at one time only. This methodology involves a single contact with the study population and therefore is considered inexpensive, quick and easy to analyze. However, the main constraint is that it is not able to measure trends with time. This study falls under this category as it considered feeder road construction project planning practices in Zambia at the time of research and the population was only contacted once.

3.3.6 LONGITUDINAL

This methodology is the direct opposite of cross-sectional method in that the researcher contacts the study population more than once thus in intervals. The contacts can either target the same respondents or different ones but the focus is still on the same population. The main advantage of longitudinal researcher is the changes can be tracked with passage of time hence making it to make conclusions on trends. The

methodology is perceived to be very expensive because of return visits and there is a risk of some respondents dropping out.

3.3.7 MICRO-GENIC

This methodology involves studying the same individual participant over a long period of time such as weeks or even months. This is normally used in educational circles as well as behavioral studies. They avail the researcher with detailed information on the development of behavior over passage of time. The main disadvantage is that these studies are expensive and tend to consume a lot of time

3.3.8 SINGLE-SUBJECT

This is similar to the micro-genic except that the one and only participant is exposed to a selected treatment. Usually the baseline characteristics or behavior are observed before the intervention and then the researcher looks to observe any changes or conservation after introduction of a particular intervention. It is important to note that there are no controls or comparison groups under this study. The main advantage is that it provides detailed information about developing changes in a particular variable. It is however very difficult to generalize the findings to a larger population.

3.3.9 ACTION

This is where the researcher aims at examining practices critically in order to make certain improvements in identified problematic areas. The research is driven by the goal to act based on the outcomes and usually the overall aim is improving quality of service delivery. This methodology involves investigating practical challenges that affect specific operations. It has a disadvantage of acceptance of findings as most scientific researchers do not consider it research (Anderman, 2009).

This study mixed the qualitative and cross – section methodology approaches in its effort to get into depth understanding of the planning procedures of feeder road projects in Zambia and arrive at reasonable conclusions.

3.4 RESEARCH DESIGN

A research design is a detailed plan or blueprint of how the research is to be completed all the way through from problem identification to generalization and reporting of findings. It identifies and develops procedures for completing the study at the same

time providing quality assurance check so as to ensure validity of the procedures (Kumar, 2011). The study employed both qualitative and quantitative approaches. Figure 2 presents key stages in the outline of the research.

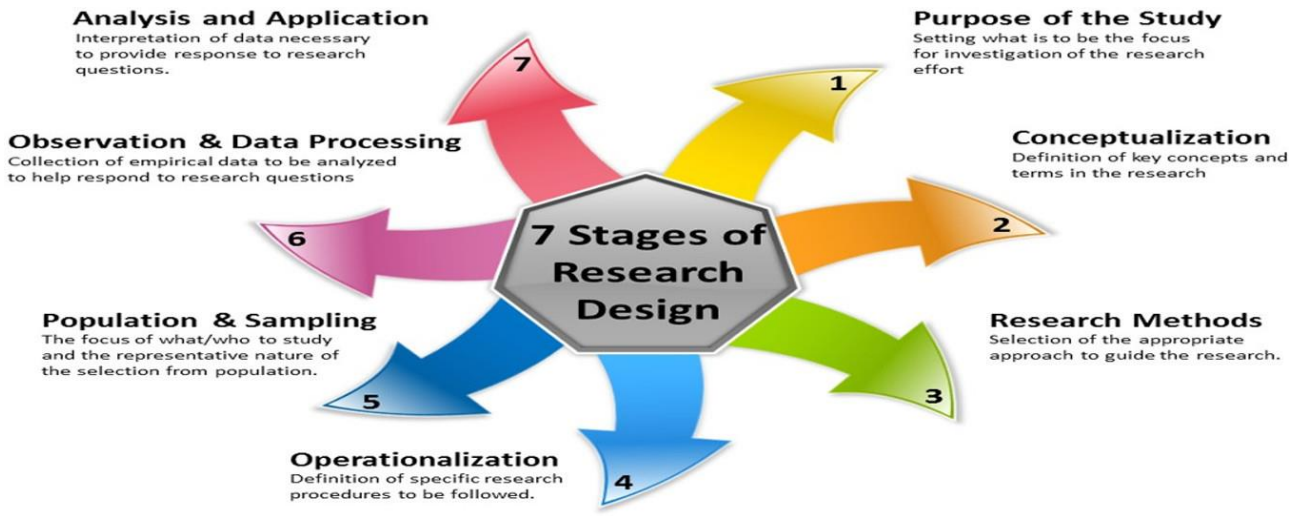

Figure 2: Research Design, SAGE Journals (2018)

3.4.1 RESEARCH PROBLEM FORMULATION

The researcher identified problems in feeder roads in line with project delays, budget overruns and quality shortfalls among others. Since project planning was identified as one of the major causal factors for these problems and very little research had been done regarding the subject, an inquiry was inevitable. During this stage the research questions were also developed.

3.4.2 OBJECTIVE DEVELOPMENT

A research can similarly be described by how the objectives are presented that is; descriptive, correlational, explanatory or exploratory.

Descriptive research describes the problem or phenomenon systematically and logically in order to present causation and effects. Correlational research aims at discovering or establishing relationships between two or more aspects of a phenomenon thus it is more based on comparisons.

Explanatory research tries to explain certain relationships amongst the existing situations. Explanatory research attempts to unveil knowledge about an area where little or none at all is known exploring the phenomenon so as to bring into light various issues. (Bickman & Rog, 2009). Looking at the objectives set out in the first chapter of this paper, this research falls in the descriptive research category. During this stage, the objectives were set to enable the research address the research questions raised at the time the problem was being stated.

3.4.3 LITERATURE REVIEW

This step involved a detailed review of the available literature in relation to the topic under study. Various sources were consulted in a bid to appreciate the works done by other researchers which included scientific journals, dissertations, books, online publications, official government publications and newspapers. A critical literature content analysis was also conducted to identify gaps in information, ideas and generalizations by other authors in order to justify the relevance of carrying out this study.

3.4.4 DATA COLLECTION PLANNING

This stage involved deciding on what kind of approach was to be used for data collection. Data collection involved both primary sources such as administering of questionnaires to sampled professionals, observations and interviews with specific feeder road project managers and secondary sources such as progress and annual reports. A questionnaire was developed with the view of targeting professionals who have been involved in feeder road construction project planning as respondents.

The limiting of projects under consideration was due to the fact that at the time of data collection meaningful developments would have occurred on these projects either positively or negatively but pointing to what was earlier stated in the problem statement. Sample sizing for the sampled projects as well as respondents was done at this stage by means of statistical principles.

3.4.5 DATA COLLECTION

The developed questionnaires were sent through google forms and mail modalities. A cover letter was attached to each questionnaire introducing the researcher, the topic and

stating the reasons for the research. The letter also assured the respondents the privacy to their responses. Appointments were made with contract managers for the selected projects for unstructured interviews to gain detailed insights into the projects. For the running contracts, project sites were inspected for physical observation and on-site interviews.

3.4.5.1 DATA COLLECTION METHODS

Data collection is an essential part of every research therefore the methods employed in collecting data should be such that will ensure credibility of the collected data. There are various methods of data collection categorized and known by the procedures engaged in collection. This section discusses some of the methods used for data collection bringing out their advantages and disadvantages.

1. QUESTIONNAIRES

This is a method of collecting data by pre-listing a set of questions on paper and distributing it to the identified people for responses. The questions can either be open ended or closed type depending on the researcher preference and the research type. This method provides advantages of the ability to collect data from large number of people in a short space of time thus it is faster. The researcher tailors the questions to meet the needs of the research therefore rules out unnecessary data. This method makes it is easy for quantitative research as the data can easily be converted into graphs and charts which makes an easy presentation of research findings. If well administered and to the right people, this method has been proven to be inexpensive. Above all, this method offers the greatest anonymity if so chosen as respondents often times are asked not to include their names. The method still has a number of cons which includes misunderstanding of questions by respondents resulting in inappropriate answers. Sometimes questionnaires take a lot of time to prepare as well as finding the right people to fill in. Questionnaires have been known for their low response rate sometimes even below 50%, however it is important to note that if it is administered collectively then this defect is ruled out. This method has a limitation of targeting only literate respondents meaning valid responses could be left out from the illiterate, old, very

young and handicapped. There is no opportunity to clarify certain issues that the respondent might not fully understand.

2. THE INTERNET

This is a relatively recent method of collecting data and most research institutions do not authenticate it. It involves the researcher typing key words or particular questions onto the search engine and reviewing the results. The main advantage is that it is quite fast in accessing information and also the fact that there is a lot of readily available information on the internet is another pro. With this method, information is easily accessible. However, the method comes with disadvantages like some of the information not being credible as it could just emerge from forum discussions or even just bloggers with certain interest therefore extra care has to be taken whenever information is being sourced using this method. Copyright issues can also be easily violated sometimes. Some sites are not reliable as they can upload anything. Some internet sites lack stability, the URL can be changed anytime or the content removed making referencing a challenge.

3. INTERVIEWS

This is one of the reliable sources of primary data for research. It involves asking a selected specialized people questions on the subject area. The interviews can either be structured or unstructured. Information is accurate and reliable if the right specialists are picked. The researcher is able to get in-depth data about a particular phenomenon as questions can be varied. There is an opportunity for further clarity for both the researcher and respondent. This method is able to cross literacy and poverty barriers. There is also an opportunity for important spontaneous responses. This method provides the advantage of leads to other important sources of information that the researcher might not have known initially.

4. BOOKS

Books provide a good starting point for research and are highly certified by most research professionals. This method involves reading through books to find relevant information on the topic under study. The main advantage of this method is that books are likely to be reliable because of the many processes involved in publishing a book. The other important aspect is that books can be specific to a topic therefore making it for the researcher to find relevant data. Despite the above pros, books have cons such as being expensive because they are produced at a cost which has to be paid for. There are also copyright issues to be considered with books. Sometimes this method can be time consuming browsing through a set of irrelevant books before getting to the right one. The last disadvantage is that books may be outdated because it takes a lot of time and resources to update a book.

5. FOCUS GROUPS

This is a method of data collection whereby a group of individuals with similar experiences and understanding are brought together to focus on a specific topic. Under this method a topic is developed and explored either by the researcher or the group members and the discussion proceedings are recorded. Amongst the notable advantages of this method is that it enables the researcher to get people's attitude and perception easily towards a particular subject. The results from these interviews or discussions are easy to understand. This method has proven to be inexpensive compared to individual interviews as all specialist are brought in one place. Group members also stimulate each other leading to detailed information gathering. The other advantage is that the researcher is able to interact with the participants therefore providing more opportunities for clarity. The disadvantage of this method is that skill and experience of the moderator is cardinal as they need to really know and understand the data needed. Sometimes getting the right groups assembled can be time consuming and difficult. The data resulting from these discussions also requires skills and experience in order to analyze and generalize it. Normally these discussions involve

small sample sizes and therefore it might not present a good representation of the general populous. The further disadvantages are that group discussions can be challenging to control and dominant participants can take over the views of others. (Irowe, 2012) Like earlier mentioned, this study adopted a triangulated approach to ensure reliability and validity of the study process. Interviews, questionnaires, as well as case study sources were consulted during the course of study.

3.4.5.2 SAMPLING

The target population was sampled using Stratified Sampling into ten categories for purposes of ensuring uniform representation from all the ten provinces of Zambia as guided by Kumar (2011) who argues that the accuracy of collected data is subject to the variability of the study population. Purposive sampling which is a non-probability sampling technique was employed in this research as there was need to identify experts in the field of project planning to give relevant responses as the research questions were being addressed. The homogenous sampling strategy of purposive sampling as outlined by Saunders (2009) in this case came in firstly by only picking feeder road projects from all the road projects that were being implemented and then only targeting a population of officers involved in the planning of these projects in relevant government institutions. Selection of samples from the ten provinces was by probabilistic means thus statistical tables were used.

A number of target respondents were identified for this study comprising planning professionals from the Local Authorities, Ministry of Local Government and Rural Development, Zambia National Service (Rural Roads section) and the Road Development Agency. Stutely (2003) advised that 30 is a minimum number that can be considered appropriate for statistical analyses. The total population of professionals involved in the planning of feeder road projects was at approximately 100. Using the table below, at 95 percent level of certainty and 5 percent margin of error, the correct sample was estimated at 79.

Table 3: Sample sizes for different sizes of population at 95% confidence level

		Margin of Error		
Population	**5%**	**3%**	**2%**	**1%**
50	44	48	49	50
100	79	91	96	99
150	108	132	141	148
200	132	168	185	196
250	151	203	226	244
300	168	234	267	291
400	196	291	343	384

Source: Saunders (2009)

The table was developed based on the formula below;

$\mathbf{n = \rho\% \times q\% \times [z/e\%]^2}$ Equation 1

where

n is the minimum sample size required

ρ% is the proportion belonging to the specified category

q% is the proportion not belonging to the specified category

z is the z value corresponding to the level of confidence required

e% is the margin of error required.

Comparing this with the Yamane Sample Size Formula (Yamane, 1973), calculating the sample size from a population of 100 at confidence level of 95% as shown below gave 80 which is almost the same as using the table.

$\mathbf{N = N/ [1 + Ne^2]}$ Equation 2

where

N is Size of the population;

n is the Sample Size; and

e is Precision level at 5%

$n = 100/ [1+100(0.05^2)] = 80$ Respondents

Equations 1 and 2: Sample Size Calculation

3.4.6 ANALYSIS

The collected data was presented in a manner that helped easy analysis and understanding.

3.4.7 INTERPRETATION AND GENERALIZATION

The analyzed results were interpreted in a manner that brought out meaningful sense in relation to the problem under study. This interpretation was generalized so as to apply to larger population since the study only used a sample. It is at this stage that the need for developing a feeder road planning model was justified.

3.4.8 ADOPTED RESEARCH DESIGN

This research adopted the Explanatory Mix Method Design procedure for collecting, analyzing, interpreting, and reporting data. The intent of the two-phase Exploratory Design was that the results of the first method (qualitative) could help develop or inform the second method (quantitative) (Greene et al., 1989). This design was based on the premise that an exploration was needed because the variables were unknown and there was no guiding framework available. This design was particularly useful because the researcher needed to identify variables needed to study quantitatively. The findings of the quantitative research were later validated by case studies.

3.5 CHAPTER SUMMARY

The research was conducted using the cross–sectional study design with the study population comprising of professionals involved in feeder roads construction project planning at national, provincial and district levels. The respondents were selected from those involved in planning at the Road Development Agency, Ministry of Local Government and Rural Development, Zambia National Service as well as Local Authorities at district level. Sampling of respondents from this population was by

statistical means so as to arrive at uniform representation. The respondents were contacted by mode of telephone before a questionnaire was sent or delivered to them. A covering letter from the University Zambia accompanied the questionnaire to request for the respondents consent as well as providing information about the purpose of the questionnaire and study. Some of the sites of the selected projects were also visited for observations. The gathered data was then analyzed and prepared into a report.

CHAPTER FOUR: DATA COLLECTION AND ANALYSIS

4.0 INTRODUCTION

The previous chapter discussed various methods of conducting this study. It presented various types of research techniques and methodology outlining their corresponding advantages and disadvantages. It also discussed the approach that data collection and analysis was going to follow which revealed that this was going to be done by conducting structured interviews which would lead to questionnaire development and administration, then later on conduct case studies on selected feeder road projects.

This chapter therefore, presents the collected data beginning with that collected from interviews and how it was analyzed.

4.1 INTERVIEWS

The researcher conducted structured interviews during the months of December, 2022 and January 2023 which targeted professionals with vast knowledge and experience in the construction and management of public roads, particularly feeder road project planning in Zambia. The interviewees were largely drawn from the public sector, with a few coming from some renowned engineering consulting/construction firms. These interviews were conducted for the sole purpose of establishing the general perception of feeder road project planning from experienced professionals.

4.1.1 DESCRIPTION OF INTERVIEWEES

Ten professionals were targeted for the interviews comprising two from engineering consulting/construction firms, three from Ministry of Local Government and Rural Development, three from the Road Development Agency, one from the National Road Fund Agency and one from the Local Council involved in feeder road projects. All the ten targeted professionals were interviewed and were very cooperative. All the interviewees had over ten years of experience in management of feeder road infrastructure project and had at least a bachelor's degree in civil engineering. Among the interviewees, seven were in senior management while the other three were in

middle management. This combination of respondents ensured credibility of the issues raised during the interviews.

4.1.2 OVERVIEW

In their responses, the interviewees highlighted the importance of adequate project planning in feeder road projects. The various issues raised by individual respondents were coded and arranged into categories of themes for easy discussion as outlined below. Sixty-seven issues emerged and were coded with the codes grouped into eighteen subthemes which were later developed into eight themes as presented by Figure 3. The details of coded issues are outlined in Appendix I.

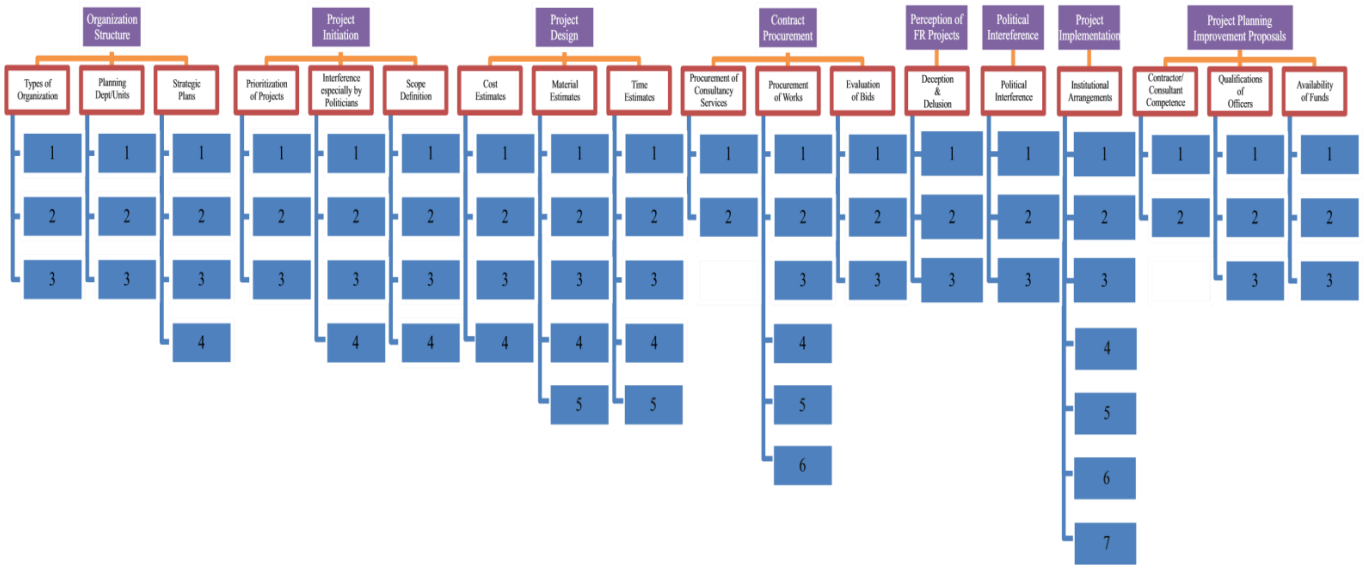

Figure 3: Classification Tree- Feeder Road Project Planning

4.1.3 ORGANIZATION STRUCTURE

Several issues emerged under this theme which were eventually categorized into three sub-themes namely; types of organizations, planning units/departments, and strategic plans.

a) Types of Organizations

The interviewees reviewed that different institutions that were involved in feeder roads had unique challenges. It was highlighted that depending on the type of organization be it Local Authority, Government Agency, Government Ministry, Contractor, or Consultant all had their own challenges that needed to be addressed to enhance smooth project execution.

b) Planning Units/Departments

Lack of competent personnel in the planning units/department in some organizations was cited to be amongst the leading causal factors for the problems in the planning of feeder roads. The interviews revealed that most planners in these units/departments had not been exposed to how things are supposed to be done so as to appreciate various planning techniques.

c) Strategic Plans

The interviewees also reviewed that some institutions that were at the core of planning for feeder roads did not have institutional strategic plans. This made prioritization and focus in terms of resources very difficult.

4.1.4 PROJECT INITIATION

This theme had three sub-themes identified and these were; political interference, project prioritization and project scope definition.

a) External Interference

Most interviewees felt that externals especially politicians were at the center of project initiation. The ideal situation as outlined during literature review was that local authorities identified roads to be earmarked for development which were submitted to provincial offices who after review submitted them to relevant headquarters which process had been reviewed to have been highly influenced by politicians at all levels. The experts at the three structural levels had very little influence in selecting projects as they were left to work on projects as instructed by politicians. Some examples cited were councilors in local authorities who would just generate lists for council management to submit for development. It was also highlighted that senior management positions for offices running public institutions were appointed by politicians hence making it easier to have decisions that would always favor the appointing authority as a way of paying allegiance and avoid losing jobs. Continued change of senior management in public institutions by appointing authorities (politicians) was also cited as a bottleneck under this category.

b) Project Prioritization

It was observed that most projects were not initiated according to professional project management prioritization criteria mainly due to the earlier mentioned external interference. Techno-economic studies and cost benefit analyses were rarely done and in the few cases when it was conducted, the recommendations were not adhered to. Interviewees also stated that stakeholder involvement in prioritization of projects was not considered cardinal as most projects were selected for political mileage. It was also noted that even when priority lists were generated, in most cases they were never adhered to.

c) Project scope definition

The scope for most projects was just stated on paper but not adhered to. The interviewees stated that most projects had suffered scope creep leading to escalated costs largely due to inadequate scope definition during planning. It was highlighted

that optimal interventions were not explored in some cases leading to costly inappropriate interventions. Contract documents also lacked sufficient clauses to protect the project. Amongst other issues identified under this sub-theme was rubber stamping of feasibility studies and regular use of standard designs.

4.1.5 PROJECT DESIGN

This category had three subthemes identified namely; cost estimates, time estimates and material estimates. Everyone interviewed highlighted on the three in their own form bringing out impacts on feeder road project implementation in Zambia.

a) Cost estimates

Interviewees argued that the lack of detailed feasibility studies greatly impacted project costs. It was heard that some planners generated cost estimates from quantities that were generated without visiting sites. Alternative options were not explored in detail as they developed the cost estimates. The respondents argued that most contract variations were as result of poorly done cost estimates.

b) **Material estimates**

Some respondents cited examples where the client had poorly estimated materials and the contractors strategically quoted high rates knowing that variations were inevitable. Generally, most interviewees stated poor material estimation as a contributory factor to avoidable costly estimations. Lack of detailed feasibility studies and condition surveys (site visits) were cited as main causal factors for this scenario. It was noted that officers charged with this task never cared whether the estimates were correct or not as there were no punitive measures against them for errors in estimates.

c) Time estimates

Time estimate can be used as a measure for competence of whoever is developing the project according to most interviewees. It was noted that most projects regardless of

scope, location, length, topography or geography unfortunately had the same project duration which showed lack of understanding of the projects on the part of planners.

4.1.6 CONTRACT PROCUREMENT

The interviews also brought out the relationship between procurement planning and overall project planning. Three sub-themes were developed under this theme namely; procurement of consultancy services, procurement of works, and evaluation of bids.

a) Procurement of Consultancy services

Some respondents expressed their thought that implementing institutions like MLGRD and RDA had basically become procuring entities without a procurement target. It was also noted that on most feeder road projects especially those under MLGRD, consultancy services were not procured leaving supervision to councils who were largely understaffed and incapacitated. This led to cases of implementing projects without designs and with very minimum supervision. The main argument around this was cost control as feeder roads were deemed not complicated since they are mainly gravel roads but it could be further argued that spending a little extra on consultancy services would enhance quality of works and value for money.

b) Procurement of works

Like discussed before, the issue of procurement target popped up again. In as much as MLGRD had done so much to ensure only local firms were awarded tenders in a bid to build capacity in local contractors, the regulation of firms participating in the tenders particularly for feeder road works was not rigorously done. There was also an argument by almost all interviewees that most works contracts if not all under MLGRD were signed and commenced without designs. These local contractors had been going to site with too much expected from them despite the fact that capacity was just being built in most of them. This made works contracts take so long such that other factors kicked in like change in the conditions on the ground or rates which would no longer be economical because of time and economic dynamics. All the respondents stated that

procurement of these works was most of the time affected by political interference and works contracts commenced even without assurance of availability of funds from treasury which resulted in cash flow challenges during implementation.

c) Evaluation of bids

Interviewees highlighted that due to over procurement in the sub sector, a lot of bids were evaluated in very limited time which made the evaluation committee not pay too much attention to details especially on the experience of the participating firms and reasonableness of the rates in the bids. The use of engineer's estimate as the main basis for financial evaluation also came out as one of the causal factors for project failure as it was identified as the recipe for corruption.

4.1.7 PERCEPTIONS OF FEEDER ROAD PROJECTS

Most interviewees had a common perception of planning in the feeder road sub sector. Only one subtheme was identified under this theme which is deception and delusion.

a) Deception and delusion

It was noted during discussions that most council staff advanced institutional or individual interests during project planning. They ensured that they put across points that would pass the project so that they can be assured of jobs. Politicians also exerted pressure for the enhancement of non-viable projects just to please their electorates. Respondents further revealed that some planners justified some projects as they saw some opportunities for corruption. Therefore, it was generally concluded that some incentives derived from the projects had a bearing on the project planning process. It was also observed that most top executives of the implementing institutions were appointed by politicians and therefore could not make independent and profession decisions while planning for projects as they always had to please the appointing authorities.

4.1.8 EXTERNAL INFLUENCE

Most interviewees stated that to some extent there was external influence in the way projects were planned. Under this theme, a subtheme namely political interference will be discussed.

a) Political interference

As earlier discussed, this can be largely related to the project initiation, procurement as well as appointment of top executives. Most respondents felt that political interference was at all levels of project planning and that politicians seemingly possessed more authority over project plans than professionals.

4.1.9 PROJECT IMPLEMENTATION

Most interviewees alluded to the fact that feeder road implementation success was largely affected by the different institutions involved in the entire process. Institutional arrangement was the only subtheme identified under this theme.

a) Institutional Arrangements

It was generally observed that project planning encountered problems because of the government bureaucratic procedures. Some cases were cited where projects were planned with adequate duration but required certain clearances with Attorney General (AG) which sometimes took long thereby affecting the overall process. In some cases, effecting a necessary and critical variation would require headquarters' procurement committee to sit before the resolution could be sent for clearance by either AG or ZPPA which was obviously a long process and affected the projects implementation. And others stated that the bureaucracy could be alright but sometimes the laissez-faire attitude in government institutions is what affects project planning and overall project implementation. Otherwise it was generally agreed that this subtheme affected all the processes of the feeder road project implementation.

4.1.10 IMPROVEMENT PROPOSALS

The respondents finally provided what they thought could be solutions to the problems in the planning of feeder road projects discussed above. Three subthemes were identified namely; contractor/consultant competence, qualification of officers, and availability of funds.

a) Contractor/Consultant Competence

All the respondents indicated that competence was lacking in most of the contractors that were engaged to work on feeder roads especially those engaged between the years 2019 and 2021 as a lot were procured within a short space of time and in large numbers owing to the general elections that were coming up. For example, MLGRD procured 210 contracts within a space of 18months. This did not give the planning units and departments enough time to do a better job in terms of evaluating competencies and doing due diligence on whatever was submitted during bidding. Therefore, it was proposed that enhancing the aspect of doing thorough evaluation and doing detailed due diligence on bidders would promote improved projects delivery. Others suggested that pre-qualification of contractors and consultants should be conducted in detail before inviting any contractor/consultant to participate in any bid. There were also suggestions that no works contract should be advertised before they are designed by a competent consultant on all feeder road projects.

b) Qualification of officers

Some respondents felt that planners in the planning departments/units did not have adequate qualifications and experience. It was also discussed that experts should be involved and consulted during planning of these projects especially at local authority and national level (MLGRD and MoF). Suggestions of internship were proposed as well as learning institutions to consider reinforcing project planning lessons in their curricula.

c) Availability of funds

Most respondents suggested that projects should only be procured upon confirming that funds are available at Ministry of Finance. Issues of procurement targets were also emphasized by some respondents who felt implementing institutions should balance procurement of new projects with running ones so as to enhance management. Some also suggested that the Ministry of Finance should be part of the clearing institutions in addition to AG before any contract is signed.

4.2 QUESTIONNAIRE SURVEY

Based on the findings during the interview survey, a questionnaire was generated with eight sections representing the themes that emerged during interviews as discussed above. The researcher generated relevant questions in line with the earlier established sections to further probe the issues that emerged.

This study is meant to carry out an assessment whose results are hoped to help feeder road project implementing institutions better their ways of planning for projects.

4.2.1 RESPONDENT RATE

Saunders (2009) states that a researcher needs to obtain high response rate in order to ensure that the selected sample is truly representative. The study advised that a 35 percent response rate for academic studies involving top management executives would be considered reasonable. In a separate study, Baruch (1999) concluded that the general most prevailing acceptable response rate for academic surveys was 55 percent.

The following formula was used to calculate the response rate;

Active Response Rate = Total Number of responses / [Total Number in Sample-(Ineligible+ unreachable)]

Ineligible = respondents who do not meet research requirements
Unreachable = respondents who could not be located or accessed.
Equation 4.1: Response rate calculation (Saunders, 2009)

For this survey, 90 questionnaires were distributed from the initially targeted 100 eligible professionals as 10 could not be reached. From the distributed questionnaires, only 72 were responded translating to 90% response rate. This response rate was considered adequate going by both criteria outlined above.

4.2.2 RESPONDENTS' BACKGROUND INFORMATION

Results from this segment showed the professionals who participated in the study survey in percentage form as follows; 95.8% Civil Engineers, 2.8% Procurement Specialists, and 1.4% Quantity Surveyors. This gave an indication that the highest number of respondents were Civil Engineers with 69 out of a total of 72 responses while Procurement Specialist had 2 and Quantity Surveyor with only 1 response.

Table 4: Background Information of respondents

Background Information	**Categories**	**Frequency**	**Percent**
Profession	Civil engineer	69	95.8
	Procurement Specialist	2	2.8
	Quantity surveyor	1	1.4
	Total	72	100.0
Years of Working Experience	> 20 years	8	11.1
	16-20 years	1	1.4
	11-15 years	27	37.5
	6-10 years	30	41.7
	0-5 years	6	8.3
		Average = 11.17	
Highest Academic Qualification	PhD	1	1.4
	Master's Degree	26	36.1
	Bachelor's Degree	42	58.3
	Diploma	3	4.2
	Total	71	98.6
Type of Working Institution	Consultant	5	6.9
	Contractor	5	6.9
	Government/ Government Institutions	62	86.1
	Total	72	100.0

The results also showed that 5 of the responses (6.9%) were from Consultants, another 5 (6.9%) from Contractors, and the remaining 62 (86.1%) from Government/Government Institutions. Further indications showed that, 1.4% of the respondents had Ph.D., 36.1% were Master's Degree holders, 58.1% were Bachelor's Degree holders while 4.2% had a diploma. The survey results also indicated that 11.1% had more than 20 years of working experience, 1.4% had between 16-20 years of experience, 37.5% had between 11-15 years of experience, 41.7% had between 6-10 years of experience, and 8.3% had between 0-5 years of experience. On average, the working experience of the respondents showed 11.17 years which indicated that the professionals who participated in the survey had substantial level of experience to respond adequately to the research as presented in Table 4 above.

4.2.3 ORGANIZATIONAL PLANNING STRUCTURE

In determining whether organizations being represented by the respondents placed planning as one of the important activities, questions relevant to the subject were developed.

Table 5 indicates that questions were asked based on the structure of their organizations as to whether they had functional planning units/departments of which they were required to respond with either a Yes or No. This question saw 14 participants responding with a No while 58 gave a Yes response. This indicated that more than 80 percent of the respondents' organizations had functional planning units/departments.

The researcher then sought to find out if these planning units/departments were adequately staffed. Responses showed 36 indicating that the staffing levels in their planning units/department were adequate while 7 indicated that they were not adequately staffed and 4 responded that they were not sure. However, 25 responded that their planning units were understaffed. The trend of responses indicated to a larger extent that organizations implementing feeder road projects have planning units /departments with adequate staffing levels as 50 percent showed that they were adequately staffed. But this could also negatively impact on the planning processes in

that the other 50 percent of the units in deficit would resort to short cuts due to overload or totally mess the whole planning process due to misunderstanding.

The respondents were then asked to rate if the officers in these planning units/departments were knowledgeable in project management. From the respondents' interaction with officers in their planning departments, 42 indicated that the officers were knowledgeable, 11 said the officers had no knowledge while 19 said they were not sure. Some positivity was observed here as almost 60 percent of the staff in these units had knowledge in project management which is an essential requirement for project planning.

Further, the researcher addressed the issue of adequacy in planning in these organizations. This sought to find out if the organizations from which the respondents belonged had strategic plans. 54 responded with Yes to having organizational strategic plans, 13 responded with no, while 5 indicated that they were not sure. Strategic planning being a process in which leaders in any organization define their vision for the future and identify their organization's goals and objectives, the process involves establishing the sequence in which these goals should be realized so that the organization can reach its stated vision. With more than 75 percent of the respondents indicating that they had strategic plans in place, more needed to be probed in this regard.

It was therefore deemed important to find out who prepared these strategic plans. Results revealed that 36 percent were prepared by senior management, 54 percent indicated they were done by management, 1.4 percent said they engaged consultants to do it for them and the remaining portion were not sure.

Coming to the question of whether the strategic plans were reviewed with staff, 44.4 percent agreed that the plans were reviewed with staff while 33.3 percent partly agreed. However, 15.3 percent attested that review was not done with staff, and 5 were not sure. As portrayed in table 5, most institutions did not fully adhere to their own strategic plans obviously for reasons that this study unveils. Failure to adhere to Strategic Plans as was the indication by many respondents leads to institutions carrying out projects

that are not in line with what was planned and this may result in implementation of projects contrary to the objectives and overall vision of the country.

In terms of general perception of project planning in these public institutions, it was observed that this component of project management was considered important as shown in table 5.

Table 5: Organizational Set Up

Variables	Categories	Frequency	Percent
Does your organization have a functional planning unit/department	No	14	19.4
	Yes	58	80.6
	Total	**72**	**100.0**
How adequately staffed is the planning unit/department	Adequately	36	50.0
	No staff	7	9.7
	Not sure	4	5.6
	Understaffed	25	34.7
	Total	**72**	**100.0**
From your interaction, how do you rate the officers' knowledge of project management	Knowledgeable	42	58.3
	No knowledge	11	15.3
	Not sure	19	26.4
	Total	**72**	**100.0**
Do you have a strategic plan for your organization	No	13	18.1
	Not sure	5	6.9
	Yes	54	75.0
	Total	**72**	**100.0**
Who prepares the strategic plan for your organization	Snr. Management	27	37.5
	Management	39	54.2
	Consultant	1	1.4
	Not sure	5	6.9
	Total	**72**	**100.0**
Is the strategic plan reviewed with the staff	No	11	15.3
	Not sure	5	6.9
	Partly	24	33.3
	Yes	32	44.4
	Total	**72**	**100.0**
Is the strategic plan adhered to during the implementation	No	10	13.9
	Not sure	4	5.6
	Partly	48	66.7
	Yes	10	13.9
	Total	**72**	**100.0**
How is project planning perceived in your organization	Important	32	44.4
	Not Important	9	12.5
	Not sure	1	1.4
	Very Important	30	41.7
	Total	**72**	**100.0**

Figure 4 shows the correlation between reviewing of the strategic plan with staff and adhering to the strategic plan during project implementation.

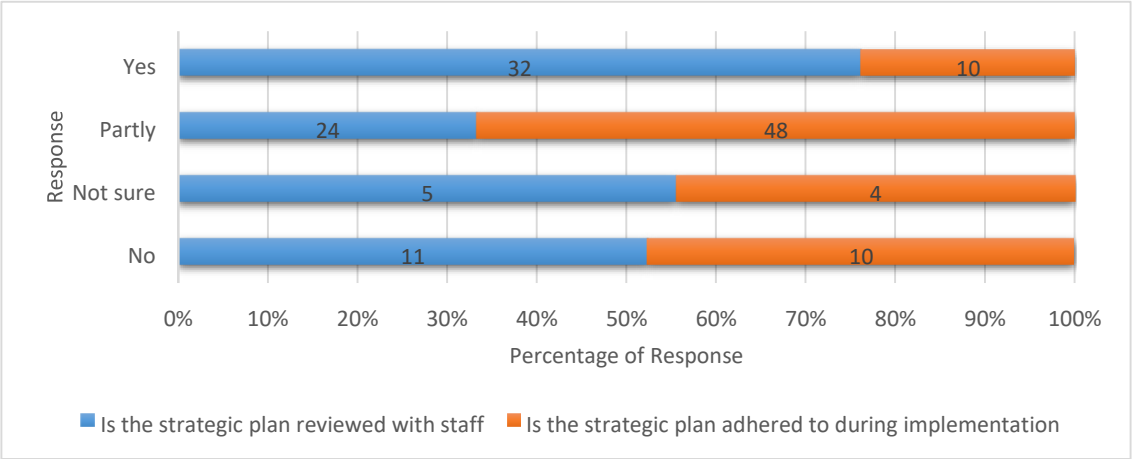

Figure 4: Strategic Plan Review against Adherence during Implementation

From figure 4, it was concluded that reviewing organizational strategic plans with the staff that is involved in the actual implementation of projects makes it easier to carry out projects that would respond to the needs of society as the implementers will have prior knowledge as to why particular projects will be implemented at a particular time even before the actual implementation begins. This makes implementation efficient, effective, and in accordance with the set objectives.

4.2.4 PLANNING IN THE PROJECT CYCLE

This section sought to check if relevant planning was adequately done by institutions charged with the responsibility of implementing feeder road projects before the actual implementation. The questions in this section were divided in five parts as follows; project initiation, project design, contract procurement, perception of professionals, and political interference. Variables under each classification were coded based on the topic of the question asked. The Mean Item Score (MIS), Standard Deviation (SD), and Ranks (R) as shown in Tables 6, 7, 8, and 9.

4.2.4.1 PROJECT INITIATION

Project initiation being the starting point of any project defines the objectives, states the scope and intended purpose as well as the expected deliverables of a particular undertaking. It is at this stage that two most important questions of "can we do the project" and "should we do the project" are answered hence the need to assess its placing in the feeder road construction industry.

Therefore, the first set of variables was about Project Initiation which were coded as PI 1, PI 2, PI 3, PI 4, PI 5, PI 6, and PI 7. Results showed that planning in government institutions during project initiation of feeder roads was strongly based on four variable points with the mean of greater than 3.0 ranked in order from the highest out of the seven variables that were analyzed. These are: PI4=politicians are important stakeholders in project initiation (MIS=4.01, SD=1.094, R=1), PI3=some projects are initiated due to personal motives (MIS=3.90, SD=1.009, R=2), PI 1=projects are initiated by politicians and top executives (MIS=3.65, SD=1.153, R=3), and PI2= there is normally stakeholder involvement in project initiation (MIS= 3.51, SD= 1.163, R= 4).

Table 6: Project Initiation Phase during Planning

Items	Code	Variables	Mean	SD	Rank
Project Initiation	PI 4	Politicians are important stakeholders in project initiation	4.01	1.094	**1**
	PI 3	Some projects are initiated due to personal motives	3.90	1.009	**2**
	PI 1	Projects are initiated by politicians and top executives	3.65	1.153	**3**
	PI 2	There is normally stakeholder involvement in project initiation	3.51	1.163	**4**
	PI 5	There is prioritization in the way projects are initiated	2.97	1.311	**5**
	PI 6	Projects are initiated in conformity with the strategic plans	2.85	1.109	**6**
	PI 7	Project activities in the road sector annual work plans are developed in line with the approved strategic plans	2.76	1.239	**7**

In as much as politicians could be a good means of getting community requirements and assessing needs for development as well as advocating for financing, allowing them to be at the center of initiating projects would create problems as they always have biased views and interests. The indication of stakeholder involvement in project initiation is evidence enough that the implementing institutions were not sole initiators of these projects but responded to community needs.

4.2.4.2 PROJECT DESIGN

Oberlender (2000) reveals that this stage of project development requires the planning engineer to convert the sponsor's concepts and ideas into some workable engineering scope. At this stage issues of cost estimates and budgeting are also put into consideration so as to come up with designs that shall be within budget. Therefore, this section looks at the design procedures as regards feeder road projects in Zambia.

The second set of variables was about Project Design. Results in this phase showed that project design during planning was based on the first eight highest ranked of the 14 variables that were considered under this section as shown in Table 7 which are PD11, PD14, PD8, PD12, PD10, PD1, PD 7, and PD5 ranked from 1-8 with 3.72, 3.40, 3.36, 3.26, 3.19, 3.11, 3.06, and 3.03 mean values alongside 1.141, 1.057, 1.237, 1.151, 1.171, 1.306, 1.161, and 1.300 standard deviation respectively.

Table 7: Project Design phase during Planning

Items	Codes	Variables	Mean	SD	Rank
Project Design	PD11	Sometimes designers replicate designs from other projects	3.72	1.141	**1**
	PD14	The designer is at times engaged to review and supervise the same contract	3.40	1.057	**2**
	PD8	Designers have in the past advised on the nonviability of some projects	3.36	1.237	**3**
	PD12	Designers are the lead causes of contract variations	3.26	1.151	**4**
	PD10	Designers propose appropriate fit-for-purpose interventions	3.19	1.171	**5**
	PD1	Options for conducting a project are fully explored during project planning and design	3.11	1.306	**6**
	PD7	Material estimates are accurately done by the designers	3.06	1.161	**7**
	PD5	Detailed designs are normally done before implementation	3.03	1.300	**8**
	PD6	Cost estimates are accurately done during the design	2.92	1.264	**9**
		The selected options are normally backed by technical and economic justification	2.86	1.190	**10**
	PD4	Feasibility studies are thoroughly conducted before detailed designs	2.76	1.239	**11**
	PD2	Designs are adequately reviewed before construction	2.75	1.219	**12**
	PD13	Techno-economic analysis (TEA) is adequately conducted during the design	2.71	1.180	**13**
	PD3	The client has in the past stopped non-viable projects after advice	2.67	1.061	**14**
	PD9				

According to the survey most respondents indicated that no thorough feasibility studies were conducted prior to project design. Further, it was reviewed that standard designs were used on most projects as opposed to having specified designs for particular projects. The majority were also of the view that project designers did not advise on the non-viability of some projects as no adequate techno-economic analysis was conducted during this phase of planning. The accuracy of cost estimates of projects

was another thing that was found to be in question during this phase of project planning according to the survey.

4.2.4.3 CONTRACT PROCUREMENT

Procurement is a very important aspect in public construction projects as well as sensitive function that defines and affects the overall project delivery. Therefore, understanding its placement and handling in the feeder road construction industry was of paramount importance in assessing the planning processes.

The third set of variables was about contract procurement and the results of the inquiry were summarized. It was indicated that 5 of the 9 variables that is CP8, CP7, CP3, CP6, and CP9 were ranked highest as R1=3.85, R2=3.40, R3=3.32, R4=3.31, and R5=3.24 rankings with the corresponding mean values as shown in Table 8.

Table 8: Contract Procurement Phase

Items	Code	Variables	Mean	SD	Rank
Contract Procurement	CP8	The delays in procurement affect overall project implementation	3.85	1.329	**1**
	CP7	The procurement processes are often unduly delayed	3.40	1.241	**2**
	CP3	There is undue external influence on the procurement process	3.32	1.412	**3**
	CP6	Contractual clauses used in feeder road contracts are adequate for the smooth implementation of projects	3.31	1.370	**4**
	CP9	The procurement criteria often don't ask the relevant things that will bring out the best contractors/consultants to do the job	3.24	1.295	**5**
	CP4	Contracts are only procured/ awarded after confirmation of the availability of funds	2.85	1.498	**6**
	CP5	As part of the evaluation, rates analysis is conducted in detail	2.75	1.402	**7**
	CP2	Most projects are procured according to the procurement plan	2.63	1.283	**8**
	CP1	Consultants are engaged in most of the feeder road works contracts	2.33	1.267	**9**

On the procurement of consultancy services, the results indicated that both design and supervision consultancy services were rarely procured on feeder road works contracts.

This meant that most contractors were doing works without proper designs and supervision. In most cases the implementing institutions supervised the works with inadequate capacities in terms of numbers as well as equipment and focused commitment. Respondents also cited undue external influence on the project procurement processes which meant procurement structures were not left to operate independently and professionally. Professionals further indicated that rates were not analyzed in detail during bid evaluation leading to some of bids having unrealistic rates which went unnoticed during tender evaluation but were a source of concern during implementation. The respondents generally stated that mostly the project procurement process was unduly delayed and stated that the delayed procurement processes had an overall negative effect on project delivery.

4.2.4.4 PERCEPTION OF PROFESSIONALS AND POLITICAL INTERFERENCE

Table 9 shows the last category of the questions that contained the variables used in examining the level of importance that government institutions attached to planning before implementing feeder road projects in Zambia. This category was divided into two, the first part asked questions about the perception of respondents as regards feeder road projects. The majority of the respondents stated that mostly, project planners were over-optimistic about how much could successfully be implemented thereby overstating the benefit-to-cost ratio (delusion) which was ranked highest with a mean score of 3.33. The variable that was ranked as the least mean score was about the accuracy of the engineers' estimates with a mean value 2.79 ranking number 4. This implied that government institutions focused more on the outrageous project implementation without caring to focus on the accuracy of the project costs thereby leading to over commitment.

The second part looked at political interference during the planning phase of feeder road projects. Findings revealed that political pronouncements about road development projects were usually made without prior consultation with those responsible for project planning. What was worrying is that implementers also heeded to these political pronouncements even when they were outside the original plans causing serious

deviations. Respondents therefore overwhelmingly agreed to the fact that political influence played a major role in selection of which feeder roads were to be worked on. The variables discussed above were ranked (R=1, MIS=4.07), (R=2, MIS=4.10), (R=3, MIS=3.63) respectively. Other variables which respondents did not agree with were that no political interference was there in the planning of feeder road projects and executives appointed by politicians discharge their duties without political interference which both ranked bottom at (R=4, MIS=1.94), (R=5, MIS=1.90) respectively as indicated in Table 9.

Table 9: Professionals' Perception and Political Interference

Items	Codes	Variables	Mean	SD	Rank
Perceptions in Feeder Road Projects	PFRP 2	Sometimes project planners are over-optimistic about project success thereby overstating the benefit-to-cost ratio (delusion)	3.33	1.175	**1**
	PFRP 4	Initial conditional surveys submitted for planning purposes are usually	2.97	1.363	**2**
	PFRP 1	Sometimes costs are deliberately and strategically underestimated when planning for the projects whilst overestimating benefits to convince sponsors (deception)	2.96	1.347	**3**
	PFRP 3	The engineer's estimate is accurately determined	2.79	1.150	**4**
Political Interference		Politicians make pronouncements about road development without consulting those responsible for project planning	4.07	1.167	
	PINT 1	Implementers sometimes yield to political pronouncements and deviate from the plans	4.10	1.103	**1**
	PINT 2	Politicians influence the selection of feeder roads to be worked on	3.63	1.399	**2**
	PINT 5	There is no political interference in the planning of feeder road projects	1.94	1.112	**3**
	PINT 4	Executives appointed by politicians discharge their duties without political interference	1.90	1.023	**4**
	PINT 3				**5**

A factor analysis was conducted on the project design factors to have fewer factors to deal with rather than a large number of variables. A Bartlett's test of Sphericity was

carried out as the first step to determine if the data set can undergo factor analysis. The results showed a Kaiser-Meyer-Olkin sampling measurement of 83% which makes the data adequate for sampling as represented in Table 10 with the significant level of 0.000 which is less than 0.001 to confirm the high correlation of the variables.

Table 10: Sampling Adequacy for Project Design

KMO and Bartlett's Test		
Kaiser-Meyer-Olkin Measure of Sampling Adequacy.		0.829
Bartlett's Test of Sphericity	Approx. Chi-Square	488.457
df		91
Sig.		0.000

In confirming the data set to be analyzed using factor analysis as shown by the KMO results, a principal component of commonalities further classified the variables into three groups and was renamed based on the researcher's discretion. These variables were classified into the same group based on their correlation and common factors. Table 11 shows the variance and cumulative percentages with their initial and rotated correlation matrix. The satisfactory levels for the three groups were all ≥ 0.5.

Table 11: Rotated Component Matrix for Project Design

Component	**Initial Eigenvalues**			**Extraction Sums of Squared Loadings**		
	Total	**% of Variance**	**Cumulative %**	**Total**	**% of Variance**	**Cumulative %**
1	5.564	39.740	39.740	5.564	39.740	39.740
2	1.904	13.601	53.341	1.904	13.601	53.341
3	1.294	9.240	62.581	1.294	9.240	62.581

The three sub-division were renamed to be Economic Factors consisting PD2=0.868, PD3=0.861, PD1=0.771, PD4=0.770, and PD5=0.647, Cost and Design Factors involving PD14=0.762, PD7=0.755, PD6=0.679, PD10=0.670, PD13=0.564, and

PD8=0.530, and the last classification was Designer Factors comprising PD12=0.868 and PD11=0.824.

The factor analysis results showed that classification 3 (Designer Factors) had a higher level of importance as regards government institutions' planning practices before feeder road projects are implemented as this had higher values compared to the other two classifications. Moreover, the data set was statistically tested for internal consistency and credibility. Cronbach's alpha coefficient (α) was used in determining the data reliability with values ranging from 0 to +1. An α value that is ≥ 0.7 is generally considered to be acceptable because the higher the alpha value, the stronger the internal consistency and reliability of the data. Economic factors showed an α value of 0.885,

cost and design factors = 0.812, and designer factors = 0.664 which result in 0.7 and above and this makes the data reliability acceptable as displayed in Table 12.

Table 12: Internal Consistency for Project Design

Code	Variables		Component 1	Component 2	Component 3	Cronbach's Alpha
PD2	Economic Factors	Feasibility studies are thoroughly conducted before detailed designs	0.868			
PD3		Techno-economic analysis (TEA) is adequately conducted during the design	0.861			
PD1		Options for conducting a project are fully explored during project planning and design	0.771			
PD4		The selected options are normally backed by technical and economic justification	0.770			
PD5		Detailed designs are normally done before implementation	0.647			0.885
PD14	Cost and Design Factors	The designer is at times engaged to review and supervise the same contract		0.762		
PD7		Material estimates are accurately done by the designers		0.755		
PD6		Cost estimates are accurately done during the design		0.679		
PD10		Designers propose appropriate fit-for-purpose interventions		0.670		
PD13		Designs are adequately reviewed before construction		0.564		
PD8		Designers have in the past advised on the non-viability of some projects		0.530		0.812
PD12	Designer Factors	Designers are the lead causes of contract variations			0.868	
PD11		Sometimes designers replicate designs from other projects			0.824	0.664

Additionally, a reliability test using Cronbach's alpha was carried out on all the variables that made up each division that examined the level of importance that government institutions attached to planning before feeder road projects were implemented in Zambia. The following were the resulting values; Project Initiation = 0.667, Project Design = 0.861, and Contract Procurement = 0.672. The other two categories, that is Perceptions in Feeder Road Projects and Political Interference were deleted from the reliability test as their values were less than 0.7 signifying lower level of internal consistency and reliability of the variables which was not acceptable.

Table 13: Internal Consistency for Project Planning

Items	Variables	Alpha (α)
Project Initiation	Projects are initiated by politicians and top executives	**0.667**
	There is normally stakeholder involvement in project initiation	
	Some projects are initiated due to personal motives	
	Politicians are important stakeholders in project initiation	
	There is prioritization in the way projects are initiated	
	Projects are initiated in conformity with the strategic plans	
	Project activities in the road sector annual work plans are developed in line with the approved strategic plans	
Project Design	Options for conducting a project are fully explored during project planning and design	**0.861**
	Feasibility studies are thoroughly conducted before detailed designs	
	Techno-economic analysis (TEA) is adequately conducted during the design	
	The selected options are normally backed by technical and economic justification	
	Detailed designs are normally done before implementation	
	Cost estimates are accurately done during the design	
	Material estimates are accurately done by the designers	
	Designers have in the past advised on the non-viability of some projects	
	The client has in the past stopped non-viable projects after advice	
	Designers propose appropriate fit-for-purpose interventions	
	Sometimes designers replicate designs from other projects	
	Designers are lead causes of contract variations	
	Designs are adequately reviewed before construction	
	The designer is at times engaged to review and supervise the same contract	
Contract Procurement	Consultants are engaged in most of the feeder road works contracts	**0.672**
	Most projects are procured according to the procurement plan	
	There is undue external influence on the procurement process	
	Contracts are only procured/ awarded after confirmation of the availability of funds	
	As part of the evaluation, rates analysis is conducted in detail	
	Contractual clauses used in feeder road contracts are adequate for the smooth implementation of projects	
	The procurement processes are often unduly delayed	
	The delays in procurement affect overall project implementation	
	The procurement criteria often don't ask the relevant things that will bring out the best contractors/consultants to do the job	

Results as presented in Table 13 showed that project design had the highest alpha value having the strongest internal consistency which means project design is mostly

considered in government institutions as important when planning for the implementation of feeder road projects in Zambia.

4.2.4.5 PROJECT IMPLEMENTATION

When responses of professionals who implemented these projects were analyzed based on the 'Project Implementation' questions that were developed, it was discovered that most responses rated the awarding of contracts without the availability of funds as the major contributor to cash flow problems while lack of technical designs was seen to be the reason why projects had increased project costs as it brought about a lot of variations. Political influence was seen to encourage implementation of non-priority roads in an uncoordinated manner which resulted in delayed and undefined project implementation. This was seen to be the major cause of scope creep, and improper project planning resulting in delayed project implementation which in most cases made it very difficult to attain planned success during project implementation. The mean values and ratings for the analyzed variables were found to be (M=4.29, R=1), (M=4.18, R=2), (M=4.08, R=3), (M=4.08, R=4), (M=4.08, R=5), and (M=4.07, R=6) as shown in Table 14. The respondents also affirmed the inadequacy of social and environmental safeguards on most feeder road projects and this was seen to result in damage to the environment and its inhabitants (M=3.83, R=7) and lack of supervision funds for client-supervised contracts also affected the successful implementation of projects

Table 14: Project Implementation

Project Implementation	PIMP 4	Awarding contracts without conforming availability of funds contributes to cash flow problems	4.29	1.119	**1**
	PIMP 2	The lack of technical designs has resulted in increased project costs due to variations	4.18	0.969	**2**
	PIMP 3	Tilting to political influence has resulted in developing non-priority roads	4.08	1.196	**3**
	PIMP 6	Uncoordinated plans have delayed project implementation in the past	4.08	0.975	**4**
	PIMP 7	Improperly defined project deliverables result in avoidable scope creep	4.08	0.975	**5**
	PIMP 1	Improper project planning has resulted in delayed project implementation	4.07	1.202	**6**
	PIMP 8	Inadequate implementation of social and environmental safeguards on feeder road projects has resulted in damage to the environment and its inhabitants	3.83	1.175	**7**
	PIMP 5	There are usually supervision funds for client-supervised contracts	2.93	1.237	**8**

After a thorough research, findings revealed that there were problems associated with planning in institutions that were charged with the responsibility of implementing feeder road projects in Zambia. Consequently, there was need for planning improvements if meaningful success was to be achieved in this sub sector.

In view of the above, responses in the section that had a set of proposals made by the researcher which suggested project planning improvement revealed that the respondents agreed with the proposed interventions as they all had high mean score values as shown in Table 15. The professionals agreed that no contract should commence until the National Road Fund Agency in consultation with the Ministry of Finance confirmed the availability of funds. They also agreed that people charged with the responsibility of project planning should possess some basic knowledge in project management. The last set of these proposals which were also nodded by the respondents were that, the rate of contract variations must be part of the tools used for assessing project designer performance and that poor-performing contractors should be barred from participating in future contracts.

Table 15:2 Project Planning Improvement Proposals

Items	Codes	Variables	Mean	SD	Rank
Project Planning Improvement Proposals	PPIP 3	No contract should commence until National Road Fund confirms the availability of funds	4.28	1.270	**1**
	PPIP 1	Project planners should have some basic knowledge of project management	4.28	1.247	**2**
	PPIP 5	Politicians cited to be influencing the procurement processes should be reported to law enforcement for possible prosecution	4.14	1.225	**3**
	PPIP 4	Executives of roads project implementation agencies should not be appointed by politicians	4.14	1.214	**4**
	PPIP 2	Serious penalty clauses should be introduced in feeder road contracts to encourage seriousness	4.03	1.222	**5**
	PPIP 6	Techno-economic studies should be the main basis for determining the intervention for road development	4.01	1.284	**6**
	PPIP 9	Engineering institution of Zambia and other relevant institutions to revoke licenses of poorly performing contractors/consultants	3.99	1.228	**7**
	PPIP 8	Past performance in works of similar nature should be used for contractor/consultant selection	3.96	1.294	**8**
	PPIP 7	The rate of contract variation should be part of the tools for assessing project designer performance	3.92	1.184	**9**
	PPIP 10	Poor-performing contractors are to be barred from participating in future contracts	3.83	1.289	**10**

In addition to establishing the project planning improvement proposals, Cronbach's alpha test was conducted to check the internal consistency of the factors proposed. Results in Table 16 present the level of reliability of the data showing that the project implementation factors are reliable at 0.881 α value while project planning improvement proposals are reliable at 0.996. This shows strong internal consistency in accomplishing success if the said interventions were taken into consideration.

Table 36: Reliability Table

Items	Variables	Alpha
Project Implementation	Improper project planning has resulted in delayed project implementation	
	The lack of technical designs has resulted in increased project costs due to variations	
	Tilting to political influence has resulted in developing non-priority roads	
	Awarding contracts without conforming availability of funds contributes to cash flow problems	
	There are usually supervision funds for client-supervised contracts	
	Uncoordinated plans have delayed project implementation in the past	
	Improperly defined project deliverables result in avoidable scope creep	
	Inadequate implementation of social and environmental safeguards on feeder road projects has resulted in damage to the environment and its inhabitants	**0.881**
Project Planning Improvement Proposals	Project planners should have some basic knowledge of project management	
	Serious penalty clauses should be introduced in feeder road contracts to encourage seriousness	
	No contract should commence until National Road Fund confirms the availability of funds	
	Executives of roads project implementation agencies should not be appointed by politicians	
	Politicians cited to be influencing the procurement processes should be reported to law enforcement for possible prosecution	
	Techno-economic studies should be the main basis for determining the intervention for road development	
	The rate of contract variation should be part of the tools for assessing project designer performance	
	Past performance in works of similar nature should be used for contractor/consultant selection	
	Engineering institution of Zambia and other relevant institutions to revoke licenses of poorly performing contractors/consultants	**0.996**
	Poor-performing contractors are to be barred from participating in future contracts	

4.3 CHAPTER SUMMARY

This Chapter presented results obtained from interviews and the questionnaire survey along with their analysis. A total of ten professionals form both the private and public sectors were interviewed. A number of issues emerged from the interviews which were sorted by means of the classification tree into subthemes then further into thematic areas. From there, a questionnaire was generated based on the themes and administered to ninety professionals out of which seventy-two were responded to representing 90 percent.

Over 96 percent of the officers involved in road infrastructure planning for the sampled institutions were occupied by civil engineers which gave an impression that the organizations were well informed about undertakings as they had the relevant experts. Over 80 percent of the sampled institutions had a planning unit of which 75 percent had strategic plans. However, in terms of adherence to these plans, most of the organizations did not fully conform. Political interference was also noted at various stages in the project planning process and it was identified that it brought too much negative impacts to the overall project management. Delay in project procurement processes was also seen to be one of the factors that negatively impacted the implementation process.

Various improvement interventions were also proposed by interviewees which were further verified by the questionnaire. Chapter five will look at three case studies to help in the validation of issues raised from interviews and the questionnaire survey.

CHAPTER FIVE: CASE STUDIES

5.0. INTRODUCTION

The previous chapter presented the findings from the interviews and questionnaire survey. A number of issues were brought out which highlighted various bottlenecks in the planning of feeder road projects in Zambia.

In this chapter the researcher looked at three case studies on projects sampled from different provinces to help in the validation of issues raised from interviews and questionnaire survey. The case studies helped the researcher in assessing the influence of the identified issues on the feeder road planning processes and how this affected implementation using actual projects.

5.1 Case Study 1

Contract for the rehabilitation of 52.2km of Musele-Katuta-Sobing Road in Luwingu District of Northern Province

5.1.1 Background

In 2014, government through the then Ministry of Local Government and Housing (MLGH) embarked on a project to rehabilitate the 52.2km road from the junction of Mansa-Luwingu Road at Musele to Katuta village at a total contract sum of ZMW 64,866,668.37 and was supposed to run for a period of 12 months. The project was aimed at improving accessibility to amenities such as hospitals, schools and potential agricultural areas for the villages that were along the project road.

The works contract for this road was signed on 11th August, 2014 and the contractor mobilized almost immediately. According to the signed contract, the works were necessitated by the key objective of the RoadSIP which was to construct, rehabilitate, improve or upgrade, and maintain the Core Road Network (CRN) to enhance

connectivity and alleviation of poverty through improved access to agricultural activities.

The design interventions were to provide a standard engineered gravel road with its associated drainage structures. The contractor however noted with concerns after a few months on site that some quantities in the BOQ were underestimated. The contractor also brought to the attention of the client that the bridges to be constructed were too big and therefore needed detailed designs. This prompted the client to engage a design and supervision consultant whose task was to review the initial designs done by the council and do fresh ones if necessary as well as supervise the works going forward.

5.1.2 Project Designs

The initial designs were reviewed and a number of deficiencies were identified. Amongst some of the identified deficiencies were the inadequacies in the drainage designs as well as the road alignment. The original BOQ also wrongly captured the total stretch as 52.2km when in actual sense the stretch on the ground was 60km. The design did not also provide for access to properties. Other quantities like trees that were supposed to be cleared along the way were wrongly captured as the quantity in the bill was far much less than what was on the ground.

It was further noted that key items in the Bill of Quantities (BOQ) were either overestimated, underestimated or completely omitted. For instance, the removal of trees with girth ranging between 1 to 2 m, 2 to 3m, and exceeding 3m were completely omitted when the actual encountered were 1,322, 187, and 40 trees respectively. On the other hand, the cut and borrow to fill material was overestimated at 636,840m^3 when the actual required material was 186,300m^3 while gravel pavement layer material was over estimated at 47,763m^3 instead of 38,880m^3. The required material to be excavated for open side drains was 64,800m^3. However, in the BOQ, only 55,200m^3 was provided for.

5.1.3 Procurement of Contracts

In August, 2014 the Ministry of Local Government and Housing engaged Continental Labor Based Contractors Limited to execute the works at the total contract value of ZMW 64,866,668.37 for an initial period of 12 months. According to project progress reports, the contractor fully mobilized to site and commenced works on 17th October, 2014.

A few months into the project towards at the beginning of 2015, Gladstone Engineering Consultants were engaged to provide consultancy services for the design review and construction supervision of the works at a contract value of ZMW 6,972,876.00 for a period of 12 months. The consultant mobilized to site in July 2015 about 8 months after the commencement of the works contract.

5.1.4 Variation Orders

Due to the many omissions and inaccurate estimations, it was necessary that some variations be made to the contract so as to correctly provide for key items. A total of three Variation Orders (Vos) were signed on this project the first of which was signed in February, 2017 which raised the value of the contract by ZMW 31,684,985.88.

Due to other unforeseen circumstances during the execution of the project, the original contract which had an initial completion period of 12months remained unfinished after 7 years and had undergone three variations that saw the contract sum shoot from the original ZMW 64,866,668.37 to ZMW367,114,878.20. The stretch of the road under the contract had changed from 52.2km in the original contract to 120km after VO 3. Unfortunately, this contract was never completed as it was terminated at 78% complete in November, 2021.

Figure 5: The state of the road three months after termination

Figure 6: Structure along the terminated project road not protected from erosion

5.1.5 None Payment

In accordance with Clause 43.1 of the signed contract between MLGH and the contractor, the contractor was to be paid within 56 days of certification of works. At the time of the research, the contractor was owed more than ZMW 200 million by the client without interest and the contractor had already passed the intention to claim interest. This was the major reason why the project had dragged for that long as the situation negatively affected the project cash flow to the point of suspension of works prior to termination as the contractor no longer had the capacity to finance the project any further.

5.1.6 Analysis of Problems

The following problems were identified under this case study as regards project planning.

a) The design inadequacies as outlined above could be related to the fact that the officers initially charged with the task might not have visited the site during the design stage. This was concluded after discovering issues like key material quantities being either under or overestimated with so much error. If the designer fully understood the site conditions which was expected, the case would have been different. Still with the above revelations, the designers who are most likely salaried council workers got their full salaries and no one could hold them accountable.
b) Securing the design and supervision contract much later after commencement of the works also highlighted a weakness in the project planning cycle. Without a consultant on site, the contractor could do shoddy works or in some instances fail to make key decisions as the council engineers could not always be on site and in some instances, they are inexperienced. Clients ought to ensure that supervision contracts are in place before commencing works.
c) Variation Orders are a cost to the project and always entail sourcing for resources that were not initially planned for. In cases like this one, where the variations are a result of design faults and lack of proper viability studies,

someone should be held accountable. A deliberate policy should also be in place that restricts how much a contract can be varied and this should be within the contingency amount to avoid cash flow challenges like was observed here.

d) Failure by the client to pay for the certified works clearly showed poor project planning. Had the funds been secured before commencement of the project or approval of variations, it would have not suffered cash flow problems. Clients should not award or sign any contracts until confirmation of the availability of funds.

5.2 Case Study 2

Contract for the periodic maintenance of 70.9km (Petauke to Chikowa Rural Health Centre) of Feeder Roads in Petauke district of Eastern Province

5.2.1 Background

The project for the Periodic Maintenance of 70.9km of feeder roads in Petauke district of Eastern Province whose aim was to enhance accessibility as well as improve the socio-economic status of the district was awarded to Shachitari Contractors Limited at a total contract sum of ZMW 108,415,598. The contract was signed in February 2017 and the contractor took possession of site on 28th March, 2017 after having fulfilled all contractual obligations. The duration for this contract was 18 months and with works commencing on 10th April, 2017, it was expected that the project would be completed by 28th August, 2018 though this could not be achieved due to various reasons among which delayed payment was cited as being the major one.

The scope of works comprised excavations, grading, earthworks, gravel surfacing, concrete works, drainage works and signage. It was hoped that at completion of the project, connectivity of the district to the other parts of the country will be enhanced, travel times reduced and delivery of goods and services promoted as farming was the major activity in the district.

The project was being supervised by the council as there was neither a design nor a supervision consultant engaged. Five years later, the project was still ongoing till its termination at 77% complete.

5.2.2 Project Designs

The project was contracted out without any detailed designs in place in spite of the fact that there were some major drainage structures that were required to be done. No consultant was engaged to do any designs or supervise the contract. This meant that the contractor had to do the works without any designs at all and the works were left to be supervised by the council who had a lot of other projects to monitor while having limited staffing levels. This made the working environment very difficult for the contractor as they were not in any way specialized in design works. Additionally, the bidding document that was issued by the client during the bidding process did not indicate that the contractor will also have to take care of the design part. This was a serious challenge on site which caused delays during project execution.

5.2.3 Procurement

The Ministry of Local Government (MLG) floated a tender through Limited Bidding for Citizen Owned Companies in Category R, Grades 4 or better of the NCC and six companies were shortlisted to participate in this particular tender.

The works contract was signed in February 2017 between MLG and Shachitari Contractors Limited at a total cost of ZMW 108,415,598 for a period of 18 months commencing 10th April, 2017.

There was no consultant procured to either design or supervise these works which meant the contract was left under the supervision of the council and MLG provincial office whose total presence on site could not be attained due to staffing and other logistical challenges.

5.2.4 Variation Orders

The contract was based on the Bill of Quantities generated by the council officials after a condition survey during the procurement stage which was largely based on estimated quantities. However, the contractor noticed some omissions and inaccuracies in

quantities while on site which led to the client and contractor agreeing on varying the contract to address this. Variation Order (VO) number 1 was signed on 5th August, 2019 and sought to vary some quantities as well as extend the contract duration for this project. The VO also meant additional costs for the project which saw the contract sum rise from ZMW108,722,023.41 to K124,214,192.00 representing an increase of 14.25%. The contract was further extended by 8 months which took the completion to 10thJuly 2020. This would allow for the smooth completion of works. The VO came with an increase on General Provisions, Drainage, Earth works and layers of Gravel, Ancillary Roadworks, and the HIV/AIDS components in the BOQ.

The contract was further rescoped in 2020 after the government ordered for rescoping of major projects which saw the introduction of the Msanzala Bridge on the project and this raised the contract sum by a further ZWM 26,000,000.00. the bridge was equally never complete at the point of termination of the contract.

Figure 7: State of Msanzala Bridge after contract termination

5.2.5 None Payment

In accordance with Clause 43.1 of the signed contract between MLG and the contractor, the contractor was to be paid within 56 days of certification of works. At the time of research, the contractor was owed more than ZMW 20 million by the client without interest. This was the major reason why the project had dragged because even the already paid certificates were not honored in time. The situation negatively affected the project cash flow to the point that the contractor had to leave site without any permission prior to the termination of the contract as the contractor no longer had the capacity to consistently finance the project.

5.2.6 Analysis of Problems

The following problems were identified under this case study as regards project planning.

a) The inadequate and omission of some quantities as outlined above could be related to the fact that the officers initially charged with the task of developing the BOQ might have not done a thorough visit to the site during the condition survey stage. This was concluded after discovering issues like key material quantities being either under estimated or completely omitted. Had the site conditions been fully understood which was expected, the case would have been different. Still with the above revelations, the officers in question who were salaried council workers would claim had a lot of other things on their plates to put all their energies on one project and may have lacked other incentives that would have allowed them to perform their duties effectively.
b) Not procuring the design and supervision contracts at all even after realizing the contract needed proper designs and supervision just showed a weakness in project planning. Without a consultant on site, the contractor could do shoddy works or in some instances even fail to make key decisions as the council engineers could not always be on site and in some instances, maybe inexperienced. Clients ought to ensure that designs and supervision of contracts are considered a priority.

c) Variation Orders are a cost to the project and always entail sourcing for resources that were not initially planned for. In cases like this one, where the variations are a result of lack of designs and proper viability studies, someone should be held accountable for not putting everything in place to allow for proper service delivery. A deliberate policy should also be in place that restricts how much a contract can be varied and this should be within the contingency amount to avoid cash flow challenges like was observed here.

d) Failure by the client to pay for the certified works clearly showed poor project planning. Had the funds been secured before commencement of the project, it would have not suffered cash flow problems. Clients should not award or sign any contracts until confirmation of the availability of funds.

5.3 Case Study 3

Contract for the periodic maintenance of 23km of Great East to Munyenta Feeder Road in Rufunsa district of Lusaka Province

5.3.1 Background

The project for the periodic maintenance of 23km of Great East to Munyenta Road in Rufunsa district of Lusaka Province whose aim was to enhance accessibility as well as improve the socio-economic status of the district was awarded to ABC Global Works Limited at a total contract sum of ZMW 33,940,324.00. The contract was signed on 29th October, 2018 and the contractor took possession of site on 11th November, 2018 after having fulfilled all contractual obligations. The duration for this contract was 12 months and with works commencing on 20th December, 2018, it was expected that the project would be completed by 21st December, 2019 though this was never achieved due to various reasons.

The scope of works for this project comprised excavations, grading, earthworks, gravel surfacing, concrete works, drainage works and signage. It was hoped that at completion of the project, connectivity of the district to the other parts of the country will be enhanced, travel times reduced and delivery of goods and services promoted.

The project was being supervised by the council as there was no supervision consultant engaged. Five years later, the project was still not completed and the site was completely abandoned. This left the government with no option but to terminate it at 33% complete.

5.3.2 Project Designs

Like in Case Study 2, this project was also contracted out without any designs in place in spite of the fact that the road needed proper drainage designs for it to be sustainable due to the nature of the terrain. No consultant was engaged to do any designs or supervise the works, meaning the contractor had to do the works without any prior designs at all and the works were left to be supervised by the council who had a lot of other projects to monitor while having very limited staffing levels and experience. Even though this contractor claimed they were registered as a Grade 1R contractor according to the National Council for Construction (NCC) certificate submitted during bidding, they found the working environment very difficult which made the client question how they fell in that category. The challenges faced led to other problems as the contractor decided to sub contract the works to another contractor even when the contract clearly stated in Clause 7.1 of the Special Conditions of the Contract that sub-contracting was not allowed in this particular contract.

5.3.3 Procurement

The Ministry of Local Government (MLG) floated a tender through Limited Bidding for Citizen Owned Companies in Category R, Grades 4 or better of the NCC and five companies were shortlisted to participate in this particular tender.

The works contract which was signed in October, 2018 was awarded to ABC Global Works Limited at a total cost of ZMW 33,940,324.00 for a period of 12 months after having satisfied all the requirements during the tender process. The contractor emerged as the best evaluated bidder ranking first in all the categories of evaluation which included Preliminary, Technical, and Financial evaluations.

There was no consultant procured to either design or supervise these works leaving the contract under the supervision of the council and MLG provincial office whose total presence on site could not be attained due to staffing and other logistical challenges.

5.3.4 Contract management

According to Clause 51.1 and 51.2 of the signed contract, the client was required to make an advance payment of 10% of the total contract sum to the contractor provided the contractor met all the requirements as stated in the conditions of the contract. The contractor was supposed to use this advance payment to pay for Equipment, Plant, Materials, and mobilization expenses required specifically for the execution of the contract. The contractor submitted Advance Payment Guarantee and Performance Bond together with the application for Advance Payment on 20th November, 2018. This application was not honored by the client on time which was against the provisions of the contract making site establishment and commencement of works very difficult for the contractor.

When the contractor realized that he could not contain both technical and financial challenges faced on site, he decided to engage another company namely JCJ Africa Investments Limited to take up the works as a sub-contractor, an action which amounted to breach of contract according to Clause 7.1 of the Special Conditions of the Contract which stated that sub-contracting was not allowed in this particular contract. The client's representative on site in this case who were Rufunsa Town Council failed to apply the provisions of the contract but instead allowed the sub-contractor to take possession of site. Later, conflict arose between the main contractor and the sub-contractor as they could not agree on how the proceeds from the works done were to be shared and since the main contractor was the one in control of the funds as the client could only effect payment to the main contractor for any works done being the only recognized party to the contract. This resulted in the sub-contractor suing the main contractor and during the period of the court case which took more than four years, works on site had stalled. Due to the prolonged court issues, government decided to terminate the contract.

5.3.5 Stalled works

At the time of the visit to the site, the works had completely stopped mainly due to the earlier highlighted problems. Due to the prolonged court case, no money was paid out by NRFA on this project and equipment was removed from site. Sections where roadbed preparation and formation were already done had been opened to traffic and because of the passage of time, the road had deteriorated. Therefore, if at any point this project was to be redeemed from its challenges and given to another contractor, then it means all the sections including those that were already done would have to be reworked, resulting in wastage of resources.

Figure 8: A section of the abandoned road showing an exposed installed pipe culvert

5.3.6 Analysis of Problems

The following problems were identified under this case study as regards project planning.

a) The lack of designs outlined above as reviewed by the officers interviewed were related to the fact that the officers were not given enough time to have designs in place as they were under pressure to have the works contract signed from politicians. The officers were therefore forced to come up with a BOQ that could be used for tendering without doing any other detailed studies that could speak to the expected works and conditions of the area. This was a pure case of external interference in project planning which should be discouraged as the results are damaging.

b) Ignoring the engagement of the design and supervision contract also highlighted a weakness in the project planning cycle. Without a consultant on site, the contractor could do shoddy works or in some instances fail to make key decisions which was mainly the case on this project as the council engineers could not always be on site and in some instances, their inexperience made things even worse as was seen in the sub contract which was allowed against the provisions of the contract. Clients ought to ensure that supervision contracts are in place before commencing works as a consultant is the only sure way of ensuring the client has eyes on the project.

c) Contract Management is an important aspect of the project cycle and clearly this aspect lacked on this project which made a lot of contractual provisions not to be followed simply because care was not taken from the onset to ensure that some things were avoided. Overlooking things that seemed not serious in terms of project management led to very serious consequences that led to loss of resources and non-delivery of the intended product to the public.

d) Failure by the client to pay for the certified advance payment certificate clearly showed poor project planning. Had the funds been secured before commencement of the project, it would have not suffered cash flow problems which led to other problems. Clients should not award or sign any contracts until confirmation of the availability of funds for that particular project is done.

e) The contractor who at tender stage claimed to be a Grade 1R contractor failed to take up the challenges that were faced and showed that no proper due diligence was done on the contract. This is an institutional weakness on the part of MLG who were the client in this case and NCC who awarded the contractor with a certificate in the highest category. Proper due diligence can help from bringing on board mediocre contractors who only come to waste government's time and resources at the expense of delivering services to the people. Evaluation of contractors needed to be stiffened to avoid problems during project implementation.

5.4 SUMMARY DISCUSSION OF THE FINDINGS

The findings of the study to a large extent agree with Kaliba (2009) who stated that challenges of insufficient initial project analysis, cost and schedule overruns existed in Zambia's public road development sector. Going by the findings of this study, some of these problems were as a result of deficiencies in the project planning cycle.

Project planning was generally very well perceived by most institutions that implemented feeder road projects as was observed during the survey. Almost all implementing institutions considered project planning to be of high importance as evidenced by the supporting structures that were found to be in place. The development of strategic plans by all implementing institutions as well as recruitment of competent professionals was an indication of organizational efforts to support this. Unfortunately, even with the above efforts, it was concluded that most implementing institutions did not develop projects according to their strategic plans. This resulted in uncoordinated initiation of projects which were later unmanageable as was later seen in the issues that were found during the Case Studies. This validates the findings of Jin-Kyung Lee

(2008) whose aim was to establish the causes of project cost overruns in the Korean Social Overhead Capital (SOC) projects. He recommended that line ministries should structure and build a public information and data management system for cataloging data from all phases of the project. This was going to make it easy for decision makers and project initiators to use this information to realistically estimate the cost of new projects and hence effectively manage public investment.

Another significant issue identified during the study was the fact that implementing institutions gave inexperienced engineers within the institutions to design projects without any budget ceilings. This led to designs which were not fit for purpose resulting into increased project costs during implementation. This was validated in Case Study 1 where a project which according to initial plan was budgeted at ZMW 64,866,668.37 later ended up being varied to ZMW 367,114,878.20 because of emerging issues that were never captured at initial stage.

The study further established that feeder road project planning had a huge impact on the implementation of the envisaged projects. For example, the awarding of contracts before confirmation of full availability of funds had negatively affected most projects leading to works stalling and later being terminated. An analysis of projects at MLGRD agreed with the findings as it was revealed that the Ministry between 2019 and 2021 procured over 200 projects with a total contract sum of over 7 Million Kwacha against the budgeted figure of about 2 Million Kwacha. This led to debt accumulation of over 4 Million Kwacha as at the end of 2022 which resulted in the termination of 197 contracts and non-renewal of 42 expired contracts.

Commencement of works contracts without engaging design or supervision consultants at was also identified to be a major challenge that resulted from poor planning. This meant tendering and commencing works without designs which was identified to be a frequent weakness in feeder road project planning. This definitely had an adverse effect on the execution of works. Out of the 240 feeder road contracts that were ongoing at MLGRD in 2021/2022, less than 10 had the services of either a design or supervision consultant and the results were evidenced by the many challenges that were faced during implementation.

The study agreed with Raballand (2013) that there was political interference in the planning of feeder road projects and it was a major contributor to the implementation of unplanned projects which often landed government in unbudgeted commitments. The finding in this study are similar to those of Adek (2016) whose conclusion stated that in as much as politicians were important stakeholders, interfering in the project planning processes which was solely supposed to be managed by experts was a major problem.

The findings of this research have highlighted practices, challenges and opportunities for improvement in the way feeder road construction projects are planned in Zambia.

5.5 CHAPTER SUMMARY

This chapter looked at three case studies all of which were GRZ funded feeder road Projects from Northern, Eastern, and Lusaka Provinces under MLGRD. This gave the researcher an insight into the issues that emerged from the interview and questionnaire survey. It was established that true to the findings of the interviews and questionnaire survey, there were problems in the manner in which feeder road project planning was conducted in Zambia as presented in this study. Considering the proposals raised by the interview, verified by the questionnaire and considered in detail via case studies, the chapter that follows aimed at developing a model that would help in addressing the above established planning problems.

CHAPTER SIX: PROPOSED FEEDER ROAD PROJECT PLANNING MODEL

6.0 INRODUCTION

The previous chapter considered three randomly selected case studies that involved feeder road projects that were government financed under the Ministry of Local Government and Rural Development. All the three cases revealed some planning problems which somehow agreed with the findings of the interviews and questionnaire survey. Therefore, in this chapter, the researcher attempted to develop and present a model which is easy to follow and if implemented would eliminate or at least minimize the occurrence of certain problems in the project planning processes. The model was then subjected to a validation process in order to ascertain its appropriateness as well as identify possible limitations.

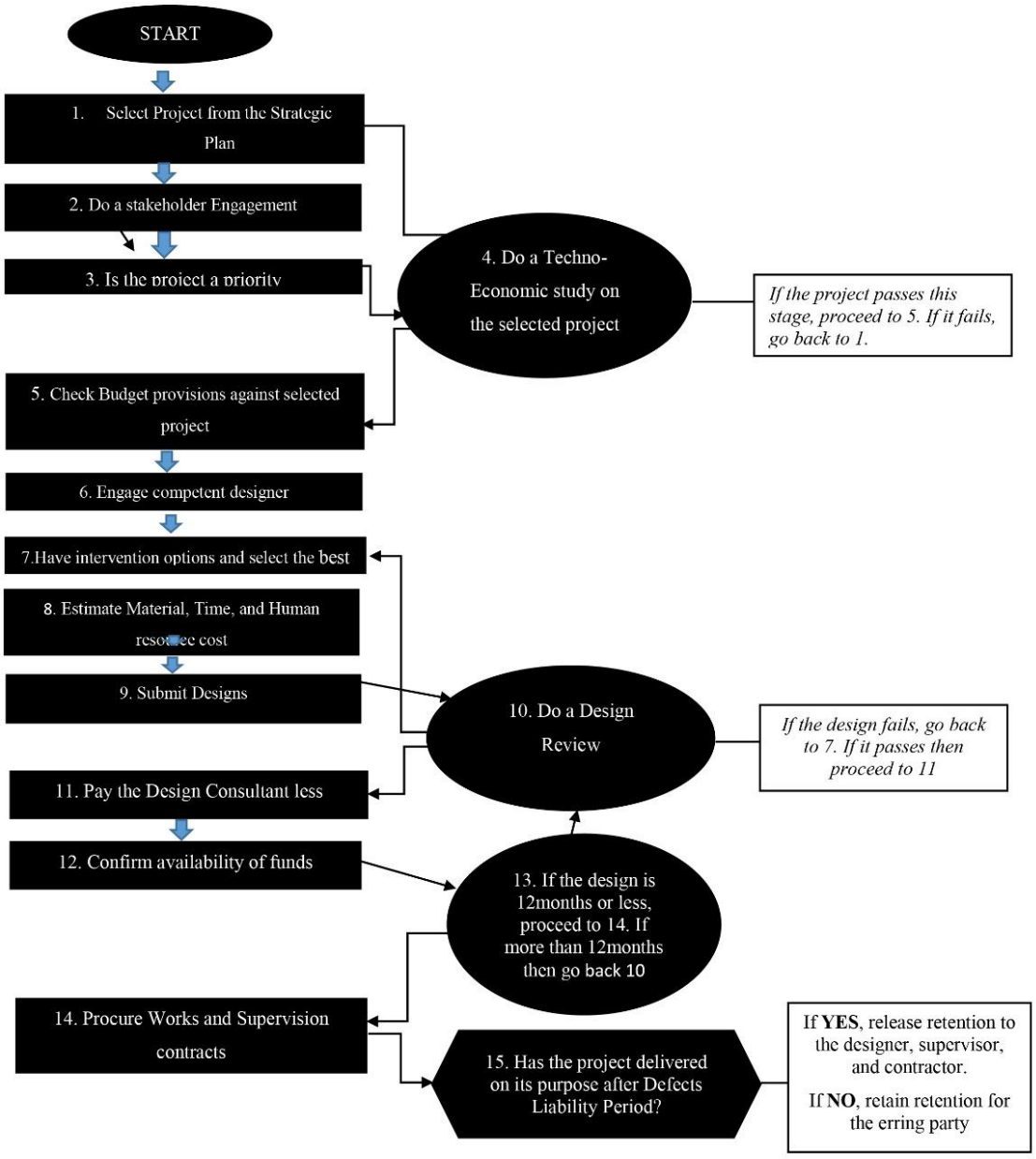

Figure 9: Feeder Road Project Planning Flow Chart

6.1 FEEDER ROAD PLANNING MODEL

The model was developed and presented with the aid of a flow chart as seen in Figure 9 above. The paragraphs below outline in detail the 15 steps that are in the model.

6.1.1 SELECT PROJECT FROM THE STRATEGIC PLAN

The results from the survey showed that more than 75% of the public institutions from which respondents were drawn had strategic plans to direct their operations in terms of road projects implementation. However, adherence to these plans was a challenge as only 13% of the respondents agreed to their institutions adhering to these plans due to external influence. To curb this, the model made verification in the strategic plan as an entry point during the planning of any feeder road project perceived to be a potential target for development. If the project being proposed is not in the strategic plan, then it should not be allowed to proceed any further.

6.1.2 STAKEHOLDER INVOLVEMENT

If the proposed road was found to be in the strategic plan for the implementing institution, the model proposed that the next step was to hold stakeholder engagements at various levels. This was meant to get the affected people and institutions' views and expectations on the proposed project as well to ensure the project is accepted and owned by beneficiaries. It is during such engagements that several other views may be captured as regards expectations from the proposed intervention. This is a very important stage as it rules out individual centered developmental projects that may risk rejection after being handed over. This step was also meant to ensure white elephant projects were avoided.

6.1.3 IS THE PROJECT A PRIORITY?

Considering the input from all relevant stakeholders coupled with the technical and professional judgement, the priority of the proposed road for development can accurately be assessed. This step is very important in ensuring that resources are strictly channeled to high priority projects that are going to make economic sense to the

beneficiaries as well as the nation at large. Priority should be validated by conducting proper social and technical road conditional surveys. Should this stage give a realization that the proposed road is of low priority, then it should be set aside and be replaced by another road from the strategic plan which might be of greater impact but in the same location, Until there is satisfaction that the project is of high priority the team should not move to the next step.

6.1.4 TECHNO ECONOMIC FEASIBILITY STUDY

At this stage, a team of experts needs to visit the site and do a thorough assessment on the possibility of implementing the proposed road project. This stage will also involve detailed economic studies so as to come up with the cost-benefit analysis of the intervention. The experts doing the activities at this stage will have to advise management on the viability of the project so as to avoid wastage of resources.

6.1.5 CHECK BUDGET PROVISION

When the team reaches this stage, management is supposed to provide direction on how much money in the institutional budget could be reserved for the particular project in question and there should be confirmation that these funds will be set aside and locked for the particular undertaking. Ideally, management should wait until designs are provided to have an estimate of the cost of the project but in this model, it is proposed that a sealing be provided to at least give the designers an idea of what budget to work with even as they do the designs. This will lessen projects being abandoned at a stage when money has already been spent on design consultants.

6.1.6 ENGAGE COMPETENT DESIGNER

Having satisfactorily satisfied stages 1 to 5, the team now goes to the next stage that involves engaging a design consultant. This must involve assessing the past performance of various bidding designers before considering them for the award of a design contract. During the questionnaire survey, most of the respondents indicated that one of the major causes of past contract variation was poor or no design at all.

Therefore, the team needs to ensure during this stage that if the designer is engaged, there should be no variations attributed to them during implementation. When doing due diligence, if any bidder with such a record on past projects is found, then such a bidder must not be considered.

6.1.7 CONSIDER INTERVENTION OPTIONS

By this time, the designer would have already been in place. The team then gets to a stage where the designer gets to give them options of various interventions for consideration. It should be very clear what intervention would be best for the project under consideration whether its spot improvement, periodic maintenance, routine maintenance, rehabilitation or construction depending on the level of service as well as importance of the selected road. And seeing that more than 99% of feeder roads in Zambia are of gravel standard, it is at this stage that a decision can be made whether it would be necessary to upgrade the particular road resources allowing. In summary, the selected designer shall explore all the options to arrive at the most viable.

6.1.8 ESTIMATION OF MATERIAL, TIME, AND HUMAN RESOURCE

After selecting the intervention to be used on a particular project, the required materials as well as their cost at the time of implementation are to be measured at this stage. The designers also need to consider scheduling the project at this point so as to arrive at the most optimal duration of the project as well as estimate the type and number of personnel needed during the course of the project in order to come up with the works bidding document that will speak to reality. Whilst all these factors are being calculated, drawings are also being prepared.

6.1.9 SUBMIT DESIGNS

After resource estimation and drawings have been completed, a design report is compiled and submitted to the implementing institution.

6.1.10 DESIGN REVIEW

At this stage, the implementing institution shall constitute a team of experts within the institution to critically look at the submitted design. The people sitting on the design review committee should be made to sign forms that state that they too will equally be held accountable for any possible failure or none performance of the design. If the review brings out a lot of grey areas then it should be sent back to the designers for reconsideration. Only until design review committee is satisfied with the design should the next step be ventured into.

6.1.11 PAY DESIGNER LESS RETENTION

Once the employer through the design review committee has been satisfied with the design, payment shall be made to the designer but less retention as stipulated in the signed contract. There should be an agreed sum of say for example 10% of the total contract sum to be withheld by the client and only paid out after the design has performed as expected within the stated period of time. As discussed earlier, performance shall be evaluated by the rate of variations resulting from design deficiencies as well as suitability of designs after construction. Should variations go beyond the accepted % of the contract value as result of design deficiencies, structural failure within the defects liability period, or any other design related defects then the retention money shall not be released unless the problem in question can be made good by the designer at their own cost.

6.1.12 CONFIRM AVAILABILITY OF FUNDS

Upon completion of the designs and having paid the designer, management shall then through NRFA confirm availability of funds with the Ministry of Finance (MoF) before commencing with the execution of the project. The implementing institutions shall not procure any contracts until such funds are confirmed to be available in writing.

6.1.13 WAS THE DESIGN COMPLETED LESS THAN A YEARS AGO?

This question becomes important when there is a passage of time between approval of the design and confirmation of funds which may interfere with the validity of the design. Without any fixed rule, a full year would be considered to be sufficient time for the design to be valid especially that these are largely gravel roads whose conditions may change with just one passing rainy season. After a year, several factors could have changed including, material costs, site condition and others from the estimates at design. In cases where the designs would be more than 1 year at the time when funds are made available, then the designs have to be subjected to another review. It is much better to incur costs in reviewing and redesigning than going ahead to meet avoidable variations. If the design is not used until it becomes due for another review, then the retention for the initial design needs to be released immediately.

6.1.14 PROCURE WORKS AND SUPERVISION CONTRACTS

If the designs have been found to be within the one-year window and funds are confirmed, then the implementing institution can go ahead to secure works and supervision contracts for the commencement of the works project.

6.1.15 HAS THE PROJECT DELIVERED AFTER DEFECTS?

This stage checks that contractor, designer, and supervisor have provided a product which is of acceptable standard and quality. At this stage, the implementing institution evaluates whether the delivered product conforms to the set objectives. The defects liability period should be decided by the client and incorporated in all the three contracts.

In an event that the final product is of sub-standard as a result of any of the three parties' deficiencies, then the retention money for the erring party would have to be retained by the client. This money would have to be used as both punishment and a contribution to the expenses that will be incurred during the correction of defects.

In the case that the product is fit for purpose and has been delivered to expectations of the client in its entirety after the defect's liability period elapses, then the designer, contractor, and supervisor would have to be paid the money retained.

6.2 VALIDATION OF THE MODEL

By definition, validation can be thought as an assessment of whether a decision or action meets its intended purpose and adds value. In this case, the researcher was interested in establishing if the proposed model stood fit to improve the planning process of feeder road infrastructure projects in Zambia. Muya (1999) states that validation by implication entails that something has undergone an assessment by someone competent to ascertain its validity.

To achieve this, a questionnaire was developed to help the researcher with the process of validating the developed model.

6.2.1 RESPONDENTS

The validation questionnaire was purposively administered to eight professionals sampled from the list of those that participated in the questionnaire survey. The researcher drew the respondents from different institutions in order to have a diverse cadre of scrutinizers as can be seen from the list of respondents attached in the appendices. All the sampled professionals had a minimum qualification of a civil engineering degree and were at senior management level in their various organizations. The respondents had extensive experience which qualified them to give adequate critique to the proposed model.

6.2.2 APPROPRIATENESS

The respondents were asked whether the model addressed design challenges in feeder road project planning. Of the eight, five agreed while the other three disagreed. The general reason given for disagreement among the three that disagreed was that the model never clearly stated exactly how designer performance was going to be assessed. Others suggested that the model should have also made suggestions of legal provisions

that would practically deter designer unprofessionalism. The validation questionnaire further asked the respondents what they thought on the model on the issue road project cash-flow challenges. All the respondents agreed that if the model was followed in its entirety, there would be no cash flow challenges during project implementation.

6.2.3 ADEQUACY

Respondents were asked whether they thought the model would minimize political interference in feeder road project planning. Six out eight respondents disagreed stating that the model did not directly state practical means of managing political interference. The questionnaire also sought to find out if the proposed model was going to efficiently address cost and schedule overrun challenges. Out of the eight respondents, two disagreed stating that the introduction of budget sealing prior to design was not good practice as there were risks of cost overruns due to currency volatility as well as unforeseen conditions on site that would require budgetary adjustments. They stressed the fact that variations were not avoidable even under the best design cases. They were of the view that the model should have proposed a means of incorporating variation orders beyond contingency. On whether the proposed model was sufficient to carter for quality shortfalls, all respondents agreed provided it was coupled with strong Monitoring and Evaluation systems.

6.2.4 USABILITY

There could be some identified deficiencies as indicated above but in terms of usability, all the respondents indicated that the model was easy to use. It was evident from this that the proposed model was appropriate to the challenges that existed in the feeder road project planning cycle and that it was highly usable. However, with a few issues pointed out above like political interference and funding, it was also concluded that the model may not be adequate to address some of the highlighted challenges. Therefore, the model needed further developed to enhance functionality.

6.2.5 SUGGESTIONS AND IMPROVEMENT

(i) Some respondents indicated that there was need to also have in place a deliberate policy that would ensure that no project is developed without a detailed feasibility study.

(ii) Some respondents suggested that the model should give in detail and incorporate a process of designer selection.

(iii) It was suggested that the model should include the development of a project charter which would guide assignment of public officers to projects and ensure responsibility.

(iv) Some professionals suggested that the model should have proposed means of ensuring that politicians do not have contact with implementing institutions' management but rather present all their concerns to ministers who are responsible for giving policy direction to managements of these institutions.

(v) Some respondents suggested that the study in general should have also developed a framework of dealing with the monitoring of the entire planning cycle of feeder road development projects.

(vi) Respondents also suggested that a competent M and E team and system should be in place before the works contracts kicks off to safeguard the funds allocated by ensuring the project is constantly monitored and evaluated for prudent expenditure and desired quality unlike coming to judge the performance at the end.

(vii) Respondents also suggested that the planning team should set out clearly what is meant by the project delivering on its objectives. Project objectives and expectations should be part of the designer, contractor and supervisors' contracts in order to avoid ambiguity and conflict.

6.3 CHAPTER SUMMARY

This chapter explained the proposed model to improve the feeder road project planning processes in Zambia. The model covered aspects like institutional strategic planning, economic analysis, project design and financing planning. It was hoped that the use of the model would minimize challenges encountered in the planning of feeder road projects. In view of the limitations that emerged from the validation process, the researcher admitted that not all the issues could be addressed within his limited time of study.

CHAPTER SEVEN: CONCLUSIONS AND RECOMMENDATIONS

7.0 INTRODUCTION

The previous chapter developed and discussed a feeder road project planning model. The aim of the model was to improve project planning practices in public institutions by proposing a number of phases through which a perceived project must be subjected to prior to its implementation. The model underwent validation by eight professionals involved in planning of public infrastructure.

This chapter presents the conclusion of the study along with recommendations. The chapter also presents the limitations of the research.

7.1 CONCLUSIONS

- From the findings of the research, it was concluded that no adequate planning was done before feeder road projects were implemented.
- Project planning was generally very well perceived by most institutions that implemented feeder road projects but implementation was different from perception as it was marred with external influence.
- From the analysis of projects under the study scope, it was concluded that the feeder road success rate was very low. Projects that were procured between 2016 and 2021 under MLGRD gave a completion rate of 8.3% over a 5-year period.
- The study concluded that in as much as politicians were important stakeholders, interfering in the project planning processes which was solely supposed to be managed by experts was a major problem.

This research has contributed to the body knowledge by highlighting practices, challenges and opportunities for improvement in the way feeder road construction projects are planned in Zambia. It gives a dashboard upon which rational decisions can be drawn by implementing institutions and a basis for further research.

7.2 RECOMMENDATIONS

This study aimed to contribute to the improvement of feeder road projects management in Zambia with focus on pre-implementation planning practices. Therefore, below general and specific recommendations in an effort to achieve this aim.

7.2.1 GENERAL RECOMMENDATIONS

- Feeder road project implementing institutions should ensure that they discipline themselves in sticking to their strategic plans whenever they are developing feeder road projects. This is going to set direction for the future such that there will no longer be external influence as this practice won't find it easy to thrive. This will make project management easy as projects will be implemented in a coordinated manner.
- The ministry responsible for local government should ensure that they involve local structure participation at all the levels of budgeting in order to promote the development of more realistic district plans that further feed into national plans for infrastructure development.
- In cases where an implementing institution does not intend to outsource contract supervision services on a particular project, arrangements should be put in place to have a fully dedicated human resource in house that will be fully on the project before mobilization of the contractor.
- Institutions responsible for Feeder road infrastructure development should invest more in project planning by recruiting competent staff, conducting continuous professional development trainings, stocking modern equipment and rendering financial support.

7.2.2 SPECIFIC RECOMMENDATIONS

- The Government through the Ministry in charge of feeder and township roads should adopt and implement the proposed model so as to enhance the management of feeder road projects in the country.

- The ministry responsible for local government should develop the feeder roads projects planning manual which should adopt the model and distribute it to all Local Authorities and other road sector institutions and ensure that any proposed project is subjected to the model.
- The minister responsible for local government should present the findings on the effect political interference to parliament and cabinet as a means of promoting awareness amongst the politicians.
- Institutions responsible for feeder road infrastructure development should consider reviewing the proposed model in an effort to continuously improve and refine it.

- No contract should be signed by any controlling officer if it doesn't have a written confirmation of availability of funds by MoF. Any controlling officer found wanting in this regard should be prosecuted.

7.2.3 RECOMMENDATIONS FOR FUTURE RESEARCH

- The topic of construction project planning should be reconsidered by looking at every construction sub sector. Looking at the feeder road sub sector brought out unique challenges that may only be faced by this particular sub sector therefore there is need to do detailed studies on all sub sectors and develop models that will answer to each sub sector's unique challenges.
- The model should be explored further to incorporate the various concerns identified during validation and go in detail on those that need further probe.
- A separate study to look at implementation of feeder roads and their construction methods needs to be done if we are to have a holistic picture of the problems surrounding this very important sub sector.

7.3 LIMITATIONS OF THE STUDY

This study focused on feeder road projects being implemented in Zambia only and therefore the findings must be used with careful consideration. The study also focused on feeder road projects only whose impact and use differs from other road classes. The

study only considered contracts implemented in the period extending from the year 2011 to 2021. However, most of the findings apply to the years beyond the stated period.

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APPENDIX I: INTERVIEW GUIDE QUESTIONS

TITLE: EFFECTS OF PLANNING ON THE SUCCESSFUL IMPLEMENTATION OF FEEDER ROAD PROJECTS IN ZAMBIA

This interview guide contains a set of questions to be used as a guide in a semi-structured interview with some selected professionals in the Zambian feeder road construction industry before developing the questionnaire. The purpose of this interview is to have a general view of the project planning scenario in the feeder road sector from experienced professionals so as to identify issues that need to be part of the data collection tool (questionnaire) for this research. The interviewer shall whenever necessary be free to divert from the outlined questions in order to get in-depth information while ensuring that the flow of questions is maintained in the stated categories as well as making sure that each one of the questions below is addressed.

1.0 GENERAL INFORMATION

1.1. What is your profession?

……

1.2. What are your academic qualifications?

……

1.3. How long have you worked in the feeder road construction industry?

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1.4. Would you tell me what your organization deals in?

……

2.0 QUESTIONS ABOUT PROJECT PLANNING INCORPORATION

2.1. Describe to me your general perception about feeder roads project planning in Zambia?

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2.2. What can you say about the level of incorporation of project planning in Zambia's feeder road projects?

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3.0 QUESTIONS ABOUT PLANNING APPROACHES ADOPTED BY INSTITUTIONS THAT ARE RESPONSIBLE FOR THE IMPLEMENTATION OF FEEDER ROADS

3.1. What do you think are the various approaches to feeder roads project planning?

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3.2. What approaches are adopted by institutions that implement feeder road projects in Zambia?

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3.3. Do you think the adopted approaches are addressing challenges that are generally faced in the feeder roads sector?

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3.4. Who is mainly involved in the planning of feeder road projects?

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4.0 QUESTIONS ABOUT SIGNAIFICANCE OF PROJECT PLANNING

4.1. What is the importance of project planning particularly in the feeder roads sector?

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4.2. What do you think are potential problems that arise from poor project planning in the feeder road sector?

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4.3. How are feeder road projects normally initiated in Zambia?

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4.4. How are options explored before getting into detailed planning when settling on a project?

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4.5. What can you say about procurement of feeder roads in connection to project planning?

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5.0 QUESTIONS ON THE RELATIONSHIPS BETWEEN PROJECTPLANNING AND FEEDER ROAD INFRASTRUCTURE BENEFITS

5.1. What are the relationships between feeder roads project planning and expected benefits?

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5.2. From your experience how have various project plans impacted the implementation processes as well as the final outcome?

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5.3. What can you say about variation orders in connection with project planning?

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5.4. What specific examples can you cite on the relationship between project planning in the feeder roads sector and benefit derivation.

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6.0 QUESTIONS ABOUT POLITICIAN PARTICIPATION IN FEEDER ROADS PROJECT

PLANNING

6.1. From your experience what has been the role of politicians in project planning?

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……

6.2. What can you say about political interference in the feeder roads project planning?

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7.0 QUESTIONS ABOUT IMPROVEMENTS

7.1. What are the possible solutions to the identified problems in the sector?

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7.2. How can we improve project planning in Zambia's feeder road projects?

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7.3. Do you have anything else to say?

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END OF INTERVIEW

APPENDIX II: SURVEY QUESTIONNAIRE

THE UNIVERSITY OF ZAMBIA
School of Engineering
Department of Civil and Environmental Engineering

Dear respondent

REF: EFFECTS OF PLANNING ON THE SUCCESSFUL IMPLEMENTATION OF FEEDER ROAD PROJECTS IN ZAMBIA

I am a Master of Engineering student in Construction Management at the University of Zambia conducting a research under the above stated title. The main aim of this research is to establish whether the depth and extent of planning for the implementation of feeder/rural roads projects in Zambia has an effect on their level of success as a means of minimizing construction challenges.

You have been identified as a potential respondent to this questionnaire as a key stakeholder in the feeder roads construction sector. Please find attached to this letter a questionnaire, based on your professional experience and understanding. This research will involve your participation by way of answering the questionnaire that has been prepared and it is expected to take you not more than half an hour to complete.

I would like to assure you that the information provided shall be used for the sole purpose of this research which is purely academic. The information provided shall be treated with strict confidentiality. Therefore, you are advised NOT to indicate your personal or institution details.

Yours faithfully

Changala Kanchule
Cell: +260-977/966-496494
Email: changala.k@gmail.com

SECTION A: GENERAL INFORMATION

This section is about background information, kindly tick (√) appropriately.

1. Which one best describes your profession?

a. Physical planner	
b. Social-economic planner	
c. Civil engineer	
d. Quantity surveyor	
e. Other (specify)	

2. How many years have you been working in the roads sector?

a. 0-5 years	
b. 5-10 years	
c. 11-15 years	
d. 16-20 years	
e. > 20 years	

3. What is your highest academic qualification?

a. Grade 12	
b. Certificate	
c. Diploma	
d. Bachelor's Degree	
e. Master's Degree	
f. PhD	

SECTION B: ORGANISATIONAL STRUCTURE

This section aims to collect general information about the structure of the planning unit/department in your organization. Kindly tick (√) appropriately.

1. Indicate the type of institution you work at

a. Government/ Government Agency	
b. Consultant	
c. Contractor	
d. Academic	
e. Other	

2. Does your organization have a functional planning unit/department? If the answer is NO then proceed to 4.

Yes		No	

3. How adequately staffed is the planning unit/department?

Adequately		Understaffed		No Staff		Not Sure	

4. From your interaction, how do you rate the officers' knowledge in project management?

Knowledgeable		Not sure		No Knowledge	

5. Do you have a strategic plan for your organization?

Yes		Not Sure		No	

6. Who prepares the strategic plan for your organization?

Snr. Management		Management		Consultant		Individual		Not Sure	

7. Is the strategic plan reviewed with staff?

Yes		Partly		Not Sure		No	

8. Is the strategic plan adhered to during implementation?

Yes		Partly		Not Sure		No	

9. How is project planning perceived in your organization?

Very Important		Important		Not Important		Not Sure	

SECTION C: PROJECT CYCLE

1. PROJECT INITIATION

This section intends to gather information about project initiation as part of the planning process. Please tick (√) appropriately.

On the scale **1=Strongly disagree 2= Disagree 3= Not sure 4=Agree 5=Strongly agree;**

how would you rate the following statements?

	1	2	3	4	5
1.1 Projects are initiated by politicians and top executives					
1.2 There is normally stakeholder involvement in project initiation.					
1.3 Some projects are initiated due to personal motives e.g. political popularity					
1.4 Politicians are important stakeholders in project initiation					
1.5 There is prioritization in the way projects are initiated					
1.6 Projects are initiated in conformity with the strategic plans.					
1.7 Project activities in the Road Sector Annual Work Plans are developed in line with the approved strategic plans					

2 PROJECT DESIGN

This section presents questions about project design according to your experience, please tick (√) in the appropriate provided box.

On the scale **1=Strongly disagree 2= Disagree 3= Not sure 4=Agree 5=Strongly agree;** how would you rate the following statements?

	1	2	3	4	5
2.1 Options for conducting a project are fully explored during project planning and design.					
2.2 Feasibility studies are thoroughly conducted prior to detailed designs					
2.3 Techno economic analysis (TEA) are adequately conducted during design.					
2.4 The selected options are normally backed by technical and economic justification					
2.5 Detailed designs are normally done before implementation					
2.6 Cost estimates are accurately done during design.					
2.7 Material estimates are accurately done by the designers					
2.8 Designers have in the past advised on the non-viability of some projects.					
2.9 The client has in the past stopped non-viable projects after advice					
2.10 Designers propose appropriate fit for purpose interventions					
2.11 Sometimes designers replicate designs from other projects					
2.12 Designers are lead causers of contract variations.					
2.13 Designs are adequately reviewed prior to construction.					
2.14 Designer is at times engaged to review and supervise same contract					

3 CONTRACT PROCUREMENT

This section is about feeder road projects contract procurement procedures. Please tick (√) appropriately.

On the scale **1=Strongly disagree 2= Disagree 3= Not sure 4=Agree 5=Strongly agree;**

how would you rate the following statements?

	1	2	3	4	5
3.1 Consultants are engaged on most of the feeder road works contracts.					
3.2 Most projects are procured according to the procurement plan					
3.3 There is undue external influence on the procurement process.					
3.4 Contracts are only procured / awarded after confirmation of the availability of funds					
3.5 As part of evaluation, rates analysis is conducted in detail.					
3.6 Contractual clauses used in feeder road contracts are adequate for smooth implementation of projects					
3.7 The procurement processes are often unduly delayed					

3.8 The delays in procurement affect overall project implementation					
3.9 The procurement criteria often don't ask the relevant things that will bring out the best contractors/consultants to do the job					

4 PERCEPTIONS IN FEEDER ROAD PROJECTS

Under this section the research gathers information about perceptions in feeder road construction project planning. Kindly tick (√) appropriately.
On the scale **1=Strongly disagree 2= Disagree 3= Not sure 4=Agree 5=Strongly agree;**
how would you rate the following statements?

	1	2	3	4	5
4.1 Sometimes costs are deliberately and strategically underestimated when planning for the projects whilst overestimating benefits so as to convince sponsors (deception)					
4.2 Sometimes project planners are over optimistic about project success thereby overstating the benefit to cost ratio (delusion).					
4.3 Engineer's estimate is accurately determined					
4.4 Initial conditional surveys submitted for planning purposes are usually not a reflection of what is on the ground					

5 POLITICAL INTERFERENCE

This section intends to gather information about political interference in feeder roads project planning. Please tick (√) appropriately.
On the scale **1=Strongly disagree 2= Disagree 3= Not sure 4=Agree 5=Strongly agree;**
how would you rate the following statements?

	1	2	3	4	5
5.1 Politicians make pronouncements about road development without consulting those responsible for project planning.					
5.2 Implementers sometimes yield to political pronouncements and deviate from the plans.					
5.3 Executives appointed by politicians discharge their duties without political interference					
5.4 There is no political interference in the planning of feeder road projects.					
5.5 Politicians influence the selection of feeder roads to be worked on?					

6 PROJECT IMPLEMENATION

This section explores how project planning affects implementation. Please tick (√) appropriately.

On the scale **1=Strongly disagree 2= Disagree 3= Not sure 4=Agree 5=Strongly agree;**

how would you rate the following statements?

	1	2	3	4	5
6.1 Improper project planning has resulted in delayed project implementation					
6.2 Lack of technical designs has resulted in increased project costs due to variations.					
6.3Tilting to political influence has resulted in developing non-priority roads					
6.4 Awarding contracts without confirming availability of funds contributes to cash flow problems					
6.5There are usually supervision funds for client supervised contracts					
6.6 Uncoordinated plans have delayed project implementation in the past.					
6.7 Improperly defined project deliverables result in avoidable scope creep.					
6.8 Inadequate implementation of social and environmental safeguards on feeder road projects has resulted in damage to the environment and its inhabitants					

7 PROJECT PLANNING IMPROVEMENT PROPOSALS

This section presents possible interventions in improving project planning. Please tick (√) appropriately.

On the scale **1=Strongly disagree 2= Disagree 3= Not sure 4=Agree 5=Strongly agree;**

how would you rate the following statements?

	1	2	3	4	5
7.1 Project planners should have some basic knowledge about project management.					
7.2 Serious penalty clauses should be introduced in feeder roads contracts to encourage seriousness					
7.4 No contract should commence until National Road Fund confirms availability of funds.					
7.5 Executives of roads project implementation agencies should not be appointed by politicians					
7.6 Politicians cited to be influencing the procurement processes should be reported to law enforcement for possible prosecution					
7.6 Techno economic studies should be the main basis for determining the intervention for road development.					
7.7 The rate of contract variation should be part of the tools for					

assessing project designer performance.					
7.8 Past performance in works of similar nature should be used for contractor/consultant selection.					
7.9 Engineering institution of Zambia and other relevant institutions to revoke licenses of poorly performing contractors/consultants					
7.10 Poor performing contractors to be barred from participating in future contracts					

THANK YOU
THE END

APPENDIX III: DETAILS OF THEMES, SUBTHEMES AND CODES

Theme

Organizational Structure	Project Initiation	Project Design	Contract Procurement	Perception of FR Projects	Political Interference	Project Implementation	Project Planning Improvement Proposals

Sub-theme

Types of Organization	Planning Dept/Units	Strategic Plans	Prioritization of Projects	Interference especially by politicians	Scope Definition	Cost Estimates	Material Estimates	Time Estimates	Procurement of Consultancy Services	Perception of Works	Evaluation Bids	Deception & Delusion	Political Interference	Institutional Arrangements	Contractor/ Consultant Competence	Qualifications of Officers	Availability of Funds

Code

GRZ	Presence	Presence	Initiated by politician	Project Outcome	Studies Done	Detailed Studies	Detailed Studies	Detailed Studies	Engagement of Design Consultants	Procurement Target	Delayed Procurement	Interest in Particular Projects	Projects Initiated by Politicians	Project Planning Extents	Contractor/ Consultant Lack Experience	Qualified Experts to be Involved in Planning	Pre-Project Planning
Consultant	Staffing Levels	Preparation	Initiated by politician	Politically Driven Prioritization	Project Cost & Time Estimates	Project Cost Time Estimates	Optimal Intervention	Project Cost & Time Estimates	Engagement of Supervision Consultants	Indigenous Contractors	Delayed Procurement	Non-Realistic Cost Benefit Analysis	Allegiance of Top Executives	Lack of Technician Designs	Regulation & Punishment	Personnel Involved in Planning to have CPD	Regulation & Punishment
Contractor	Qualifications of Personnel	Review	Top Executives Allegiance	Stakeholder Consultation	Inappropriate Designs	Explanation of Options	Feasibility Studies	Feasibility Studies		Delays in Procurements	External Interference	Initial Studies Not Done Accurately	Unstable Management Personnel	Political interference			
		Adherence	Management Personnel Instability	Priority Lost	AWP vs Strategic Plans	Vos Arising from Inadequate Pre-studies	Inexperienced Designers	Vos Arising from Inadequate Planning		External Interference	Evaluation Criteria			Cash Flow Problems			
							Vos Arising from Inadequate Planning			Budgets before Procurement				Lack of Funding to institutions			
										Works Contracts Procurement withou				Undefined Projects Deliverables			

APPENDIX IV: MODEL VALIDATION QUESTIONNAIRE

THE UNIVERSITY OF ZAMBIA

School of Engineering

Department of Civil and Environmental Engineering

Dear respondent

RE: VALIDATION OF THE FEEDER ROAD PROJECT PLANNING MODEL

This questionnaire seeks to conclude the research on the planning of feeder road construction project in which you participated by completing a survey questionnaire in April/May, 2022. I am therefore writing to request for your participation in the validation of the proposed model of the planning cycle. The validation process will help in assessing the appropriateness, adequacy and usability of the proposed feeder road project planning model.

Kindly find attached to this letter a model and brief questionnaire which will take about fifteen minutes of your time to complete. I would be grateful if you studied the model before responding to the questionnaire. I would like to assure you that the information provided shall be used for the sole purpose of this research which is purely academic and shall be treated with strict confidentiality.

Yours faithfully,

Changala Kanchule

Cell: 0977496494

Email: changala.k@gmail.com

MODEL VALIDATION QUESTIONNAIRE

This questionnaire is meant for the validation of the appropriateness, adequacy and usability of the proposed feeder road project planning model. Kindly study the attached model and respond to the questionnaire. Kindly state YES or NO in the provided spaces and where necessary tick (√) appropriately.

1. Which one best describes your profession?

Physical planner

Socio-economic planner

Civil engineer

Statistician Other

2. Do you think this model addresses design challenges in feeder road project planning?

If NO state the reasons

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3. Do you think model addresses the issue of political interference in feeder road project planning?

If NO state the reasons

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4. Does this model aim at addressing project cash-flow challenges in feeder road projects?

If NO state the reasons

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5. Do you think this model would efficiently address the challenges of cost and schedule overrun in feeder road projects?

If NO state reasons

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6. Is the proposed model sufficient to carter for quality shortfalls in feeder road projects?

If NO state reasons

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7. Do you think the model can be used in the planning feeder road projects in Zambia?

If NO state reasons

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8. Do you consider the model user friendly?

If NO state reasons

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9. Kindly propose your improvements to the model.

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Name……Signature……Organization……

APPENDIX V: VALIDATION QUESTIONNAIRE RESPONDENTS

S/N	Position	Organization
1	Director-Rural Development	MLGRD
2	Assistant Director- RD	MLGRD
3	Principal Engineer Roads- RD	MLGRD
4	Director- M & E	NRFA
5	Council Secretary	Gwembe Town Council
6	Senior Manager- Technical Audit	RDA
7	Provincial Principal Engineer- Central Province	MLGRD
8	Director of Works	Serenje Town Council

APPENDIX VI: ETHICAL CLEARANCE

THE UNIVERSITY OF ZAMBIA
DIRECTORATE OF RESEARCH AND GRADUATE STUDIES

Great East Road Campus | P.O. Box 32379 | Lusaka 10101 | **Tel:** +260-290 258/291 777
Fax: (+260) 211 290 258/253 952 | **Email:** director.drgs@unza.zm | **Website:** www.unza.zm

APPROVAL OF STUDY

IORG No. 0005376
HSSREC IRB No. 00006465

19th August, 2022

REF NO. NASREC-2022- JUL - 007

Mr. Changala Kancule,
The University of Zambia
School of Engineering
Department of Civil Environmental Engineering
P.O. Box 32379
LUSAKA

Dear Mr Kachule,

RE: "EFFECTS OF PLANNING ON THE SUCCESSFUL IMPLEMENTATION OF FEEDER ROAD PROJECTS IN ZAMBIA"

Reference is made to your protocol dated as captioned above. NASREC resolved to approve this study and your participation as Principal Investigator for a period of one year.

REVIEW TYPE	ORDINARY REVIEW	APPROVAL NO. NASREC-2022—JUL - 007
Approval and Expiry Date	Approval Date: 19th August, 2022	Expiry Date: 18th August, 2023
Protocol Version and Date	Version - Nil.	18th August, 2023
Information Sheet, Consent Forms and Dates	• English.	To be provided
Consent form ID and Date	• Version - Nil	To be provided
Recruitment Materials	• Nil	Nil
Other Study Documents	• Interview Guide.	

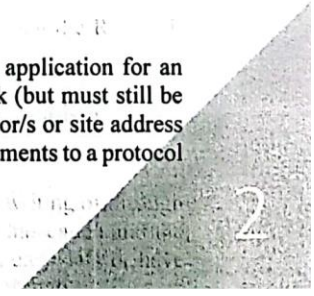
Specific conditions will apply to this approval;

As Principal Investigator it is your responsibility to ensure that the contents of this letter are adhered to. If these are not adhered to, the approval may be suspended. Should the study be suspended, study

sponsors and other regulatory authorities will be informed.

Conditions of Approval

- No participant may be involved in any study procedure prior to the study approval or after the expiration date.
- All unanticipated or Serious Adverse Events (SAEs) must be reported to NASREC within 5 days.
- All protocol modifications must be approved by NASREC prior to implementation unless they are intended to reduce risk (but must still be reported for approval). Modifications will include any change of investigator/s or site address.
- All protocol deviations must be reported to NASREC within 5 working days.
- All recruitment materials must be approved by NASREC prior to being used.
- Principal investigators are responsible for initiating Continuing Review proceedings. NASREC will only approve a study for a period of 12 months.
- It is the responsibility of the PI to renew his/her ethics approval through a renewal application to NASREC.
- Where the PI desires to extend the study after expiry of the study period, documents for study extension must be received by NASREC at least 30 days before the expiry date. This is for the purpose of facilitating the review process. Documents received within 30 days after expiry will be labelled "late submissions" and will incur a penalty fee of K500.00. No study shall be renewed whose documents are submitted for renewal 30 days after expiry of the certificate.
- Every 6 (six) months a progress report form supplied by The University of Zambia Natural and Applied Sciences Research Ethics Committee as an IRB must be filled in and submitted to us. There is a penalty of K500.00 for failure to submit the report.
- When closing a project, the PI is responsible for notifying, in writing or using the Research Ethics and Management Online (REMO),both NASREC
- and the National Health Research Authority (NHRA) when ethics certification is no longer required for a project.
- In order to close an approved study, a Closing Report must be submitted in writing or through the REMO system. A Closing Report should be filed when data collection has ended and the study team will no longer be using human participants or animals or secondary data or have any direct or indirect contact with the research participants or animals for the study.
- Filing a closing report (rather than just letting your approval lapse) is important as it assists NASREC in efficiently tracking and reporting on projects. Note that some funding agencies and sponsors require a notice of closure from the IRB which had approved the study and can only be generated after the Closing Report has been filed.
- A reprint of this letter shall be done at a fee.
- All protocol modifications must be approved by NASREC by way of an application for an amendment prior to implementation unless they are intended to reduce risk (but must still be reported for approval). Modifications will include any change of investigator/s or site address or methodology and methods. Many modifications entail minimal risk adjustments to a protocol



and/or consent form and can be made on an Expedited basis (via the IRB Chair). Some examples are: format changes, correcting spelling errors, adding key personnel, minor changes to questionnaires, recruiting and changes, and so forth. Other, more substantive changes, especially those that may alter the risk-benefit ratio, may require Full Board review. In all cases, except where noted above regarding subject safety, any changes to any protocol document or procedure must first be approved by NASREC before they can be implemented.

Should you have any questions regarding anything indicated in this letter, please do not hesitate to get in touch with us at the above indicated address.

On behalf of NASREC, we would like to wish you all the success as you carry out your study.

Yours faithfully,

Dr. M. Kaonda

VICECHAIRPERSON
THE UNIVERSITY OF ZAMBIA NATURAL AND APPLIED SCIENCES RESEARCH ETHICS COMMITTEE - IRB

cc: Director, Directorate of Research and Graduate Studies
Assistant Director (Research), Directorate of Research and Graduate Studies
Assistant Registrar (Research), Directorate of Research and Graduate Studies