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Examining Causes of Project Completion Delay- Case Study of Road Construction Projects in Lusaka

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Abstract: The objective of this research is to identify the factors that lead to delays in completing road construction projects in Lusaka, Zambia. A survey was conducted to collect data from a sample population of 50 people which consisted of 20 RDA (Road Development Agency) staff members, 30 construction companies and 10 staff members from the Ministry of Infrastructure and Transport. The study has three main objectives: Identify the causes of delays in road construction projects; Evaluate how delay impacts upon the cost of a project, and Assess how inadequate funding for projects had impacted upon road construction.Project Managers play a major role in the successful execution of road construction projects. Consequently, road project managers need to be trained to develop the requisite skill sets needed to complete their road projects on time. There are a number of key reasons as to why road construction projects are delayed. Among those are: 1) Lack of project planning; 2) Poor management of road projects; 3) Insufficient numbers of qualified construction labourers; 4) Inattention to environmental and social issues during project preparation; 5) Utility relocation problems; and 6) Legal disputes with landowners or other adjacent landowners.The cost implications of delay for road construction projects vary depending upon the circumstances. 77.5% of those responding said that delays typically reduce project costs however this can be due to lower cost of labour; better pricing and negotiating on the purchase of construction materials; the ability to improve project designs and/or construction methods and techniques. 90%t of respondents reported that delays increase the duration of the completion of road contracting projects in Zambia & therefore, emphasized some challenges and difficulties which delays exacerbate. Respondent's suggestions included factors contributing to road construction project delays: weather conditions & emergency events; lack of funding; changes in the design of a contracted project; logistical challenges & unforeseen circumstances. Overall there were several recommendations based upon the analysis conducted. Moreover, it was suggested that strategies to address minimizing delays or minimizing associated costs as well as implementing transparent and efficient financial processes be considered as a possible solutions.

Keywords: *Causes, Project Completion Delays and Road Construction.*

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I. INTRODUCTION

➢ *Background*

Many road construction projects in Zambia suffer from the same problem: delay in project completion, therefore incurring additional costs, increased safety risks and environmental degradation. By understanding the factors causing development delays, Project Managers (PM) and Stakeholders can identify areas for improvement and develop ways of preventing or reducing development delays. A study performed by Mwale and Munyinda (2016) reported that the three most common reasons for completion delays on road construction projects in Zambia are poor planning and design, insufficient financial resources and poor PM. According to their study, poor planning and design were the most significant contributors to delays, with 37%, followed by inadequate funding at 29% and poor PM at 24%.

A study conducted in Zambia concerning the root causes of delay on construction of roads, stated that the largest cause of delays was poor planning and design, which accounted for roughly 36.8% of all delays. It was also determined that inadequate funding created 27.6% of all delays, while poor management contributed 21.4% towards total duration of construction projects. Additionally, another research carried out by Chibwe et al. (2019) also indicated that the biggest problems associated with implementing road infrastructures projects in Zambia will include inadequate

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funding along with poor design and planning. If there was sufficient funding provided for projects within Zambia, the likelihood of delays resulting from inadequate funding, shortage of materials/equipments, and so forth would greatly reduce.

According to research conducted by Tembo (2016), lack of communication and coordination among all stakeholders contributes to project delay. This research also noted that many project managers did not have sufficient skill or experience managing their resources effectively which then adds another layer of complication when managing road construction projects.

The limitations of planning and design were also identified by Kaseva (2020), who indicated that they lead to delays in road construction projects. While these studies demonstrate multiple reasons why delays occur; it is evident that multiple stakeholders play a part in reducing and preventing both productivity losses and delays through their roles as Project Managers, Engineers or Owners. In addition, both studies indicate that a coordinated effort between all stakeholders involved; including Government Agencies, General Contractors and Consultants is necessary to improve the status of construction management within Zambia. To accomplish this goal there should be a greater emphasis on the implementation of appropriate project management tools and systems.

Additionally, there are other reasons why road construction projects in Zambia may not be completed on time, including weather related issues, difficulties acquiring land, and delays in obtaining permits or approvals. The World Bank (2016) reported that approximately 20% of all projects experience weather related delays in Zambia.

➢ *Statement of the Problem*

The intent of this study is on causes of delays in completing of projects. An analysis of selected road construction projects within the Lusaka Region based on economic factors impacting the development of Infrastructure in Zambia. Developing the Infrastructure is an important part of Zambia's future economic development and through a number of road construction projects; Zambia's Government has made significant efforts toward developing its Infrastructure. However, the completion of these projects has been delayed, which has resulted in additional cost to the nation. The causes of delays in completing of these projects are numerous and depend on the conditions or characteristics of each respective project. A number of common causes for delays that occur during ongoing project development are: Substantially under-resourced design and construction phases; Poor overall management of a project (e.g., lack of capability of the project manager); Change Orders to the Contract; Weather condition such as rain; and/or Length of time it takes to complete the Approval process. Mwewa and Sakala (2018) published a study to determine the factors that cause delays in completing the Construction of Projects in Zambia. They found that delays to the Projects were due to a number of different factors including: substantially under-resourced design and construction phases; Poor project management practices; Lack of Skilled Labor; and delays in procuring materials. They identified the lack of a clear and effective means of communication among all Project Stakeholders as a significant cause of delays to the Projects. The study showed that poor communication among stakeholders, including project owners, contractors, and consultants, led to misunderstandings, conflicts, and delays in decision-making, which ultimately impacted project timelines.

➢ *General Objectives*

The general objective of the study is to Examining causes of project completion delay- case study of Road construction projects in Lusaka.

- *Specific Objectives*

✓ To identify the causes of delays in road construction projects
✓ To analyze the effects of delays on the cost of road construction projects
✓ To assess the effect of inadequate project funding on road construction projects

➢ *Research Question*

- What are their causes of delays in road construction projects in Lusaka?
- What are the effects of delays on the cost of road construction projects in Lusaka?
- What is the effect of inadequate project funding on project completion delay in road construction projects in Lusaka?

➢ *Theoretical Framework*

The authors (Cooper and Schindler) define a "theoretical framework" as the researcher's perception and understanding of the world through a certain lens. Since this research involves the relationship between clients and employees, "Agency Theory" and several theories on Capabilities will also be included within the theoretical framework of this study. The organizational structure of an owner or owner's organization relates to the delays experienced by the owner or owner's organization that lead to variations in project delivery and the inability to provide on-time site information, extension of time, escalation of cost due to inflation, delay in payments of interim certificates, delayed decision-making, delayed site handovers, lack of pre-project planning, excessive bureaucracy, and poor planning with regard to the project.

Research has shown that poor decision making and excessive bureaucracy within an owner's organization are some of the most frequent types of delays in all projects. As per Desai et al (2013), organizational delays are those caused/influenced by the project-dedicated organization or owner. They classify three types of organizational delays: poor risk management and supervision; slow decision-making; and final work variation, as the major causes of delay in project delivery due to organizational delays.

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II. LITERATURE REVIEW

Construction delays continue to be an issue in many countries even after implementing modern management techniques. Research from 22 different countries was analyzed on the causes of construction delays. Based on his research of delayed construction projects in Kenya, Talukhaba (1999) identified the following primary cause of delays: payments from clients; architect's design and construction-related decisions; client-related decisions; presence of rock; and excess underground water. In their investigation of delayed construction in Saudi Arabia, Assaf, Al-Khalil, and Al-Hazmi (1995) found that the top five causes of delays were: slow response time on approved shop drawing requests; contractor payment backlog issues that were related to cash-flow issues at the time of construction; construction design changes; conflicts between the work schedules of different contractors; and excessive bureaucracy and indecision from the owners' organization(s). Mansfield, Ugwu, and Doran (1994) conducted an investigation in Nigeria concerning causes of delay and cost overruns in the construction industry, and their results showed that financing and payment of completed work, poor contract management due to a lack of communication between parties, limited availability of building material(s), and improper planning contributed to delayed construction completion and cost overruns.

In Sweis (2013), the investigation of factors responsible for the delay of time overruns when dealing with public construction projects within Jordan was undertaken. The findings indicate that five major contributors to project delay can be identified; Excessive demand from the client for changes to be made; Poor project planning and scheduling by the Contractor; Mistakes and ambiguities within project drawings and project specifications; Slow responses from the client to the Contractor's requests and Poor Qualifications of individuals and companies engaged as Consultants, Engineers and Staff engaged on the Project.

Baloyi and Bekker (2011) studied in South Africa the reasons that cause delays and overruns in time and cost for construction projects. Baloyi and Bekker (2011) show that the primary factors impacting project cost overruns included incomplete drawings; design modifications; delays indecision by clients; and a lack of skilled workers. Study by Baloyi and Bekker (2011) on time overruns in South Africa and building construction projects. Baloyi and Bekker (2011) identify the principal reason for time overruns in South Africa were due to incomplete drawings; design modifications; long time from the client to reach a decision about the project; delays in issuing instructions; and ontractors. Both studies confirm that in South Africa and Malaysia, financial challenges and delayed construction processes are leading causes of delays in building project completion. While construction projects have had a beneficial effect on meeting the goals of both social and economic development in countries across the globe, construction projects are continually impacted by the problems of delays. Delay is the most documented and significant issue facing construction projects on a worldwide basis; delays have numerous negative impacts on the performance of construction projects and consequently on the economy of the country as a whole. For the past two decades, research has been conducted globally on delays associated with time. Most of the work has focused on identifying the causes of delays. On the other hand, a limited number of studies have addressed the effects associated with delay, while other studies have attempted to examine both aspects of the delay problem simultaneously. In 2002, Aibinu & Jagboro (2011) conducted a survey to identify and quantify the effects related to delay in construction projects in Nigeria. Among the main impacts of delay in Nigerian construction projects were time and cost overruns, litigation, arbitration, and total abandonment of the construction project. In addition, a questionnaire survey was performed to identify the types of delay factors and their effect on construction projects in Malaysia.

Poor road design is another major factor affecting Zambia's overall poor road construction project outcomes. Poor road designs are generally the result of a lack of technical expertise, low funding levels, and a failure to take into account the flow of traffic, safety, and current standards. An example of this is that many of Zambia's roads have no drained systems, which leads to flooding and soil erosion and damages the road or causes accidents above and beyond the cost of repairs. Poor design also results in many roads being built width wise too narrowly and the pavement thickness is not sufficient for the weight of traffic; these conditions can lead to frequent road repairs which increase maintenance costs.

Poor road designs also result in low safety standards which cause high fatalities. Many roads in Zambia are built without safety features (traffic lights, pedestrian crossings, speed limit signs, et cetera) and do not provide adequate space between cars and pedestrians; in combination, this raises the chance of accidents occurring. Additionally, not considering safety standards while designing roads leads to poor sight distance, poorly marked roads, and not enough light; all of these are factors in reduced visibility and increased chances of accidents. Due to the importance of proper planning and design for successful completion of any project as described above, any road construction project in Zambia without proper planning and design may face long-term consequences that will ultimately have negative economic implications.

Furthermore, the lack of adequate planning and designing a road construction project in Zambia can increase the chances of damage done to vehicles that utilize those roads and ultimately increase overall operating costs for these vehicles. A recent report published by the World Bank shows that poor roads account for an estimated 6.7% of the country's GDP annually, and increases in vehicle operating expenses and accidents caused by poor road conditions have caused significant losses to the economy of Zambia. Ultimately, poor roads not only result in financial burdens on the government but can also create increased costs to local communities through increased medical costs resulting from vehicle crashes and increased risks to personal safety through

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increased accidents and fatalities caused by poor road conditions.

Finally, the lack of adequate road design and planning will also create conflict within local communities regarding their use of roadways that are built without proper planning and/or design.

III. MATHODOLOGY

➢ *Research Methodology*

Kothari, (2004), defines a 'Research Design' as the process of studying how to gather and analyze data in a way that will allow you to combine economic considerations with the purpose of the Study. The nature of the Objective of the study is generally Descriptive Research, which aims to depict characteristics of a specific Individual or Situation and/or a Group. It can also depict how frequently an event occurs.

➢ *Target Population*

The Target Population of the study includes Staff of the Road Development Agency (RDA), Construction Companies, and the Ministry of Infrastructure within the Lusaka district. This was defined as a Fixed Population as all potential Study Participants are known. The Target population will consist of 20 RDA Staff Members, 30 Construction Companies, and 10 Ministry of Infrastructure Staff Members.

➢ *Sample Procedure*

This research utilised one method of data gathering, a survey. According to Kothari (2004), a case study can either be a census or sample survey. A census indicates that all individuals from the universe should be included in the study, while a sample survey indicates that a specified portion of the universe should be included in the study. The first step in establishing a sample was the creation of a source list that the researcher created due to the lack of existing source lists. The second step was determining the sample size based on the aforementioned universe. This sample size was outlined in the preceding section. The final step after establishing the required sample size (50 employees of the RDA), was the application of a probability sampling technique. Because of the descriptive nature of this study, the major drawback to non-probability sampling techniques is that a large potential for bias exists.

➢ *Determining Sample Size*

Participants were drawn from the Road Development Agency (RDA), the construction industry, and the Ministry of Infrastructure, however, the size was 50 participants.

➢ *Data Collection*

The study used a structured questionnaire as its primary means of soliciting information from study participants, as it is relatively quick and easy to administer for both researchers and participants (Flick, 2017). The questionnaires will consist of a number of sections based on the primary research questions, except for the first section, which will focus on the backgrounds of the participants, such as their gender, marital status, age, work experience, and education level. In addition, each section will contain questions pertaining to the specific aims of the study. The questions will include both open-ended and closed-ended formats. Closed-ended questions will allow researchers to gather quantitative data for statistical analyses. Open-ended questions will permit researchers to obtain qualitative data for exploratory analyses and to gather information relevant to the study that could not be adequately captured using structured questions. The researcher will personally administer the questionnaires to ensure the reliability of participant responses. The researcher will also conduct oral interviews with members of relevant interest groups.

➢ *Data Analysis*

Research project was part of a larger descriptive study, the collected data was analysed descriptively. The primary means of collecting data in this study was through questionnaires, with the data collected coded, tabulated and then derived from the frequencies and percentages. The main computer programme used was SPSS, focusing mainly on Descriptive Statistics, while Microsoft Excel was used to produce visual representations in the form of graphs and charts. The approach to the qualitative data analysis for the information collected from the interview was through manual qualitative content analysis.

➢ *Triangulation*

Triangulation used method of analyzing data gathered by the researcher through different types of research methodologies in order to confirm what was found in one type of research methodology (socio-demographics) against what was found in a different method (survey interviews). The survey methodology that was used for collecting data included using a structured questionnaire or an interview guide, sampling, and the use of probability sampling to determine the target population for the sample. All coded data and data collected from qualitative sources were analyzed using thematic analysis. Data collection methods identified many important complexities with respect to the study's socio-economic environment. In addition to surveys, interviews and focus groups were conducted to complement the surveys. All methods provided multiple perspectives on a single issue. The multi-method, multidisciplinary approach employed in the study provided a great deal of insight into the problems faced by the issuer.

➢ *Limitations of the Study*

Potential difficulties with the study may be due to some respondents having challenging issues related to understanding the format of the questionnaire. Other possibilities include the inability of the researcher to adequately gather monetary support to facilitate data-gathering activities, and the potential risk that the confidentiality of the information provided to them by the respondents may prevent them from providing various essential data to the researcher.

➢ *Ethical Considerations*

Informed consent was obtained from each participant before they participate in the study. Each participant was provided information regarding the purpose of the study.

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There was no requirement for participants to provide their name or to provide any identifiable information regarding themselves. Participants were permitted to skip any questions they felt uncomfortable answering. Tools for collecting data would be stored and maintained in a secure environment; additionally the information collected would be used solely for the purpose of academic research. Appropriate research authorities have granted the necessary research permits and authorisations required to conduct the research.

IV. PRESENTATION AND INTERPRETATION OF FINDINGS

➢ *Background Information*

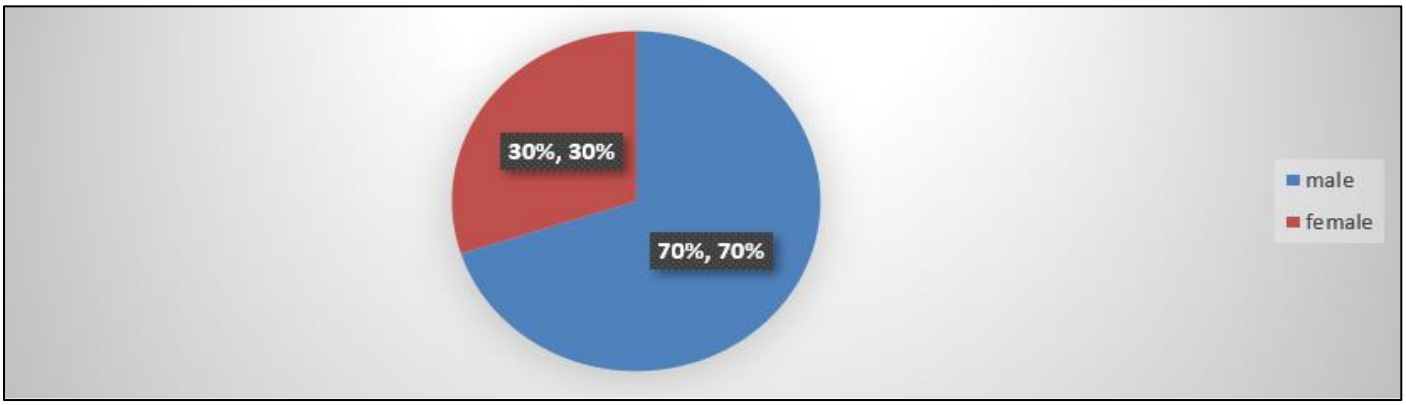

Fig 1 Gender

The study requested respondent to indicate gender. 70% of the majority respondent indicated male while 30% of the respondent indicated female.

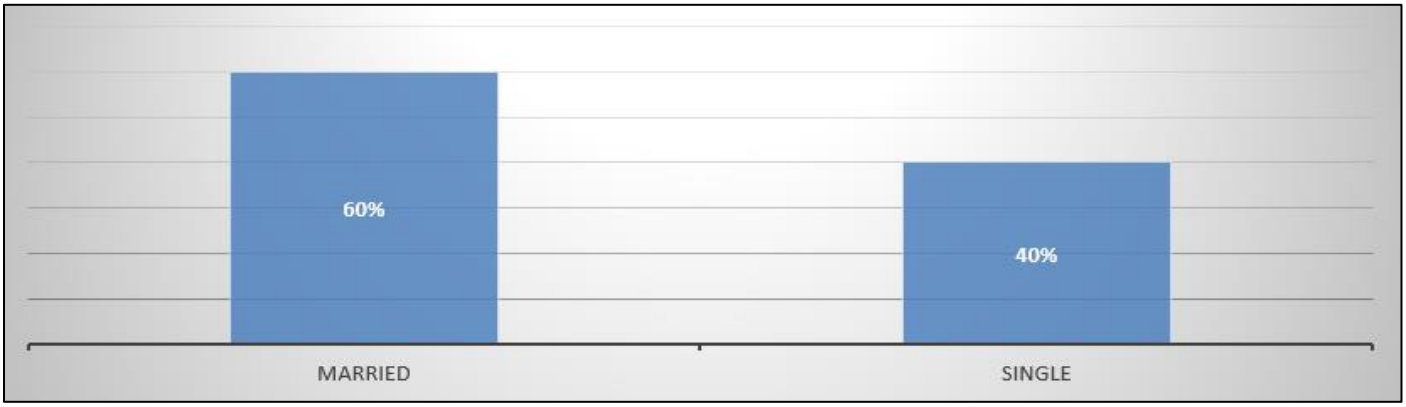

Fig 2 Marital Status

The study requested respondent to indicate marital status. 60% of the majority respondent indicated married while 40% of the respondent indicated single.

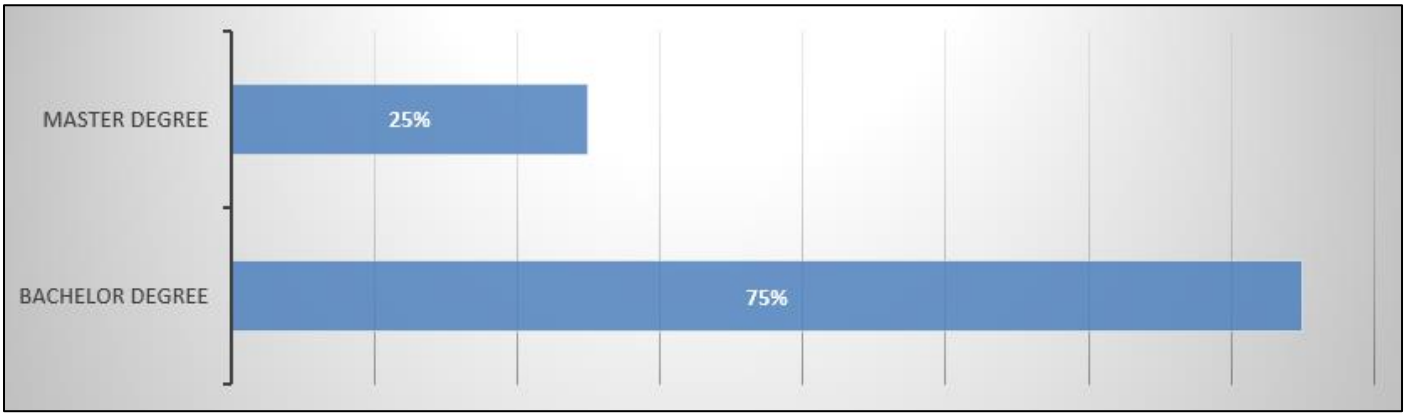

Fig 3 Education Level

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The study requested respondent to indicate education level. 75% of the majority respondent indicated education to holder bachelor degree while 25% of the respondent indicated holder master degree.

➢ *To Identify the Causes of Delays in Road Construction Projects*

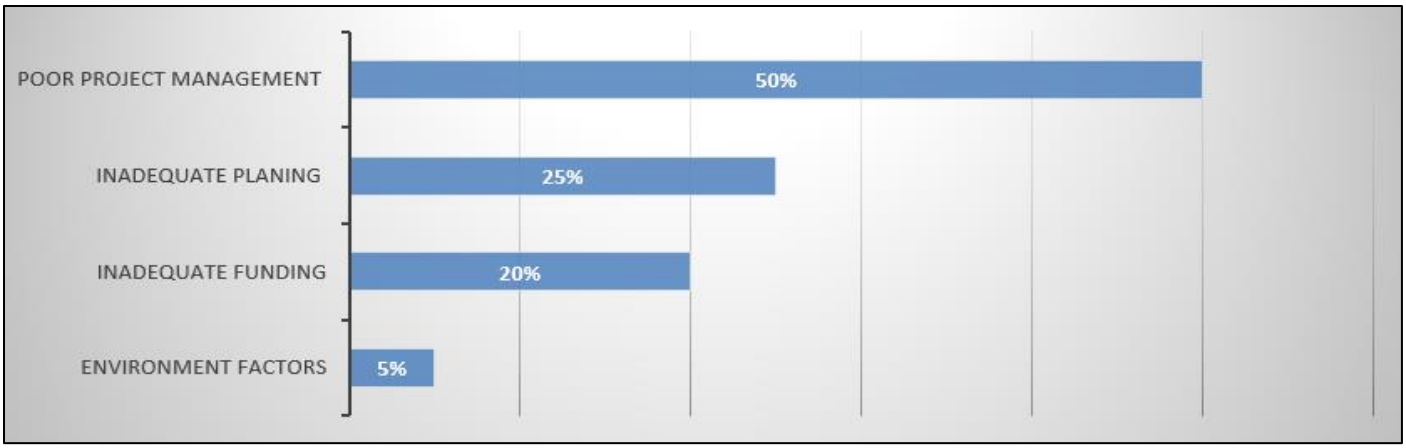

Fig 4 Main Cause of Delays in Road Construction Projects

The study requested respondent to indicate main cause of delays in road construction projects . 50% of the majority respondent indicated poor project management, 25% of the respondent indicated inadequate planning, 20% of the respondent indicated inadequate funding and 5% of the respondent indicated environment factors.

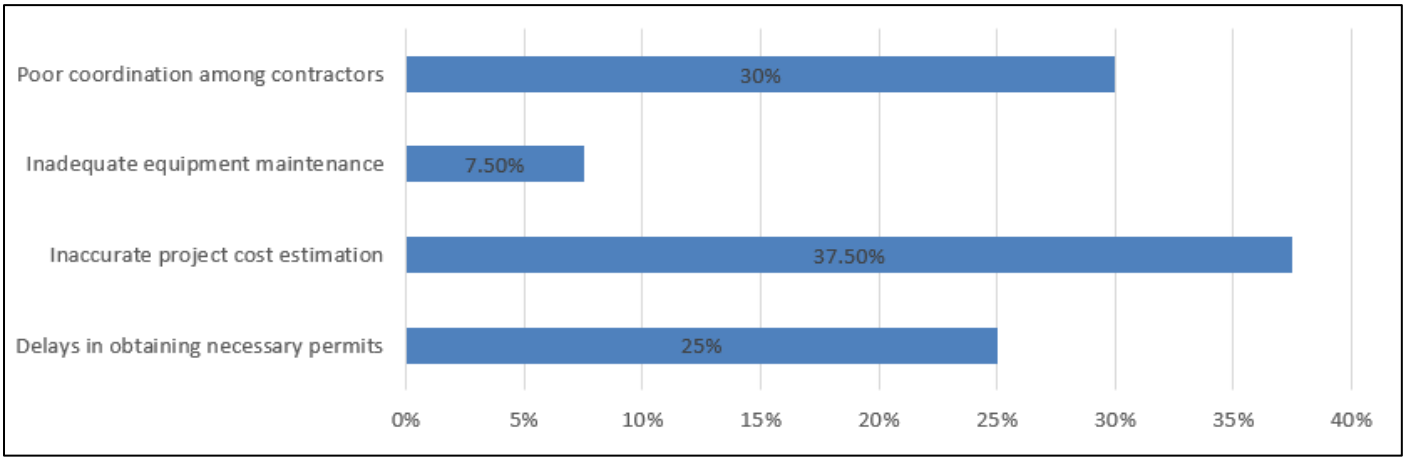

Fig 5 Cause of Delays in Road Construction Projects

The study requested respondent to indicate what is a significant cause of delays in road construction projects. 37.5% of the majority respondent indicated inaccurate cost estimation, 30% of the respondent indicated poor coordination among contractors, 255 of the respondent indicated delays in obtaining necessary permits and 7.5% of the respondent indicated inadequate equipment maintenance.

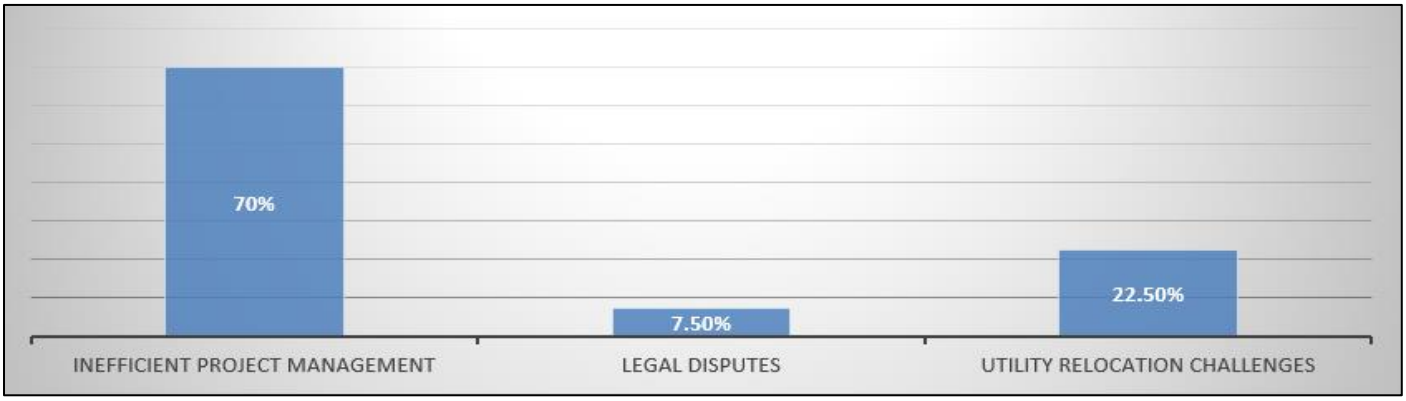

Fig 6 Which of the Following can Lead to Delays in Road Construction Projects.

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The study requested respondent to indicated factors which lead to delays in road construction projects. 70% of the majority respondent indicated inefficient project management, 22.5% of the respondent indicated utility relocation challenges and 7.5% of the respondent indicated legal disputes.

- *To Analyze the Effects of Delays on the Cost of Road Construction Projects*

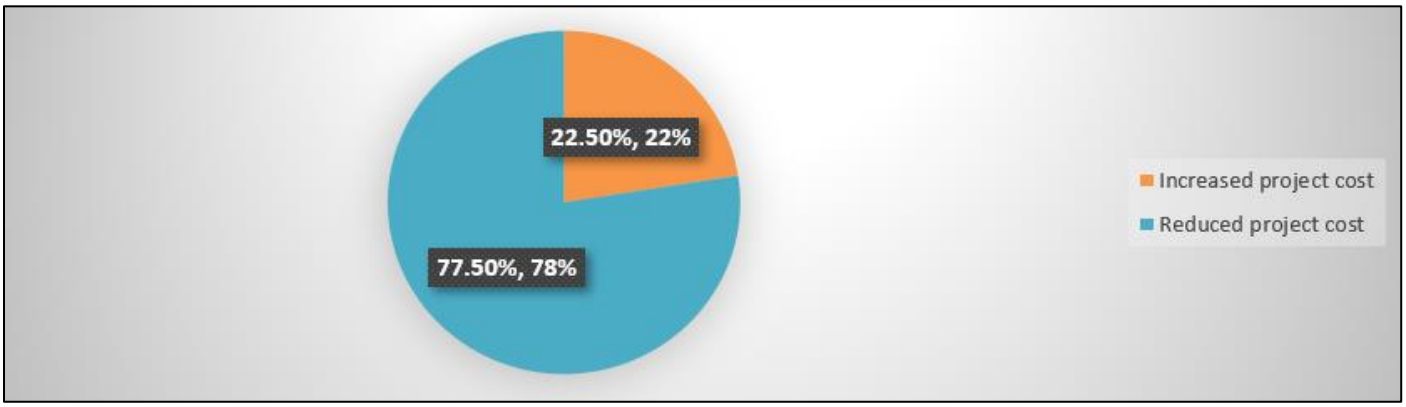

Fig 7 Which of the Following is a Consequence of Delays in Road Construction Projects in Zambia

The study requested respondent to indicate which of the following is a consequence of delays in road construction projects in Zambia. 77.5% of the majority respondent indicated reduced project cost while 22.5% of the respondent indicated increased project cost.

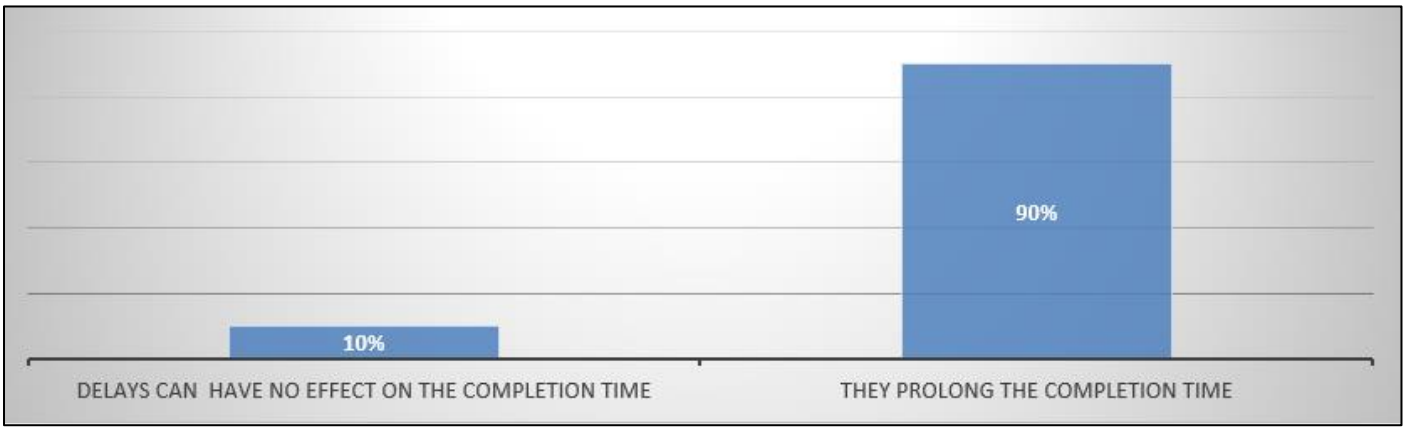

Fig 8 How do Delays Affect the Timely Completion of Road Construction Projects in Zambia

The study requested respondent to indicate how delays affect the timely completion of road construction projects in Zambia. 90% of the majority respondent indicated they prolong the completion time while 10% of the respondent indicated delays can have no effect on the completion time.

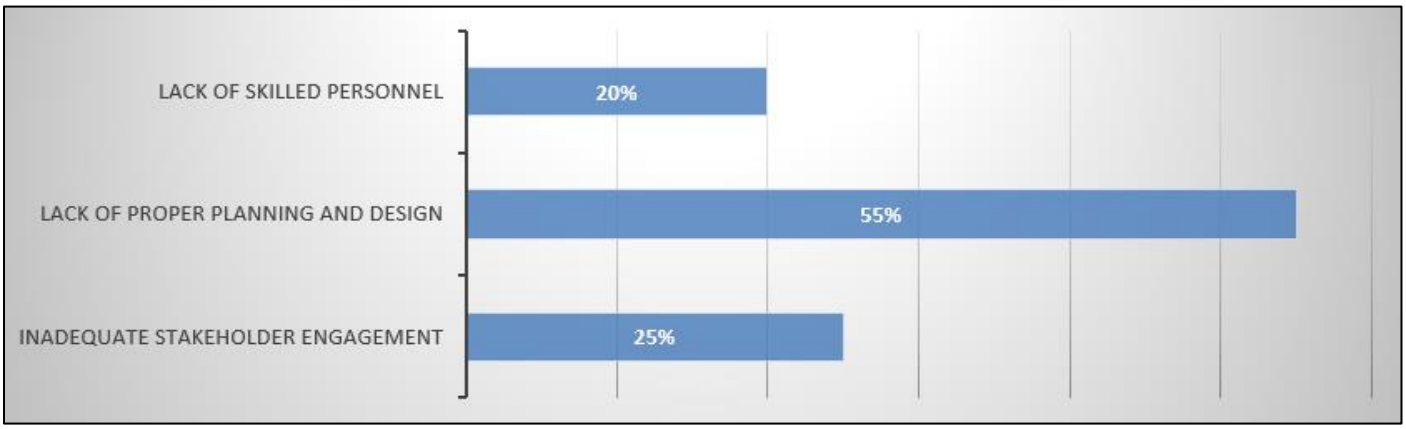

Fig 9 Common Cause of Delays in Road Construction Projects in Zambia?

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The study requested respondent to indicate common cause of delays in road construction projects in Zambia. 55% of the majority respondent indicated lack of proper planning and design, 25% of the respondent indicated inadequate stakeholder engagement and 20% of the respondent indicated lack of skilled personnel.

- *To Assess the Effect of Inadequate Project Funding on Road Construction Projects*

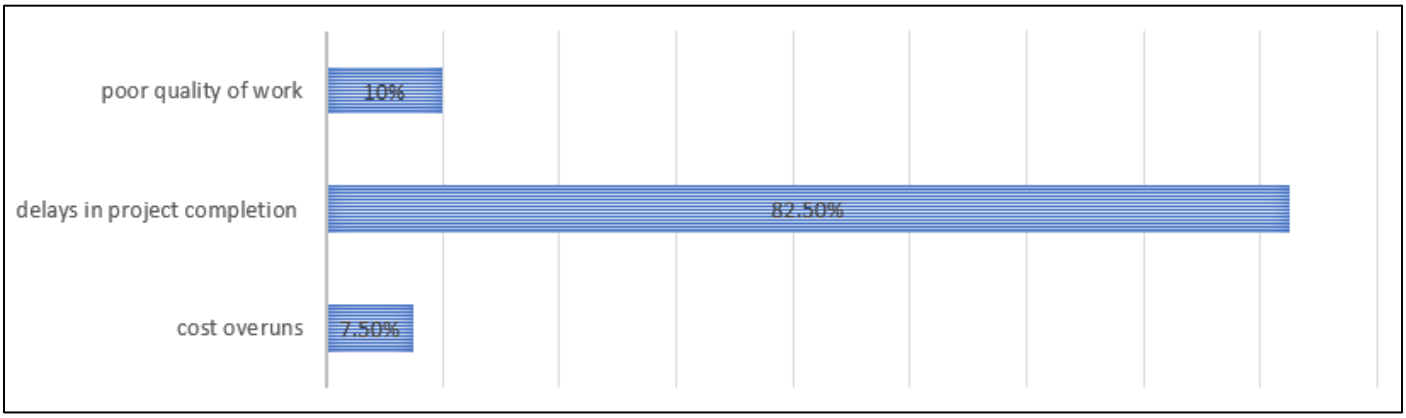

Fig 10 How does Inadequate Project Funding Affect Road Construction Projects?

The study requested respondent to indicate how inadequate project funding affect road construction projects does. 82.5% of the majority respondent indicated delays in project completion, 10% of the respondent indicated poor quality of work and 7.5% of the respondent indicated cost overrun.

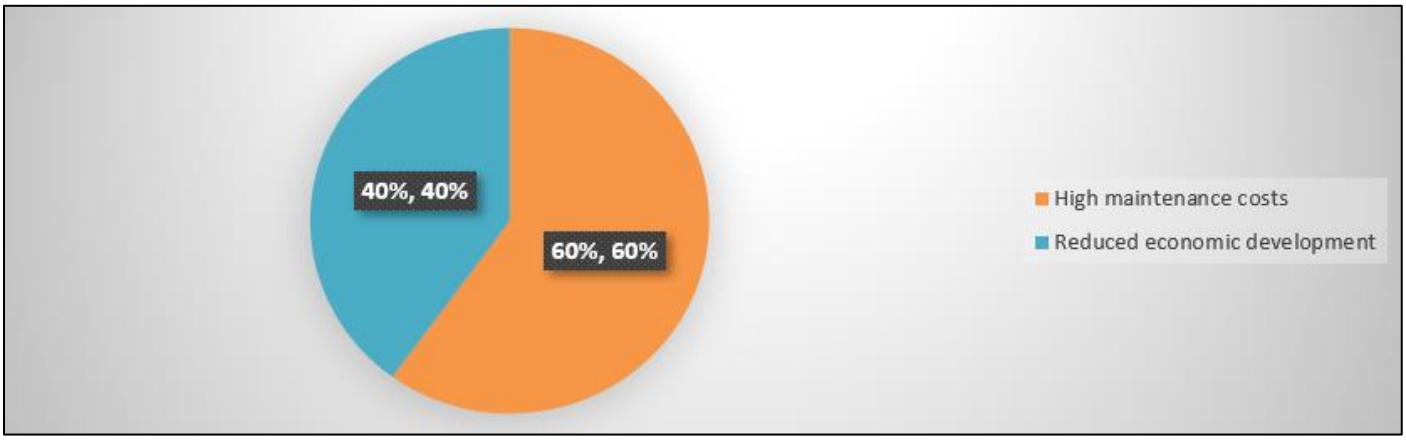

Fig 11 What are the Consequences of Inadequate Project Funding on Road Construction Projects

The study requested respondent to indicate consequences of inadequate project funding on road construction projects. 60% of the majority respondent indicated high maintenance costs and 40% of the respondent indicated reduced economic development.

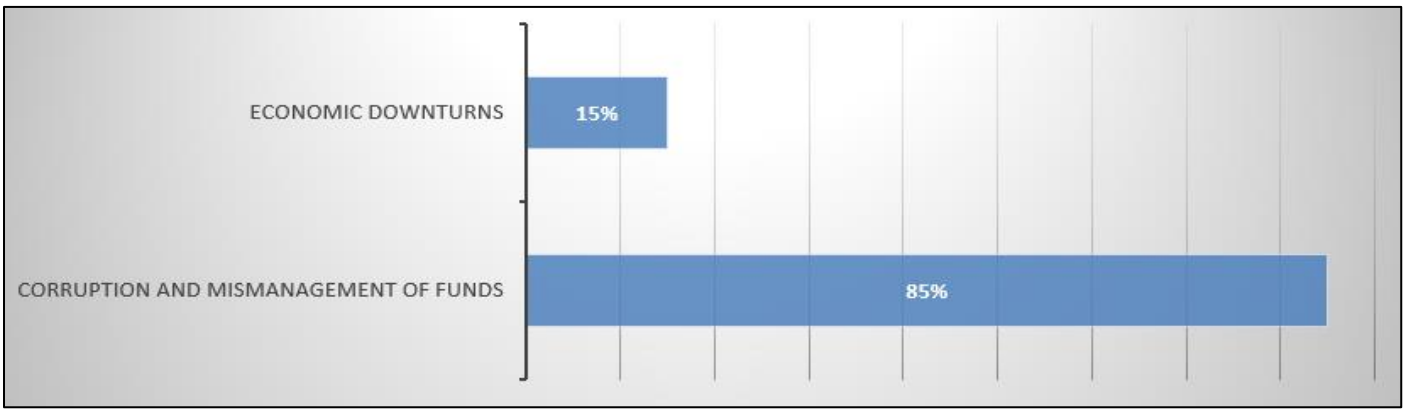

Fig 12 What are the Factors Contributing to Inadequate Project Funding in Road Construction Projects

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The study requested respondent to indicate factors that contributing to inadequate project funding in road construction projects. 85% of the majority respondent indicated corruption and mismanagement funds and 15% of the respondent indicated economic downturns.

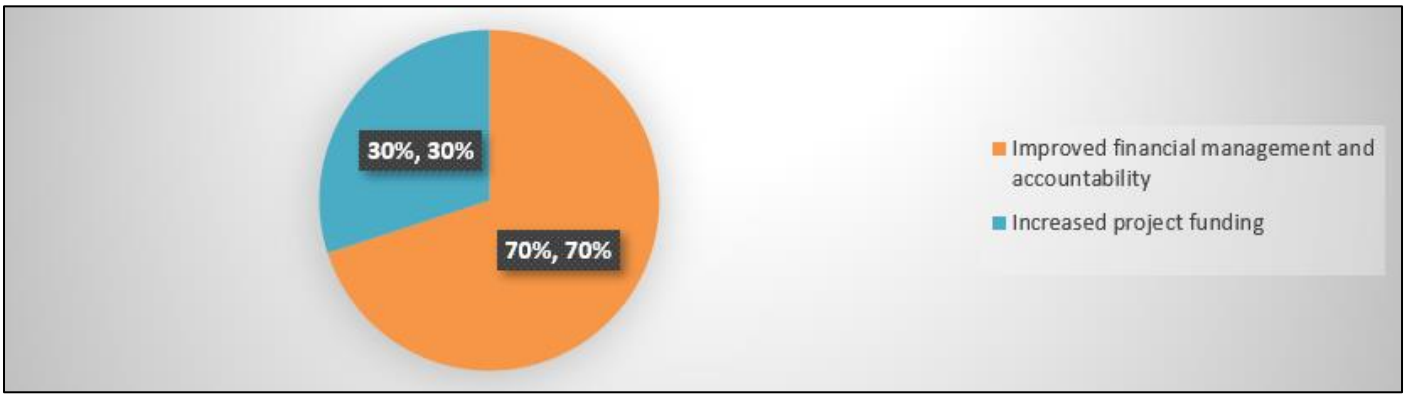

Fig 13 What Measures can be Taken to Address Inadequate Project Funding in Road Construction Projects

The study requested respondent to indicate measures can be taken to address inadequate project funding in road construction projects. 70% of the majority respondent indicated improved financial management and accountability and 30% of the respondent indicated increased project funding.

➢ *Discussion of the Findings*

The research findings regarding the major reasons for delays occurring during the execution of a road construction project have provided helpful information. The following paragraphs provide an expanded description of each finding: 50% Percent of the Total Respondents Identified Poor Project Management as the Major Contributing Factor to Delays. Poor project management can consist of a wide range of reasons, including poor communication, poor coordination, lack of decisiveness, ineffective planning, and poorly allocated resources.

These factors create problems for the project because they hinder timely decision-making, hinder timely performance of execution, and inhibit timely correction of problems; therefore, ultimately affect a project's timeline and total duration. 37.5% of Total Respondents Reported Inaccurate Cost Estimation as a Major Reason for Delay. The identification of accurate cost estimation or the lack thereof provides evidence that there is often a large disparity between what is initially estimated to occur during the construction of a road construction project versus what is actually estimated when the work has been completed. This disparity in estimation creates numerous financial constraints, budget overruns, and delays, as additional funds will be needed to complete the construction project. The equipment failure resulting from improper maintenance practices results in turnaround time delays; as well as causing undue operational disruptions and escalating costs due to the need for repair. It should also be noted that the percentages indicate how many respondents selected each cause of delay. Both of these issues, inaccurate cost estimation and insufficient task coordination among contractors, were listed as the first two most common factors contributing to the delay of road construction; however, the timing for obtaining the correct permits, as well as negligence of equipment maintenance, were noted by fewer numbers of survey participants. An understanding of these three challenges helps the project manager and stakeholder proactively respond to potential issues or delays that may occur during road construction projects.

Seventy percent of respondents selected the significant role of project planning input as contributing to delays in road construction projects. Deficiencies during the project's planning phase (i.e., a lack of adequate feasibility studies, poor design, specifications, and project management) negatively affect the on-time delivery of a road construction project. The lack of project planning input leads to unforeseen obstacles and changes to requirements that will require additional funding and cause an increase to the project.

According to the results of this research, good project planning and addressing the skilled labour shortage will be critical to limiting delays in road construction projects. Enhancing the project planning process involves conducting comprehensive feasibility studies, performing complete risk assessments and coordinating all project stakeholders efficiently. To address the shortage of skilled labour's, it will be necessary to provide vocational training initiatives, promote the construction sector as a viable career choice and create partnerships between the construction industry and educational institutions to develop the skilled workforce.

This "inefficient project management" factor was mentioned by the majority of respondents (70%). Inefficient project management occurs when the planning, coordination and execution processes of road construction projects are not effective. Examples of inefficient project management include poor project planning, inefficient distribution of resources, ineffective communication and lack of oversight and controls over projects. These deficiencies can lead to delays, excessive costs and/or deterioration in the overall quality of construction projects.

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This research showed clearly that delays in Zambia's road construction projects have significant impacts. Respondents had the choice of either believing that the delayed road construction would increase or decrease the overall cost of the project. The results showed that 77.5% of respondents identified with the option to believe that delays caused the project costs to decrease.

Due to inflation or shifts in the marketplace, delays in construction will result in increased material, equipment, and labor costs associated with construction projects. Some construction contracts will contain a clause imposing penalties on contractors for any delays, thus placing a financial burden on the contractor and likely increasing the overall cost of the project. In addition to these added costs, a longer project timeframe may create additional indirect costs, such as the increased administrative costs associated with having a longer project timeline and the increased amount of project management fees that a contractor will incur. Although there were many respondents who were surveyed in this study and the majority of their responses provided insight into the cost impact of delays specifically in regard to road construction projects in Zambia, the overall response to this question indicates that the actual cost of delays for road construction projects in Zambia will differ significantly depending on the specifics and circumstances of the project, and under the current economic conditions and the specific management practices associated with each road construction project. Therefore, additional research should be conducted to amend this study and create a more accurate picture related to both direct costs and indirect costs associated with construction delays that occur in roads in Zambia.

In Zambia, most of those surveyed in the research project believed that delays affected the schedule of completing road construction projects. In fact, the overwhelming majority (90%) of respondents agreed that there was a direct connection between the time it took to complete a project and the delay in scheduled completion of the work; thus indicating how significantly these factors influenced project completion time lines. Therefore, it stands to reason that, if the majority of respondents viewed delays negatively, they believed such situations would ultimately result in delays in project completion and also present obstacles and other challenges resulting from the delays.

The research showed that more than half of the people surveyed (55%) indicated that poor planning and design were the main reasons for the delays experienced in Road Construction Projects. Poor planning and design prior to starting road construction Projects (such as inadequate assessment of Project needs, inadequate feasibility studies, and poor overall Project Management) will limit the amount of progress that can be made on the Road Construction Projects and delay the time until completion. The lack of proper planning and design can result in budget overruns, poor design, and the need for costly redesigns during road construction. About 25% of those surveyed indicated that the lack of adequate Stakeholder Engagement was a major contributor to Road Construction Project delays. This indicates the need to engage and consider multiple Stakeholder perspectives (Community Members, Government Agencies, and Related Organizations) throughout all phases of a Road Construction Project. The lack of adequate Stakeholder Engagement can lead to Conflict, Disputes, and Legal Issues, all of which can result in additional time delays for completing a Road Construction Project. This further demonstrates the requirement for efficient communication, Collaboration, and Consultation with Stakeholders throughout the Road Construction Project to ensure Stakeholder concerns are identified, and included in Project Planning/Decision Making.

First, it is clear from the findings that 80% of those surveyed believe that delays in the execution of road construction projects could be reduced by appropriately planning and designing these Projects. This indicates the importance of adequate planning and the necessity of conducting extensive planning and adequate design early on in a road construction project. For example, a road construction project must also take into account some key considerations including:

Conducting feasibility studies (to determine if the Project is viable), completing environmental assessments (to identify potential impacts on the environment) and taking into account other considerations such as: Traffic patterns, topography and drainage systems. The development of road construction Projects emphasizing the use of proper planning and design will improve the efficiency of executing these Projects, thereby decreasing the potential for delays resulting from unexpected problems or bad design. Second, 20.5% of survey participants indicated that delays in road construction could be solved through the allocation of an increased amount of money to the projects. This indicates to me that providing more money will help alleviate the challenges that lead to delays in road construction. The additional funds will allow for a greater number of resources to be used, such as hiring more skilled labour, purchasing advanced equipment and using higher-quality materials. All of these will help to expedite the road construction process and improve the speed and efficiency of these operations, leading to decreased delays. However, before pursuing this approach to solve construction delays, contractors must carefully consider the cost implications of providing additional funding to their projects and the way these costs could affect their overall budgets.

The results demonstrate how vital to successful planning and design for road construction projects in Zambia is setting aside money for them. Furthermore, the study's results show how by choosing to put extra resources toward road construction projects and putting a robust planning process in place to look at the cost of doing so, parties involved in the road construction project may work together to reduce the overall time taken to complete the project, and thus increase the efficiency of road construction projects in Zambia.

The data generated from this study concerning how a lack of funding affects road construction projects has identified a number of critical issues. Of the people surveyed,

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82.5% said a lack of funding for the project caused a delay in completing the project. This suggests that if roadside construction projects do not get the proper level of funding to finish their work, the project will be delayed due to not enough funding, resulting in a longer time frame to finish. Furthermore, of those surveyed, 10% identified that poor quality of work as a result of inadequate funding for the project was also an issue. When funding is too low, the project cannot afford to hire skilled laborers, buy quality materials, and have the level of quality control necessary to ensure a well-built finished project. These elements combined will ultimately lead to a poor overall quality of the work performed for that project, and may lead to ongoing repairs or premature failure of the teamwork.

A majority38% of respondents (38% for Proper Use) cited the negative impact of inadequate project funding on High Maintenance Costs as a cause of inadequate funding (for road projects). An insufficient amount of funds directed toward Road Construction Impacts the Quality of Construction, resulting in rodes that may experience Higher Maintenance Costs. Therefore, with Higher Maintenance Costs comes Financial Burden and Frustration as a result of the delays experienced during Repairs, as well as the decrease in Safety for Road Users due to Interruption of Traffic Flow during Road Repairs. Additionally, while Almost Half of Respondent (976%) cited insufficient Economic Growth due to insufficient funding of Road Construction Projects, many noted that the availability of Well-Constructed, and Well-Maintained and Efficient Transportation Systems are key to successfully supporting Economic Growth through the Effective Movement of Goods, Service, and People within a region. Lastly, due to the limited availability of funds to support Road Construction Projects, Regions may see delays in the completion of Road Construction Projects, Limits on the Length of Road, or a reduction in the Efficiency (or Quality) of Road Construction Projects which ultimately results in Limited Economic Growth.

In addition to finding out why there was insufficient funding for roads, this study looked at other ways to address this problem by gathering input from the individuals who participated in the survey. Over 70% of those surveyed stated that better financial management/accountability is the first step towards correcting the problem of insufficient project funding. This reinforces the importance of utilizing proper financial procedures, e.g., planning/budgets, controlling costs, and conducting audits, as a means of ensuring that funds will be appropriately distributed/used, when it comes to RCPs. The development of good financial management improves the overall use and distribution of funds and helps to reduce the possibility of corruption and/or misuse of funds.

Furthermore, 30% of the respondents indicated the need for a substantial increase in the budget of each project as a solution to this problem. This indicates that while it will be necessary to address the financial management concerns related to this issue, sufficient funding must also be provided to road construction projects in order to produce timely, quality, and efficient infrastructure to help support and accelerate the growth of the economy and the well-being of society. The findings of the study confirm the importance of addressing corruption and improving financial management systems as a means of solving the problem of inadequate project funding on road construction projects. In addition, given the economic environment, it will also be important to develop ways to successfully increase funding for infrastructure development. Through the implementation of comprehensive measures that consider both of these issues, governments and other interested parties will be able to improve project funding and successfully implement road construction projects.

Through this study it has been shown that it is critical to include relevant outside stakeholders such as government agencies, the local community, as well as private entities in all phases of the decision-making process for construction projects. Building effective relationships with these stakeholders will ultimately lead to the ability to identify alternative funding sources, establish partnerships, and gain support for funding requests. Stakeholder involvement throughout the entire lifecycle of a project provides project managers with diverse viewpoints and experiences, including additional organizational resources and knowledge. Therefore, there will be a much higher percentage of successful outcomes for road construction projects if multi-faceted strategies are utilized to address insufficient project funding. Essential to the success of road construction projects will be the improvement of project planning and budgeting techniques, in conjunction with encouraging and developing strong relationships with external partners. Together these strategies will help improve the chances of obtaining sufficient project funding and, therefore, minimizing financial limitations and enhancing the overall success of road construction projects.

V. CONCLUSION

The results of the research provide insight into the primary causes of delays associated with road construction projects. These causes include improper planning, inadequate management of the project, the need for skilled labor, not taking environmental and social considerations into account, and challenges related to moving utilities, as well as legal disputes related to road construction projects. These causes reflect a variety of different elements associated with executing a project, including how to properly plan and manage a project, how to effectively coordinate the various resources that make up the project (e.g. materials, labor, etc.), how to effectively involve stakeholders during the project, and ensure compliance with established laws and regulations. Therefore, addressing any one of these causes will help to reduce future delays from occurring and ultimately lead to a successful completion of all road construction projects. Most survey respondents (77.5%) indicated that they perceive a reduction in total project costs associated with delays occurring during the project. This indicates that, through delays in road construction, some form of decreased expenses may occur related to labor costs, the increased ability to establish better deals concerning materials used in the road construction, and lastly, the ability of contractors to

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implement the most effective method of implementing plans. Conversely, some survey respondents (22.5%) reported that they perceived the opposite, i.e., that through delays in road construction, the overall project cost may increase. The early opinions indicate that if delays in project completion occur, the costs may increase from the higher costs of construction materials, penalties imposed for delays within various contracts, and potentially additional costs indirectly associated with the longer amount of time required to complete a project.

A total of 90% of respondents believed that delays are a cause of increased time in completing road construction projects in Zambia. This belief suggests that there are a variety of factors associated with the delay of projects that inhibit their completion, such as weather, funding issues, design changes, logistics, and other unanticipated problems. Conversely, 10% of the respondents do not necessarily believe that delays will impact the time that it takes to complete road construction projects. This opinion may have been derived from an individual's experience or because they were able to effectively manage or mitigate the effects of a delay. The findings suggest that inadequate funding of projects negatively impacts the completion of road construction projects. Delayed completion of projects, defective work and/ or additional costs incurred were all reported by respondents as significant outcomes of insufficient funding of road construction projects. Additionally, many respondents also identified high maintenance and low economic development as a consequence of insufficient funding of road construction projects. Finally, the study identified corruption, poor fund management, and economic downturns as the primary contributors to insufficient funding of road construction projects.

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