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Factors impacting performance of rural-based construction projects in Mpumalanga

By

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DECLARATION

I, Jeanifer Skhulile Nkosi, declare that the contents of this dissertation/thesis represent my own unaided work, and that the dissertation/thesis has not previously been submitted for academic examination towards any qualification. Furthermore, it represents my own opinions and not necessarily those of the Cape Peninsula University of Technology .

Signed

27 May 2022

Date

ABSTRACT

Project failure is a major challenge in South Africa. There are numerous challenges that are disturbing the performance of construction projects. Most communities are affected by the performance of the construction industry which contributes to economic growth. The study focuses on the factors impacting performance of rural-based construction projects in Mpumalanga. Many projects are failing in rural areas and people do not understand what is leading the projects to fail. The study also seeks to recommend ways to make projects successful in rural areas. The research study adopted a quantitative approach. Structured questionnaires were distributed in two construction companies in a municipality in Mpumalanga. The study discovered the following results: respondents agreed on the key factors influencing the poor performance of construction projects in Mpumalanga are improper planning and scheduling, poor risk management in all project steps, scope creep and changing orders, and inadequate documentation and tracking. In addition, productivity issues and delays, inadequate human and technology resources, poor leadership, interference of the client in the construction process, poor communication, changing client requirements, and inaccurate budget estimations play a part. The study identifies measures that may help to improve construction industry performance, which include site management and supervision; effective strategic management; clear communication channels; proper planning and scheduling; the appointment of highly experienced project managers; adequate planning; practice sufficient risk management; and ensures proper material procurement. The research adds to the body of information about the factors that influence the performance of rural construction projects in Mpumalanga.

KEY WORDS: Construction failure, Construction industry, Project failure, Project performance, Project management.

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DEDICATION

The thesis is dedicated to my late father Nkosana Freddy Nkosi. I wish you were here to celebrate this achievement with me. I will always cherish or always remember the words to always work harder and continue resting in peace.

To my mother for always believing in me and for her prayers.

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Chapter 1: Background of the study

1.1 Introduction

Construction projects rely heavily on effective project management and to understand effective project management, one has to first comprehend the definition of a project. According to Kerzner (2017: 192), a project can be defined as any collection of tasks and activities with a particular aim to be achieved within certain requirements, with a focus on the development of business value. Todorović *et al* (2015: 772-783) stated that the project management theory and methodology are wider and more complex than a conventional repetitive task control. The construction industry is seen as the main industry in any economy. The construction industry in Southern Africa is a difficult one to work in since the responsibilities and processes are so varied (Mofokeng & Thwala, 2012: 712; Windapo & Cattel, 2013; George, 2016:24).

According to Hussain *et al.* (2017:10), public-sector construction projects are widely regarded as an economic and social engine for rural economies' long-term growth, promoting the well-being of rural residents. These authors also find (2017:10), that in most developing nations, state expenditure on infrastructure projects is seen as a critical factor of the growth estimates. The government also aims to invest capital in public groundwork projects to boost economic development, local venture development, growing cultivation, informal market access, enhanced health-care facilities, excellent training, and reduction in poverty, which are attractive success strategies. The most critical metrics for project performance are not simply meeting the project's interval, expense, and excellence goals, but also meeting the community needs.

1.2. Problem statement

There are failed or incomplete projects in most of South Africa’s rural areas and some have been abandoned. The government or construction industry appears to prioritize urban areas over rural areas when it comes to construction projects. According to UKEssays (2017), rural construction failure affects the economy significantly. Infrastructure development is crucial for our country's socioeconomic development and it correlates to human livelihood enhancement. However, it has become a culture that several rural-based construction projects fail to meet the required time frame, for example, the R2.1 billion housing projects in the municipality

of Msunduzi was approved in 2011 by the Human Settlement department but the project was stopped due to low structural efficiency (Ngubane, 2017).

Rural areas need to be developed urgently since it is understood that they have been ignored. The government is trying to improve rural areas by doing community development projects, however it remains true that most rural areas in the municipalities of Mpumalanga have many projects that have failed or not been completed on time. The researcher seeks to find out the factors impacting performance of construction-based projects in the rural area of Mpumalanga. The study is important because the purpose of construction projects is to bring about development in rural areas; therefore, if these projects do not succeed, they foster under-development.

1.3 The study's rationale and importance

This study is conducted to understand factors that impact performance of rural-based construction projects in Mpumalanga. It is anticipated that this understanding could be used to develop strategies to minimize the failure of construction projects in rural areas. It is also hoped that the findings may assist project managers' capability of ensuring that projects are successful by giving clear guidelines. The causes of many construction project failures in rural areas remain unknown. Understanding the cause of project failures in construction projects, specifically in rural areas, will assist in minimizing the failure of projects because a better focus can be achieved concerning the causes of these high project failure rates.

1.4 The study aim and objective

The main aim of this study is to identify the factors impacting the performance of rural-based construction projects and to recommend ways to make projects successful in rural areas in Mpumalanga.

The following are the sub-objectives of this study:

- To identify the nature of the risks that cause the failure of rural construction projects.
- To identify the skill sets required for the execution of those construction projects.
- To recommend ways to mitigate challenges in rural construction projects.

1.5 Research Questions

- What are the most common risks that cause the failure of rural construction projects?
- What skills are needed for effectively executing rural construction projects?
- What ways can be recommended to mitigate challenges in rural construction projects?

1.6 Literature review

According to Tran *et al.* (2014:1), rural transit projects are mostly limited in scale, but are several and scattered geographically. Such remote infrastructures, bridges, transit stops, parks, and stations provide important transport links between rural and urban towns and are crucial to enhance the quality of life and sustain economic prosperity in rural areas. Managing these projects can be difficult due to relatively restricted resources, specific threat factors, and a shortage of experience in building management. Without successful construction management techniques, rural transit projects are unlikely to be optimally designed and managed, with the potential for delays, cost overruns, rework, accidents, and low quality construction.

According to Babalola *et al*. (2015:57), the building industry is complex as it includes a large quantity of project stakeholders including customers, consultants, contractors, shareholders, and regulators. The industry's complexity and decentralized nature as well as its highly contractual labour-employment system, make it vulnerable to poor contract performance.

According to Ajayi *et al.* (2010), the selection of contractors is a critical issue for the project manager. This typically has a major influence on project achievement or disaster. Furthermore, a contractor's success would certainly correlate with contract execution. They further noted that performance evaluation has remained a problem for the construction industry for years. Researchers have proposed numerous models and approaches for assessing development performance. However, most of these restrict their studies to specific methods, such as budgeting, scheduling, or efficiency of labour. Construction efficiency promotes customer satisfaction, production in time, cost management, quality of construction, and sustainable development (Ajayi et al., 2010).

According to the studies conducted by Kerzner (2015: 12), from the delivery of project management in the early 1960s up to the last decades, stakeholder involvement in projects has been more inactive than dynamic. Stakeholders focused deeply on the deliverables after the projects but did not get actively involved at all. Their involvement was closer to the end of the project when there were fewer decisions for them to make. Stakeholders understood very little about the actual processes employed in project management during this period.

Maley (2012:2) describes project management as the practice of resource planning, organization, and management to achieve specific project goals and objectives successfully. Harrison and Lock (2017:6) define project management as achieving project goals by individuals and through the organization, preparation, and control of project allocated resources. It needs the establishment of positive human relationships with and between those concerned, both within the contracting company and in all other organizations which may be involved.

On the other hand, Alotaibi and Matimisebi (2017:93) claim that project management could be understood as applying understanding, talents and methods to schedule activities designed to meet project necessities. By splitting the project into several constituent stages, good management can be encouraged, thereby identifying the stages between its beginning and its successful conclusion.

Project management (PM) has historically been governed by a deterministic view point that suggests the probability of organizing, managing, and monitoring the construction project phenomenon. Specific roles and responsibilities of project stakeholders are seen as a way of ensuring effective collective performance (Omes and Romeo, 2016: 489-497).

A project can be described as a special, non-repetitive undertaking. It all has to start from scratch. The scope of the project has to be specified, roles have to be delegated, and specifically planned, resourced, and budgeted. Projects are typically hard to coordinate, and are subject to many changes. Essential to their success or failure is successful planning and control. However, owing to poor preparation and monitoring, many projects have suffered delays and over-expense (Harrison and Lock 2017).

Tsiga *et al*. (2016:134) established that the construction industry is unique and the most significant division of the economy; it comprises the complete project design cycle to building construction and substructure. It is interlinked with various sectors as a service industry. The significance of the building industry can be seen through the past and in the economic improvement it ideally achieves.

Murphy (2013:155) provides evidence of the need for in-depth empirical research into the approach of Professional Service Firms (PSFs) in the construction sector. Murphy stressed that the scope of strategic management research in the construction sector will need to be expanded to how the processes evolve in response to changes in the industry. Tan and Langston (2012: 352-360) argue that designing and executing an effective strategy would allow construction firms to adapt their operations to the rapidly changing business environment and gain a sustained competitive advantage.

According to Guduza and Yahya (2018:67-80), the literature emphasizes the importance of human capital in the implementation of any construction project. Getting the right individuals on-site will assist in driving the project according to schedule. The skills and dedication of project managers arise as the fifth-greatest significant factor. The project manager is the project forerunner who oversees every aspect of the project. His / her skill, characteristics, and his / her dedication to the project will contribute greatly to the achievement of a successful project in the end. The least important factors were the unexpected circumstances (Natural disasters, conflicts, economic crises, and sudden legislative and regulatory changes, etc.), political and dishonest disputes, and harsh environmental atmosphere. This can be attributed to being familiar with the area of the project, the local economy, laws, and geographical conditions. The fact that the construction sector struggles mostly to meet deadlines and budgets thus requires a great deal of effort in defining critical success factors.

The project manager of today has ready access to an increasing variety of cost-effective resources for project planning and management. The most successful manager will be able to choose and use those techniques that best suit the project in question. However, managing a project entails much more than following the

strategies and procedures. Project management encompasses a comprehensive system of strategic planning and decision-making, as well as perceptiveness, liberal use of common sense, proper organization, efficient commercial and financial management, meticulous reporting, and, most importantly, the ability to lead and empower individuals (Lock 2014: 3).

Skills in project management are the most relevant in any type of project. Nevertheless, both the skills of project management and technical (subject matter) skills are important to a project's success. The level of technical skills depends mainly on the size of the project and the industry involved. Projects come in many forms, there are typical major projects from heavy engineering industries such as aerospace, construction, shipbuilding, civil works, transportation, and natural resource and energy production energy (Maley, 2012:28).

Good project managers are motivated to identify the nodes of uncertainty and to build contingency plans to continue operating during uncertain times. Project management has more than 50 years of knowledge in the aerospace, defence, and construction industries. Project management activities were successful on larger projects with more well understood and consistent technologies, expectations, and limitations that were possible to transform through development and a somewhat unchanging political situation (Kerzner, 2015: 6).

Ranawant *et al.* (2018:10108-10114) state that, based on the growing volatility in technology budgets and the development process, the construction industry is becoming more complex. Construction project executives are facing uncommon changes. Investigating project accomplishment and vital factors are thought to be a way of improving an undertaking's appropriateness. The concept of project progress achievement has, however, remained loosely defined in the technology experts' brains. Various experts have made different attempts to determine important growth factors.

Iqbal *et al.* (2015:65-75) add that managing risk is a significant part of the construction industry and has expanded achieved international prominence, thanks to the new broadband research. Nonetheless, to offer more profit, this relatively new area needs more attention. Building projects face several hazards such as time

budget and quality that harmfully affect them. These authors also suggest that the research they conducted, based on the results of a questionnaire-based risk management investigation in construction plans in Pakistan, found that the monitoring of the importance of diverse types of hazards, their crucial accountability, and the efficacy of certain of specific risk management methods used in the industry were important. Two types of risk management strategies have been considered: predictive strategies that can be used to mitigate the risks expected during project execution before a project is started and remedial methods used in the implementation process, after the danger has already arisen. The study exposed that the most significant risks facing most construction projects are financial problems for companies, on-site accidents, and faulty design.

Guduza and Yahya (2018: 67-80) note that the building project is special; therefore, comparisons of apples to apples may not be feasible. This can also be due to difficulties in gauging the relationship between the features of the project and its benefits. There is a perception that the characteristics of the project can have an impact on the benefits.

As construction projects are now approaching megaproject scale, so the organization of construction parties is becoming more complicated, and the degree of conflict more severe as the progress of a building project depends on the synchronized efforts of the project team members.

According to UKEssays (2018), management was generally focussed on the capital cities of many countries and all growth was centered around the capital city, with transport (road, rail, and air) infrastructure based around the capital. Urban areas are the centre of commercial development and provide many openings for non-rural jobs. There is a worldwide migration to the urban areas, causing pressures on the infrastructure and management of these regions. At the same time the rural areas are generally poorly serviced and funded. According to Utting (2013), it is accepted that several countries like South Africa were doing what others were doing: the greatest effort is being placed on big cities like Johannesburg, Durban, Middleburg, and Cape Town, while rural zones' infrastructure is required.

According to UKEssays (2018), various towns and rural transport are affected by the project failure problem in construction. There are important factors affecting construction projects and they include: uncoordinated building environment practitioners, data collection deficiencies, weak user feedback, weak design and leadership of projects; problems with design and construction; and lack of technological skills; unrealistic deadlines and cost estimates; inadequate choice of methods for building procurement; poor coordination and lack of planning for pre-projects.

1.7 Demarcation/delimitation of the study

The sample selected for this study was limited to two construction companies in the Mpumalanga Province. The people that participated were those who were working on projects in a rural area, and others that have been involved in rural area projects. Participants were people who are experts in the construction industry: quantity surveyors, project managers, and structural engineers who play key roles in the construction team. The research involves knowledge gained from the respondents in this field and from literature searches.

1.8 RESEARCH DESIGN AND METHODOLOGY

1.8.1 Research design and methodology

Jilcha (2019) asserts that research methodology defines the path which researchers follow to perform their investigations. It explains the directions by which researchers formulate their goals and presents their discoveries from the information collected throughout the study period. Hartis (2015) describes a quantitative design as a science that incorporates both experimental and other organized or systematic approaches that emphasize control and quantified techniques. It is a study design where measures and statistics are crucial because they link observation via empirical and mathematical expression.

In this study, quantitative research was employed because it presents a high degree of precision in the reporting of findings due to the use of numbers. For data collection, well-structured questionnaire surveys were undertaken following an online mechanism (Google forms) sent to the respondents.

1.8.2. Research Design

A research design is defined as "a plan, structure, and method for obtaining answers to research questions." The strategy is a comprehensive research plan (Kumar, 2015). A research design can also be defined as "the blueprint or precise plan for completing a study" (Cooper and Schindler, 2016). An explanatory research strategy was seen as relevant and appropriate for this study. According to Khawla (2018), the rationale for using an explanatory research approach is to formulate a problem for further examination or to develop a working hypothesis from an operational perspective. The fundamental purpose of research projects is to explore new ideas and insights.

Jovancic (2020) states that an explanatory research design is used to further develop, scrutinize, and clarify the researcher's opinions and hypotheses. This study design is used to expand on previously undiscovered areas of a topic and to discover any gaps. It will also serve as a foundation for future studies.

1.8.3 Target Population

According to Hassan (2015), the definition of the research population refers to a study of a collection of well-defined sets of individuals or objects taken from the general population. Generally, all people in a given population have a particular feature or characteristic that links them together. In addition, studies are conducted for the benefit of the community. Because of the large population size, researchers are unable to access every person because it would be too costly and time-consuming, so researchers rely on sampling techniques. The target population for this research were two construction companies in Mpumalanga that have been involved in construction-based projects and would have information about the factors impacting the performance of rural-based construction projects.

1.8.4. Sample method/technique and sample size

The sample is derived from the populations that are affected. A purposive sampling method was used in a municipality based in Mpumalanga rural area. According to Ilker Etikan (2016:2), purposive sampling is a non-random technique not involving a fixed number of participants. A minimum of 100 people were consulted to get a satisfactory and reasonable set of results. The sample was made up of 50 construction employees, 20 construction project leaders, and 30 end-users.

1.8.5. Instruments for data collection and research

A structured questionnaire was used in this study as the data collection tool for the different sections to gather data from the two construction companies. The questionnaire consisted of closed-ended questions. This approach was chosen because it is inexpensive, quick, and an effective way to obtain detailed information from a large sample. According to Saul Mcleod (2018), a questionnaire is a study tool that entails of a set of questions designed to elicit information from respondents. The researcher decided to use a questionnaire because the respondents were able to complete questions within a reasonably limited time frame. The approach used influences the quality of the study results. Due to the Covid-19 pandemic, the researcher used an online mechanism (Google Forms) to collect data.

1.8.6Data Analysis

The Statistical Package for Social Sciences (SPSS) was used to process the data and to translate them to easy-to-use graphs, tables, histograms, bar charts, and pie charts. It is understood that this software is user-friendly and can produce the illustrations needed to report the findings. This program can carry out a descriptive and inferential analysis (Kulas, 2009). Descriptive statistics were used to analyze the results/findings because they allow the data to be presented in a meaningful way, and allow for easy data interpretation.

1.9 Ethical considerations

Ethical approval was sought from the CPUT Ethics Committee before the initiation of this research. The study must honour and meet the values of all participants for the research study to be regarded as ethical, by respecting the target population`s rights. Moreover, the researcher paid careful attention to confidentiality concerns by ensuring non-disclosure, and ensuring that the analysis did not discriminate towards any participants. The following aspects were addressed:

1. A letter of consent to interview the participants was given to all participants to sign. The intended use of the research is explained in the letter.
2. Participants had a right to withdraw from participating in the research and respondents remained anonymous. No participants was asked to disclose their names.
3. Confidentiality of information shared by respondents was respected at all times.
4. There was no deception or misleading of respondents.

5. Permission was obtained from the construction companies and the municipality before the research was carried out.
6. The researcher acknowledged the information from secondary sources using proper referencing techniques.

1.10 Outline of the dissertation”

Chapter 1: Introduction and background of the study – with literature review and outlining the problem statement, and research questions.

Chapter 2: Literature Review. This focused on the reasons why rural construction projects fail.

Chapter 3: Research Methodology: The chapter focuses on critical issues that relate to answering the research questions. The population is discussed as well as sample size and research instruments.

Chapter 4: Results and discussions: The findings of the research are presented and analysed herein.

Chapter 5: Conclusion and Recommendations: The research objectives are re-visited and summed up. Suggestions for changes are highlighted in this chapter.

1.11 Limitations of the research

The researcher chose to conduct this study within a municipality in Mpumalanga. The regional restriction has left out other non-provincial construction companies who may face the same difficulties too. Their scenarios might have offered the analysis a changed viewpoint, which will, unfortunately, not be captured in this research. The current COVID-19 pandemic may also have impacted the response rate of the population.

Chapter 2. Literature Review

2.Introduction

The aim of this chapter is to explore factors that impact the performance of rural-based construction projects.That is to investigate a factor that causes failure in rural areas projects, construction in project management. The contents of this chapter will assist in the overall understanding of the study as it includes issues that are vital to the study as a whole, such as a project, Project management, etc “

2.1. Project

A project is a “temporary activity having a beginning and an end that must be employed to produce a unique product, service, or result” (PMBOK Project Management Body of Knowledge). Furthermore, it is gradually developed. Projects are activities that cannot be carried on indefinitely and must accomplish a defined aim. According to Hartney (2018:1), “a project is a short-term endeavour performed to create a one-of-a-kind product, service, or result”. The term "temporary" in the context of a project refers to the fact that each project has a defined start and end date. As a result, time (deadlines) and money (budgets) are two considerations that play a key role in almost every endeavour. Similarly, Hartney (2018:1) defines a project as a short-term endeavor aimed at producing a one-of-a-kind product, service, or result. The two characteristics of deadlines and budgets are also unchangeable, and the more ambiguous these borders are, the greater the risk of conflict among stakeholders. Schwalbe (2015:4) also defines a project as a collection of tasks with a beginning and a finish, such as the construction of a community hall. A project also needs operational resources, such as personnel, equipment, software, and other assets (Schwalbe, 2015:4). Money for a project should be distributed; these funds may come from interested and impacted parties, as well as stakeholders (Schwalbe, 2015:4). Because of the project's uniqueness, there is a sense of

uncertainty in every endeavour. Uncertainty is one of the most difficult parts of project management since it produces risk (Schwalbe, 2015:4).

2.2. Project management

Asare (2017:5) states that project management has been acknowledged as involving flexible and successful monitoring and evaluation techniques, especially in developing countries. This is particularly valuable for developing countries. However, there is still a requirement for local skill training to obtain better project applications and results (Asare, 2017:5). According to LaBarre (2021:1) project management comprises the planning and organization of a company's resources in order to implement a certain task, event, or responsibility. Personnel, finance, technology, and intellectual property are just a few of the resources managed, in what could be a one-time or ongoing project.

2.2.1. The importance of thorough project management

Aston (2021:1) concluded that project management is critical since it ensures that the final product is accurately achieved and adds true value to the business opportunity. Every customer has strategic goals in mind, and these initiatives assist them in achieving those goals. One of a PM's responsibilities is to confirm that projects are correctly architected so that they fit well within the strategic frameworks of the client. Project aims should be tightly matched with the company's strategic objectives.

2.2.2 The Project Manager

Project managers are responsible for the planning, execution, oversight, control, and completion of a project. They have overall accountability for the project's scope, team, and resources, as well as its success or failure (Alexander, 2019). According to Kelsey Miller (2019), project managers strategies, manage, and monitor the accomplishment of certain projects for an organization, ensuring that they are finished on time, on budget, and within scope.

2.2.3 The role of the project manager

Madhavi (2018: 34–48) explains that a project manager is in control of supervising the project's progress. In other words, project managers are the driving force behind the project. They ensure that the project is completed on time and in good shape before being delivered to the client.

Project managers are therefore the driving force behind the projects. They make sure that the project is done within the specific time limit and is delivered to the customer without any flaws. They are in charge of all parts of the project, from the start to the finish (Madhavi, 2018: 34–48). According to Mrsic (2018), the roles of a project manager are the following:

a) Planning of activities and resources
b) Organizing and inspiring a project team
c) Maintaining control overtime management
d) Estimating costs and setting a budget
e) Ensuring that customers are satisfied
f) Identifying and addressing project risks
g) Keeping track of progress
h) Managing reports and other required paperwork

2.3. Project phases and “project life cycle”

The project life cycle describes the steps that a project goes through as it develops from start to finish (Cohen, 2018). A well-defined life cycle provides the project structure and the ordering of the project. According to PMI (2013:38), "project management is the application of knowledge, skills, tools, and procedures to a broad variety of activities to meet the requirements of a specific project”. Although the lifespan gives an elevated picture of the project, project management is broken down into five phases. The phases serve as a roadmap for getting things done, as explained below.

Project Initiation- This is the project's preliminary phase, and the intention is to define the project broadly.

Project Planning- This segment is crucial to venture control fulfilment because it makes a speciality of growing a plan with a purpose to be observed by using all of us. Goal-setting is usually step one on this phase.

Project Execution- This is the degree in which deliverables are created and completed. There is an awful lot occurring at some stage in this time, along with repute reports and conferences, improvement updates, and overall performance reports.

Project Performance/Monitoring- This involves keeping track of the project's progress and outcomes, as well as ensuring that everything runs smoothly.

Project Closure- This is the final stage of the project. Contractors who were hired specifically for the project are laid off at this point (PMI, 2013:39).

Source: (Eby 2018)

Figure 1.1: Phases of Project Management

2.4. Performance

Performance is defined inversely depending on the nature of the setting in which it is used. "The term ‘performance’ has been employed by a number of writers in a range of studies, with varying definitions. In the construction industry, performance is described as the ability to consistently improve a company's competence or output in order to remain competitive” (Horta et al., 2012:90; Hu & Liu, 2016:147).

2.4.1. In the construction industry, there are a variety of performance indicators

The construction industry must assess its long-term success or achievement by examining the internal and external factors that influence its performance, which is accomplished using performance measurements (Aladag & Isik, 2016:11). The practice of evaluating the efficiency and effectiveness of actions is known as ‘performance measurement’ (Sibiya et al., 2015:3). Companies can use performance assessment to help them define premeditated direction and increase their effectiveness in their sector (Ali et al., 2013:126). This is accomplished by "regularly collecting and reporting information on inputs, process efficiency, and project efficacy" (Sabone & Addo-Tenkorang, 2016:1493).

2.5. Why construction project fails

2.5.1 Unskilled Labour

According to Yesodharan and Mohan (2021), construction projects necessitate a diverse set of abilities, ranging from those of on-the-ground labourers and engineers to highly qualified architects and project managers. It is one-of-a-kind because of its vulnerability to climatic and environmental factors. In addition to the usual resource-related issues, this adds to the complexity. Project failure can occur when project managers fail to address important issues or when minor deviations in any element are neglected. These authors cite the following reasons for the project's failure: failure to establish a contingency plan, ineffective project management, insufficient project planning, erroneous resource capacity planning, unskilled resource allocation, wasteful resource use and tracking, cost overruns, and timetable delays are common occurrences.

Matera et al. (2015:24) revealed that 78 percent of the general workforce were incapable of understanding project management technical terms and ideas such as project strategies and Gantt charts, project networks diagrams, and evolution reports. This was because casual labour and semi-skilled to unskilled labour (88%)were generally used in project execution. Understandably, this would cause projects to miss their scheduled completion deadlines.

Labour shortages and a lack of skilled staff have only compounded the problem of employee productivity in recent years. Newer personnel lack the knowledge and confidence to carry out tasks at the same speed as more experienced crew members. Knowing what your personnel is capable of, is crucial when deciding on a project timetable (Rokita and Hacker, 2020)."

2.5.2. Corruption

In South Africa, corruption affects numerous businesses, with the construction industry being one of the most affected (Rose-Ackerman & Palifka, 2016). Bowen, Edwards and Cattell (2012), concur that there is a severe corruption problem in the South African construction industry, which is placing a strain on the country's economy. Bribery between public workers and private sector practitioners is, apparently, a major source of corruption. The prevalence of corruption in the

construction industry, and particularly in South Africa, caused interested parties such as Integrity Action (2012) to call on governments and international construction sectors to sign the Construction Sector Transparency Initiative (CoST) to combat this problem.

Abdul-Rahman, Hanid and Yap (2014:235-248) claim that unethical behaviour or corruption impacts the quality of building projects and leads to unacceptable sub-standard work. This research also reveals a link between professional ethics and construction quality, and it suggests ways to improve professionalism among construction industry professionals.

Bribery, fraud, collusion, theft, favouritism and pressure are the most commonly reported kinds of corruption in the construction business according to Chan and Owusu (2017:9) and these corrupt activities give rise to project cost overruns (Niazi & Painting, 2017:517). Bribing government officials or public institutions to gain power in the procurement of contracts is a common practice in various nations across the world (Thompson et al., 2017) as well as in South Africa. Damoah (2015) argues that the issue of corruption has been exploited to legitimize those who do it, with poverty being seen as the root cause. In Nigeria, the repercussions of these actions range from a lack of basic infrastructure, such as safe drinking water, to increased unemployment and poverty rates (Ijewereme, 2015). Despite efforts to curb these behaviours, the problem remains, putting the country at risk of project failure.

2.5.3. Project Resources

“Resources can be categorized as tangible and intangible resources (Das and Teng, 2000; Teigland and Lindvist, 2007; Damoah, 2015). Material, people, space and financial resources are examples of these resources (Teigland and Lindvist, 2007; Damoah, 2015). Projects had been shown to fail because of a loss of good enough investment. Another of these resources is human capital. One of the main reasons of interruptions and cost overruns during the 2010 World Cup in South Africa was a lack of labour during the stadium construction phases (Baloyi and Bekker, 2011:51-57). Furthermore, according to Grant Thornton International, there is a 39% global shortage of qualified workers, Malaysia being a prime example (Rahim et al., 2016).

Windapo and Cattell (2013:9) claim that the primary construction and development challenges affecting construction sector performance in South Africa include, firstly, rising building material costs. Following that, insufficient mortgage markets and exorbitant interest rates emerged as the second most serious problem. Respondents ranked technology, government procurement methods, and key global issues/globalization as of lesser importance.

Because of a shortage of resources, or competent staff, and the desire to cut costs, project managers are required to function as site agents, contract managers, foremen, or surveyors (Martin, 2010). As a result, they are overburdened with work. “According to a study conducted by Ramokhoase and Rugimbana (2010) in three (3) municipalities in Mpumalanga, South Africa, microbusiness owners face serious challenges in terms of funding, dealing with crime, lack of appropriate education and training, lack of access to government funds, and business management skills. This research also found that there is a general incongruity between government goals and practices when it comes to microbusiness support, which has a detrimental impact on microbusinesses.

2.5.4. Material is of poor quality

Ogunde et al. (2017:456-457) assessed the challenges faced during the implementation of the construction project management structure in the Nigerian construction business. He found that the use of sub-standard materials is only one of the elements impeding the operation of the construction project management system on construction projects in Nigeria. Other issues raised by Ogunde et al. (2017:456-457) include the project manager's passive engagement. The implementation of construction project management is hampered by a lack of client involvement in decision-making, design flaws, ineffective communication and poor treatment of the labour force. They propose that construction project management be institutionalized and that proper training and skill modification programs for construction professionals be made mandatory to ensure the long-term viability of Nigeria's construction project management systems (Ogunde et al., 2017:456-457).

According to Kuta (2017:1-9), a lack of compliance with building norms and monitoring leads to the use of substandard materials and the construction of substandard structures. To address this issue, he proposes that there must be a

guarantee that Nairobian by-laws are followed, site inspections must be conducted, and licenses must be provided (Kuta, 2017:1-9). Kuta (2017:1-9) states that the Kenyan government must combat irresponsible performance in this sector by ensuring that contractors follow professional regulations correctly.

2.5.5. Management of materials

Other elements that strongly influence construction sector performance have been noted by various authors, including Durdyev et al. (2018c); Larsen et al. (2015); Mavi and Standing (2018); and Ranawat et al. (2018). Material utilization accounts for 50-60% of construction project expenses hence efficient material use and management is crucial to improving project performance (Prasad et al., 2018:15).

In a larger study on universal delay causes in the construction sector, Zidane and Andersen (2018:663) studied material shortages. The ability of both the customer and the contractor to efficiently coordinate material replenishment could have a favourable impact on project performance, resulting in project delivery on schedule (Chaturvedi et al., 2018:352; Tayeh et al., 2018:10). A research conducted by Windapo and Cattell (2013:75) in the South African construction industry found rising building material costs were identified as an important issue influencing the industry's performance. The importance of avoiding resource scarcities cannot be overstated, and this necessitates all parties adopting a thorough coordination strategy through their respective manufacturers and suppliers to assure timely material and equipment availability.

Buys and Le Roux (2013:1-78-99) looked into the primary reasons that led to flaws in built houses, as well as the failure of building construction projects as a result of these defects. They discovered that the South African construction industry, notably in the Eastern and Western Cape regions, lacked enough trained craftspeople to build dwellings. Buys and Le Roux (2013:78-99) further found that projects also fail due to unnecessarily long timelines and design flaws. This could be due to shoddy workmanship by designers or architects, as well as inept labour and inadequate project management.

Building collapses plague the Nigerian construction industry (Ogunde et al., 2017:1-11). Agwu (2014:456-457) researched six Nigerian cities in response to multiple

reports of structures collapsing or failing, killing people, and destroying existing property. He found that the use of sub-standard designs, improper or inaccurate, and sub-standard materials and improper practices in the Nigerian construction sector are the principal causes of building collapses.

The price stability of construction materials is also crucial for good project cost control. According to Ghanim et al. (2017), an absence of building materials has an effect on the efficiency of a project. Moreover, these researchers revealed that shifting material prices can drive up the cost of a construction project. Ghanim et al. (2017) and Abera et al. (2016) advocated that contractors estimate commodity price rises and that the owners bear the costs.

2.5.6. Geographic location

According to Bekker and Mashaba (2018:85), construction failure research is frequently conducted across industries but is usually regionally specialized. Regardless of where the projects were located, it was obvious that common variables contributed to project failure. In Egypt, project failures were classified as material-related, owner-related, consultant-related, contractor- or subcontractor-related (Marzouk & El-Rasas, 2014:50).

2.5.7 Client interference

Shahhossein et al. (2016) divided project failure factors into two categories: internal (such as interfering of clients, payment delays to workers, slow decision-making, financial difficulties, and poor cash flow managing) and external (such as dangerous weather, and hostile political circumstances), government intervention, a lack of arrangements among project sponsors, and an interruption in material delivery). As a result, judging project success and failure may involve a variety of elements. On the other hand, a project should be able to satisfy the key project objectives, such as the time allotted, and the budget, the budget set aside, the quality requirements, and the client's satisfaction with the final deliverables.

According to Vahid Shahhossein et al. (2017:2), construction ventures play a crucial role in any nation's economic growth. Construction programs absorb a significant portion of the state budget's capital asset expenditure in most countries, and Iran's construction industry is no exception. Contractor-related causes of project failure

have also been connected to an increase in project failures in Nigeria. In all Nigerian states, poor contracting practices such as poor contracts approved, suppliers' non-performance, and contractors' misuse of assigned budgets, have led to below-par project delivery, late deliveries, and the feared desertion and failure of public projects (Uyo, 2019). Nepotism and tribalism in contract awarding have also been associated with contracting issues resulting in a high failure rate.

Stakeholders engaged in the agreed contracts have also reported project cost overruns as a result of project failure. Inherently, if a project fails, the government, as a stakeholder, will be obligated to reward the local community that was evacuated to make room for the project's execution, as well as any expenses spent as a consequence of the delays (Nweze, 2016). On the other hand, Contractors will be obliged to pay returned their credit score advances to finish the tasks.Murwira (2017) found that owners and contractors rated the contractor's underestimation of the project expense as the leading cause of construction project failure in the North-West Department of the Public Road (NW DPWR).

On the other hand, according to a report by Msafiri (2015), client support reduces irregular money disbursements and, as a result, the project delays and stalls. In addition, this study found that client support improves prompt payment and encourages project completion on time. Client support aids in the acquisition of skills as well as improving a contractor's performance. Finally, Msafiri (2015) advised clients to develop their financial control processes so that vendors would be paid on time.

2.5.8 Productivity issues and delays

Hussain et al. (2017:2-3) state that public construction projects are often recognized as monetary and social catalysts for long-term rural community growth that benefits rural communities. Infrastructure spending accounts for a significant portion of most developing countries' development budgets. The government therefore invests money in public infrastructure projects to help with development, local company development, farming growth, market access, improved health centers, better education, and poverty improvement, all of which are appealing win-win solutions. Conversely, poor infrastructure affects educational quality, negatively affects health care, electrical power delivery, water supply, telecommunications services, and

sufficient sanitation in these communities. Infrastructure is therefore crucial to the growth of rural economies and their development. However, in should be noted that even in wealthy countries, most public-sector initiatives encounter severe delays and take longer than expected (Hussain et al., 2017:2-3).

Thus, delays in public infrastructure projects, particularly in developing nations, impact both economic and social development such as improving worker skills, eradicating poverty, providing education extension services, agricultural expansion, sustainable growth, and sustaining communities. Several studies have been undertaken globally to investigate the causes or impacts of project delays in the construction sector. Only contracting parties bear the brunt of the consequences of project delays (owner, contractor, and consultant). Construction delays, on the other hand, have an impact not just on the construction industry, but also on the region's complete economic and social status (Hussain et al., 2017:2-3). They are thus one of the most common problems, resulting in a slew of negative consequences for the project and its participants (Awari et al., 2016). Divya and Ramya (2015) also argue that construction delays are one of the most common issues in the construction industry and that they negatively impact project performance in terms of expense, time, efficiency, and safety. Similarly, delays are one of the most common and recurrent issues in Zimbabwe's construction industry, having almost become a way of life in that country.

Even Malaysia, as a more developed country, faces challenges in the construction industry, as well as delays in meeting the cut-off date and budgets, construction waste, low output and an over-reliance on foreign labour. Project delays have become a significant part of the construction management process and a vital factor in project performance. According to Malaysian Treasury Secretary-General Datuk Dr. Wan Abdul Aziz Wan Abdullah, construction projects that are 30 percent or three months behind schedule are considered sick. Out of 359 projects in Malaysia, 79.5 percent of public projects and 66.7 percent of private projects were not finished within the time frames specified in the contracts. In addition, 80 percent of Malaysian government projects have been delayed.

Raml et al. (2017) stated that one of the subjects covered in the Eleventh Malaysia Plan for the rural region is Transforming Rural Regions to Lift Health of Rural

Communities, which stresses the problem of a lack of basic substructure and other utilities in rural areas, such as a road network. The 2015 figures on construction projects in Malaysia from the Construction Industry Development Board back up this claim (CIDB). According to these numbers, urban regions like Johor, Selangor, and Wilayah Persekutuan have had more construction projects in the last three years than locations like Kedah, Kelantan, and Perlis. Project construction in the rural region of East Coast Expressway Project Phase 2 (LPT2) has been judged delayed in the completion time due to changes in the overall design and layout from a Federal highway to a toll road. Another project in Sarawak's Bakun Hydropower's rural area has been confirmed to be experiencing significant delays, resulting in cost overruns. The request for studies to solve the complications has increased as a result of the project delays. However, there has been no research on project delays in Malaysia's rural areas. As a result, it is necessary to look at what is causing project delays in rural areas in this country also. Inappropriate preparation during the early stages of a project can cause delays at different stages throughout the project (Ramli et al., 2017). As a result, particularly in large and mega projects, an experienced contractor and experienced labour are required. In addition, to speed up the project plan, good preparation and management are critical.

Gomez et al. (2019), comment on a study on the causes of delays and cost overruns based on stakeholders' perspectives showing the frequency of incidence, magnitude, or significance of each potential cause and ranking the most significant variables. The study concludes that the major reasons for cost inflation in road construction projects are scheduled delays and strikes.

As in other countries, the construction industry in Cambodia contributes significantly to the country's economic progress and improvement (Council for the Development of Cambodia [CDC], 2015). The construction sector plays a vital role in the quality of life because of its forward and backward interconnections with other industries (Durdyev & Ismail, 2015). As a result, long-term growth in the construction industry is seen as crucial as it has an effect on the broader economy (Durdyev & Ismail, 2016; Enshassi & Ayyash, 2014). Since 2007, the construction industry has contributed around 30.1 percent of Cambodia's GDP and has provided nearly one-fourth of the country's jobs (Durdyev, Omarov & Ismail, 2016). However, here also there is confirmation of inconsistency in construction projects in terms of results, and this

trend is growing. Two key difficulties restricting the construction industry's performance in Cambodia are poor budget and schedule performance (CDC, 2015).

Payment delays to suppliers, inflation/amount fluctuation, material price increases, and insufficient funds from customers, variation orders, and poor financial market conditions were identified as project delays in Ghanaian state housing construction projects by Amoatey et al. (2015). According to Gomez et al. (2019), there is other research focusing on reporting causes causing delays and cost overruns based on stakeholders' perceptions to identify the frequency of occurrence, severity, or importance of each conceivable cause to ranking the most critical elements. In particular, research in Zambia found that inclement weather, scope revisions, environmental protection, timetable delays, and strikes are the leading reasons for cost inflation in road construction projects.

As discussed above every country's economic development relies heavily on construction projects. Nonetheless, a check of project records reveals that in the vast majority of situations, projects are not completed on time, causing them to lose their economic basis and simply collapse (Shahhossein et al., 2018). According to Shahhossein et al. (2017), construction's most important management functions lack dedication, with unproductive site management, weak site scheduling, inappropriate preparation, lack of explanation in project scope, lack of communication, and poor contracts were all listed as failures. The regression model identified a sluggish decision-making process by the owner, as well as low labour productivity.

2.5.9 Project Finance

According to Larsen et al. (2015), In the Danish construction industry, the most dangerous factors disturbing project time, expense, and quality are a lack of project funding, lapses in advisor content, and omissions in construction work completion, and the most serious factors affecting project time, cost, and quality are a lack of project funding, oversights in material, and omissions in the construction work itself. Shehu et al. (2014) analysed the Malaysian construction industry's cost efficiency and revealed 55 percent cost overruns. The cost overrun in the private sector, it is interesting to note, was larger than in the public sector. In terms of negative cost variation, they discovered that different countries' industries perform differently. They blame cost overruns on procurement methods including traditional, design-build, and

project management, as well as project scope, with big and medium-scale projects performing more poorly than smaller projects.

Project delays in Ghanaian state housing construction projects were described by Amoatey et al. (2015) as delays in payment to contractors, price fluctuation, material price rises, lacking funds from clients, variant orders, and a weak financial market. The loss of foreign or donor funding in local projects done in Nigeria has been identified as a serious consequence of the rising number of unsuccessful projects in the country. Nigeria's development partners make available both technical and financial support for the realization of critical infrastructure projects (Adeyemo & Amade, 2016). However, donor support has dwindled as a result of escalating leadership failure, as seen by corruption and theft of cash by local governments and their leaders.

Projects cannot be finished without the requisite funds. However, studies reveal that many Nigerian efforts have been delayed or abandoned as a result of financial constraints (Akande et al., 2018a). In Nigeria today, the practice of government ministries and agencies refunding unexhausted allocated cash to the national coffer at the end of each financial year has left projects with deficient money during this time, increasing the accidental factors of project failure - but the issue of insufficient financial volume is not exclusive to the government.

2.5.10 Lack of experienced labour

Lack of skilled labour is also a common problem. As an example, in Zimbabwe's construction sector (Chigara & Moyo,2014; Nyoni & Bonga, 2016), while labour is plentiful Moavenzadeh (2014) claims that skilled labour is in short supply as in other developing countries. The shortage of highly qualified and educated staff in Zimbabwe's construction industry may be due to the country's high capital flight as a result of economic hardships. As a result, more workers are crossing international boundaries in search of greener pastures (Nyoni & Bonga, 2016).

Despite its enormous population, Nigeria's most important efforts are disadvantaged by a scarcity of trained personnel to carry them out (Kuroshio and Lawal, 2014; Okuntade, 2015). Nweze (2016) recognized variables such as experienced

professional immigration to other countries as key contributors to ineffectiveness in Nigerian projects, causing a higher cost of hiring foreign specialists.

Most projects in Nigeria become affected by planning and monitoring challenges of project professionals' deficiency of expertise. Project planning, control, and monitoring, according to the literature, are essential for successful project execution (Adebayo et al., 2018). A major reason for project failure in Nigeria has been identified as a deficiency of active planning, estimating, and scheduling in project application. Project failures in Nigeria have been linked to poor contractor estimating, project operation time frames, and weak cost projections (Dosumu & Aigbavboa, 2017). Planning faults are caused by poorly formulated objectives and clear roadmaps for reaching them. As a result, projects in Anambra State, Nigeria, have been carried out chaotically, with no methodical developments, resulting in significant failures in most of them (Nzekwe et al., 2015).

Adeemi and Aigbovoa (2018:8-9) concluded that poor workmanship, ineffective contractors, poor construction methods, management of time, unsuitable planning, shortage of labour and materials, scarcity of resources, deceptive practices and bribes, insufficient management between stakeholders, and poor monitoring and evaluation are the factors most disturbing of construction performance. To properly quantify construction performance in South Africa, all elements influencing construction performance must be carefully monitored.

Ngcengeni (2020:94) claims that lacking of experienced and professional technical workers such as designers/engineers/project managers, with pertinent skill and knowledge is a critical factor influencing failures in sustainable performance because employees not having the applicable experience, knowledge, and the technical expertise required, the project will not be sustainable. Due to a lack of knowledge and expertise, the project may require reworking or may be delayed, increasing the cost of implementation.

2.5.11 Poor technical performance

According to Azeez and Asadi (2017), expertise and technical issues such as poor design ability and frequent design changes, lack of reliable historical details, lack of experience in a complex project, the influence of incompetent subcontractors,

defective works and reworks account for 25% of failures. Engineers (technical advisors, senior/site engineers, supervisors), and project managers are examples of technical employees in the construction business who can be used in a variety of roles. In developing countries like South Africa, the problem of a low-qualified workforce persists due to insufficient employee training (Horta & Camanho, 2014:974). Lack of understanding of business ethics is a factor influencing long-term performance in the construction sector. This is because project staff who do not understand business ethics endanger their work, customers, and societies. A lack of business beliefs jeopardizes the company's future, endangers the public good, and can have a diversity of other negative workplace consequences (Ngcengeni, 2020:96).

Owners and advisers ranked the servicer's lack of expertise in implementing construction projects as the leading cause of construction project failure in the North-West Department of Public Work Road (Murwira, 2017).

2.5.12 Poor Communication

According to the Project Management Institute (PMI), bad communication is the major cause of one-third of all project failures. Even if the project is not a tragedy, the consequences of bad communication are costly. Just 37 percent of projects were accomplished on schedule, 48 percent completed within budget, and 52 percent met their original targets in projects with fairly efficient communications.

According to the Department of Marketing (2017), an issue in construction is a lack of contact. Miscommunications can harm a project by causing indecision among everybody participating, from main stakeholders to construction professionals and field labourers. On the job site and in the workplace, unpredictable reporting, inaccurate reporting, uncertain reporting, and late reporting can result in mistakes that trigger project delays and cost overruns.

Various studies have demonstrated that effective communication is a critical constituent of a project since it supports the dissemination of related information to all project contributors, which is needed for the successful completion of the project (Zulch, 2014; Ikechukwu, et al., 2017). As a result, poor communication throughout the planning and execution of projects is likely to result in project failure. According to

Zulch (2014), communication is the procedure of gathering important data, analysing it, and disseminating it to those who will require it. Efficient communication is the glue that holds a project team together and helps them achieve their objectives, whereas misunderstanding jeopardizes project success. Language obstacles, cultural barriers, poor feedback, and unclear communication routes are among the causes of poor overall communication in the construction sector (Hussein et al., 2018). In projects involving multicultural collaboration, the first two causes are most prevalent. Feedback demonstrates exactly how project members respond to certain information and tasks, and it is necessary to understand this for effective communication.

Poor communication between many stakeholders in Nigerian public projects has been identified as a major cause of project failure. Poor communication may exist between the federal government and state governments, the government and private project stakeholders, the government and local communities, and project implementation partners (Ogundelea & Somefunb, 2008; Dim, 2018). Poor communication has also been connected to delays in project implementation in Nigeria, which leads to project abandonment and failure.

According to Hussein et al. (2018), language obstacles, cultural obstacles, poor feedback, and unclear communication routes are among the causes of poor communication in the construction sector. In projects connecting diverse partnership, the first two causes are most prevalent. Feedback is necessary for complete communication since it reveals how project participants react to specific information and tasks.

2.5.13 Summary of factors that cause construction projects failures

Various studies have already investigated aspects that contribute to project failure (Table 1). The majority of these studies are attentive to the main reasons for time and schedule overruns, contractor issues, and quality control in different construction projects. Table 1 lists some of the most typical causes of project failure.

Table 1: Table 1: A Summary of common causes of project failure in the construction industry

Critical performance factors	Authors

Poor communication	Riddel (2019)
Inexperienced project managers	Lim (2021); Rokita&Hacker (2020)
Scope changes from owner	Jones (2018)
Inadequate and poor planning	Jones (2018); Lim (2021); Yesodharan&Mohan (2021)
Contractor's financial difficulties	Jones (2018)
Poor site management and supervision	Lim (2021)
Underestimation of project cost	Rokita&Hacker (2020); Lim (2021);
Incompetent resource allocation	Yesodharan&Mohan (2021), Lim (2021);
Project structure, sufficient resource accessibility (money, work, plant, material), full top supervision and sponsor provision, incessant performance measurement, skill maintenance over time (staff maintenance), decent affiliation with shareholders, thorough technical understanding of project, instructions learned from previous projects useful to upcoming projects, organize.	Mavi and Standing (2018)

Compiled by author

2.5.14 Shortage of efficient and systematic delivery systems

According to a study conducted by the South African government in 2002 to identify problems and deficiencies in infrastructure delivery, there is a shortage of efficient and systematic delivery systems, as well as a shortage of skills to complete projects according to stipulations (SAICE, 2016: 2).

The following are the most pressing issues confronting the government's organization service delivery program:

• Infrastructure investment delays, also recognized as the "blocked infrastructure project pipeline," are caused by insufficient planning and resource allocation, as well as unnecessary bureaucracy.
• Backlogs in infrastructure delivery, especially in the area of buildings infrastructure
•Budgetary constraints in addressing infrastructure implementation backlogs;
• Inheritance of inequitable infrastructure spatial distribution, resulting in restricted access to basic, social, and economic services in rural areas;
• Capital expenditures that are underspent;
• Ineffective project management practices; and
• Ineffective time management.

2.5.15 Improper planning and scheduling

A detailed analysis of the literature revealed that a number of factors impact the success of construction projects in Gauteng (Sibiya, 2015). In this report, eighty-two factors were listed as having the potential to influence project success; cost factors, time factors, efficiency factors, efficiency, customer fulfilment factors, supervisory factors, human resource factors, creativity and learning factors, and finally environmental factors were noted.

Findings from the reviewed literature revealed that the most significant factors preventing the success of construction projects are the average delays due to closures leading to material shortage according to customers, consultants, and contractors (Sibiya, 2015). Further research revealed that the significant factors influencing the efficiency of construction projects, according to clients, are nonconformance to specifications, a lack of funding, a lack of professional workers, and an increase in material prices.

The most vital factors affecting Congolese construction projects were architecture, client management, contractor efficiency, scheduling, and the contract (Batimba, 2020). The design-related factors were found to be influenced by the design team's expertise and ability, while the client/owner-related factors were found to be influenced by late payments and delivery to the construction site by the contractor.

According to Batimba (2020), the construction industry faces numerous issues, including project overruns, time delays, inter-party disputes, and a lack of a quality

assurance mechanism. The three key reasons for the pervasive nature of these issues are the particular nature of projects, the decentralized and extremely modest nature of the construction industry, and the industry's growing challenges. A construction project is measured good when it is completed on time, on budget, and following the project's quality requirements (Mohamed et al., 2017; Abera et al., 2018; Murat et al., 2013). The difficulty of contractors in obtaining finance affects the project process, according to Rateb et al (2014). The leading factors directly influencing contractor output on construction projects were financial complications encountered by the contractor, manpower shortages (of skilled, semi-skilled, or unskilled labour), and unnecessary adjustments to the orders by owners. Poor planning, variations in project design and scope, inflation, contractor capability, and inadequate cost projection are only a few of the other culprits (Nzekweet al., 2015).

There are several motives for project failure in both industrialized and developing countries, and studies have shown that governments have lost enormous sums of money as a result of unsuccessful initiatives (Fabian and Amir, 2011; Damoah, 2015). These variables contribute to project failure, which results in slow national development (Nweze, 2016). To combat this threat, several authors have advocated increased research on the reasons and consequences of project failure, particularly in poor nations (Damoah, 2015; Taherdoost and Keshavarzsalehc, 2016).

Shahhosseini et al. (2016:93-108) divided the causes of construction project failure into customer and external linked causes. Client intervention, payment delays to the contractor, low speed of decision making, financial challenges, and inadequate cash flow management are some of the client-related causes of project failures, according to them. Life-threatening weather, aggressive political situations, government meddling, a lack of settlement among project stakeholders, and material delivery delays are some of the external variables they identified as contributing to project failures.

Project failure has resulted in significant sums of money being lost globally. Initiatives involving information systems in the United Kingdom, electricity-generating in Africa, and construction in Asia are just a few illustrations of failed projects (Heeks, 2006; Fabian and Amir, 2011; Okereke, 2017; Shahhossein et al., 2018). The Home

Office, for example, had a £750 million e-boarder program that was awarded in 2007 but was discontinued as a failing experiment in 2010 (Alami, 2016).

Project failure rates in poor nations have been reported to be more prevalent than in developed countries necessitating the implementation of more development initiatives (Ogwueleka, 2011; Damoah, 2015). However, these initiatives face several obstacles, including poor preparation (Akande et al., 2018a), cost variance (Aziz, 2013), and challenging stakeholders (Rajablu et al., 2015). Currently, the incidence of project failure in Nigeria is worrying, and these failed projects have significant financial consequences (Akande et al., 2018), reducing the rate of progress.

Time delays, cost overruns, and quality defects are all common problems in construction projects around the world. According to Pheng and Chuan cited in Adebowale and Ayodeji (2015: 1118), effective delivery of a construction project is historically dependent on the project manager's efficiency, which must contemplate delivery time, budgeted cost, and predictable quality.

According to official figures released by Iran in 2015, a total of 597 billion rails were invested solely in construction projects. Unfortunately, the bulk of these projects were never completed, and several others had cost and time overruns. Additionally, no gains from existing incomplete projects annually damage the national economy by more than 200 billion Rials (roughly one-third of the country's annual development budget) (Research Centre of the Islamic Republic of Iran's parliament). Given these results, it should come as no surprise that recognizing and ultimately avoiding project failure in the construction industry, is critical for the Iranian economy.

When none of the aforementioned factors are present, the project can fail due to poor management. If a project is adequately staffed, has a strong WBS, proper planning, supply availability, proper setting up, and sponsor provision but still fails, the only explanation for failure is bad project management. The project manager and project team are responsible for the project's progress. As a result, the recommendation is to hire the right people with relevant expertise for your company/organization (Neeru, 2018).

Since precise time estimate is a vital skill in project management, project failure is also often caused by a lack of capability to precisely estimate the time needed to complete the project. Without it, project personnel will have no idea how long the project will take, potentially increasing the project's costs or budget (Ngcengeni, 2020:97). If a construction project is not properly and thoroughly administrated, the consistency of its organization and management may have an impact on the project. Msafiri (2015) found that organizational conditions have a direct impact on worker productivity.

2.5.16 Poor leadership

Abera et al. (2016) found that leadership performance issues were the major issues in Oromia Industry and Urban Development Bureau building construction projects in Ethiopia. The presence of a project manager (PM) to oversee a construction project was discovered to be the secret to the success of a construction project in the same report. In a similar vein, a Malaysian study found that the design team's expertise and proficiency had a substantial impact on construction costs. Multiple design changes were also discovered to be contributing factors causing rework and further costs in the construction project (Boon et al., 2017).

As a result, Boon et al. (2017) recommended that the Malaysian government must ensure that all of the projects it undertakes should have sufficient resource funding. They further indicated that, “in addition to sufficient resource funding, the government must develop and enforce strategies to eliminate corruption-promoting practices on government-funded projects. Finally, Boon et al. (2017) and Murithi et al. (2017) suggested that time management be adequately laid out in line with construction management standards and that orders be completed on time. This will assist in eradicating unnecessary construction postponements of the project's completion.

Damoah (2015) cites bad supervision, contract modification, construction blunders, inadequate or unavailable equipment, poor procurement practices, complicated financial processes, and other factors as causes of delays in Zambian road construction projects.

The ever present threat of project failure has therefore encouraged scholars to investigate the underlying variables that lead to these failures. Some studies have

adopted a somewhat generic approach (Liu et al., 2011; Aziz, 2013; Taherdoost and Keshavarzsalele, 2016) or have examined project failure with relation to specific projects in various industries (Liu et al., 2011; Aziz, 2013; Taherdoost and Keshavarzsalele, 2016; Oloruntobi, 2013; Patanakul, 2014; Kog, 2017).

2.5.17 Unreliable workers

According to a study conducted by Msafiri (2015), professional manpower is one of the three main influences affecting the success of contractors in Kenya's road sector. To ensure that resources are available when needed, effective resource management necessitates an understanding of the lead time necessary. A successful resource management program will result in a reduction in project expense, while a weak resource management program will cause the project to meet its planned deadlines and cause many problems such as cost inflation, material and labour waste, and idling of machinery timings.

Experience and expertise were found to have a greater impact on the design, while delays in payments and delivery of the site to the contractor were the most significant client/owner-related factors (Batimba, 2019). The ability of the project manager's team to make day-to-day decisions on the job site was discovered to be the most significant factor influencing project management factors. The contractor's factors were also affected by a lack of subcontractor expertise and frequently changing subcontractors, while the project's complexity was found to be the most significant factor influencing efficiency. The factors relating to schedules and contracts were greatly influenced by discrepancies between contract documents.

2.5.18 Cash flow

According to Amoah and Pretorius (2018:18), the amount budgeted for each project in the government must go through several stages before being approved. Due to the lengthy processes that allotted money for projects must go through, funds are frequently not authorized when they are most needed to pay contractors and consultants working on the projects. As a result, contractors and consultants are not paid on time, which mostly affects the cash flow of the infant subcontractors. Inexperienced (nominated) subcontractors with a poor financial history must wait for the payment certificate to be processed before additional supplies can be ordered,

extending the project's completion time. Even when the assigned budget has been approved, the signature of payment certificates to the contractors can take months if the officer in charge is on leave or outside the country. This finding is consistent with Shahhosseini et al (2016:93-108). Findings addressing client-related reasons for project failures, such as contractor payment delays, financial issues, and poor cash flow management.

Contractor cash flow issues contributed to project failures as well (Amoah and Pretorius, 2018:19). Even though they were paid by the client, most contractors did not use the funds to purchase the necessary materials for the project, but they utilized the advance payment to acquire a private car in two cases instead of paying for the goods required and the people on the job. As a result, there were labour discontent and material shortages, which led the contractors to abandon the project, and it had to be re-tendered, delaying the project's completion date. In the North-West Department of Public Work Road (DPWR), contractors' cash-flow constraints were rated as another major cause of construction project failure by owners and consultants (Murwira, 2017).

2.5.19 Scope definition

Scope definition is defined by Bjorn et al. (2018:75) as one of the project's phases (initiation phase) that "determines what product systems are to be assessed and how this assessment should be placed." Defining project scope entails bringing together appropriate or relevant stakeholders early in the project planning process (Chaturvedi et al., 2018:347), allowing each stakeholder to explicitly identify what needs to be done and what the deliverables from each party should be (Gunduz & Yahya, 2015:76). A well-defined scope of work gives the project a clear vision and aim since each stakeholder engaged understands exactly what is expected of them (Gunduz & Yahya, 2018:76; Tayeh et al., 2018:307).

Tayeh et al. (2018:307) state that executing a project without knowing its objectives, is a recipe for disaster. Tayeh et al. (2018:307) found that the primary cause of poor scope definition is a lack of time allocated to engineers to produce designs and project drawings. Variations in orders and disagreements during execution are minimized with a well-defined and well-resourced scope of work, resulting in severe delays or an increase in project costs when this is absent (Gunduz & Yahya,

2018:76). As a result, given enough time, more precise designs could avoid or minimize scope fluctuations during execution, resulting in improved long-term performance.

According to Amoah and Pretorius (2018:18), project failure is caused by a lack of project scope clarity. In an interview with the project team, it was discovered that the customer frequently misdefined project scope because projects are typically rushed. This results in unnecessary modifications and more work in the middle of a project's implementation, causing the project to exceed its time and budget and often, as a result, fail. This finding is consistent with Doli et al. (2012) who showed that poor planning and a lack of clarity in project scope are two of the leading reasons for project failure.

According to Ngcengeni (2020:94), one of the elements that cause project failure is the lack of a clear project aim and vision because it is impossible to construct a project without knowing its aim and intended application. This is tied to several factors, including technical, financial, educational, and societal difficulties, and a full understanding of the project's scope is required to avoid arguments and fights, which may arise if the scope is not well-defined. The degree to which project goals and expectations are accomplished determines the project's success.

2.5.20 Change of scope

Changes in project scope are another of the leading causes of project failure (Taherdoost and Keshavarzsalehc, 2016; Sudhakar, 2016). Before or during the execution of many projects, requirements alter. The majority of the company's projects are government-related, such as schools, hospitals, and offices. Normally, projects are pushed through without a clear scope description. In most situations, projects are started before the concerned department has made any judgments about the type of facilities that are required in the community. As a result of the changes to the originally proposed project scope during the project, the project completion time and expected cost are surpassed (Amoah and Pretorius, 2018:18).

2.5.21 Politics

Gunduz and Yahya (2018:76) recently found that political battles and uncertainties have only a minor impact on construction project success in developed countries.

However, the effect of the political factor has arisen significantly in emerging economies such as South Africa, where construction projects have become a highpoint of development (Damoah & Kumi, 2018:4) and political conflicts are often caused by government changes and corruption.

Political variability and uncertainty were ranked as the fifth most important element determining long-term performance in the construction business because political instability is viewed as a significant malaise that harms economic performance. Policymakers' horizons are likely to be shortened as a result of political instability, resulting in inefficient short-term macroeconomic strategies. It may also result in more frequent policy moves, increasing volatility and, as a result, a negative influence on macroeconomic performance(Ngcengeni, 2020:95).

In Nigeria, socio-cultural impediments such as disagreements and persistent opposition to government initiatives have become barriers to project completion. Similarly, due to a lack of continuity in initiatives formed, successive governments have neglected to give funds for the completion of initiatives initiated by their predecessors (Nweze, 2016). Initiatives across Nigeria have failed due to a lack of political coherence toward development, notably in project implementation. The Gas Revolution Industrial Park in Ogidigben, Delta State, and the Gelegale Seaport in Edo State, for example, both failed to get off the ground despite the willingness of foreign and local governments to finance the projects (Yusuf, 2018; Okoromadu, 2019). Because of their sabotage and conflicts during the implementation of these two efforts, this was the case.

It is critical to be able to accurately estimate project costs if you want to succeed (Botchkarev, 2015). Erroneous cost estimates plague the majority of government projects in Nigeria, which are fuelled by a variety of factors, including corruption. According to Nweze (2015), in Nigeria, ministries and agencies in charge of project delivery are given the ability to begin and manage their projects, allowing for unrestricted cost manipulation. In the North-West Department of Public Work Road (DPWR), corruption and bribery by the owner during the bidding and contract award procedure are among the leading causes of construction project failure (Murwira, 2017).

2.5.22 Conflicts

When the project objectives are not met adequately, constraints in project implementation will emerge. To avoid losses, the aspect of conflicts or disputes between the project's many elements must be appropriately controlled. Conflict arises when there is a misalignment of ideas or aims to be achieved, both inside and between individuals. Potential sources of conflict include owners, contractors, consultants, project scope, human resources, contracts and specifications, and external variables (Kuala et al, 2016:44). Conflicts are inherent in the construction sector, according to Kaula et al. (2016:45), due to differences in perceptions among project participants. Confrontations that are not managed appropriately can quickly degenerate into fights.

Disputes are one of the most common problems that impede building projects from being finished properly. As a result, in order to execute the construction project on time, on budget, and with the intended quality, it is critical to understand the origins of conflicts. Elmagdobi et al. (2016:33), confirm that conflicts are one of the most common causes of construction project failure. As a result, it is necessary to assess and anticipate the most likely sources of conflicts that may arise during the project's completion so that appropriate tactics and processes for preventing and controlling them can be implemented.

2.5.23 Poor risk management

Risk management is one of the nine knowledge areas identified by the Project Management Institute (PMI), and its integration is seen as a vital component and need for project success. Construction projects are exceedingly difficult projects to complete, and uncertainty can originate from a variety of sources. To successfully deal with unforeseen incidences and uncertainty, risk management is gradually becoming an important component of building project management.

Natural risks associated with climate systems (hurricane, typhoon, flood, etc.) and ecological methods (seismic activity, volcanic eruption, geotechnical issues) are present in construction projects, as are human risks related with political, economic, financial, authorized, well-being, management, cultural, and social dynamics (Perez et al., 2016).

Due to increasing investment, complex interfaces, a variety of stakeholders, technology and material integration, and strict schedules, construction projects are especially vulnerable to risk. In today's construction business, these issues are becoming increasingly complex, and they are linked to other factors such as contractual, technical, and financial needs (Perez et al., 2016).

Construction is a dangerous industry, but it is critical to both developed and developing countries' economic progress. As a result, risk management in construction projects has been known as a serious procedure for meeting project goals in terms of time, safety, quality, cost, and ecological sustainability . Risk management was identified as a critical technique for dealing with construction hazards and overcoming task failure issues. Risk management was identified as a management strategy aimed at locating sources of uncertainty and risk, analyzing their impact, and generating appropriate management solutions. Furthermore, risk management in the context of construction project management is a systematic and complete approach to classifying, analyzing, and concluding strategies on risks to attain project objectives. Construction project failure or success is often determined by risk management (Akinbile et al., 2018:169-174)

Project failures are, in essence, the worst-case scenario of poor risk management. Such failures result in a loss of valuable output or production, as well as a waste of time and resources, preventing the achievement of the project's goals and objectives. When industrial hazards are not anticipated, especially for different and advanced ideas in technological and construction circles, the project can fail outright. Every mistake made at managerial levels and by stakeholders in risk management has a detrimental influence on how products are distributed. Risks can quickly wipe out a project's profits and benefits, or they can slowly eat away at a contract's profit until the construction bodies run into debt or suffer large losses, eventually causing the project to fail and close (Halou et al., 2019:157:164).

2.5.24 Poor project activity execution following the project plan

Mavetera et al. (2015:24) found that the majority of respondents (65%) plan projects before executing them and that they have possibility plans in place for late-running projects by the PMBOK's project time management standards (2013). In their plans,

65 percent of respondents said they also create project timetables and task breakdowns of project activities and major milestones.

Moilwa (2013) emphasized that project managers must be knowledgeable in all nine project management knowledge areas, as well as possess skills in the tools and methods needed for projects. The general running functions, such as planning, organizing, leading, and monitoring, are some of the areas covered by these knowledge areas.

Delays due to an absence of materials, a deficiency of resources, a lack of leadership management skills, an escalation in material amounts, the absence of extremely proficient and capable professionals, and a lack of quality of accessible equipment along with adequate raw material are all factors that commonly obstruct construction performance and cause disruption or breakdown (Saraf, 2013:6.14). Overall various obstacles have been identified as influencing the performance, growth, and improvement of the construction industry in South Africa (Windapo and Cattell, 2013).

Saraf (2013:6.14) classified elements affecting construction performance into three categories: owner, engineer, and contractor viewpoints. Inappropriate planning, site organization, decision-making, labour scarcity, technical personal quality, and material scarcity are all factors influencing construction performance. In the eyes of engineers, such factors represent an inappropriate design.

Saraf (2013:6.14) discovered that incorrect planning is the most important issue influencing construction performance in the eyes of owners, followed by site management. When a building project's planning is not done properly it will undoubtedly have an impact on the construction's performance. According to the survey, incorrect design has the highest ranking as a factor influencing construction performance among engineers. After that, there will be labour and technical people scarcity. In terms of contractors, the study discovered that poor planning is the most significant factor affecting construction performance.

Some factors influencing construction performances include deceptive practices and rewards, insufficient organization amongst stakeholders, and poor monitoring and

reaction as consultant-related influences (Tengan et al., 2014:269-280). They also said that poor quality training for employees, poor management leadership, and poor contractor behaviour in the past were all identified as contractor-related factors influencing construction performance.

According to Tengan et al. (2014:269-280), poor quality staff training was placed top among contractor-related issues influencing construction performance. Following that, there was a lack of management leadership. Respondents placed insufficient previous experience as the third contractor-related key influencing factor, followed by poor planning and control approaches. Deceptive tactics and responsiveness were also ranked high among consultant-related variables influencing construction performance. Poor monitoring and feedback came in second, with improper collaboration between designers and contractors coming in third. Melba et al. (2015) claim that the top five variables affecting project performance include increased material costs, insufficient labour supply, wrong planning, erroneous estimation approach, and poor financial control on site.

According to Alaloul et al. (2015:2689-2698), construction performance is influenced by a diversity of factors, including construction managers' skill, top organization sustenance, overseeing and response by specialists, and decision-making process. Furthermore, the coordination of construction activities has a significant impact on a variety of project outcomes.

Melba et al. (2015) state that some factors influencing project performance include insufficient labour supply, incorrect planning, increased material costs, improper poor financial control on-site, and incorrect estimates. Other factors affecting construction performance include a lack of management and supervision; inappropriate participants; reduced relations and coordination; lack of motivation, insufficient infrastructure, political issues, cultural issues, and financial conditions.

Olanipekun et al. (2017) divided factors that influence construction performance into different categories. Quality-related criteria were ranked as the most important factors influencing construction performance, closely followed by project management-related issues, according to their findings. Procurement-related issues were ranked as the third most influential factor on construction performance. This

showed that the level of precision demanded by clients, the procurement process utilized for projects, and the project management capabilities of contractors all had a significant impact on their results. Owners' organizational elements were the least significant factors impacting contraction performance. Other criteria, as assessed by the respondents, were comparatively significant. This implies that all project stakeholders should make an effort to determine the construction industry's performance stage.

2.5.25 The failure of a project can be traced back to the contractor

These are examples of contractor-caused project failures (Amoah and Pretorius, 2018:19-21). The following are the main contractor causes of project failures that have been identified:

Concerns about the labour market: Contractors' workers usually go on strike, which delays the project's completion schedule. Workers were not paid on time, resulting in strikes. On other occasions, workers' demands for wage increases resulted in conflict between employers and employees because the employers were unwilling to pay the workers' demands. In certain situations, this resulted in strike activities, and project execution had to be halted until wage conflicts were settled, affecting project completion time.

Poor workmanship: Most of the contracts were allocated to contractors that could not complete the project due to the government's goal of encouraging local black contractors. This resulted in sloppy work execution, lowering the quality of the work as a result. Contractors have abandoned projects due to a lack of resources in some cases, forcing the project to be re-tendered, delaying the project completion time.

Poor organization: The majority of the contractors lacked construction management abilities such as site management, procurement, health and safety management, and cost management. As a result, work improvement on site was disturbed owing to an accident or casualty, and the site had to be shut down by law enforcement agencies so that the investigation could be completed before any work could resume.

Material acquisition: Due to material limitations on-site, the procurement of materials to the site was not done appropriately. In certain cases, the contractors' credit

history was not favourable, and as a result, suppliers refused to furnish them with the goods they needed, delaying the project's completion.

Inadequate resources: Due to the government's goal of encouraging local black contractors, many contractors lack the appropriate construction equipment to complete the scope of the project they have been granted. Contractors had to rely on hiring firms for that equipment in the majority of cases, and when the hiring companies fail to deliver the equipment on time, it causes the project to be delayed because contractors must wait for the delivery before starting work on site.

Poor communication: During the design and implementation stages of several projects, it was discovered that consultants were not communicating well with one another. There were certain occasions when there were inconsistencies between the architectural and structural plans, and the contractor had to wait for these discrepancies to be corrected before that particular portion of the project could be completed, causing the project's completion date to be pushed back. Some things in architectural and structural drawings were not discovered in the bill of quantities documents in other circumstances. This resulted in unjustified changes and extra effort, causing the project's budget and timeline to be surpassed.

Nature (weather-related) played a role in project failures: As a result of the weather, which was mostly in the form of rain or cold/hot weather, work on-site had to be halted, affecting the project completion schedule. This supports the findings of Shahhosseini et al. (2016:93-108) which suggested that harsh weather conditions are one of the external factors that contribute to project failures.

Unrest in the workplace, such as strike action by labour unions, has also been identified as an influential factor in project failures: Steelworker strikes disrupted the supply of iron rods and roofing sheets needed for structural and roofing construction, respectively, and project progress had to be halted until the strikes were resolved, which impacted project completion time.

Unexpected site conditions: In certain cases, projects have been delayed because the soil conditions at the project site differed from what was expected. Projects were suspended in such circumstances so that the plans could be altered to suit the

conditions on the job site, extending the project completion time because new drawings had to be submitted for approval and a new budget agreed before the project could begin.

CHAPTER 3:

RESEARCH METHODOLOGY AND DESIGN

3. Introduction

In order to satisfy the study's research objectives, this chapter of the research explains the research technique used in carrying out this investigation concerning the problem statement. This chapter also specifies a study design, a population, a sampling method, a data collection tool, and procedures, as well as the method used to maintain reliability and validity, and ethical guidelines. The purpose of this chapter is to present the various methodologies that were employed in this study.

3.1. Research Problem

There are failed or incomplete projects in most of South Africa's rural areas and some have been abandoned. The government or construction industry appears to prioritize urban areas over rural areas when it comes to construction projects. According to UKessay (2017), rural construction failure affects the economy as more money is spent on infrastructure. Infrastructure improvement plays a critical role in the socio-economic development of our country and it correlates to human livelihood enhancement. However, it has become a culture that several rural-based construction projects fail to meet the required time frame, for example, the R2.1 billion housing projects in the municipality of Msunduzi was approved in 2011 by the Human Settlement Department but later the project was discontinued due to low structural efficiency, as stated by Ngubane (2017).

Rural areas need to be developed since it is understood that they have been ignored. The government is trying to improve rural areas by doing community development projects. Unfortunately, most rural areas in the municipality of Mpumalanga have several projects that have failed or not been completed on time. The researcher seeks to find out the factors impacting the performance of construction-based projects in the rural area of Mpumalanga. The study is important because the purpose of construction projects is to bring about development in rural areas; therefore, if these projects do not succeed, they foster under-development.

3.2. Research Questions

- What are the most common risks that cause the failure of rural construction projects?
- What skills are needed for effectively executing rural construction projects?
- What ways can be recommended to mitigate challenges in rural construction projects?

3.3. Research objectives

The main aim of this study is to identify the factors impacting the performance of rural-based construction projects and to recommend ways to make projects successful in rural areas in Mpumalanga.

The following are the **sub-objectives** of this study:

- To identify the nature of the risks that cause the failure of the rural construction projects.
- To identify the skill sets required for the execution of those construction projects.
- To recommend ways to mitigate challenges in rural construction projects**.**

3.4. Significance of the research

This study was conducted to understand factors that impact the performance of rural-based construction projects in Mpumalanga. It was anticipated that this understanding would be used to develop strategies to decrease the failure of construction projects in rural areas. It is hoped that the findings may assist project managers to be capable in ensuring that projects are successful by giving clear guidelines. The current causes of project failure in rural-based construction projects are not known. Understanding the cause of project failures in construction projects, specifically in rural areas, will assist in minimizing the failure of projects because a proper focus can be given to the causes of high project failure rates.

3.5. Research Methodology

Qualitative research and quantitative research are the two main methods for conducting a research topic. Qualitative research is exploratory research that aims to comprehend both verbal and nonverbal data. It gives information about the problem and aids in the development of concepts and hypotheses. Qualitative research can be utilized to find tendencies in both verbal and nonverbal data, giving a more

thorough knowledge of the study. Qualitative data collecting methods include observations and interviews that are loosely organized or non-standardized, with a typically limited and selected sample size (Leedy: 2016).

Quantitative research, on the other hand, is analysing numerical data and applying statistical analysis to quantify the problem. It is used to quantify known factors and extrapolate conclusions from a large sample size. Quantitative research is a type of research that employs numerical data to generate facts and identify patterns. Quantitative data collecting methods are more structured than qualitative data collection methods, and they include the use of standardized instruments (Leedy: 2016).

Because of the nature of the problem, this study took a quantitative approach. The goal of the research technique was to recognize the key factors influencing the performance of rural-based construction projects in Mpumalanga and to suggest solutions for making the projects effective.

A questionnaire survey was utilized to collect primary data, which will be the main data used in this study's analysis. This method of primary data collection was chosen for the following reasons: (1) it provides a detailed description of a particular individual's, situation's, or group's characteristics, such as behaviour, opinions, abilities, beliefs, and knowledge; (2)because the study focuses on two construction businesses in Mpumalanga, executive members, and various construction employees will be selected to be respondents in the current study, a big fraction of the people on the specified site can be covered in a reasonably short period.

Following approval from the City of Mbombela Municipality to research the study region, 100 questionnaire questionnaires (Appendix I) were sent to each construction company using Google Forms. Respondents will be chosen at random by obtaining participation consent from executive management and any construction staff found onsite in the two respective construction companies. After the respondents gave informed consent to participate in the study, the aim and scope of the investigation was described, and all participants were ensured that their names will be kept confidential.

The questionnaire was distributed using Google Forms, according to the plan. The questionnaire was divided into three sections: Section A, biography, Section B, and C–close-ended questions on the Likert scale. To provide rich results, a quantitative research method was recommended for this subject.

The three-page questionnaires were designed in a funnel shape by the researcher. The first section of the questionnaire was based on demography information to outline respondents. The second section covered factors that cause failure in construction-based projects. The third section focused on how challenges faced in rural construction projects can be mitigated and recommended ways to make projects successful in rural areas in Mpumalanga.

The questionnaire was accompanied by a covering letter politely seeking respondents' participation. Part of the questionnaire used a 5-point Likert scale, in which respondents had to choose the option with which they agreed most closely for each statement – ranging from (1) strongly disagree, to (2) disagree, to (3) neutral, to (4) agree, too (5) strongly agree – allowing respondents to be captured through leading statements. A single or multiple-response scale or checklist was included in the other section of the questionnaire to allow participants to choose one or more options. The Likert scale was chosen because, according to Newson (2021) it is straightforward to comprehend and use for both survey administrators and respondents, and it produces trustworthy quantitative data that can be examined with relative simplicity.

The researcher took five weeks to distribute 100 questionnaires via Google Forms, utilizing emails to deliver a link to construction company employees, giving them sufficient time to read and consider the questions before replying them. The researcher's data collection was completed in the sixth week. The responses achieved a sample size of 100 people at that time. It took six weeks for the researcher to distribute and collect all 100 questionnaires. These participants were stationed at Mpumalanga municipality, and in two construction companies

3.6. Research Design

According to Leedy (2016), research design must be driven by the critical research question, the research objective, and its sub-objectives. Some objectives and sub-

objectives call for only quantitative research, while some call for only qualitative research, while others are best addressed using mixed-methods designs which utilize both kinds of research. Kwofie (2015:142), states that design is considered as a central structure that directs and promotes the most relevant and suitable tool for gathering and analysing data, which will then answer the research objectives. Jovancic (2020), listed five types of research designs: descriptive, correlational, experimental, diagnostic, and explanatory. In this study, the researcher used an explanatory research design.

3.6.1. Explanatory research design

An explanatory research design, according to Jovancic (2020), is applied to enlarge, examine, and clarify the researcher's ideas and hypotheses. This study design is used to expand on previously undiscovered areas of a topic and attempt to explain the missing pieces. Explanatory design permitted the researcher to use a questionnaire with two construction companies in a municipality in Mpumalanga to have an improved understanding of the problem. Furthermore, Jovancic (2020), suggested that explanatory design involves approaching respondents who have some involvement and are well-informed about the problem investigated in the specified study. In accordance with this, the researcher sent an email questionnaire by means of Google Forms to two construction companies in a municipality in Mpumalanga**.**

3.7 Target population

A population is made up of all of the participants that will be researched. The survey's target is the group or individuals to whom it is directed. According to Ledwaba (2012:23), a target population is defined as "those groups or individuals who are in a position to answer the questions and to whom the survey results will be communicated."

The population was made up of construction industry professionals from Mpumalanga, and two construction enterprises were targeted. Those who had been or were actively involved in the implementation of construction projects were targeted. Construction industry professionals were chosen because they were likely to have in-depth knowledge of the elements influencing the performance of rural

construction projects in Mpumalanga, and they would be reflected by this group, resulting in the research objectives being met.

3.8. Sample size and sampling methods

A sample of 100 people was chosen from the construction industry, including quantity surveyors, structural engineers, civil engineers, project managers, construction managers, and public sector owners who were involved in the construction project implementation in Mpumalanga. Two construction companies agreed to help with the research in principle and from these companies a non-probability sampling (purposive sampling) technique was used to identify respondents According to Crossman (2020), a purposive sample is a non-probability sample that is chosen based on demographic characteristics and the study's goal. For this study, only employees who work on construction projects were chosen as participants**.**

3.9. Data collection method and the research instrument

The data gathering method used in this study was a carefully structured questionnaire. According to Aryal (2020), a questionnaire is a document including questions and various types of items used to gather information for analysis. The questionnaire's design is to aid in gathering as much accurate information from the population as possible, obtaining maximum cooperation from respondents from the targeted demographic and easing data collection and analysis. The questionnaire was created to support the findings of the literature review. Due to the Covid- 19 pandemic, the questionnaire was disseminated to respondents by email via an online method in the study setting called Google Forms.

A survey method was used in this study since it is a reasonably rapid, inexpensive, efficient, and accurate method of gathering information about a community. As a result, the researcher sent questionnaires to responders for three weeks. The data collected through the questionnaires was captured and analyzed using the Statistical Package for the Social Sciences (SPSS).The SPSS, a computer program, was used to analyze closed-ended questions.Descriptive statistics were used to collect data. From these, tables were drawn, and the data was presented in pie diagrams and bar graphs.

The research instrument consisted of closed-ended questions, with respondents being asked to express their preference for each one. A five-point Likert scale of

strongly agree, agree, neutral, disagree, and strongly disagree was used in the structured questionnaire.Demographic information, such as age, education level, and gender, is the main topic of Section A. The purpose of Section B was to identify factors that causes failure in the construction based projects. The purpose of Section C is establishing how challenges faced in rural construction projects can be migigated and recommended ways to make projects successful in rural areas. A Likert scale of 1 to 5 was used to collect responses for parts B and C, with 1 denoting strongly agree, 2 agree, 3 disagree, 4 neutral, and 5 strongly disagree. The questions included instructions and directions on how to respond.

3.10. Data collection procedure

To make the process of contacting organizations easier, a list of two prospective companies where participants were based was created. The next step was to contact human resources personnel and company administrators to select respondents and obtain permission and cooperation in conducting the study. Human resources identified responders and emailed questionnaires to them utilizing the google form online mechanism. Participants were asked to complete the survey at their leisure; it was stated in the questionnaire and reaffirmed verbally to participants from time to time that their comments were truly confidential. The significance of asking the correct research questions is to encourage participants to express their thoughts and feelings. To obtain credible data and avoid biased outcomes, the truth is required. Response bias can have a major impact on results. As a result, there was no "name section" on each survey to protect the confidentiality and minimize prejudice; as a result, replies could not be assigned to a specific person, maintaining anonymity.

As a result of the Covid-19 pandemic, all of the data was collected through email-administered questionnaires using a google form online mechanism. The potential respondent was contacted before administering the questionnaires. Emailed questionnaires via google forms are easy and quick administer since they allow the researcher to plan the events, ask questions to employees or collect diverse types of information simply and efficiently (Melo,2018).

Before administering questionnaires, attempts were made to make telephonic contact with possible targeted respondents. Email-administered surveys were regarded as a viable choice since they are quick to administer, cost-effective, and function well with

a sample like website specialists who have substantial email access and usage (Hill and Alexander, 2017:73).

3.11. Data analysis

According to Roldós (2021) data analysis, is the activity of cleaning, analyzing, interpreting, and displaying data to uncover important insights that will finally be able to assist businesses in making better decisions. There are technologies that help with data analysis by extracting useful information from company data. Closed-ended questions were analyzed utilizing the SPSS, a computer application. The data was analyzed using descriptive statistics.

The frequency tables were created from this, and the data was then displayed in pie charts and bar graphs. To quantify developing features and notions, the researcher used quantitative content analysis to examine the open-ended study question responses. According to (University of Pretoria research guide: 2021) data analysis is the most significant part of any study. The most compelling part of every study is data analysis. The evidence gathered is summarized through the data analysis phase. It comprises using analytical thinking and reasoning in order to discover patterns, correlations, and trends.

Data analysis is vital for a study. Data analysis summarizes collected data. It contains the interpretation of knowledge collected through the utilization of investigative and rational reasoning to work out patterns, relations, or trends. This study employs description analysis, which means that the data depicts occurrences from a specific perspective. The results of the questionnaire were analyzed and interpreted as needed. The analysis aimed to identify factors impacting the performance of rural-based construction projects.

Description analysis means the data depicts occurrences from a specific perspective. The results of the questionnaire were analyzed and interpreted as needed. The analysis objective was to find factors that cause failure in construction-based projects. Mitigated strategy factor. Also, suggestions could be made for the establishment and management of municipality projects in the future.

3.12. Validity and Reliability

Reliability relates to how reliably a way is able to measure something. If the same outcome can be consistently attained by means of the same approaches under the same conditions, the measurement is regarded as reliable (Middleton: 2018). To ensure the reliability of the study, the employees from two construction companies in a Mpumalanga municipality, who are involved or were involved in construction projects, were requested to participate and respond to questions, in the form of a questionnaire, which was derived from the research topic. Difficult words were removed from the questionnaire. Only closed-ended, basic, and well-structured questions were employed.

According to Middleton (2018) validity discusses how precisely a method measures what it is assumed to measure. When a study has a high level of validity, it brings results that resemble real-world personalities, features, and alterations. The reliability of data collected was assured by exercising extreme attention, only completed questionnaires from employees of two construction companies who work or have worked in a construction project in the Mpumalanga municipality were involved in the preparation of the discoveries. The validity of the findings was verified by double-checking whether primary research data was appropriately transcribed and incorporated in the conclusions. The rationality of the findings was verified by double-checking whether primary research data was appropriately transcribed and incorporated in the findings.

3.13. Ethical Issues

Ethical approval for this research was gained from the Cape Peninsula University of Technology, written authorization to conduct the study was decided from the Faculty of Business and Science. These are the ethical considerations that the researcher supported: According to Allen (2017), privacy and anonymity are ethical practices designed to protect the discretion of human subjects while gathering, analyzing, and reporting data. The term "confidentiality" states the separation or modification of any personally recognizable information submitted by participants from the data.

Anonymity, on the other hand, refers to data collection without getting any personally identifiable information. Confidentiality and anonymity of research was guaranteed by setting apart a room that was always firmly inaccessible so that unauthorized

persons would not have access to the finished questionnaires. Anonymity was guaranteed by ensuring that respondents' personal information was not requested, nor was it necessary anywhere on the survey. Respondents' security was ensured by having them complete the questionnaire at their homes or any other location where they felt at ease and free to respond. Furthermore, the research partakers were initially apprised of the research, aim, objectives, and purpose of the research. Potential respondents were informed that participation in the study was entirely optional, and that they had the opportunity to withdraw at any moment if they felt it was necessary.

The ethical guidelines established by the ethics committee of the Cape Peninsula University of Technology, where the researcher studies, will serve as the basis for this study. First and foremost, the process is intended to obtain ethical clearance from the Cape Peninsula University of Technology's ethics committee. We acquired letters of approval from constrution companies and municipalities. A systematic questionnaire with closed-end questions was distributed to respondents.

3.14 Empirical data

In this study, as explained above, the method of data collection used was a questionnaire. According to Debios (2019), a questionnaire is a data collection instrument that asks a subject to reply to a sequence of oral or transcribed questions. Debios (2019) highlights the following reasons for using this form of instrument (questionnaire): (a) Questionnaires provide a quick way to obtain results; (b) questionnaires provide anonymity because interviewees are not required to fill in their names or contact information; (c) Questionnaires do not have time restrictions (when using mail-in, online, or email questionnaires, there is no time boundary and no one on the other end waiting for an answer; respondents complete the questionnaire at their own pace) Questionnaires can cover every area of a subject; (e) a questionnaire allows quantitative data to be collected in a consistent manner, resulting in more objective data; and (f) questionnaires provide a speedy way to obtain results.

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The questionnaire consisted of 3 sections, namely A, B, and C. Section A was on demographic data such as gender, age, and level of education; Section B aimed at establishing the factors impacting the performance of rural-based construction projects in Mpumalanga; different factors were identified for this section and

mentioned. Section B was aimed at finding Mitigation strategy factors; while Section C of the questionnaire outlined suggestions in the establishment and management of municipality projects in the future. In sections B, C, the respondents had to rate the importance of each criterion on a scale of 1-5, with 1 (strongly agree), 2 (agree), 3 (neutral), 4 (disagree), and 5 (strongly disagree). Instructions and guidelines were attached to the questionnaires to guide the respondents on how to answer the questionnaires.

3.15. Conclusion

The research methodology for the study was explained in this chapter, covering the demographic, sample, data collection tools, data analysis methodologies, study limits, and measures utilized to guarantee ethical standards, as well as why questionnaires were used. The data analysis and discussion are presented in the study's next chapter.

CHAPTER 4:
Data analysis and data discussion

4 .1 Introduction

The results of data gathered from the structured questionnaires sent among people working in the construction industry, including project managers, construction employees, engineers, leaders, and managers in two construction companies in a Mpumalanga municipality, are presented in this chapter. The aim of this study has been to determine factors impacting the performance of rural based construction projects in Mpumalanga. To achieve this goal, the data collected for this study was analyzed, and the results are given in this chapter. The completed questionnaires were used to analyze the data and explain the results, and they also served as the basis for quantitative data collecting. An electronic link with the Google Forms questionnaire was sent with an aim of receiving 100 respondents. If there was a 100% response rate, 100 questionnaires response could be used to achieve the objective and aim of the study. The questionnaires distributed were designed as per following sections, the first section of the questionnaire was to explore the background of the respondents. The second section investigated the factors that

cause failure in construction-based projects. The third section was to find out how challenges faced in rural construction projects can be mitigated and the last one was the recommended ways to make projects successful in rural areas in Mpumalanga. From Google Forms, the replies were measured and given in percentage format.

4.2. Data Analysis

4.2.1 SECTION A: RESPONDENTS' BACKGROUND INFORMATION

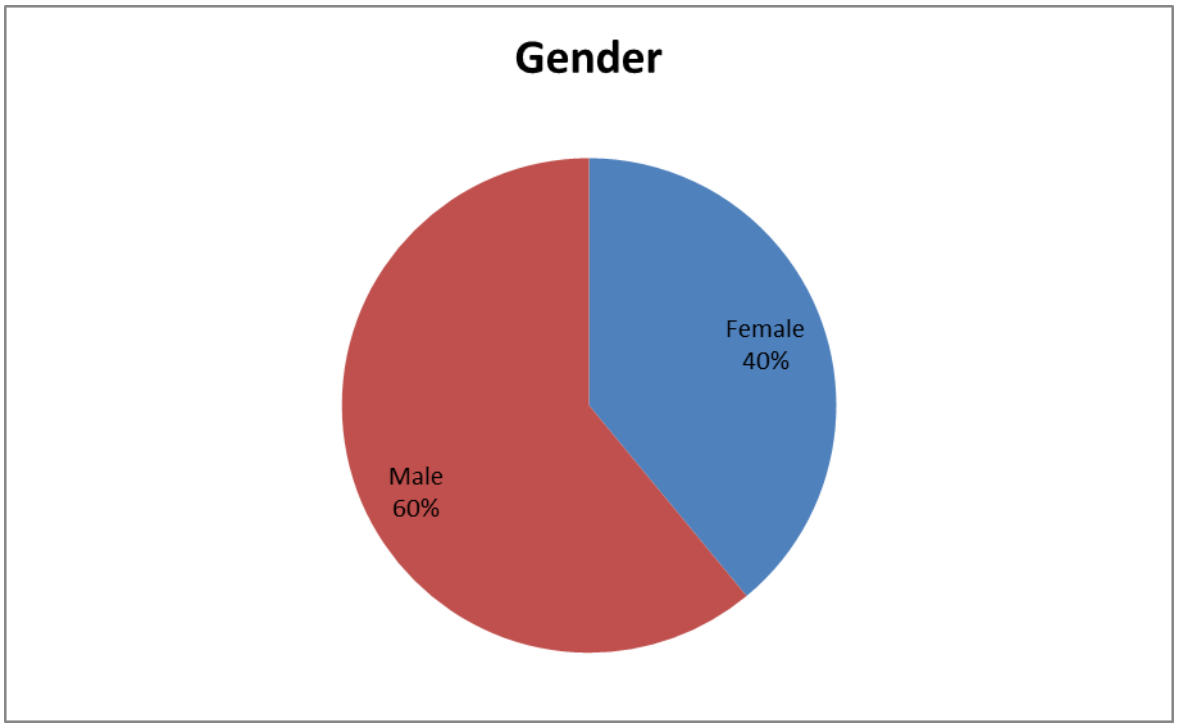

Figure 4.2.1. 1: Gender

The gender differences for female and male respondents are depicted in Figure 4.2. 1.1 According to the graph, male respondents accounted for 60% of the total, whereas female respondents accounted for 40%.

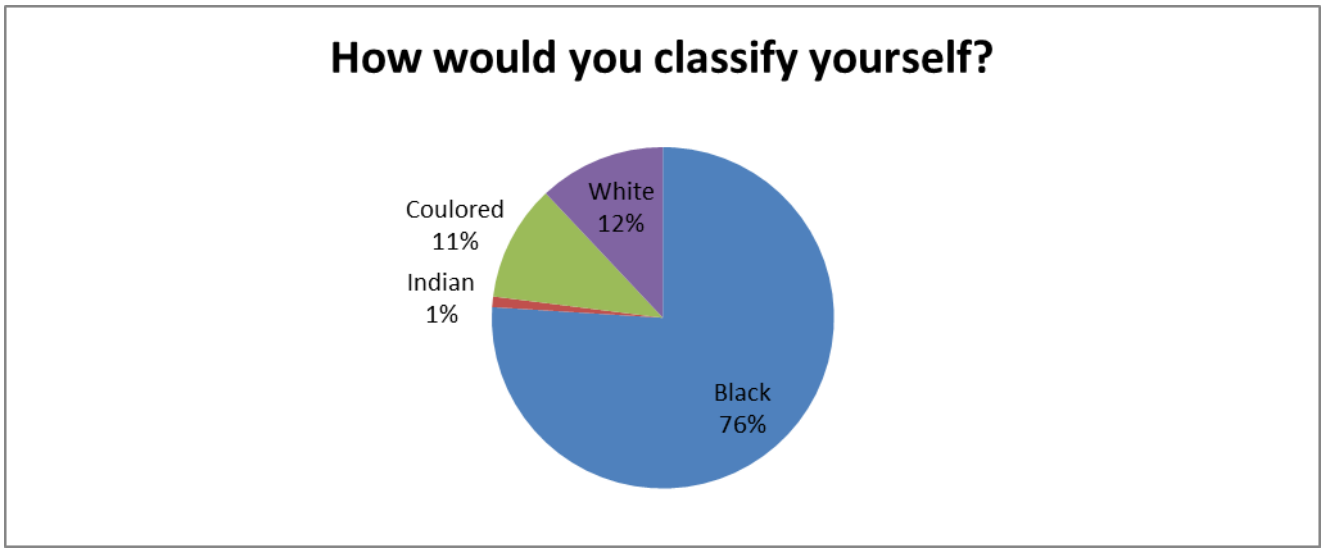

Figure 4.2.1. 2: How would you classify yourself?

According to Figure 4.2.1.2, 76% of the respondents were black, 12% were white, 11% were coloured, and 1 percent were Indian, as shown in the graph above.

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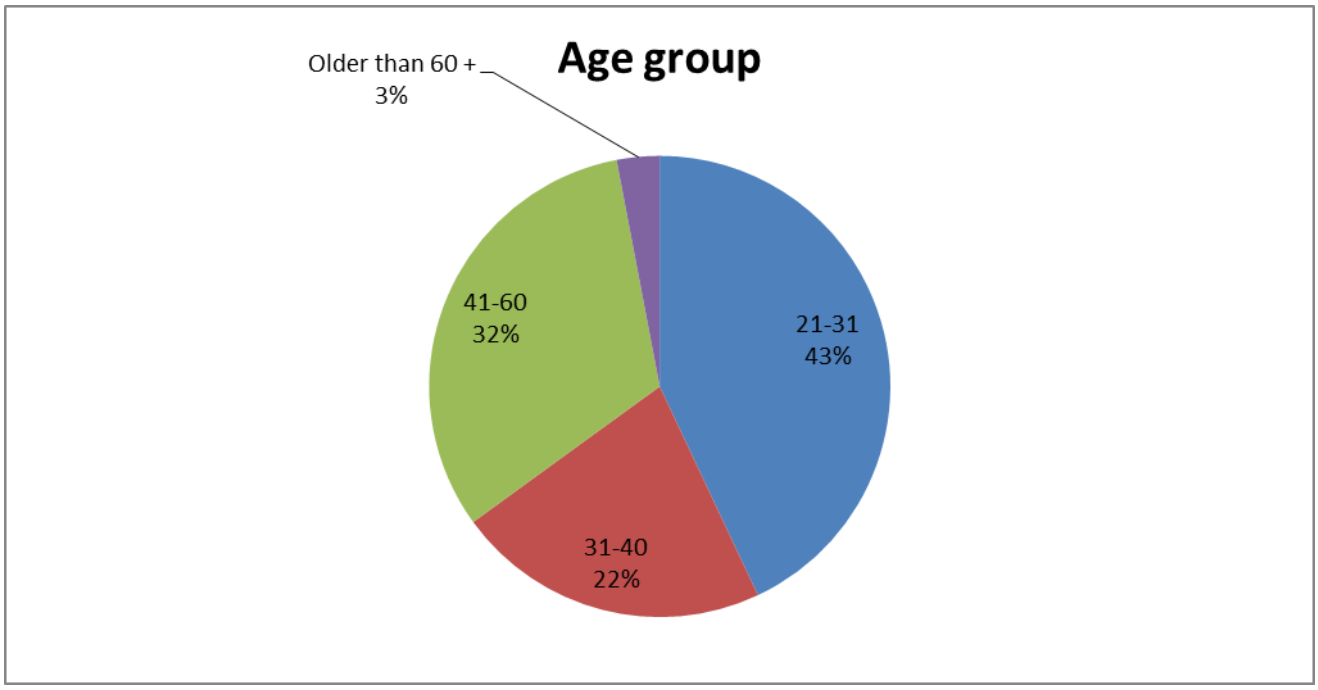

Figure 4.2.1. 3: Age Group

Figure 4.2.1.3 above shows that 43% of respondents were amongst the ages of 21 and 31, 32% were amongst the ages of 41 and 60, 22% were amongst the ages of 31 and 40, and 3%were beyond 60 years old.

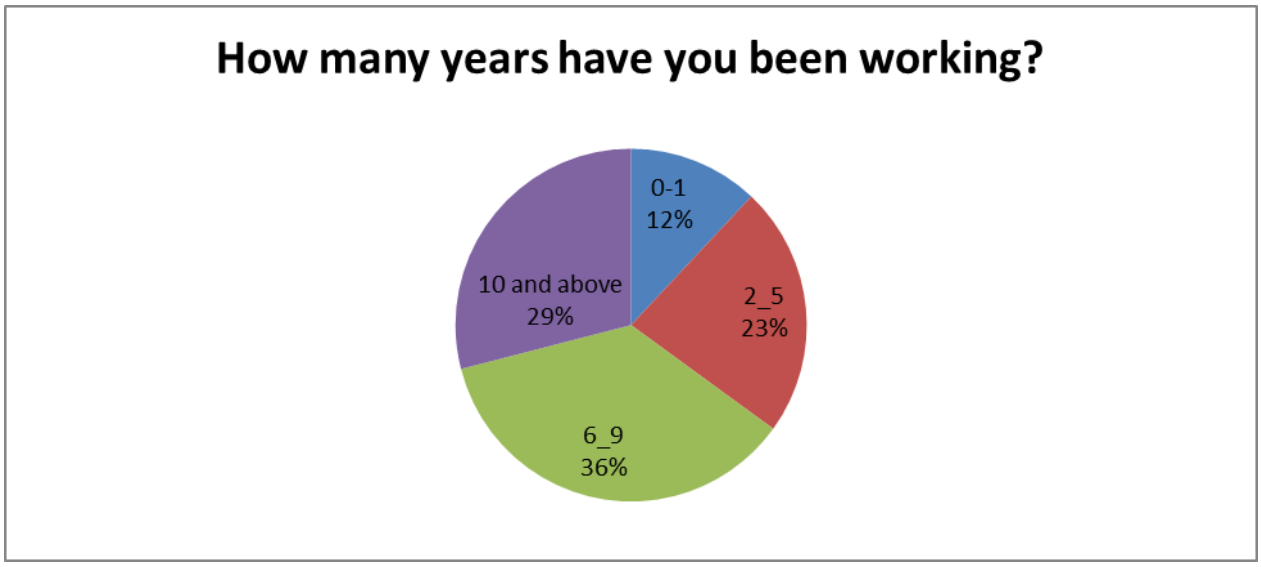

Figure 4.2.1. 4: How many years have you been working?

Figure 4.2.1.4 the number of years the respondents have worked is seen above; 36% have worked 6-9 years, 29% have worked 10 years or more, 23% have worked 2-5 years, and 12% have worked 0-1 years.

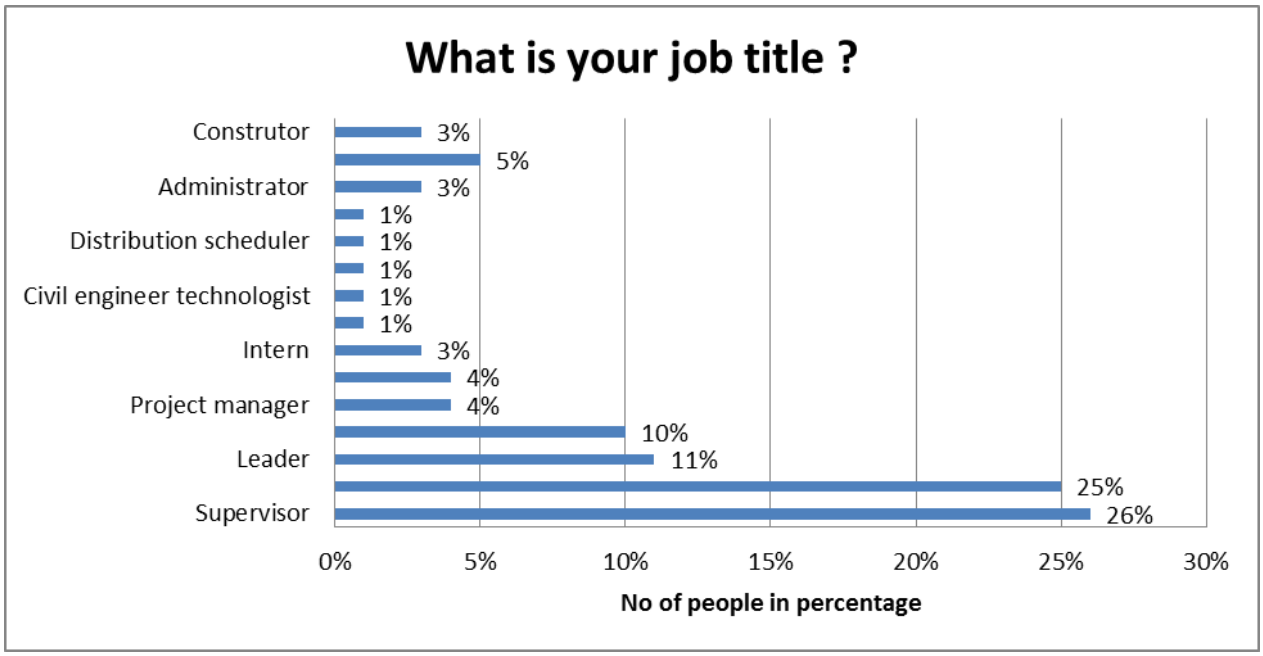

Figure 4.2.1. 5: What is your job title?

Figure 4.2.1.5 The employment titles of the respondents are shown above: 26% were supervisors, and 25% were managers. 11 percent were leaders, 10% were construction workers, 5% were quantity surveyors, 4% were project managers, 4% were civil engineers, 3% were constructors, 3% were administrators, 3% were interns, 1% were senior lecturer, 1% were civil engineer technologist, 1% were substitute teachers, 1% were distribution schedulers, and 1% were cashiers.

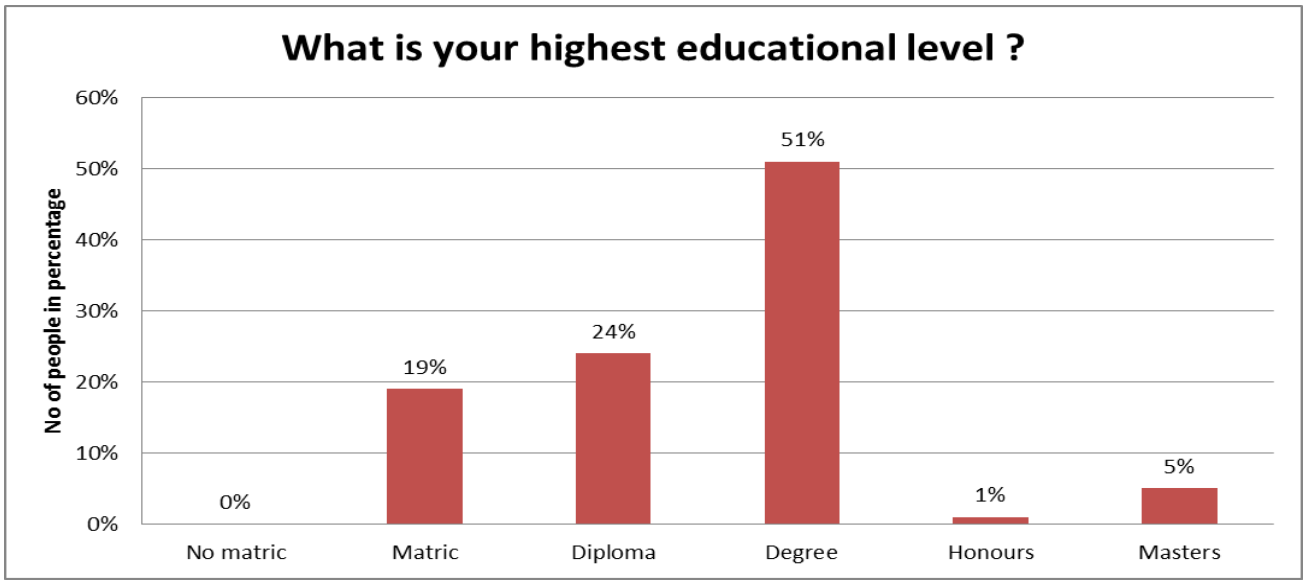

Figure 4.2.1. 6: What is your highest educational level

Figure 4.2.1.6 The above indicates the respondents' qualifications: 51% had degrees, 25% had diplomas, 19% had matric, 5% had masters, 1% had honours, and there was no one without matric.

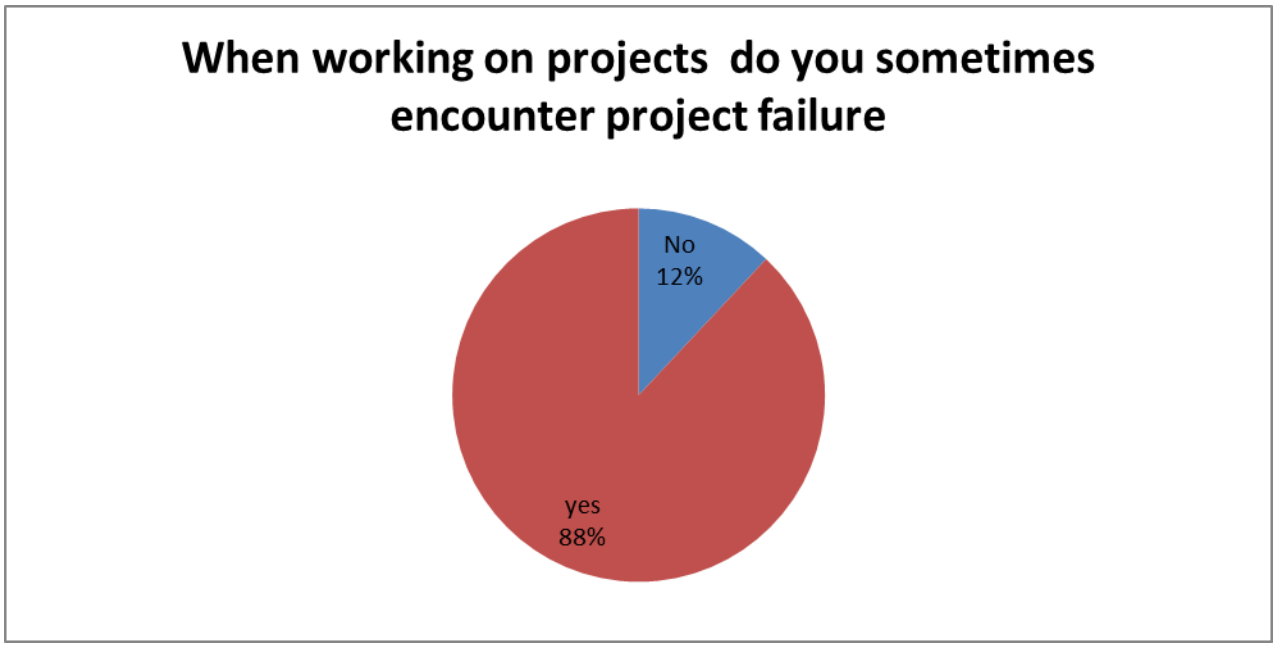

Figure 4.2.1. 7: when working on projects do you sometimes encounter failure?

Figure 4.2.1.7 the above shows if respondents encounter projects failure, 88% of the respondents said yes, they do encounter projects failure sometimes and 12% said no they do not encounter project failure.

4.2.2 SECTION B: Factors that causes failure in construction-based projects

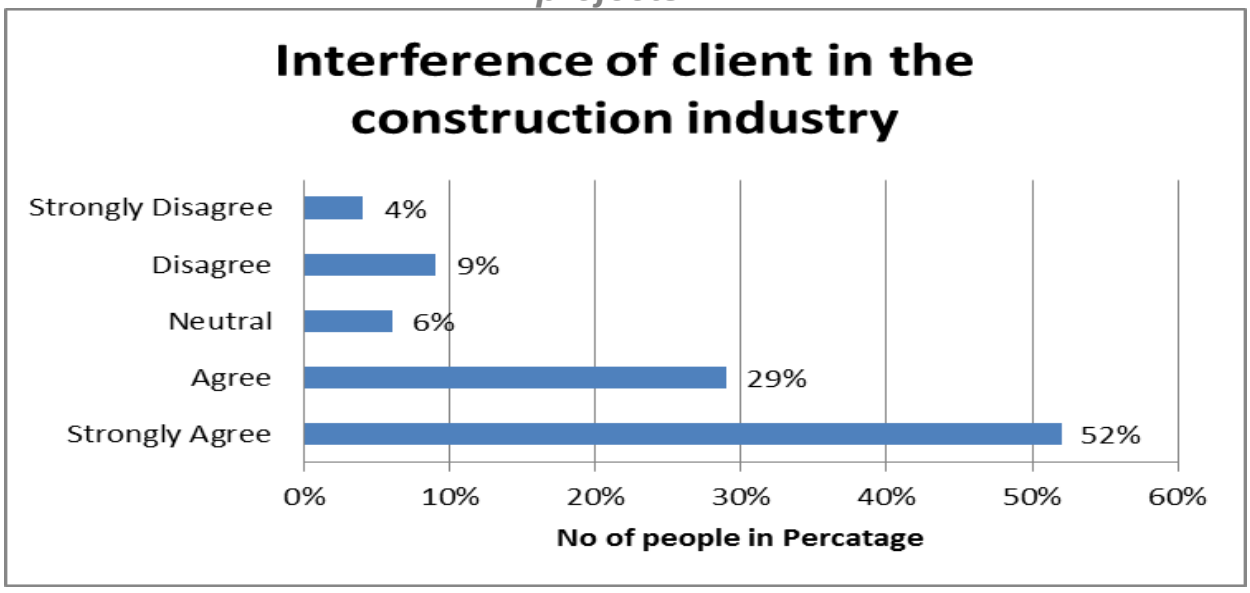

Figure 4.2.2.1: Interference of client in construction industry

Figure 4.2.2.1 when asked about 'client influence in the construction sector,' 52% of respondents strongly agree and 29% agree, as shown in the graph above. 6% of

respondents were undecided, 9% disagreed, and 4% strongly disagreed. The responses to the statement show that respondents' views on client intervention in the construction business are not uniform, although the majority of respondents strongly agree with the statement.

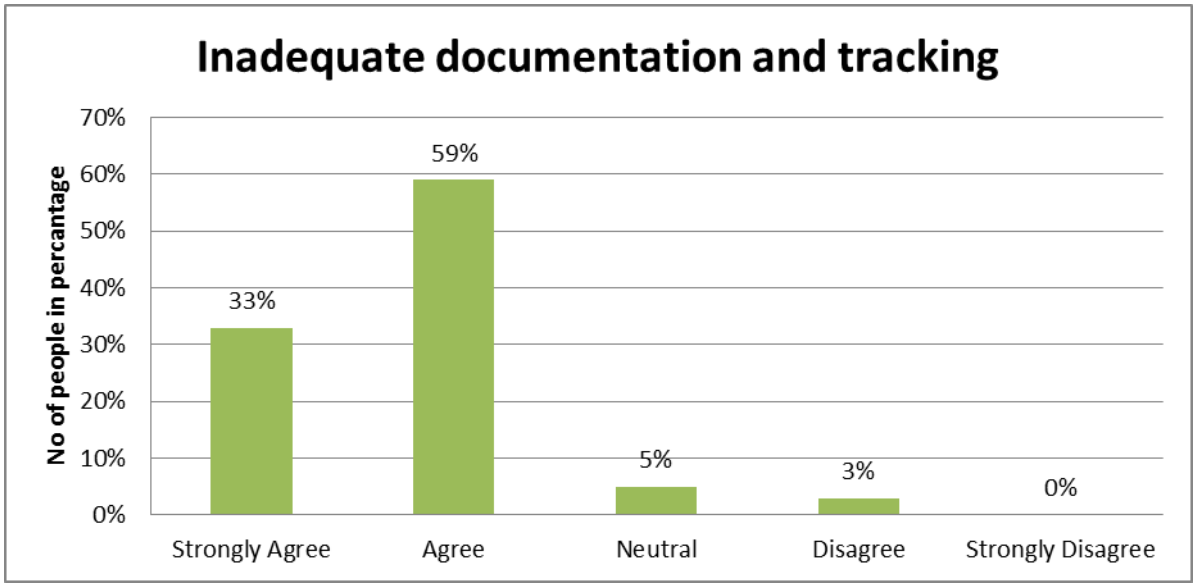

Figure 4.2.2.2: Inadequate documentation and tracking

Figure 4.2.2.2 According to the results, 59% of respondents agree on inadequate documentation and tracking, while 33 percent strongly agree and 5% are neutral. Only 3% disagree, and none strongly disagree, indicating that the construction industry is harmed by inadequate documentation and tracking.

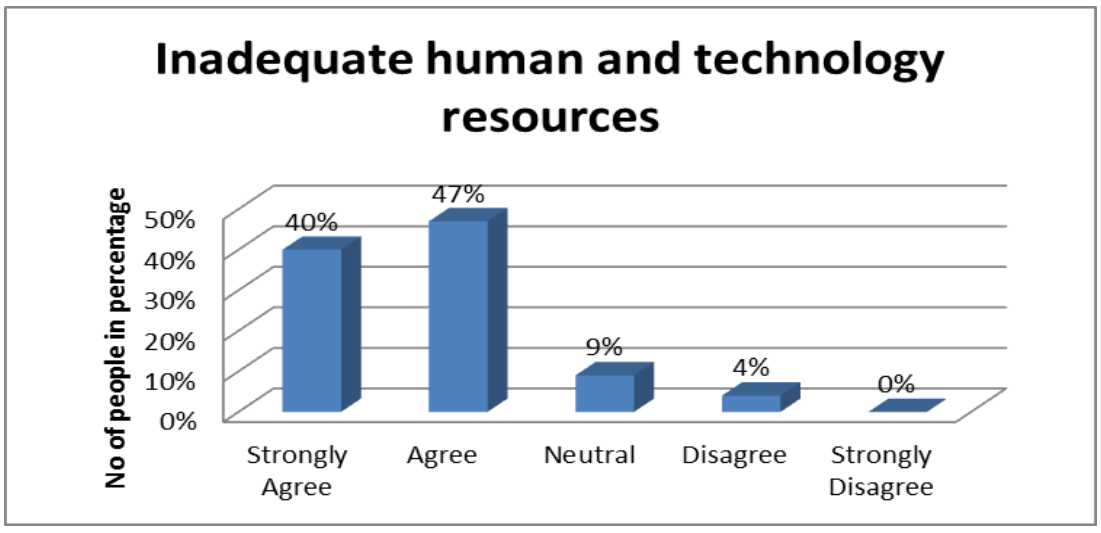

Figure 4.2.2.3: Inadequate human and technology

Figure 4.2.2.3 the above demonstrate that 42% of the repondents agree that on the inadequate human and technology resources, while 40% strongly agree and 9% of

the repondents were neutral.4% disagree and none of the repondents strongly disagree.

Figure 4.2.2. 4: Poor risks management in all the project steps

Figure 4.2.2.4 the above shows that 52% agree that poor risk management occurs at every stage of a project, while 41% strongly agree and 6% are undecided. With only 1% of respondents disagreeing and none strongly disagreeing, the data show that the majority of people agree.

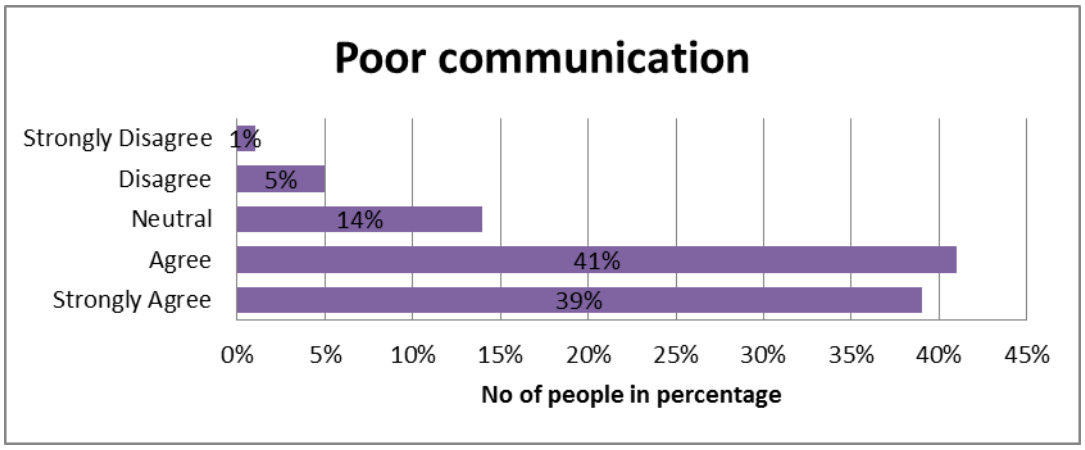

Figure 4.2.2. 5: Poor communication

Figure 4.2.2.5 the findings show that 41% of respondents agree, 39% strongly agree, and 14% remain neutral on bad communication. Those who disagree were 11% and just 1% strongly disagrees, confirming that poor communication is a factor that contributes to project failure in the construction industry.

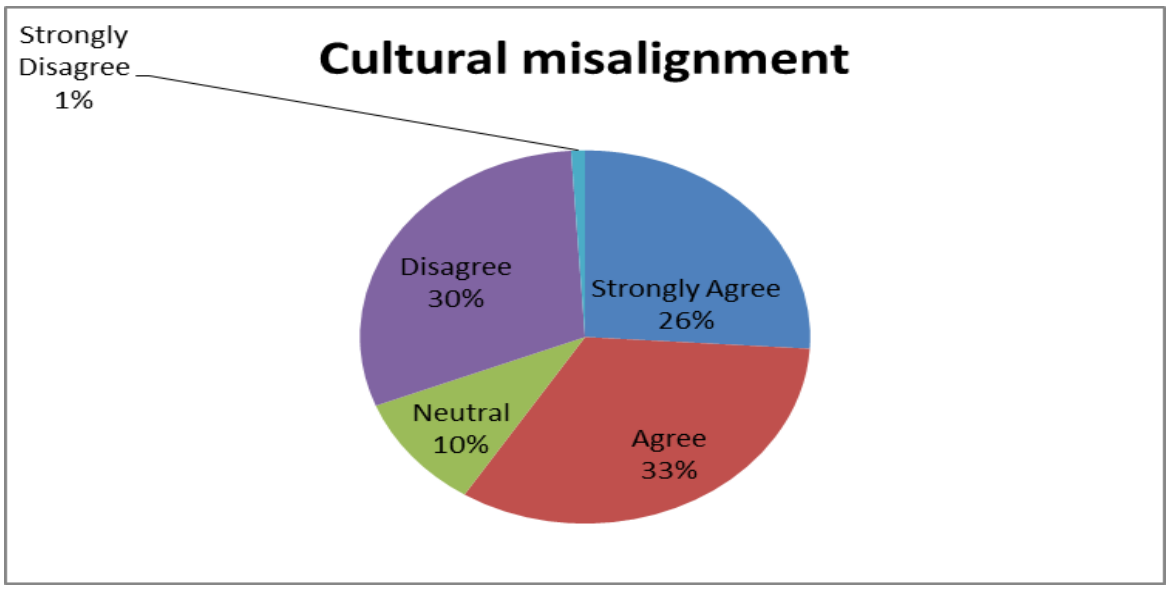

Figure 4.2.2. 6: Cultural misalignment

Figure 4.2.2.6 shows that 33% of respondents agree, 30 percent disagree, 26 percent strongly disagree, 10% were neutral, and 1 percent strongly disagrees. Cultural misalignment is not a serious issue in construction; the majority of people disagree that it causes building failure, although others agree.

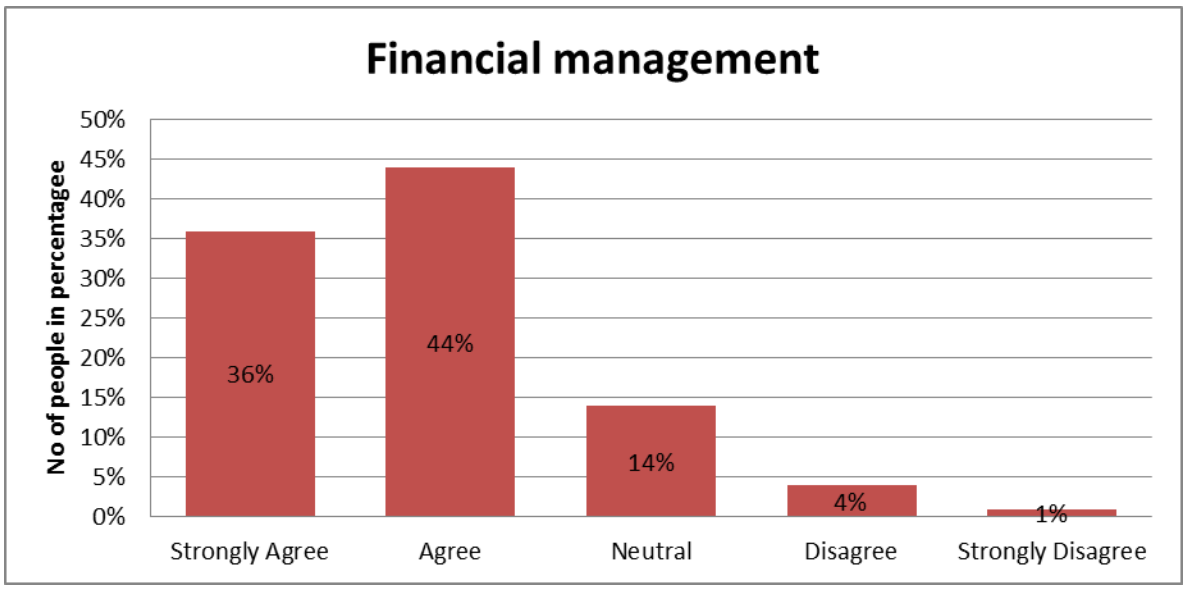

Figure 4.2.2. 7: Financial management

Figure 4.2.2.7 When asked if financial management is one of the factors that causes project failure in construction projects, 44% of the participants agree, 36% strongly agree, 14% remain neutral, 4% disagree, and just 1% strongly disagree. The majority of responders agree with this conclusion.

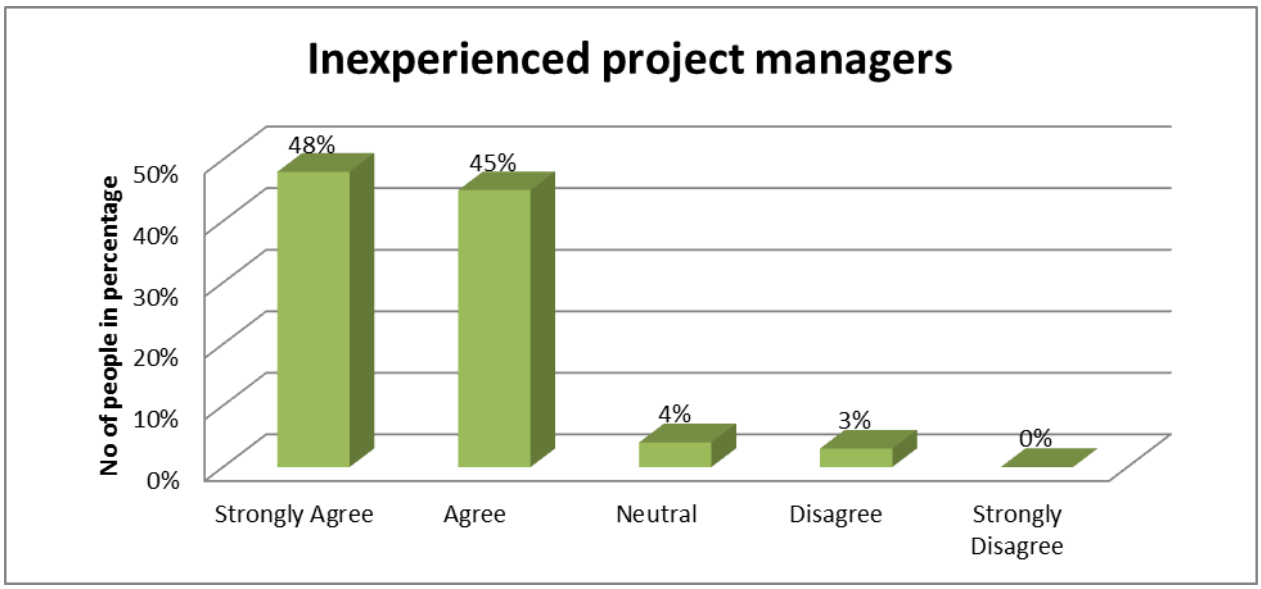

Figure 4.2.2.8: Inexperienced project managers

Figure 4.2.2.8 show that 48% strongly agree, 45% highly agree, and the majority believe that unskilled project managers are one of the factors that contribute to project failure in construction, whereas 4% are neutral, 3% disagree, and none severely disagree.

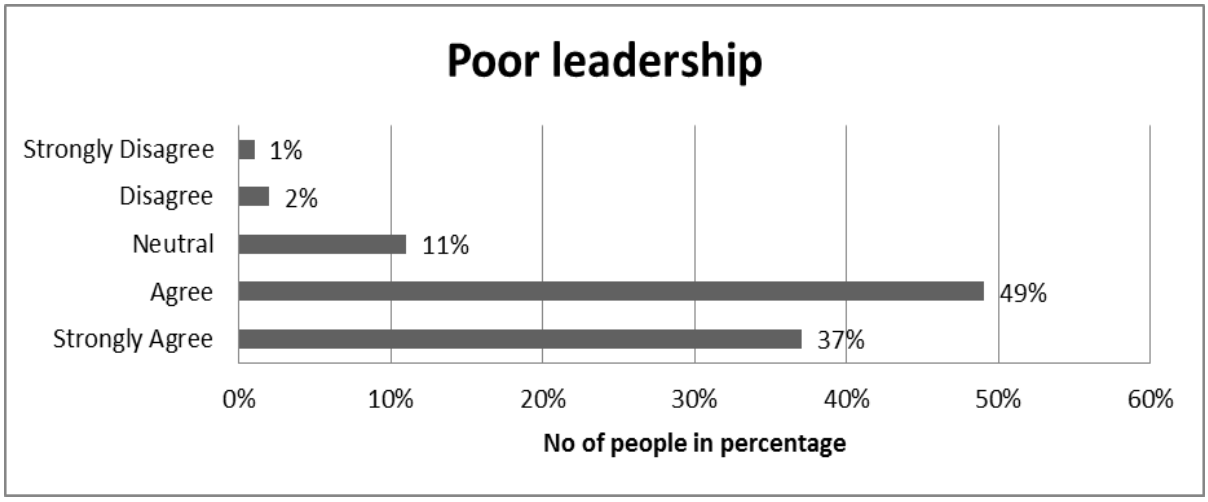

Figure 4.2.2. 9: Poor leadership

Figure 4.2.2.9 According to the results, 86% of respondents believe (37 percent strongly agree and 49% agree) that bad leadership is a major factor in construction project failure, while 11% of respondents are neutral, 2% disagree, and 1% strongly disagree. It is critical that they enhance their leadership skills in the construction business.

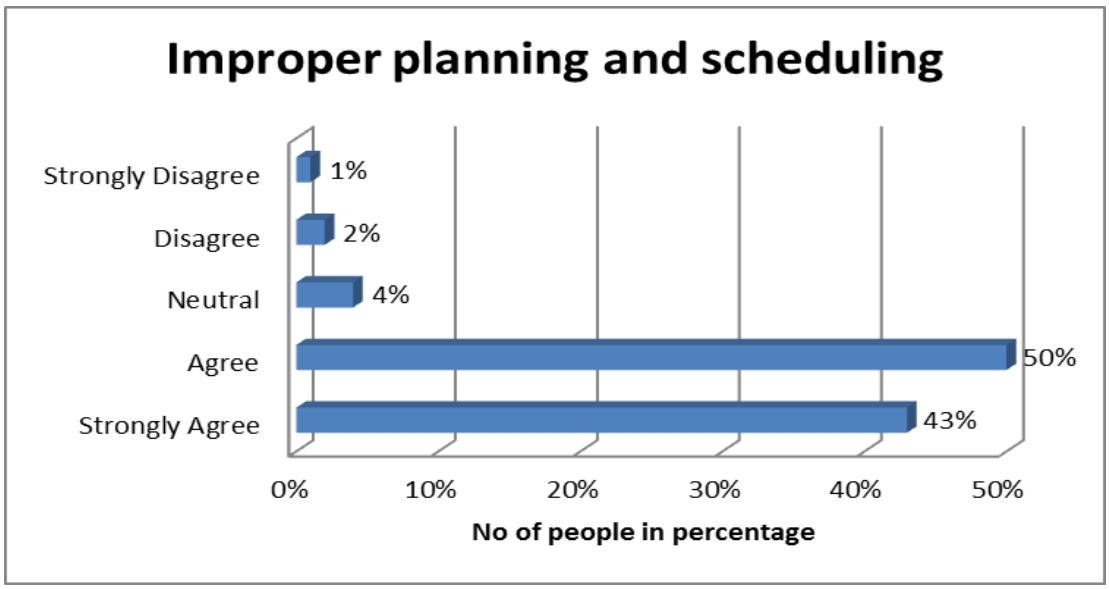

Figure 4.2.2.10: Improper planning and scheduling

Figure 4.2.2.10 The findings demonstrate that the large number of respondents agree that improper planning and scheduling causes project failure in construction projects, with roughly 50% agreeing, 43% strongly agreeing, 4% remaining neutral, 2% disagreeing, and only 1% strongly disagreeing. The majority of responders agree with these findings.

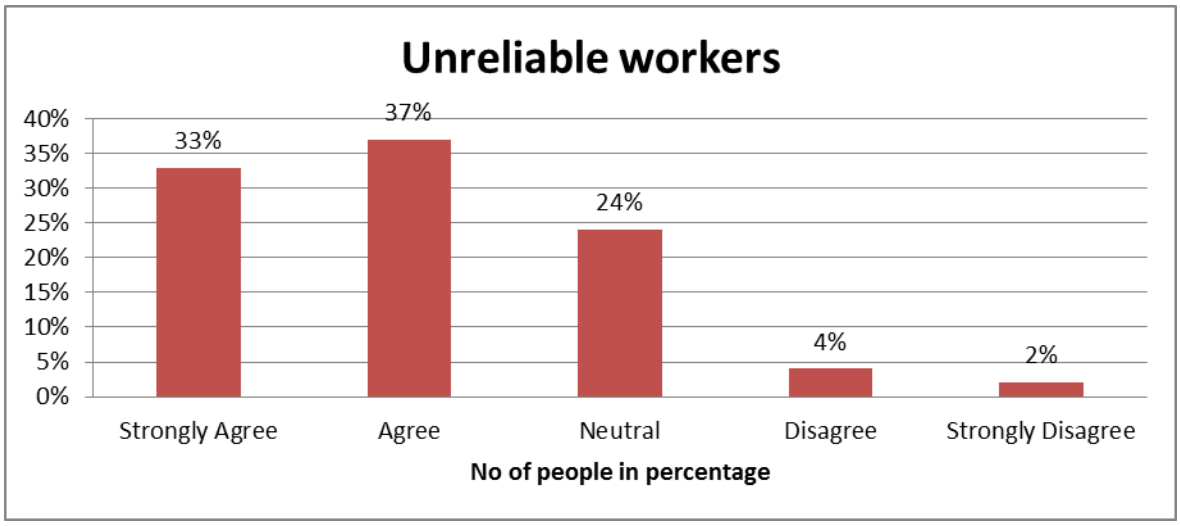

Figure 4.2.2.11: Unreliable workers

Figure 4.2.2.11 results shows that 37% of respondents agree, 33% strongly agree, that unreliable workers are one of the factors that contribute to construction project failure, while 24% remain neutral, 4% disagree, and 2% strongly disagree. As a result of these findings, the vast majority of people strongly disagree.

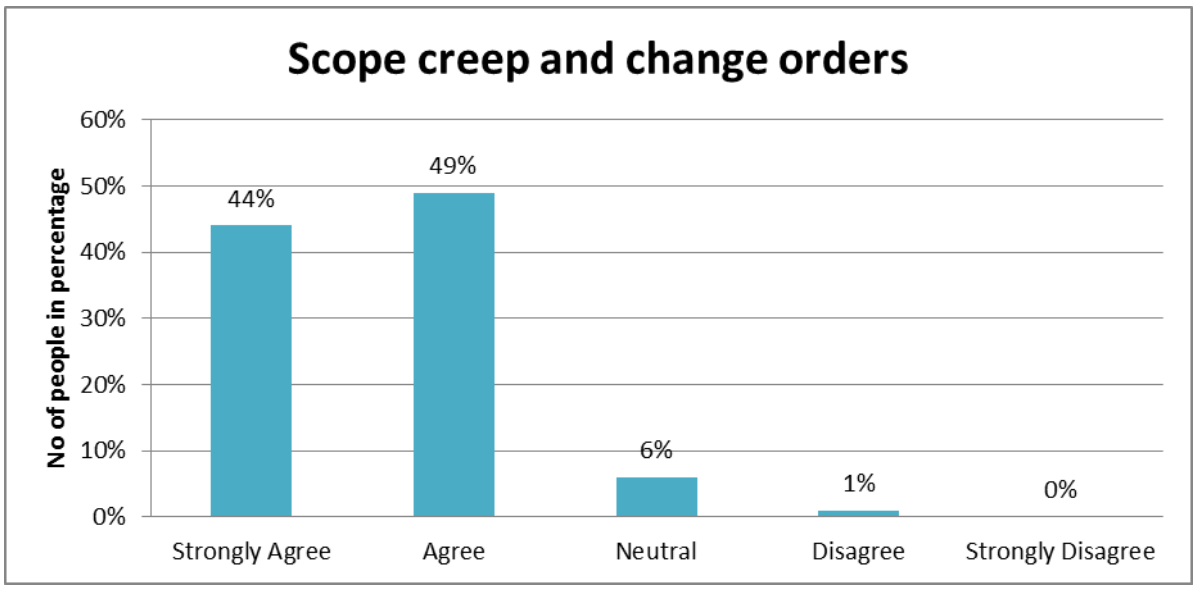

Figure 4.2.2.12: Scope creep and change orders

Figure 4.2.2.12 show that 49% of respondents agree, 44% strongly agree, 6% are neutral, 1% disagrees, and none strongly disagree that scope creep and change orders are a primary cause of construction project failure. A majority of respondents agree with this conclusion.

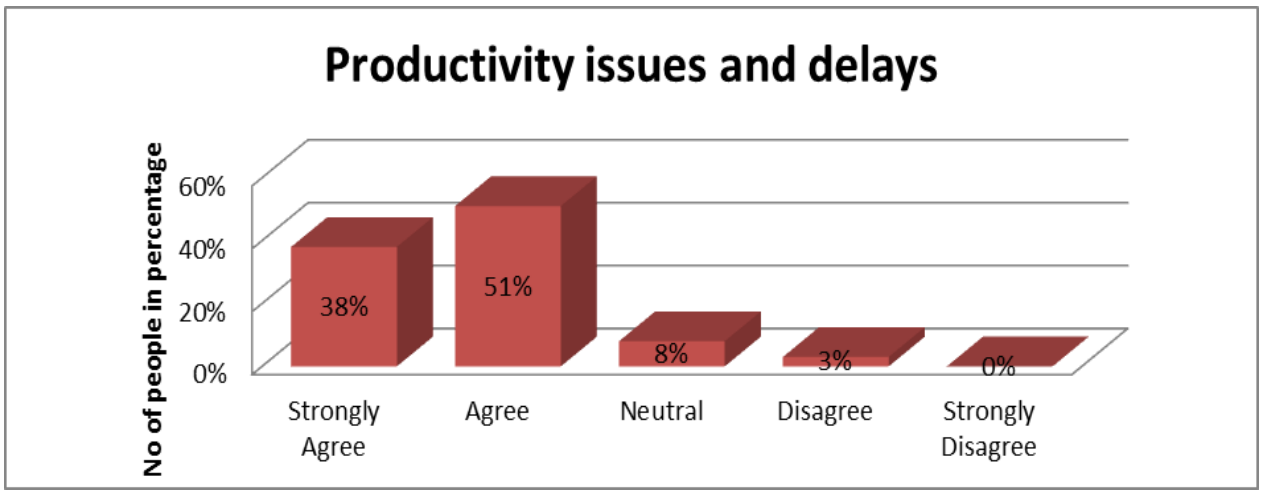

Figure 4.2.2.13: Productivity issues and delay

Figure 4.2.2.13 the above reveals that roughly 51% of the 100 respondents agreed, 38% strongly agreed, and 8% were neutral, 3% disagreed, and none strongly disagreed with the productivity concerns and delays. A majority of responders agree with this conclusion.

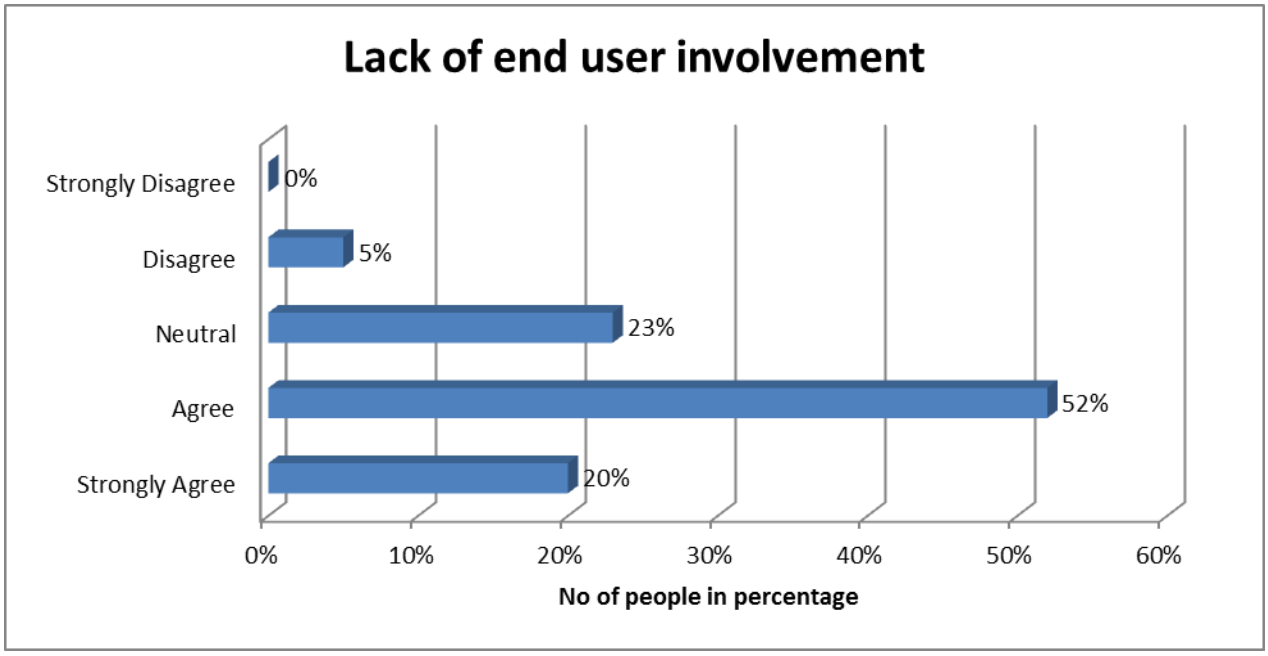

Figure 4.2.2.14: Lack of end user involvement

Figure 4.2.2.14 the findings shows that 52% of respondents agree, 20% strongly agree, and 23% chose to remain neutral that lack of end-user involvement is a factor that causes construction project failure, 5% disagree, and none strongly disagree.

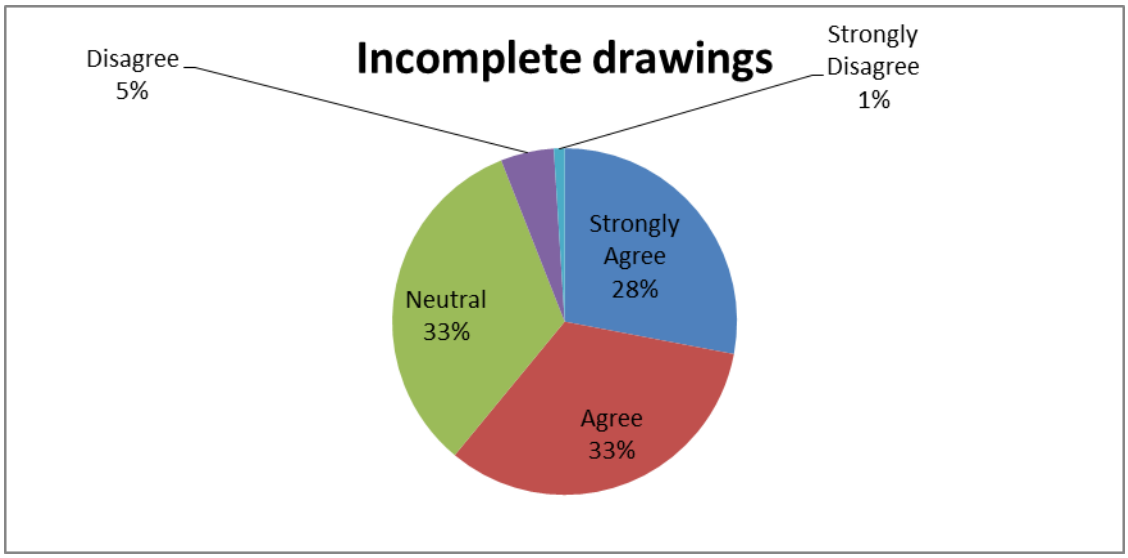

Figure 4.2.2.15: Incomplete drawings

Figure 4.2.2.15 On the unfinished drawings, the results show that 33% agree, 28% strongly agree, 33% remain neutral, 5% disagree, and just 1% severely disagree.

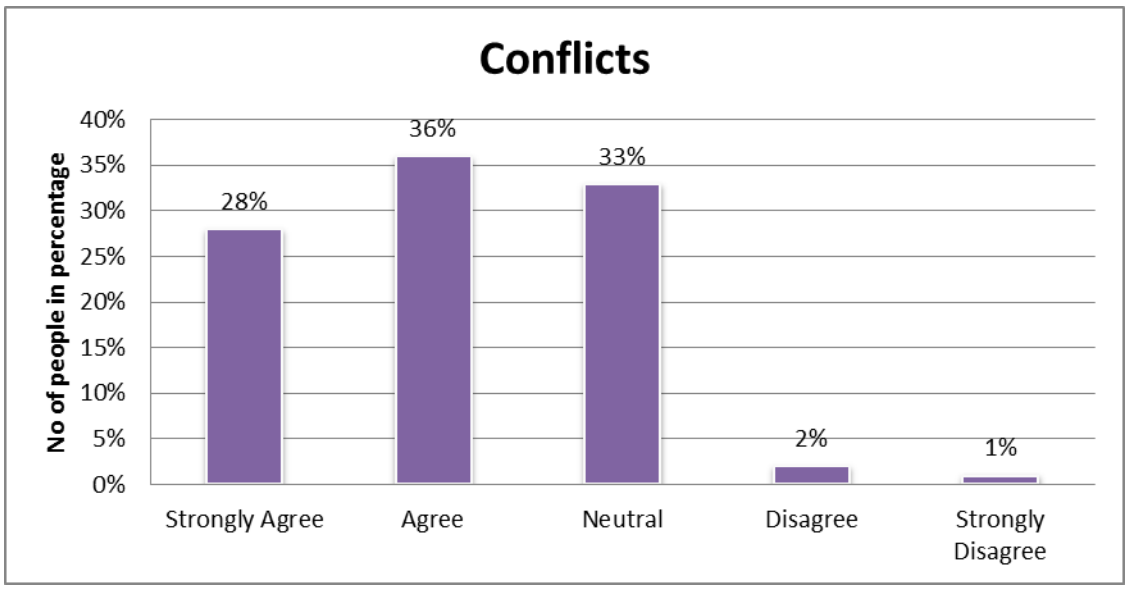

Figure 4.2.2.16: Conflict

Figure 4.2.2.16 The findings show that 36% of respondents agree, 33% remain neutral, and 28% strongly agree, 2% disagree, and just 1% severely disagree with the statement of conflicts.

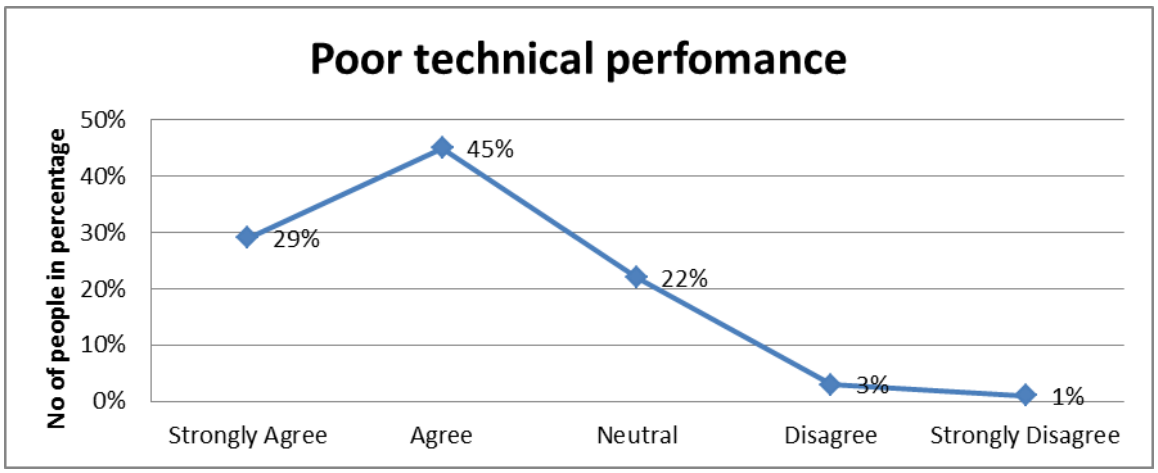

Figure 4.2.2.17: Poor technology performances

Figure 4.2.2.17 the graph above demonstrates that the majority of respondents agree, with 45 percent agreeing and 29 percent strongly agreeing, compared to 2% disagreeing and 1% strongly disagreeing. Only 22% of respondents were undecided about the statement about poor technological performance.

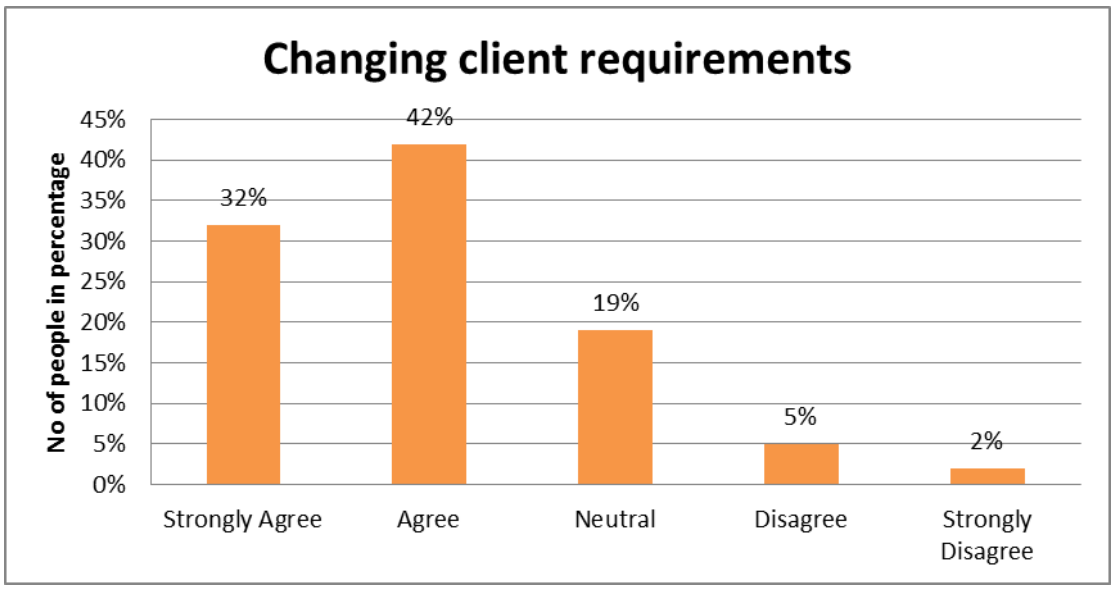

Figure 4.2.2.18: Changing client requirements

Figure 4.2.2.18 when asked about changing customer requirements 42% of the respondents agree, 32% strongly agree, 19% remain neutral, 5% disagree, and 2% strongly disagree, according to the findings. The majority of individuals agree based on the results.

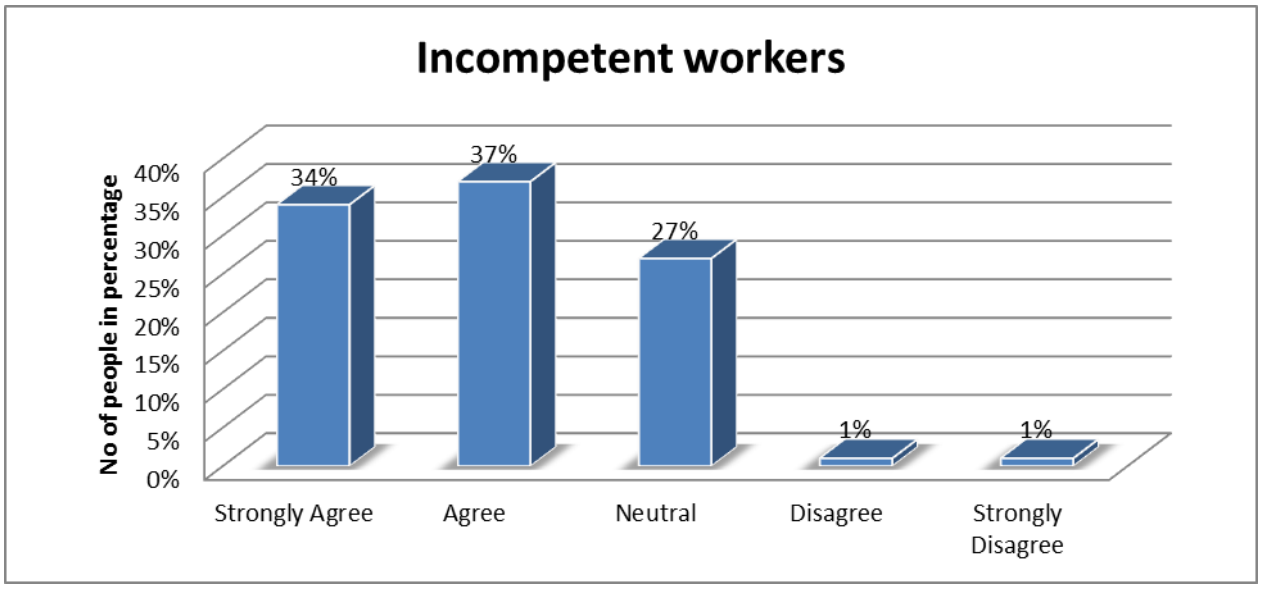

Figure 4.2.2.19: Incompetent workers

Figure 4.2.2.19 show that 71% of the respondents agreed that incompetent workers are a factor that causes construction project failure, while 2% disagreed and 27% stayed neutral. A majority of responders agree with this conclusion.

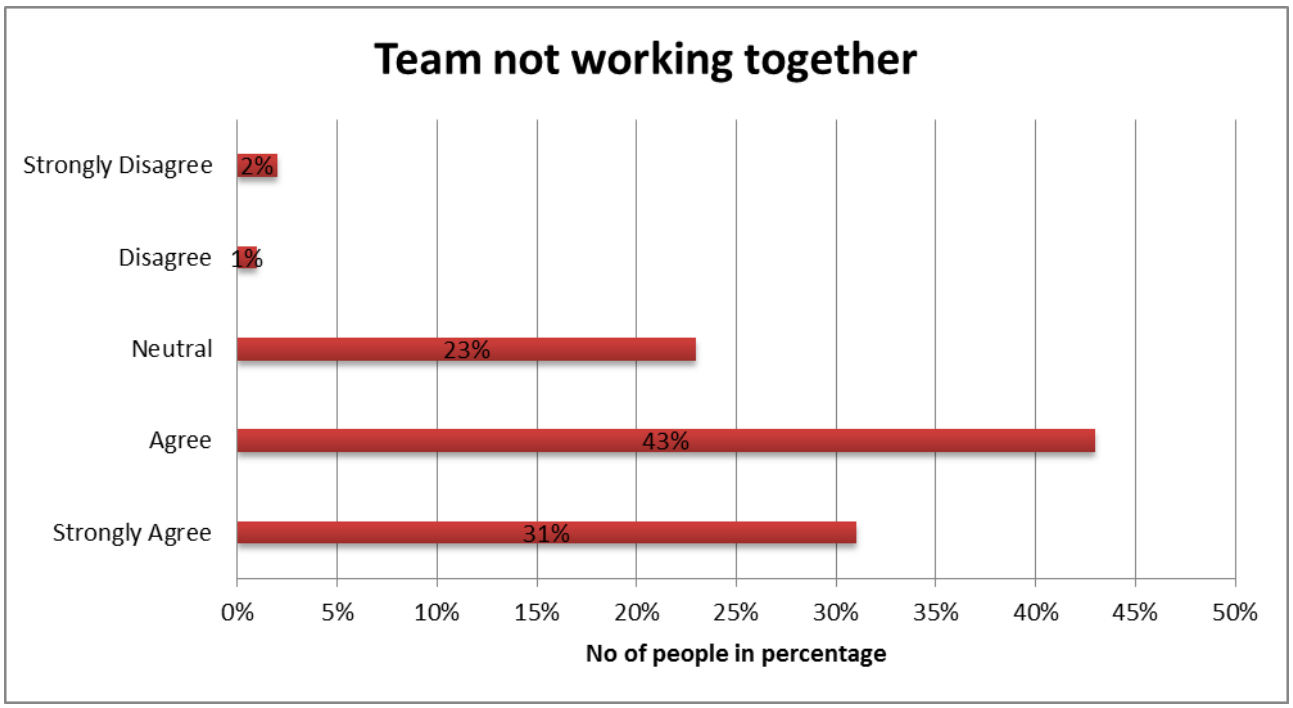

Figure 4.2.2.20: Team not working together

Figure 4.2.2.20 show that 43% of respondents agree, 31% percent strongly agree, 23% percent are neutral, 1 percent disagree, and just 2 percent strongly disagree with the statement that the team is not working together. The results show that the majority of people agree.

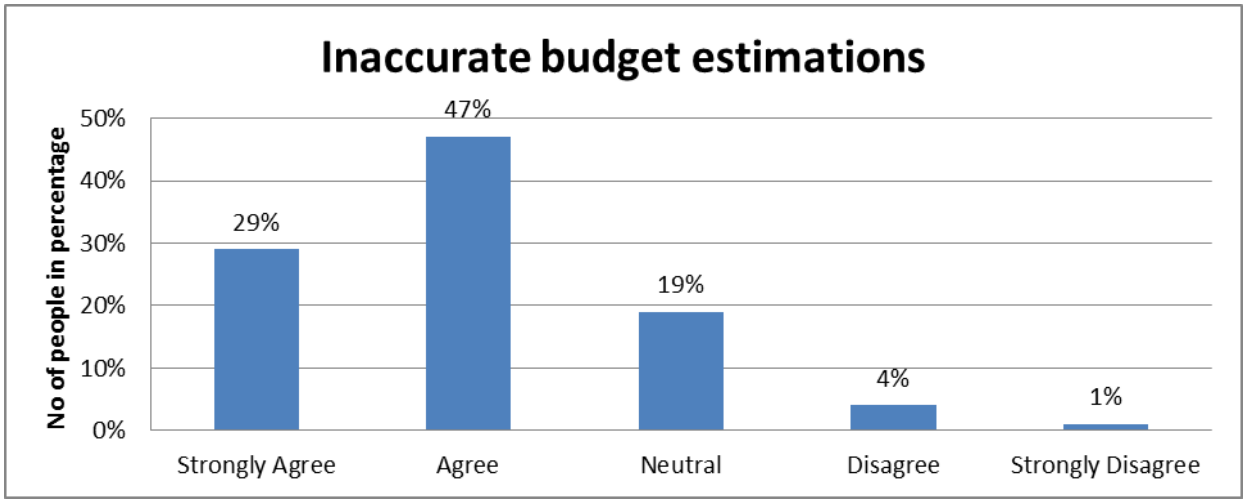

Figure 4.2.2. 21: Inaccurate budget estimations

Figure 4.2.2.21 the results displays that 47% of respondents agree, 29% strongly agree, 19% are neutral, 4% disagree, and only 1% strongly disagree with the statement erroneous budget estimates the findings show that the majority of people agree.

4.2.3 Section C:How can challenges faced in rural construction projects be mitigated?

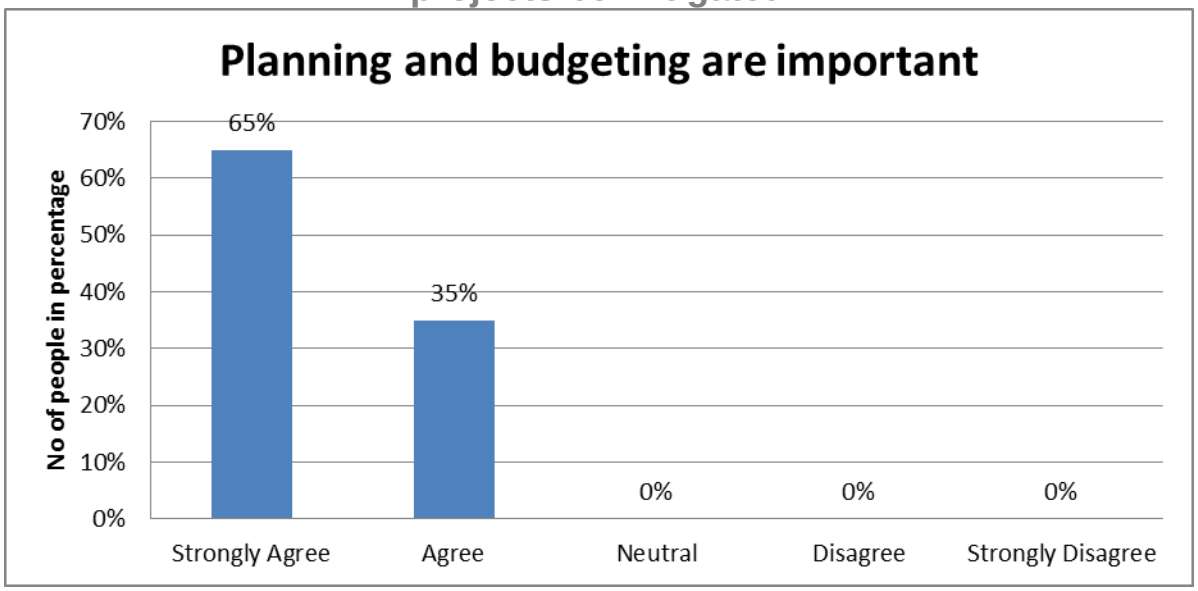

Figure 4.2.3. 1: Planning and budgeting are important

Figure 4.2.3.1 On the assertion that planning and budgeting are important, 65% of the 100 respondents strongly agree, 35% agree none of them picked impartial, disagree, and strongly disagree. The vast majority of those polled agree.

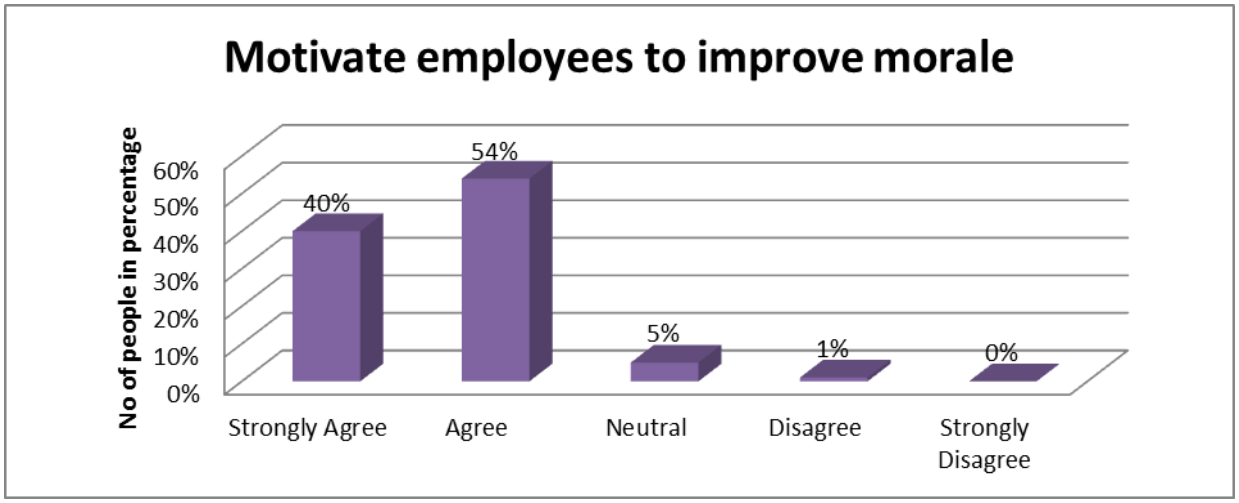

Figure 4.2.3.2: Motivate employees to improve morale

Figure 4.2.3.2 the results shows that 54% of respondents agree, 40% strongly agree, 5% are neutral, 1% disagree, and none strongly disagree with the statement inspires employees to increase morale. A great percentage of people agree wholeheartedly.

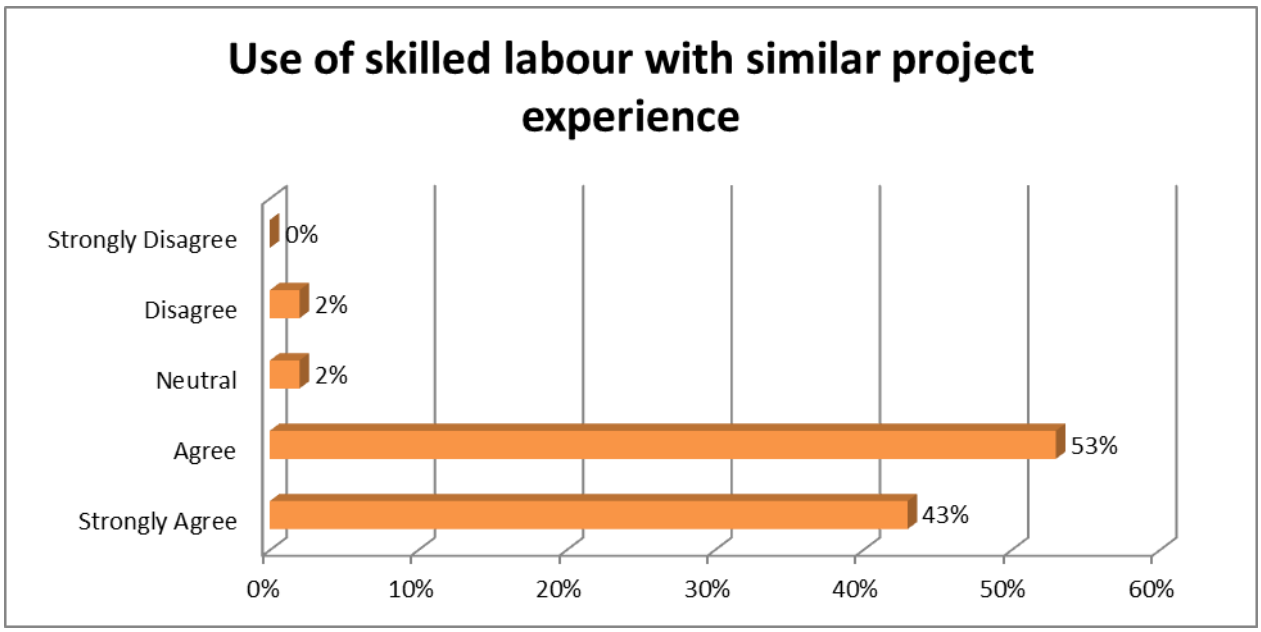

Figure 4.2.3.4: Used of skilled labour with similar project experience

Figure 4.2.3.4 above shows that 53% of respondents agree, 43% strongly agree, while 2% remain impartial, 2% disagree, and none strongly disagree. The majority of respondents think that using trained labour with similar project expertise can assist reduce the challenges faced in building projects, as evidenced by this result.

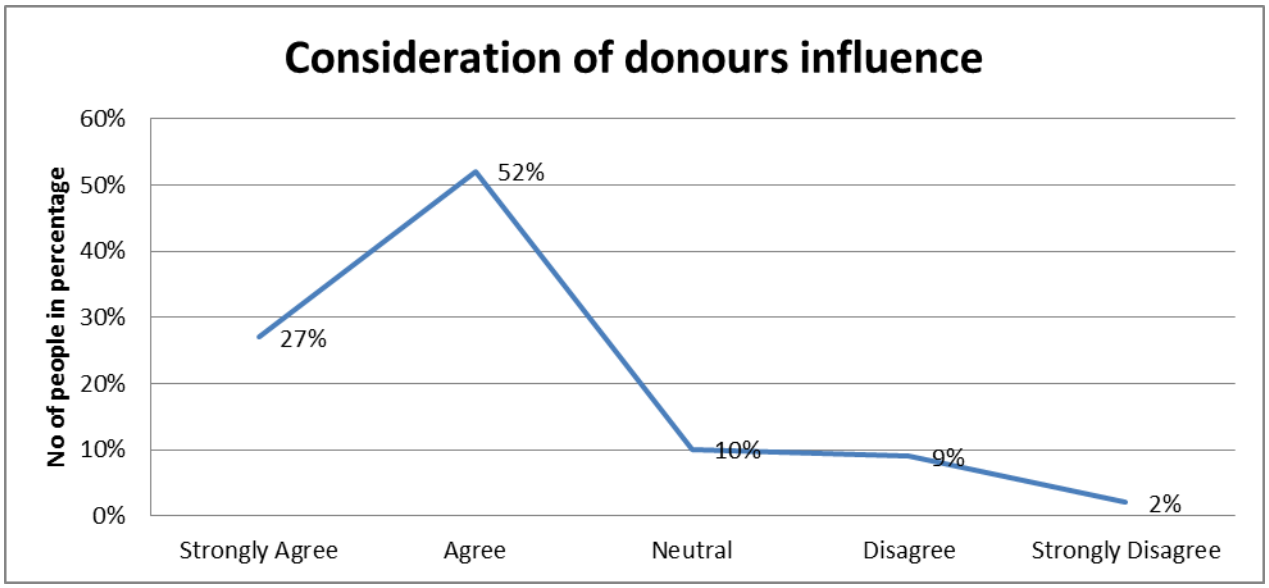

Figure 4.2.3.5: Consideration of donors' influence

Figure 4.2.3.5the results above show that 53% of respondents agree, 43%strongly agree, while 2% remain neutral, 2% disagree, and none strongly disagree. The majority of respondents think that using trained labour with similar project expertise can assist to reduce the challenges faced in building projects, as evidenced by this result.

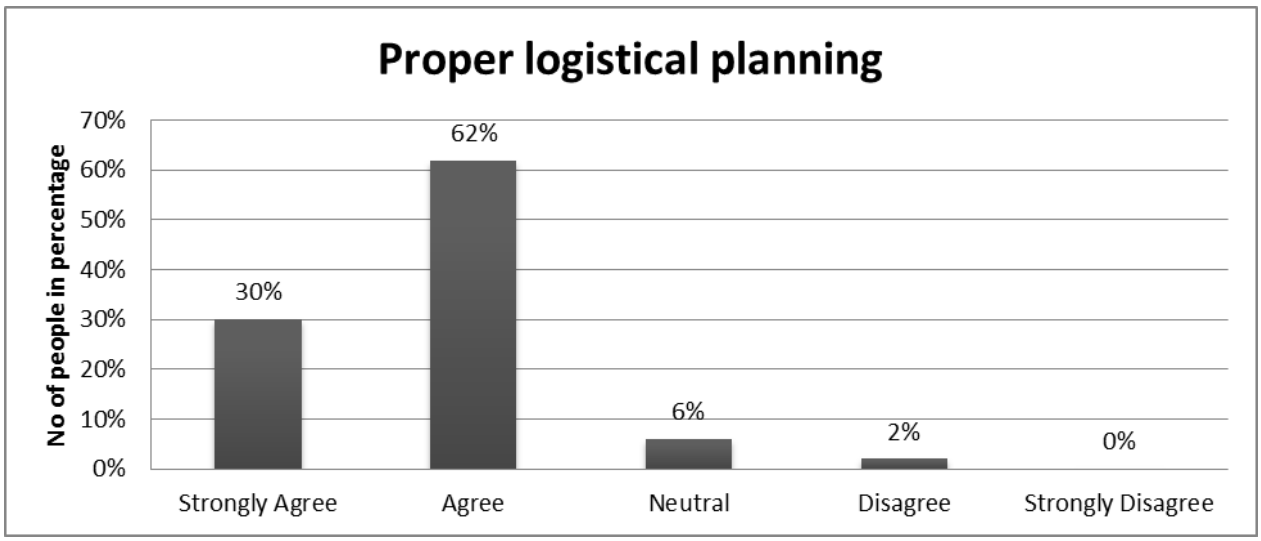

Figure 4.2.3.6: Proper logistic planning

Figure 4.2.3.6 According to the results, 62% of respondents agree, 30% strongly agree, 6 percent remain neutral, 2% disagree, and none strongly disagree. The majority of responders agree with this conclusion.

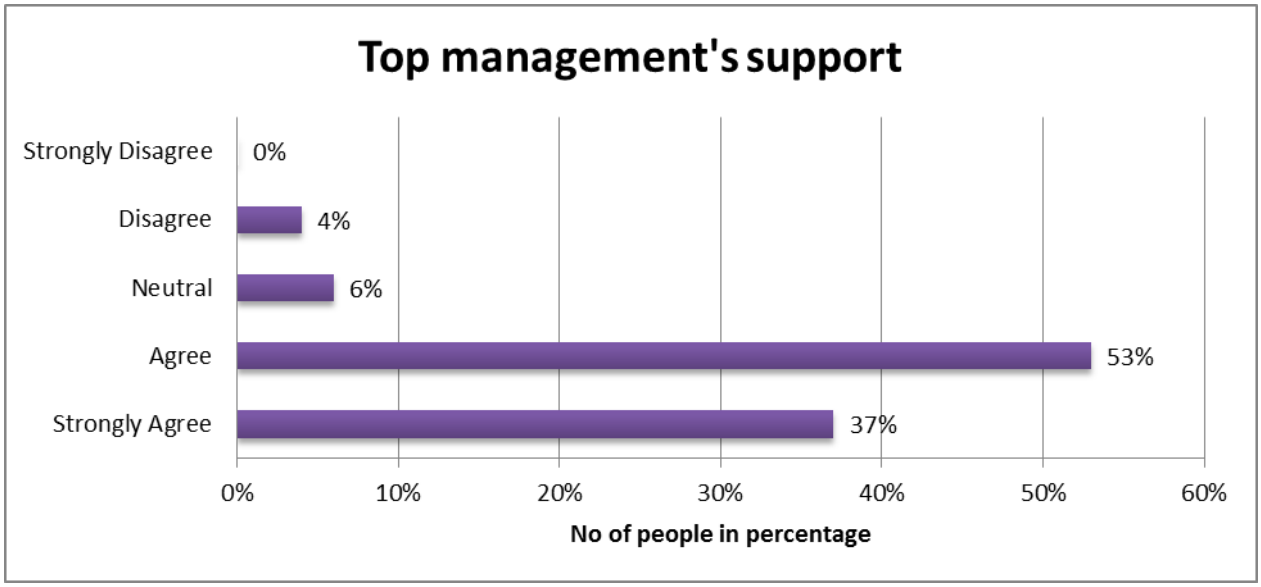

Figure 4.2.3.7: Top management's support

Figure 4.2.3.7 The results suggest that 53% of respondents agree, 37% strongly agree, 6% remain indifferent on top management's support, and 4% disagree and none strongly disagree.

4.2.4Section D: Recommend ways to make projects successful in rural areas in Mpumalanga

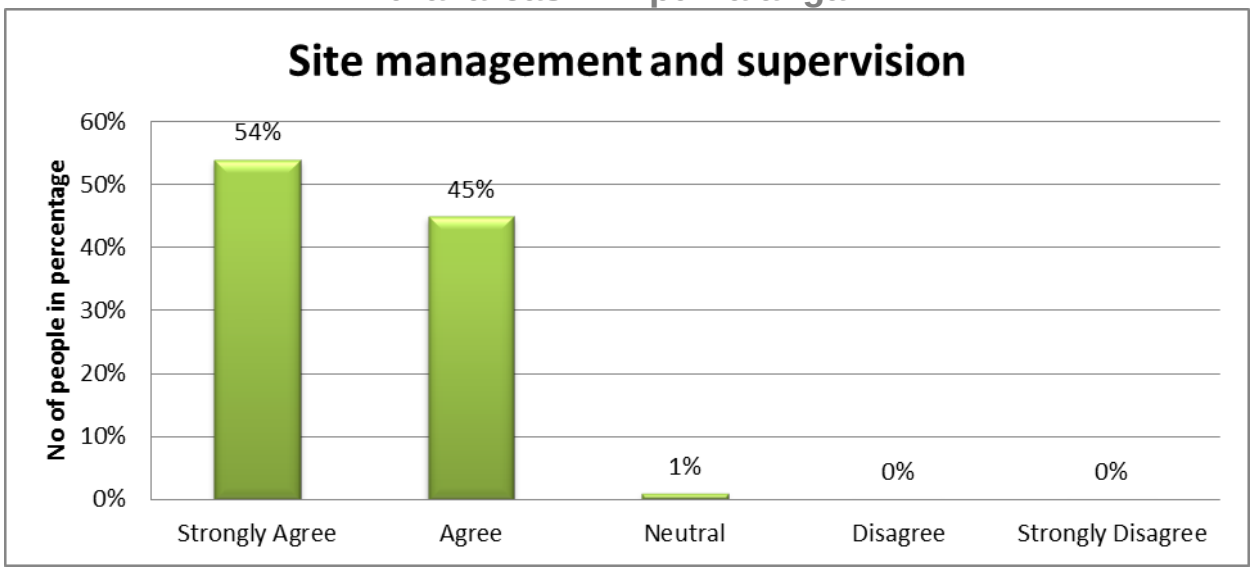

Figure 4.2.4.1: Site management and supervision

Figure 4.2.4.1The results suggest that 54 of respondents strongly agree, 45% agree, and 1% disagree that site management and supervision can assist to improve the success of building projects, while 1 percent remained neutral. The majority of individuals agree with this outcome.

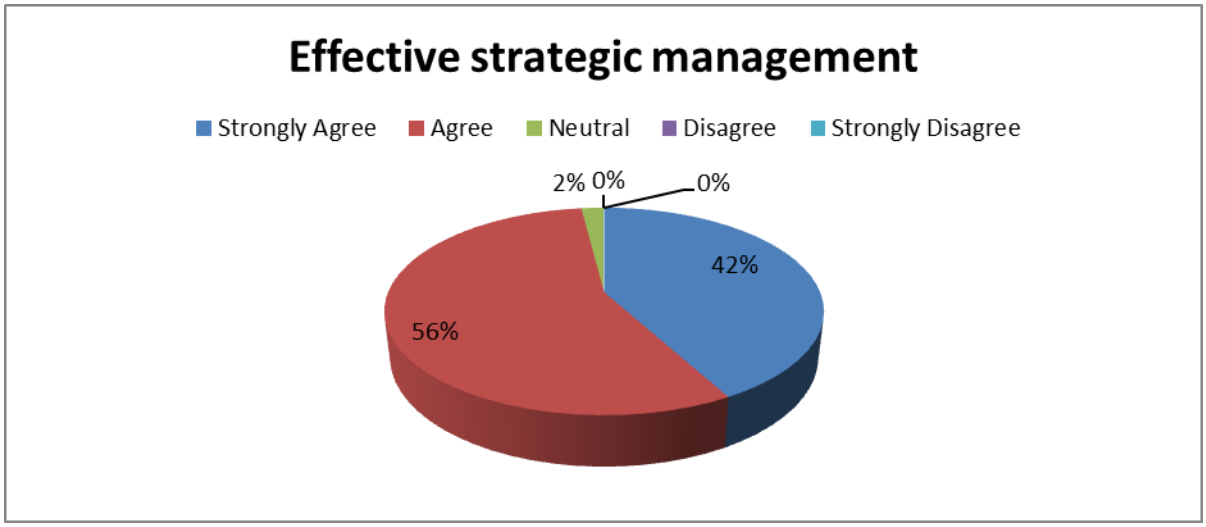

Figure 4.2.4.2: Clear strategic management

Figure 4.2.4.2 The results demonstrate that the majority of respondents agree with the statement of effective strategic management, 56% agreeing, 42% strongly agreeing, 2% remaining neutral, and none strongly disagreeing or disagreeing.

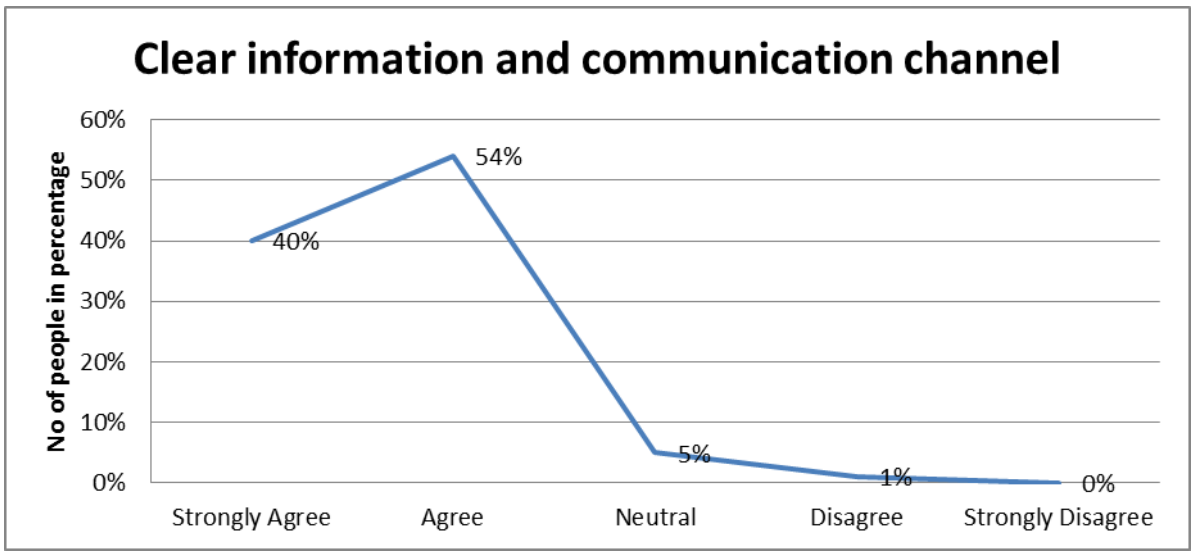

Figure 4.2.4.3: Clear information and communication channel

Figure 4.2.4.3 the above demonstrates that 54% of the respondents agree ,40% strongly agree on the statement clear information and communication can help in improving success of construction project,while 5% were neutral ,only 1% disagree and none of the strongly disagree.From this results it is confirmed that a majority of respondents agree.

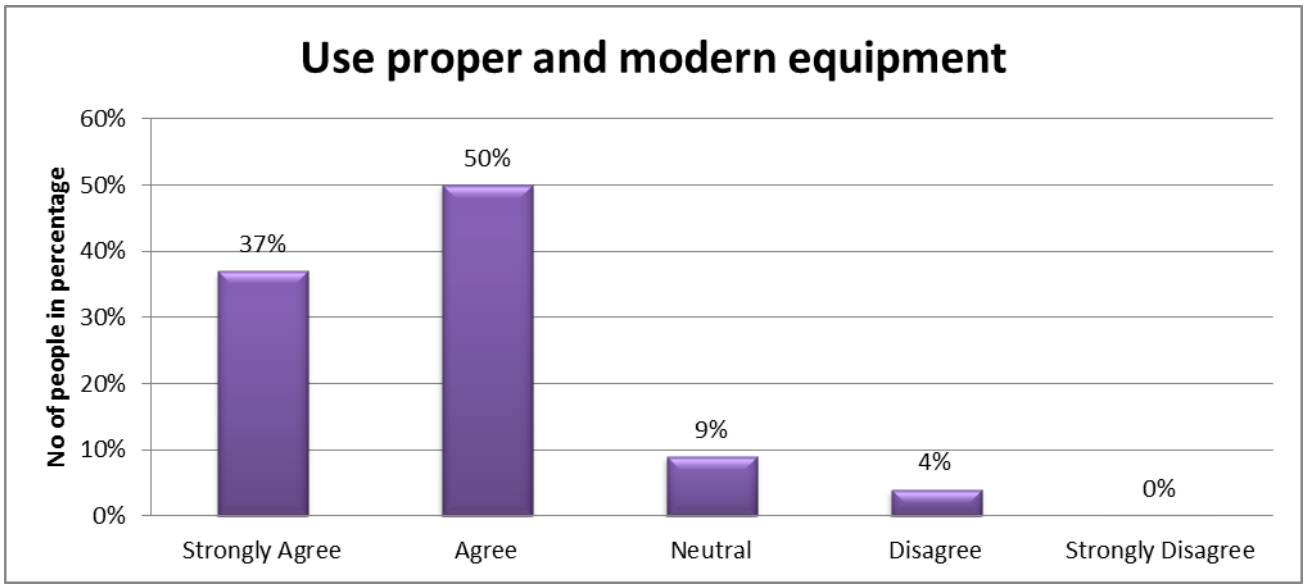

Figure 4.2.4.4: Use proper modern equipment

Figure 4.2.4.4 The results suggest that 50% of respondents agree, 37% strongly disagree, and 9% remain neutral on the assertion that adequate and modern equipment should be used, while 4% disagree and none severely disagree. The majority of responders agree with this conclusion.

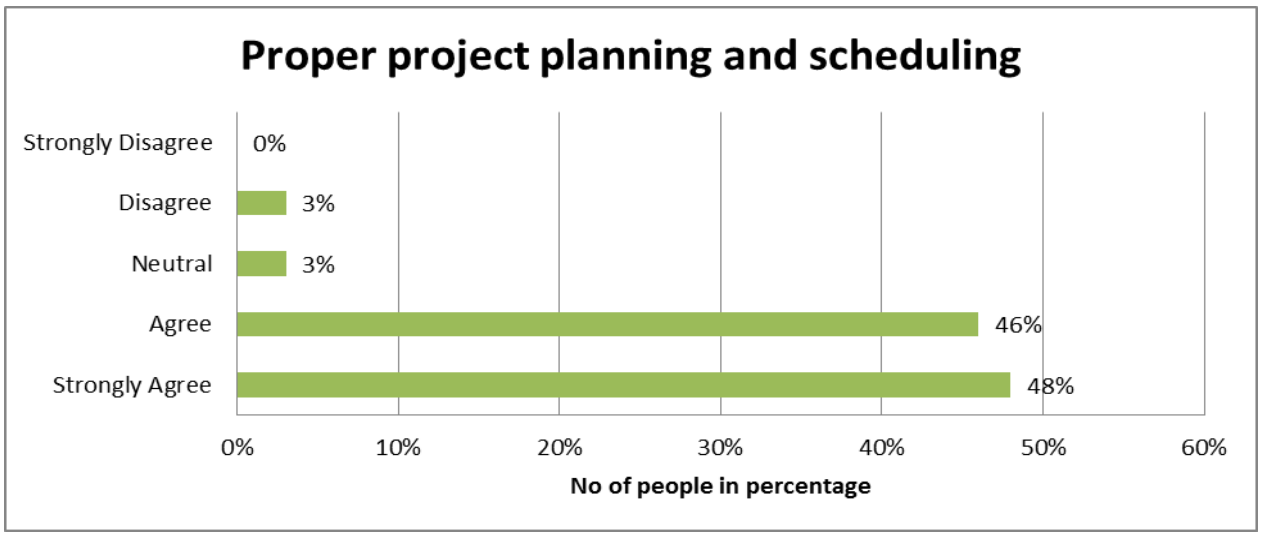

Figure 4.2.4.5: Proper project planning and scheduling

Figure 4.2.4.5 On the statement proper project planning and scheduling, 48% of the respondents highly agree, 46% agree, 3% remain neutral, while 3% disagree and none of them strongly disagree. The majority of responders agree, as evidenced by these findings.

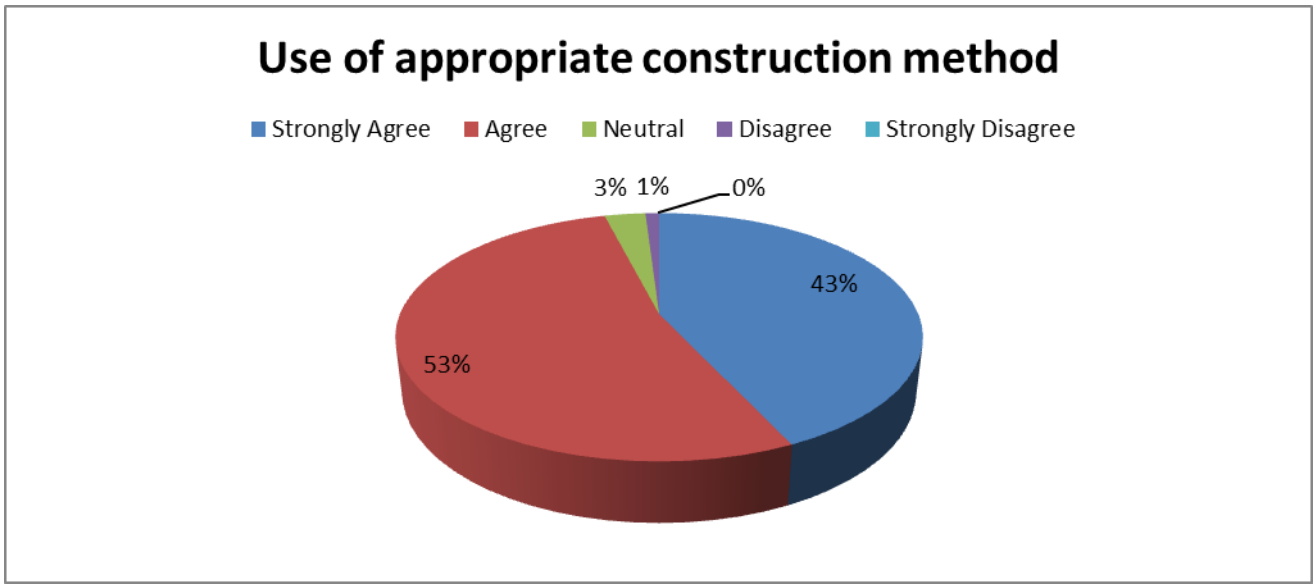

Figure 4.2.4.6: Use of appropriate construction method

Figure 4.2.4.6 shows that on the statement "usage of proper building method," 37% of respondents agree, 43% strongly agree, 3% remain neutral, and only 1% disagree, with none strongly disagreeing. The majority of respondents agree with these findings.

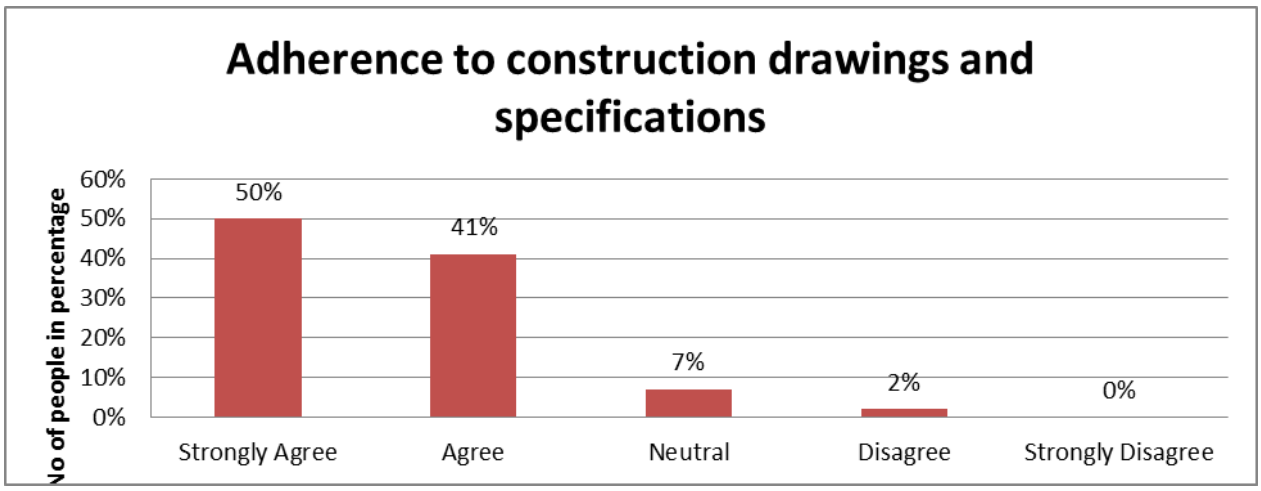

Figure 4.2.4.7: Adherence to construction drawings and specifications

Figure 4.2.4.7 the above shows that 50% of respondents strongly agree, 41% agree, 7% remain neutral, 2% disagree, and none strongly disagree on the statement conformity to building plans and specifications. A wider group has agreed as a result of these findings.

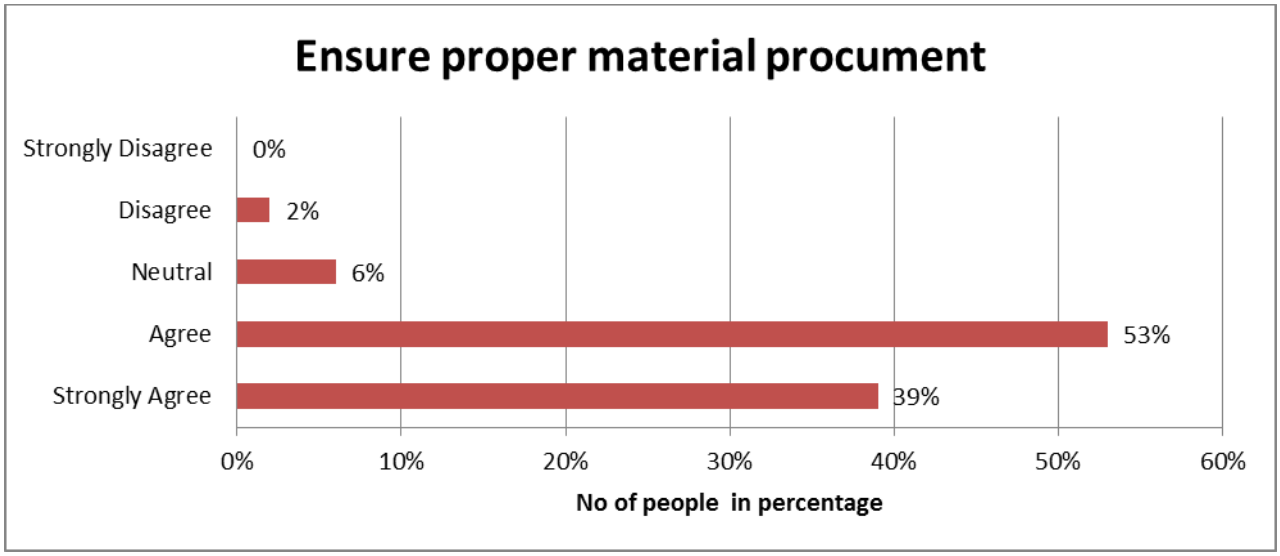

Figure 4.2.4.8: Ensure proper materials procurement

Figure 4.2.8 the above results show that 53% of respondents agree, 39% strongly agree, 6% remain neutral, 2% disagree, and none strongly disagree on the statement ensure proper material Procurement. The vast majority of those polled agree.

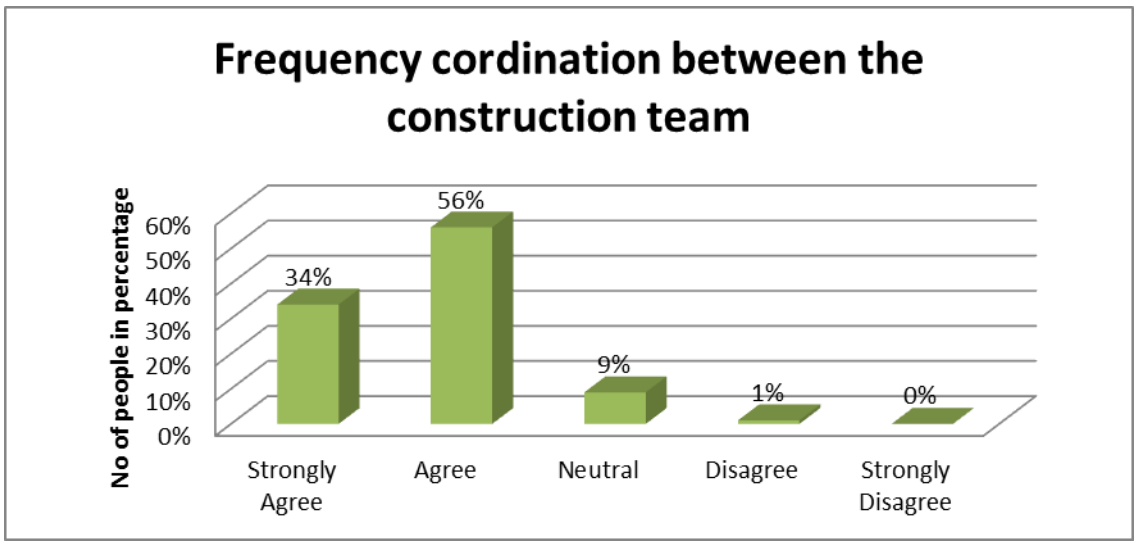

Figure 4.2.4. 9: Frequency coordination between the construction team

Figure 4.2.4.9 the above results shows that 56% of the respondent agree, 34% strongly agree, 9% remained neutral, while only 1% disagree and none of the respondents strongly disagree on the statement frequency coordination between the construction team. The majority of responders agree with these findings.

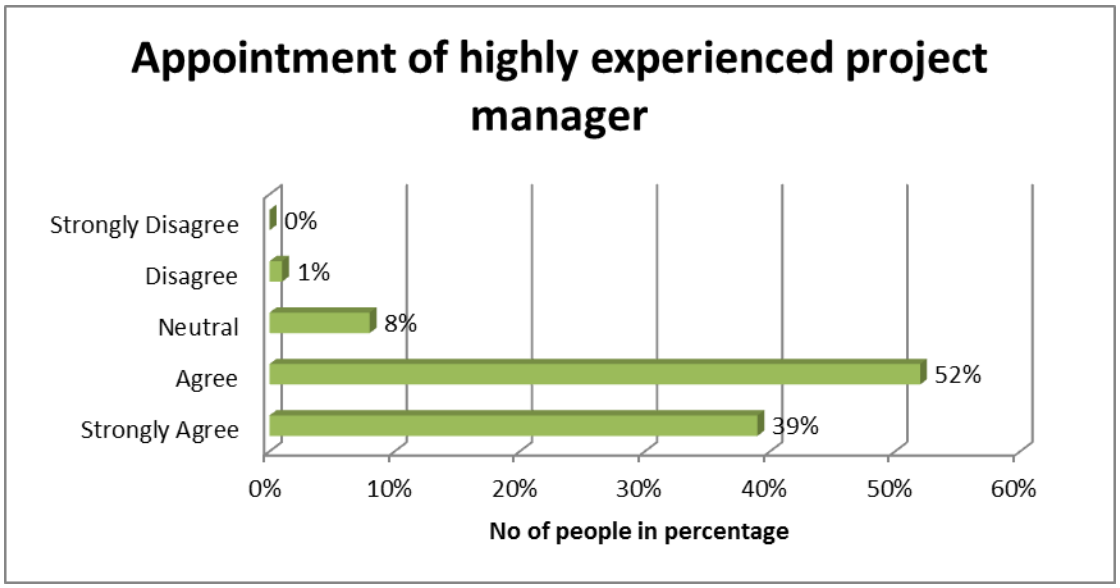

Figure 4.2.4.10: Appointment of highly experienced project manager

Figure 4.2.4.10 the results shows that 52% of respondents agree, 39% strongly agree, and 8% are indifferent, while 1% disagree and none strongly disagree. This data confirms that a majority of people agree.

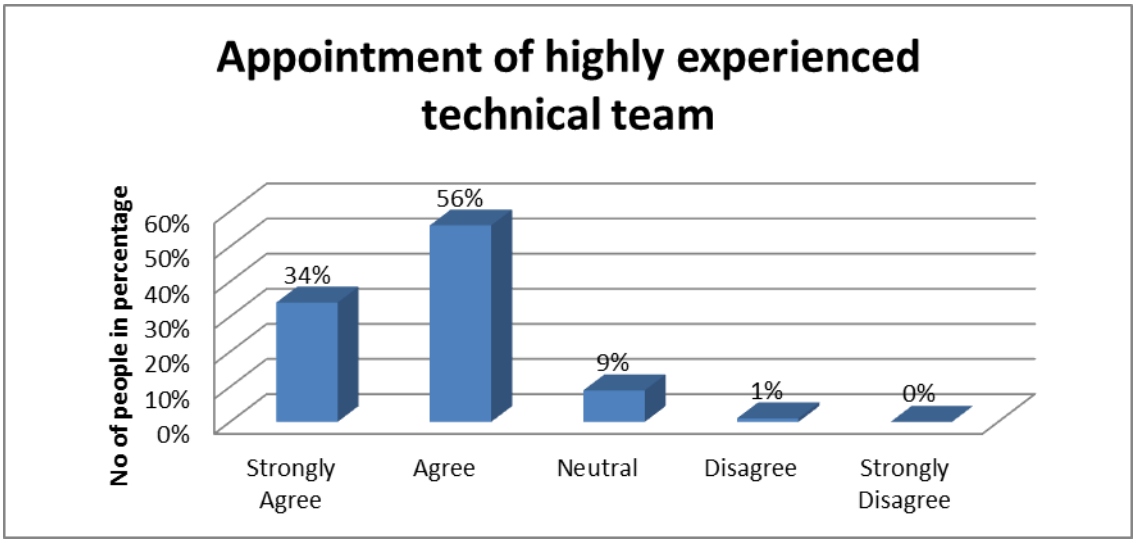

Figure 4.2.4.11: Appointment of highly experienced technical team

Figure 4.2.4.11 shows that 56% of the respondent agree, 34% strongly agree, 9% remained neutral, while only 1% disagree and none of the respondents strongly disagree on the statement frequency and coordination between the construction team. The majority of responders agree with these findings

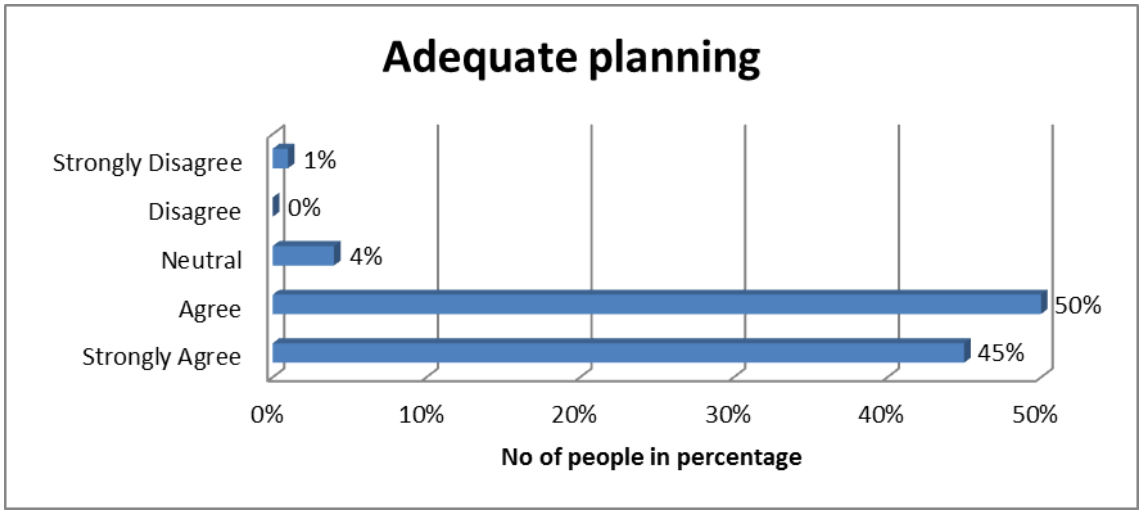

Figure 4.2.4.12: Adequate planning

Figure 4.2.4.12 the results show that 50% of respondents agree on the adequate planning statement, 45% strongly agree, 4% remain neutral, and just 1% strongly disagrees and none of the respondents disagree. The majority agrees, as evidenced by this outcome.

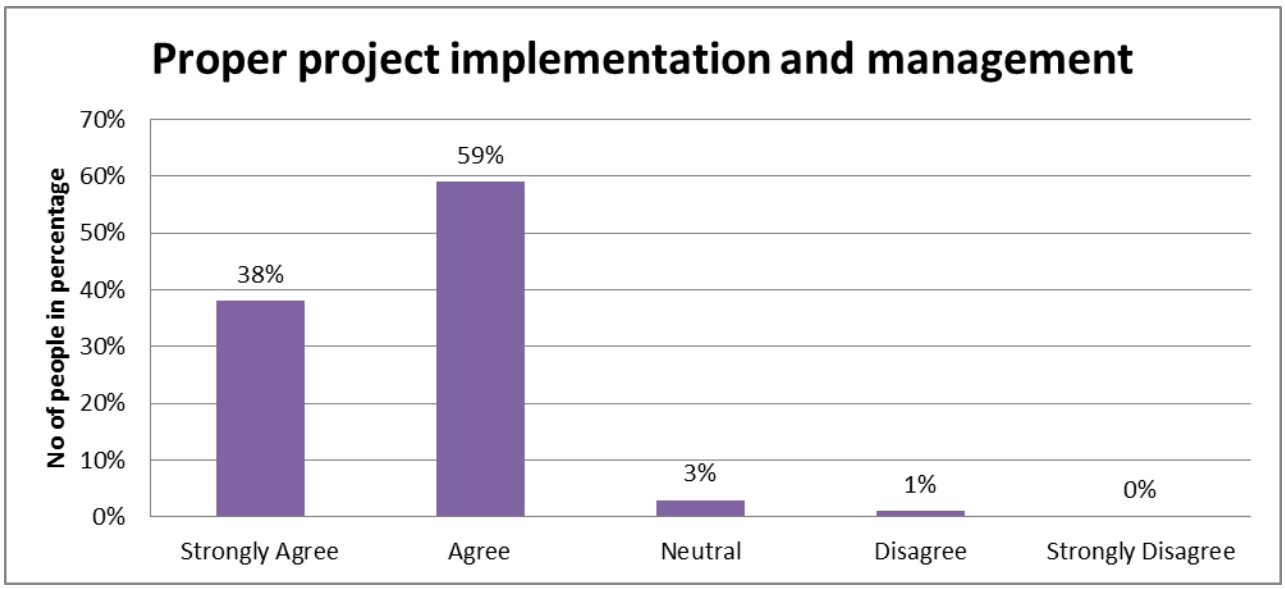

Figure 4.2.4.13: Project implementation and management

Figure 4.2.4.13 the results shows that majority of the respondents agree, those who agree were 59% and those who strongly agree were 38%, while 3% remained neutral ,1% disagree and none of the respondents strongly disagree on the statement proper project implementation and management.

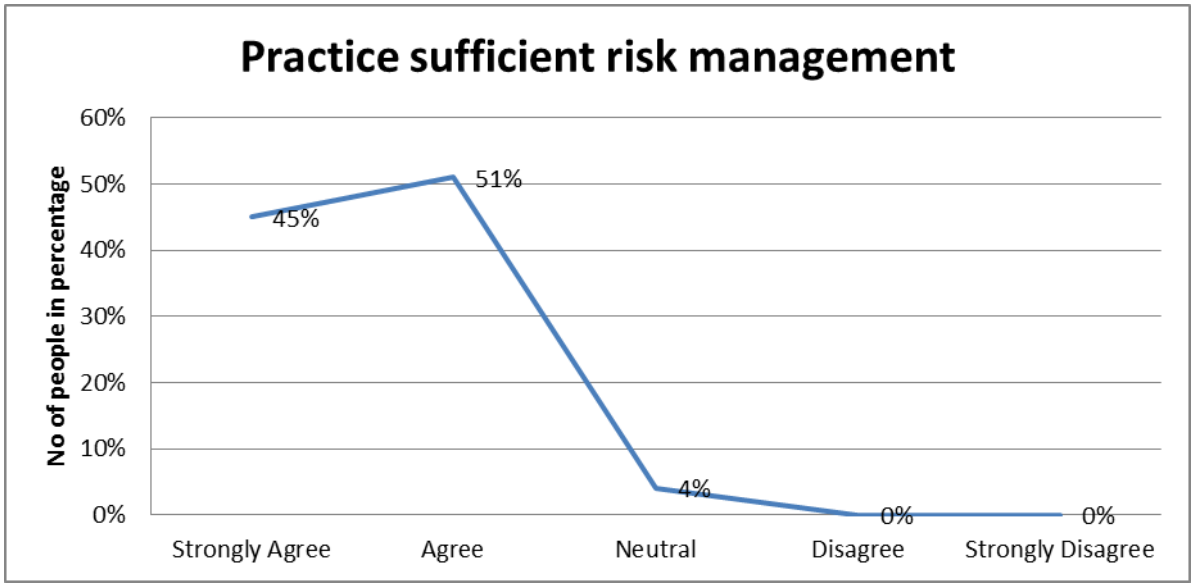

Figure 4.2.4. 14:Practice suffecient risk management

Figure 4.2.4.14 shows that 51% of the respondents agree,45% strongly agree,4% remained neutral on the statement practice sufficient risk management, none of them have strongly disagree or disagree. Majority agrees.

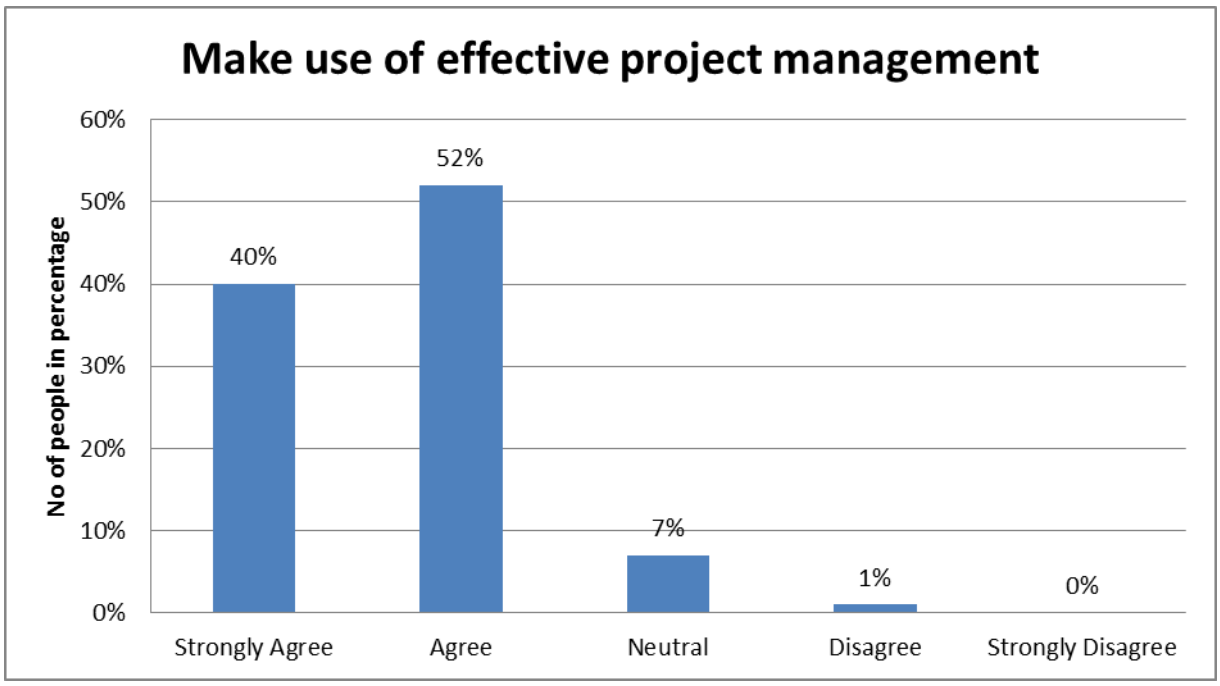

Figure 4.2.4.15: Make use of effective project management

Figure 4.2.4.15 the graph above shows that 52% of the respondents agree,40% strongly agree, while 7% remained neutral and only 1% disagree, none of the respondent strongly disagree on the statement make use of effective project management.

4.3 Summary of the findings

The findings revealed that project failure is more likely to occur in construction projects because project managers who are not qualified for the job are hired, as well as owing to client scope changes. This is usually due to the length of time between the initial design and the actual implementation of the project. Many respondents stated that poor scope management, documentation, and monitoring had an impact on projects regardless of their size.Furthermore, poor communication, client interference in the construction process, poor risk management in all project steps, and improper planning and scheduling were ranked as the causes of project failure. The study revealed that to overcome project failure, site management and supervision,effective strategic management and use of proper and modern equipment were essential in construction projects.

4.4 Conclusion

Findings on factors impacting performance of rural-based construction projects in Mpumalanga were given in this chapter. Chapter 4 outlined all of the outcomes from the analysis of the research data in order to meet the study's objectives.

Respondents were given the option to withdraw from the survey at any moment because it was for research purposes, and the majority of respondents did not withdraw because the questions were easy and fair, they were all closed ended questions.

CHAPTER 5 :
SUMMARY OF FINDINGS, CONCLUSIONS, AND RECOMMENDATIONS

5.1 Introduction

Based on the data analyzed in the preceding chapter, this chapter provides an overview, a summary of the findings, conclusions, and recommendations. The objective of the study was to find factors impacting the performance of rural-based construction projects in Mpumalanga. This chapter will present and discuss the study's conclusions and recommendations concerning the study's objectives.

5.2 Previous Chapters Synopsis

The research problem was introduced in Chapter one. The problem was identified, and the objectives were stated. This contained a discussion of the research methodology as well as the research study's planned methodologies. A literature review of the topic was included in the second chapter of this research study. The review was carried out to provide a theoretical understanding of the topic and a foundation for constructing the research tools that were used. Chapter three explained and examined research design and methodology. The target population, as well as sample size and sampling selection, were discussed. In addition, in chapter four, the data is presented, statistical analysis is performed, and the results are interpreted. Chapter five summarized the entire research work. Conclusions are reached on the subject, and recommendations for future research are suggested.

The main aim of this study was to identify the factors impacting the performance of rural-based construction projects and to recommend ways to make projects successful in rural areas in Mpumalanga.

The following were the **sub-objectives** of this study:

- To identify the nature of the risks that causes the failure of the rural construction projects.
- To identify the skill sets required for the execution of those construction projects.

- To recommend ways to mitigate challenges in rural construction projects.

5.2.1Objective 1: The nature of the risks that cause the failure of the rural construction projects.

The first objective was to identify the nature of the risks that cause the failure of many rural construction projects. The results obtained from the questionnaire survey from different respondents selected randomly, exposed that the following were the main kinds of risks that cause failure in construction-based projects in Mpumalanga: improper planning and scheduling; poor risk management in all project steps; scope creep, and changed orders; inadequate documentation and tracking, productivity issues and delays, inadequate human and technology resources, poor leadership, interference of the client in the construction process, poor communication, changing client requirements, and inaccurate budget estimations. The first objective was accomplished.

5.2.2 Objective 2: Skill sets required for the execution of those construction projects

The second objective was to identify the skill sets required for the execution of these construction projects. According to the findings obtained from the survey, the set of skills for the execution of construction projects includes site management and supervision; proper project implementation and management; practicing sufficient risk management, use of appropriate construction methods, effective strategic management, clear information and communication channels, use of the proper methods and modern equipment, proper planning and scheduling. A highly experienced project manager and highly experienced technical team were also important to the success of the project. The survey further revealed that adequate planning, proper project implementation and management, the practice of sufficient risk management, and making use of effective project management techniques are the most important skills needed for the execution of the projects. A majority of the respondents were in agreement with this set of skills required. It can be concluded that the objective was met from the data collection.

5.2.3 Objective 3: Ways to mitigate challenges in rural construction projects

The third objective aims to determine how challenges faced in rural construction project can be mitigated. Results obtained from the survey revealed that the most common strategies used to mitigate challenges faced in construction projects, include planning and budgeting, use of skilled labour with experience on a similar project, motivating employees to improve their ethical state, proper logistical planning, top management's support, and consideration of donor’s influence. All the strategy factors are important to mitigate challenges faced in rural-based construction projects in Mpumalanga. The objective was achieved in terms of the findings from the questionnaire.

5.3 Recommendations

The final objective was to recommend ways to make projects successful in rural areas in Mpumalanga. The research makes the following recommended steps:

Improve managerial ability by holding training workshops to teach and train managers in good project management, organization, and planning techniques. It is necessary to communicate and enforce a clear project completion timeline. The client should employ skilled and qualified project managers, a project manager with experience will be able to ensure timeframe and budget are met. Clear project scope is essential at the beginning of the projects.

To improve performance it is recommended that all those working in project construction should pay proper attention to the following: site management and supervision, proper project implementation and management, practice sufficient risk management, use of appropriate construction methods, effective strategic management. They should avoid: improper planning and scheduling, poor risk management in all project steps, scope creep and changed orders, inadequate documentation and tracking, productivity issues and delays, inadequate human and technology resources, poor leadership, interference of the client in the construction process, poor communication, changing client requirements and inaccurate budget estimations.

5.4 Conclusion

In conclusion, the objective of this research was to identify factors that cause failure in the construction-based project. Twenty-one factors were identified as having the

potential to impact project performance, and they were classified under the headings of the nature of risks that cause construction project failure. The findings revealed that a wide range of factors influences the success of construction projects; these factors might have either a negative or positive impact on construction projects. The findings show that construction projects require a highly trained project manager with sufficient project management experience. As a result, the findings of this study add to the body of knowledge and provide significant insights into the variables that cause construction project failure, as well as recommendations for how to improve the results of construction project delivery.

5.5 Future Research

The focus is on finding factors impacting the performance of rural-based construction in Mpumalanga. There were a number of focus areas where this study was unable to examine. However, future studies could consider the following topics:

- Optimization of safety in the construction industry.
- Risk assessment of a construction project.

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APPENDICES

APPENDIX A: QUESTIONNAIRE

FACTORS IMPACTING PERFORMANCE OF RURAL-BASED CONSTRUCTION PROJECTS IN MPUMALANGA

QUESTIONNIARE

My name is Jeanifer Skhulile Nkosi, a registered Mtech project management student, studying at the Cape Peninsula University of Technology. I am engaged in a research study entitled: *Factors impacting performance of rural-based construction projects in Mpumalanga.* The purpose of the study is to analyse factors impacting the performance of rural-based construction project. I am writing to request your permission to collect information from you using this questionnaire. Your identity is protected and your responses are confidential. Please do not write your names. You are free to withdraw from this survey at any time if you are not comfortable.

The questions will take 10-15 minutes to complete.

To participate kindly answer the questions on the questionnaire.

Thank you for your responses.

Regards

Jeanifer Skhulile Nkosi

SECTION A. BIOGRAPHY Indicate with an X in the relevant box and fill in the blanks.

1.1 Gender

1	Female	
2	Male	

1.2 How would you classify yourself?

1	Black	
2	Indian	
3	Colored	
4	White	

1.3 Age group:

21-30	
31 -40	
41 -60	
Older than 60+	

1.4 How many years have you been working?

1	0 – 1	
2	2– 5	
3	6– 9	
4	10 and above	

1.5 What is your job title?

1	Supervisor	
2	Manager	

3	Leader	
4	Other	

1.5a If other please specify…….

1.6 What is your highest educational level?

1	Matric	
2	Diploma	
3	Degree	
4	No Matric	
5	Other	

1.7

When working on a project do you sometimes encounter project failure	Yes	
	No	

SECTION B

2.1

	Factors that causes failure in construction-based projects	**Strongly agree**	**Agree**	**Disagree**	**Neutral**	**Strongly disagree**
1	Interference of the client in the construction process	1	2	3	4	5
2	Inadequate documentation and tracking	1	2	3	4	5
3	Inadequate human and technology resources	1	2	3	4	5
4	Poor risk management in all project step	1	2	3	4	5
5	Poor communication	1	2	3	4	5
6	Cultural misalignment	1	2	3	4	5
7	Financial management	1	2	3	4	5
8	Inexperienced project managers	1	2	3	4	5
9	Poor leadership	1	2	3	4	5
10	Improper planning and scheduling	1	2	3	4	5
11	Unreliable workers	1	2	3	4	5
12	Scope creep and change orders	1	2	3	4	5
13	Productivity issues and delays	1	2	3	4	5
14	Lack of end user involvement	1	2	3	4	5
15	Incomplete drawings	1	2	3	4	5
16	Conflicts	1	2	3	4	5
1	Poor technical performance	1	2	3	4	5
18	Changing client requirements	1	2	3	4	5
19	Incompetent workers	1	2	3	4	5
20	Team not working together	1	2	3	4	5

21	Inaccurate budget estimations	1	2	3	4	4

2.1a If other please specify……
……
……
……

SECTION C

How can challenges faced in rural construction projects be mitigated?

	Mitigation strategy factor	**Strongly agree**	**Agree**	**Disagree**	**Neutral**	**Strongly disagree**
24	Planning and budgeting are important.	1	2	3	4	5
25	Use of skilled labour with similar project experience	1	2	3	4	5
26	Motivate employees to improve morale.	1	2	3	4	5
27	Use of skilled labour with and experience on similar project	1	2	3	4	5
28	Consideration of Donors influence	1	2	3	4	5
29	Proper logistical planning	1	2	3	4	5
30	Top management`s support	1	2	3	4	5

Recommend ways to make projects successful in rural areas in Mpumalanga

	Recommended ways to make project successful in rural areas	**Strongly agree**	**Agree**	**Disagree**	**Neutral**	**Strongly disagree**
31	Site Management and supervision	1	2	3	4	5
33	Effective strategic management	1	2	3	4	5
33	Clear information and communication channel	1	2	3		5
34	Use proper and modern equipment	1	2	3	4	5
35	Proper project planning and scheduling	1	2	3	4	5
36	Use of appropriate construction method	1	2	3	4	5
37	Adherence to construction drawings and specifications	1	2	3	4	5
38	Ensure proper material procurement	1	2	3	4	5
39	Frequency coordination between the construction team	1	2	3	4	5
40	Appointment of highly experienced project manager	1	2	3	4	5
41	Appointment of highly experience technical team	1	2	3	4	5
42	Adequate planning	1	2	3	4	5
43	Proper project implementation and	1	2	3	4	5

	management					
44	Practice sufficient risk management	1	2	3	4	5
45	Make use of effective project management techniques	1	2	3	4	5

Thank you for your time and contribution in the study. Wish you best luck in your work .

APPENDIX B: ETHICAL CLEARANCE

Cape Peninsula University of Technology

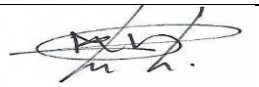
P.O. Box 1906 | Bellville 7535
Symphony Road Bellville 7535
South Africa
Tel: +27 21 4603291
Email: fbmsethics@cput.ac.za

Office of the Chairperson Research Ethics Committee	FACULTY: BUSINESS AND MANAGEMENT SCIENCES

The Faculty's Research Ethics Committee (FREC) on **4 May 2020** ethics **APPROVAL** was granted to **Jeanifer Skhulile Nkosi (211037311)** for a research activity for **M Tech: Business Administration (Project Management)** at Cape Peninsula University of Technology.

Title of dissertation / thesis / project:	Factors impacting performance of rural-based construction projects in Mpumalanga Lead Supervisor (s): Mr S Fore

Decision: APPROVED

	21 July 2021
Signed: Chairperson: Research Ethics Committee	Date

The proposed research may now commence with the provisions that:

1. The researcher(s) will ensure that the research project adheres to the values and principles expressed in the CPUT Policy on Research Ethics.
2. Any adverse circumstance arising in the undertaking of the research project that is relevant to the ethicality of the study requires that the researcher stops the study and immediately informs the chairperson of the relevant Faculty Ethics Committee.
3. The researcher(s) will conduct the study according to the methods and procedures set out in the approved application.
4. Any changes that can affect the study-related risks for the research participants, particularly in terms of assurances made with regards to the protection of participants' privacy and the confidentiality of the data, should be reported to the Committee in writing accompanied by a progress report.
5. The researcher will ensure that the research project adheres to any applicable national legislation, professional codes of conduct, institutional guidelines and scientific standards relevant to the specific field of study. Adherence to the following South African legislation is important, notably compliance with the Bill of Rights as provided for in the Constitution of the Republic of South Africa, 1996 (the Constitution) and where applicable: Protection of Personal Information Act, no 4 of 2013; Children's act no 38 of 2005 and the National Health Act, no 61 of 2003 and/or other legislations that is relevant.
6. Only de-identified research data may be used for secondary research purposes in future on condition that the research objectives are similar to those of the original research. Secondary use of identifiable human research data requires additional ethics clearance.
7. No field work activities may continue after two (2) years for Masters and Doctorate research project from the date of issue of the Ethics Certificate. Submission of a completed research ethics progress report (REC 6) will constitute an application for renewal of Ethics Research Committee approval.

Clearance Certificate No | 2021_FBMSREC 047

APPENDIX C: PERMISSION LETTER: DEPARTMENT COMMUNITY SERVICES

Civic Centre
1 Nel Street
Mbombela 1201
Republic of South Africa

P O Box 45
Mbombela 1200
Republic of South Africa
Tel: +27 (0) 13 759-9111
Fax: +27 (0) 13 759-2070

CITY OF MBOMBELA
THE ULTIMATE DESTINATION

DEPARTMENT COMMUNITY SERVICES

Enquiries: Lesiba Maluleke
Tel Nr: 013 759 2239 / 2142

11 January 2021

TO: WHOM IT MAY CONCERN

RE: PERMISSION TO CONDUCT ACADEMIC RESEARCH

1. The above refers to your letter dated **19/12/2020**
2. City of Mbombela municipality would like to grant Permission to **Miss Jeanifer Skhulile Nkosi (student no: 211037311)** to conduct an Academic Research at Tekwane West Landfill site and Hazyview Landfill site, within the jurisdiction of the Municipality.
3. Kindly note that upon completion we would like to receive a copy of the outcome of the research.

Hope you find the above in order.

Kind Regards,

Mr. LS Maluleke
Senior Manager : Solid Waste Management

APPENDIX D: PERMISSION LETTER FOR CONSTRUCTION COMPANY 1

MPULUZANA

52 Bester Street
Nelspruit
1200
☎ 013 752 2370
✉ info@mpuluzana.co.za
🌐 www.mpuluzana.co.za

RE:PERMISSION TO CONDUCT ACADEMIC RESEARCH AT OUR CONSTRUCTION COMPANY

This letter will serve as authorisation of Ms Jeanifer Skhulile Nkosi student number 211037311 to conduct the research project entitled" Factors impacting performance of rural- based construction projects in Mpumalanga "at our construction company.

Upon a review of the letter sent to us by your institution, we are glad to offer you an opportunity to conduct the same study in our organisation.

If you have any concern any concerns or requirement additional information, feel free to contact us. Thank you

Yours faithful

.....

Xolani Sibiya
Project Manager
Mpuluzana Trading
066 588 4389

MPULUZANA TRADING cc
REG: 2009 / 038470 / 23
PO BOX 2814 NELSPRUIT 1200
TEL: 013 753 2370
Email: admin@msmabuya.co.za

APPENDIX E: PERMISSION LETTER FOR CONSTRION COMPANY 2

TEL: 013 752 3284

FAX: 013 752 2433

EMAIL 1: whitehazy@ymail.com

EMAIL 2: admin@whitehazy.com

WEBSITE: https://whbc.co/

POSTAL ADDRESS: P O BOX 964, KABOKWENI, 1245

PHYSICAL ADDRESS: 40 EHMKE STREET, NELSPRUIT, 1200

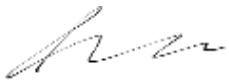
To whom it may concern

LETTER OF AUTHORIZATION TO CONDUCT ACADEMIC RESEARCH AT WHITE HAZY CONSTRUCTION

I am pleased to inform you that our organisation give Ms Jeanifer Skhulile Nkosi student number 211037311 permission conduct academic research at White Hazy Construction.

Upon a review of the letter sent to us by your institution, we are glad to offer you an opportunity to conduct academic research at our organisation.

Yours faithful



……

Bonginkosi Mthombothi

Supervisor

Cell:0810438353

Tell: 013 752 3383

APPENDIX F: PERMISSION LETTER: OFFCE OF THE MUNICIPALITY MANAGER

Civic Centre
1 Nel Street
Mbombela 1201
Republic of South Africa

CITY OF MBOMBELA
THE ULTIMATE DESTINATION

P O Box 45
Mbombela 1200
Republic of South Africa
Tel: +27 (0) 13 759-9111
Fax: +27 (0) 13 759-2070

OFFICE OF THE MUNICIPAL MANAGER

Tel: 0137592041
Enq: Ms. Busi Sithole

10 February 2021

Ms. Jeanifer S Nkosi
M-Tech student
Cape Peninsula University of Technology
District Six Campus
Cape Town
8000

Dear Madam,

RE: PERMISSION TO CONDUCT RESEARCH

Your letter dated 19 December 2020 on the abovementioned subject has reference.

The City of Mbombela hereby grants you permission to conduct a research study titled *"Factors impacting performance of rural-based construction projects in Mpumalanga".*

Please take note that the municipality will not be liable for any financial responsibility on this study. Kindly ensure that the work of employees is not interrupted and consent is obtained from each participant before the actual research is conducted. The municipality strictly adheres to COVID-19 regulations, therefore COVID-19 health protocols must be maintained namely; observing at least 1,5 metres from each other, wearing of masks at all time, washing and sanitizing of hands regularly.

We wish you all the best with your research and would appreciate if you share with us the research outcomes and recommendations.

Regards,

W J KHUMALO
MUNICIPAL MANAGER

APPENDIX G: TURNITIN REPORT

Factors impacting performance of rural-based construction projects in Mpumalanga

ORIGINALITY REPORT

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APPENDIX H: TURNITIN DIGITAL RECEIPT

turnitin

Digital Receipt

This receipt acknowledges that Turnitin received your paper. Below you will find the receipt information regarding your submission.

The first page of your submissions is displayed below.

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Submission title:	Factors impacting performance of rural-based construction ...
File name:	Jeanifer_Nkosi_final_dissertation__Examination.doc
File size:	5.54M
Page count:	116
Word count:	26,110
Character count:	153,893
Submission date:	31-May-2022 10:18AM (UTC+0200)
Submission ID:	1847688569

Cape Peninsula University of Technology

Factors impacting performance of rural-based construction projects in Mpumalanga

By

JEANIFER SKHULILE NKOSI

Dissertation submitted in fulfilment of the requirements for the degree

Master of Technology: Business Administration in Project Management in the Faculty of Business and Management Sciences

at the Cape Peninsula University of Technology

Supervisor: Mr Stanley Fore

District Six Campus)
Date submitted: April 2022

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