Cape Peninsula
University of Technology

FACTORS INFLUENCING OFFSHORE SAFETY OF A SELECTED OIL RIG ALONG THE SOUTH AFRICAN COAST

by

ZWELIBANZI VIRGIL NEIL NGCULU

Dissertation submitted in fulfilment of the requirements for the degree

Master of Technology: Business Administration

in the Faculty of Business and Management Sciences

at the Cape Peninsula University of Technology

Supervisor: Prof M Twum-Darko
Co-supervisor: Dr S Enow

District Six, Cape Town
June 2022

DECLARATION

I ……....., declare that the contents of this dissertation represent my own unaided work and that the dissertation 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: _____ Date: _____

ABSTRACT

There has been much research on offshore mining safety and the substantial influence impeding factors have on the successful implementation of safety processes, with a keenness to foster optimal mining operations. However, to date, there has been little to none directed at uncovering these factors and how to tackle them, with a specific bearing on offshore mining in the South African context.

This study thus explores the factors that influence offshore safety on a selected oil rig on the South African coast to uncover those common factors which influence offshore safety and, in particular, what the most influential of these is. In addition, an enquiry exploring the degree to which provisions have been made addressing this chief influencing factor and if any such attempts have been made would also shed light on the present state of safety practices on the rig (and region) and whether or not they have been successful. Several Accident Causation theories (Heinrich's Domino Theory, Behaviour Theory and, Combination Theory) are also considered, at least in the capacity as a lens through which to examine and, interpret the findings or, rather any potential causal relationships in the data, should they exist.

Since the study's methodology is qualitative, the data collection method is interviewing (structured questions) with a voice recording device and hand notes as data collection tools. Data were transcribed and analysed utilizing a coding frame, then further interpreted through content analysis. The study population consists solely of safety department personnel and top select management. Herewith, the significance of this study rests with the impending benefits the offshore mining industry (and other offshore establishments) would gain from this new knowledge.

Finally, all participants in the study were required to provide informed consent. Also, the study was anonymous, guaranteeing the privacy and anonymity of all participants, particularly that of the organization in question. Nevertheless, participants were free to withdraw at any time if they wished to.

To conclude, what was found by the study is that there are an array of factors that influence safety on an offshore rig on the South African coast; however, the factor considered to be the greatest among them is behavioural/ personal safety or rather the lack thereof.

Keywords

Offshore Safety, Factors Influencing Offshore Safety, Safety on Oil Rigs, Oil Rigs on South African Coast, Oil Rig.

ACKNOWLEDGEMENTS

I wish to thank:

- Mr Masiza Ngculu, my father, for his unremitting motivation and support.
- Tatu Matshela Moscow Koko, for his assistance in funding my degree.
- Mr Samuel Enow, my supervisor, for his patience and guidance.
- Prof Michael Twum-Darko for his patience, support and guidance.
- My Family: Mom, Makhulu and Aunt Thety, for their motivation and support.
- Dr Nosisana Mkonto, for the example she set.
- Mr Luvuyo Kakaza, for speaking life into me when I had thrown in the towel.
- Ms Mongiwa Ncube, for always submitting my work to Turn-it-in.
- Mrs Candice Walters, for her selfless assistance.
- Mr Samson Nambei Asoba, a fellow student, for his helpful assistance.

TABLE OF CONTENTS

TABLE OF TABLES

TABLE OF FIGURES

ABBREVIATIONS AND ACRONYMS

Abbreviation/Acronym	
DIM	Deputy Installations Manager
DMR	Department of Mineral Resources
FTO	Fitness to Operate
GoM	Gulf of Mexico
MBO	Management by Objective
OIM	Offshore Installations Manager
SHE	Safety, Health & Environment
SSMS	Systemic Safety Management System

GLOSSARY

Term	Definition
Offshore	Situated at sea, some distance from the shore. Relating to the ocean.
High risk	Denotes exposure or subjection to potential high danger levels, harm, or injury.
Oil Rig/ Offshore Installation	An oil or offshore platform is a large structure with facilities to drill wells, extract and process oil and natural gas, or temporarily store products until they can be brought to shore for refining and marketing.
Safety	The quality of averting or not causing injury, danger or loss. Freedom from the occurrence or risk of harm, injury, danger or loss to personnel or property, whether caused deliberately or by accident. A contrivance or device to prevent injury or avert danger.

CHAPTER 1
INTRODUCTION AND PROBLEM STATEMENT

1.1 Introduction and Background

As a degree holder in industrial psychology, career prospects are numerous. A love for the ocean and a curiosity about mining created a focus area in which the two interests could be combined. That said, what remained was to identify where Industrial Psychology is relevant in an environment such as an oil rig and the offshore oil and gas industry. Naturally, safety came to mind, as it coincides with the primary role of an Industrial Psychologist, which concerns people, their relationship with one another, and their environment. That said, to run a safe offshore mining operation, one must know what the factors are that contribute to or impede safety. Granted, what better way to uncover these factors than through research.

Having identified the field and subject of the study, it was left to narrow it down and direct it to a specific research problem. The study was made easy and aided in large part by the literature consulted as it provided a point of reference from which to map the scope and boundaries of the study. The problem statement: 'Challenges to safety on a selected rig on the South African coast', was then arrived at after long deliberation and consideration of where to position the study with the existing body of knowledge in the field. Also, much care was taken to distance the reflection from others similar to it. Although the study would be relatable to and find relevance within the existing body of knowledge, creating new knowledge remained vital. It only fits then that the focal aim of this research is 'to determine what the factors are that influence offshore safety on a selected oil rig', and in line with it, the leading question follows, 'What are the factors that influence safety on this oil rig?'.

In keeping with the underlying theme and focus of the study, the literature consulted focused primarily on safety in offshore (hazardous) environments, as alluded to by Krausmann, Necci, Ponte, Tarantola, and Vamanu (2019:12). In addition, attention was paid to the different kinds and manifestations of safety practices, processes and protocols (Adumene and Ikue-John, 2022:19-27). Those factors that have in past research been identified as significant aspects of safety impediments by Adumene and Ikue-John (2022:4-10); and Krausmann et al. (2019:12-13), and accident causation (Krausmann et al., 2019:13-21) were examined along with the central contributing factors to offshore accidents such as are cited by Krausmann et al. (2019:12-15). The literature review surveyed methods and policies devised and recommended for implementing these platforms to prevent, reduce and mitigate offshore accidents (Krausmann et al., 2019:12-20). This included looking at the risks and associated consequences (Adumene and Ikue-John, 2022:17); and (Krausmann et al., 2019:13-20).

Given the identified scope of the literature relevant to this study, the qualitative methodology applied to address the phenomenon. Consequently, the method and tools for data collection

were interviews using a voice-recording device and hand notes. Interview questions were structured and semi-structured. The collected data were transcribed and analysed using a coding frame developed during data transcription. Finally, content analysis was the research instrument applied to the data analysis and interpretation.

Following the delineation of this study, it was conducted on an offshore (oil) rig on the South African coast. First, it determined what factors influence offshore safety on the selected rig. Second, it determined the most influential factors that influenced safety on the selected offshore rig. Third, it determined to what extent provisions were made to address the main influencing factors, granted there were any. Furthermore, it consisted of a select population group: safety department personnel and top select management. The population size was dependent on the size of the target organisation's on-site safety department.

The limitations of this study relate to the fact that it is a case study and, therefore, may not be representative of other such 'operations' in the same industry and geographic location. Another possible limitation could be the researcher's competence as a study facilitator, which entails recording interviews and accurately interpreting and analysing data. Any misconception or misunderstanding during notetaking and recording or misinterpretation of data due to researcher bias or prejudice would render that information and the entire study insignificant and worthless. Much care was however taken, by the researcher by means of recording the interviews, and the method of note taking employed, including further transcription of the notes with the aid of the recordings in order to ensure trustworthiness and accuracy.

The ethics observed in the study ensured informed consent was acquired from all participants. The study was also anonymous, guaranteeing all participants' privacy, confidentiality and anonymity. Furthermore, participants were allowed to withdraw from the study at any point if they wanted to withdraw. Moreover, participants were in no way or means subjected to any harm, be it physical, psychological, or emotional. Finally, since there was no deception present in this study, no debriefing nor desensitisation was necessary when it concluded, nevertheless, were it necessary, it would have been provided.

In conclusion, this study seeks to contribute to management strategies on offshore mining safety in Southern Africa. Thus, factors impeding offshore safety on the South African coastline, successful practical offshore safety practices, and offshore safety procedures successfully address and overcome impending factors. Also, adopting established safety practices on offshore platforms worldwide addresses similar problems. Finally, it would be a helpful case study to draw from the likelihood of potential future offshore ventures in the region.

1.2 Statement of the Research Problem

The research problem being investigated is

Challenges to safety on a selected oil rig on the South African coast.

Safety is discussed here concerning high-risk offshore platforms, as explained by Derdowski and Mathisen (2023: 4); and Zhang, Fu, Hao, Fu, Nie and Zhang (2020: 79), is where work processes involve significant employee and environmental risks due to the unremitting potential for colossal accidents. Enshaei, Fan and Gamini Jayasinghe (2021:11) herewith continue, by elucidating what a safety 'philosophy' is and why it is set at the founding of a new offshore venture as part of the project design to direct, among other things, the implementation of safety systems. Furthermore, Derdowski and Mathisen (2023: 1); and Mathisen, Tjora and Bergh (2022: 2) in their research also found that, although technical equipment on offshore platforms may be significant aspects of safety and accident causation, human factors play a vital role. Because of this, Amponsah-Tawiah, Ntow and Mensah (2016:13) note that occupational injury and casualties present a severe and costly burden to all offshore establishments hence the desire to provide a safe, productive work environment has made safety a condition of employment.

Enshaei, et al. (2021:11), then continue by identifying risk, work pressure, safety arrangements, training, management, procedures, and competence as crucial safety factors. That said, they did point out that these findings be considered cautiously as several other researchers have identified differences in safety because safety factors are not universally stable. Mathisen, et al. (2022: 2) further point out some of the risks related to offshore operations, such as fires and explosions, and not forgetting the added dangers associated with long distances to medical assistance and hospitals. Moreover, Derdowski and Mathisen (2023: 3); Saedia, et al. (2020:240); and Amponsah-Tawiah et al. (2016:13) also identified a lack of compliance with safety regulations as a central contributing factor to offshore accidents.

Derdowski and Mathisen (2023: 1); and Zhang, et al. (2020: 79); Johansen and Rausand (2015: 54); Griffin et al. (2014:169) thus went on to propose that for the successful prevention and mitigation of significant accidents, safety is essential and consequently presupposes its systematic implementation throughout the lifetime of a facility because although many oil companies may do their best to follow requirements, many challenges remain. Hence, the assertion by Geng and Saleh (2015:36-37), Griffin et al. (2014:169) that an organisation without it stands a significant chance of meeting a disastrous end.

Derdowski and Mathisen (2023: 1); and Zhang, et al. (2020: 79); affirm that due to a lack of safety, occupational accidents have had and continue to exact high costs in mining, both socially and economically. This led to the assertion by Enshaei, et al. (2021:11); and Zhang, et al. (2020: 79) that to overcome occupational health and safety challenges on offshore platforms, as well as to better control the factors influencing them, safety and security objectives need to be clearly defined and communicated to employees. In addition, risk data needs to be updated and analysed continuously, risks need to be identified, and corrective actions are to be taken and subsequently evaluated to calculate their level of success.

Given the above and the absence of prior research on an Offshore Rig on the South African coast, this study is warranted.

1.2.1 Purpose statement

The primary purpose of the proposed study is to explore the factors that influence offshore safety on a selected rig on the South African coast. For the proposed research, “offshore safety refers to the freedom from the occurrence or risk of harm, injury, danger or loss to personnel and property, whether caused deliberately or by accident”, on an offshore platform situated at sea (some distance from the shore) which is a large structure with facilities to drill wells, extract and process oil and natural gas.

1.2.1.1 Aim

This study explores the factors influencing safety on an offshore rig on the South African coast.

1.2.1.2 Objectives

I. To determine the factors that influence offshore safety on the selected rig.

II. To determine the influential primary factors that influence the selected rig offshore safety.

III. To determine to what extent provisions have been made to address the main influencing factors if any.

IV. To determine whether any prospective safety provisions could be recommended for future implementation to enhance rig safety?

1.2.1.3 Research Questions

I. Question 1

What are the factors that influence safety on this rig?

II. Question 2

Of these, which is the most predominant factor?

III. Question 3

Are any provisions in place at present that address said dominant factor?

IV. Question 4

Are there any prospective safety provisions that could be recommended for future implementation to enhance rig safety?

1.3 Importance of the Study

This study investigating the factors that influence offshore safety is vital for the following reasons:

1. Firstly, it will provide offshore mining operations within South Africa with valuable insights regarding progressive safety practices which reduce the risk of possible accidents. This, considering the abovementioned fact that Offshore Rig Operations are classified as "high risk" and thus rank among the highest in the world regarding occupational accidents.
2. Secondly, offshore safety affects the productivity of these offshore mining operations. In other words, safer working conditions translate into fewer personnel safety accidents and operational breakdowns, meaning the business can run smoothly, and more money can be made.
3. Thirdly, investigating the factors that influence offshore rig safety will provide the personnel in such establishments with a great deal of knowledge and skills to deal with potential incidents in future practice, enabling them to be better positioned to respond to the daily environmental and situational demands.

1.4 Research Design and Methodology

1.4.1 Empirical study

With regards to the methodology employed in this report, the qualitative research method was observed because it is the employee's subjective points of view in which the study was interested. This was fitting, given Delgado-Hito and Romero-García (2021: 164); Bazen, Barg and Takeshita (2021: 241); Amin, et al. (2020: 1472); and Bleiker, et al. (2019:4) definition of qualitative research as a methodology that draws on complex descriptions to convey how people respond to situations or experience them (Baghlaf, 2023: 32) .

An array of practical resources can be employed to this effect, including and not limited to "case studies, personal experience, introspection, life story, interview, artefacts, cultural texts and productions, observational, historical, interactional, and visual texts" as pointed out by Baghlaf (2023: 32); Delgado-Hito and Romero-García (2021: 167); Bazen, et al. (2021: 244); and Bleiker, et al. (2019:6). However, for this dissertation, data collection took the form of voice-recorded one-on-one interviews and handwritten notes.

Furthermore, these interviews assumed the form of structured and semi-structured questions, of which two were open-ended and two closed-ended. Resultant data were then transcribed and analysed using a coding (frame) scheme constructed during the data collection transcription. Finally, because this is a qualitative study, content analysis proved to be more than adequate as a research instrument for this dissertation.

1.4.2 Data collection, analysis and interpretation.

To shed some light on the theoretical constructs identified above, Delgado-Hito and Romero-García (2021: 168); Bazen, et al. (2021: 243); and Bleiker, et al. (2019:6) define content analysis as an assortment of instruments dealing with the analysis of content which entails evaluating, managing, and categorising a large mass of information. Content analysis involves the classification, summarisation and tabulation of data to make sense of and expound on key messages, features and findings (Baghlaf, 2023: 34; and Vespestad and Clancy, 2021: 2-3). To further elaborate, content analysis for this report took the form of a coding frame, defined by Bazen, et al. (2021: 243) as a word or short expression through which a comprehensive, fundamental, and suggestive quality is symbolically assigned to a section of verbal or visual data. In layman's, a coding frame is simply a way of structuring one's data. One could even call it a filter of sorts, through which one can view the data (Vespestad and Clancy, 2021: 2-3).

Bazen, et al. (2021: 242); and Bleiker, et al. (2019:6) describes structured questions as possessing neutrality and being both non-prompting and non-improvisational and unstructured, probing, and creating rapport with the interviewee in terms of understanding the aims of the undertaking. Closely linked, open-ended questions allow participants to respond freely and in their own words, giving deep and insightful explanations of their understanding of the topic. In contrast, closed-ended questions force participants to choose from a limited number of predetermined responses, forcing them to stay on topic and not wander off.

1.4.3 Research population and sample

Regarding the population, which Bazen, et al. (2021: 242) refer to as the entire body of data (people/ participants) one is interested in, this study comprised seven respondents. This is because the population's size essentially depended on the size of the organisation in question's on-site safety department (Baghlaf, 2023: 34). It consisted of a 'select' population group, namely the safety department personnel and top select management. Consequently, because said participants amounted to the sum-total of the members of the organisation necessary for the study, there was no need for a sample, as the entire population was small enough to manage.

1.4.4 Ethical considerations

The following ethics were observed in this study. All participants were informed of the nature of the study beforehand, ensuring they understood what it entailed before consenting to partake. It contained no deception, lying or disinformation whatsoever. It was a transparent, honest study, yet even so, if participants felt they wanted to leave or discontinue their part at any time, they were free to do so. The study was also anonymous, guaranteeing all participants' privacy, confidentiality, and anonymity, particularly that of the organisation in

question. Ethical approval was applied for through the faculty ethics committee and granted prior to the commencement of the study.

Furthermore, participants were in no way or means subjected to any harm, be it physical, psychological, or emotional. Also, all participants, including their personal, social, and cultural values, were respected. In conclusion, since there was no deception present in this study, no debriefing nor desensitisation was necessary when it concluded; nevertheless, were it, it would have been provided (Delgado-Hito and Romero-García, 2021: 168).

1.5 Delineation of the Research

The boundaries of the research study were that:

- The study was conducted on an offshore rig on the South African coast.
- Specifically, an oil mining rig.
- It determined what factors influenced offshore safety on the selected rig.
- It determined the main factor that influenced safety on the selected offshore rig.
- It determined to what extent provisions were made to address the main influencing factors if any.
- It consisted of a 'select' population group: safety department personnel and top select management.
- The population size was dependent on the size of the target organisation's on-site safety department. Given that the safety team of the organisation in question only consisted of five members, including the two relevant senior management members, those who participated were the full complement of potential respondents within these categories of employees.

1.6 Significance of the Research

This study is considered necessary because, aside from the fact that it provided us with an understanding of the factors that influence offshore safety and the challenges to safety in offshore mining environments. The knowledge obtained from it, using co-relational evidence, assisted us in identifying possible problem areas that resulted from cause-effect relationships between variables. This, in turn, allows us to investigate those aspects impeding thoroughly. Thus, enabling us to rectify all shortcomings to improve (Operations, through more accurate knowledge and skill) the state of offshore mining safety in the said environment and elsewhere globally, where applicable and beneficial. This study was thus beneficial to the offshore mining industry regarding oil, diamond and gas mining and any other offshore establishment facing the same impediments to safety.

1.7 Limitations and Contraints

Regarding the study's limitations, the primary factor was that it was a case study based on one rig. It may thus not represent other operations (Offshore Oil Rigs) in the same industry and the exact geographic location. This ran the risk of calling into question the integrity of the study and whether or not the data collected was accurate and dependable, rendering the case study questionable, irrelevant and unreliable.

Another possible limitation as identified by Bazen, et al. (2021: 242), was the researcher with regards to competence as the facilitator of the study. The study entailed recording of interviews, accurate interpretation of participants' answers as well as expert analysis, and interpretation of data collected. Therefore, the researcher's competence as a note-taker, recorder, interpreter and analyst is pivotal to the study. Any misconception or misunderstanding during notetaking and recording or misinterpretation of data due to the biases or prejudice of the researcher would render that information and possibly the entire study with it insignificant and worthless. Much care was thus taken, by the researcher by means of recording the interviews, and the method of note taking employed, including further transcription of the notes with the aid of the recordings in order to ensure trustworthiness and accuracy (Delgado-Hito and Romero-García, 2021: 168).

1.8 Contribution of the Research

The expected outcomes of the study are:

- Contribution to the body of knowledge on offshore safety in the Southern African context.
- To uncover the factors impeding offshore safety on the South African coastline.
- To realise offshore safety procedures that successfully address and overcome impeding factors.
- Adapting realised safety practices on offshore platforms worldwide addresses similar problems.
- The opportunity for innovative safety processes to be created if none yet exist.
- A practical case study to draw from in the likelihood of potential future offshore ventures in the region.

CHAPTER 2
LITERATURE REVIEW

2.1 Introduction

With the label, one of the world's most hazardous and dangerous industries, mining today necessitates employing efficient and effective occupational health and safety management practices (Derdowski and Mathisen, 2023: 1; and Zhang, Fu, Hao, Fu, Nie and Zhang, 2020: 79). This is the case as delineated by Derdowski and Mathisen (2023: 4); and Zhang, et al. (2020: 79) because oil and gas industry employees are subject to a hazardous environment with numerous technological, environmental, and human challenges. However, the undertakings of offshore oil rigs, which Ramzali, Lavasani and Ghodousi (2015:49) maintain, have severe consequences on people, the environment, and assets. The definition by Derdowski and Mathisen (2023: 4); and Zhang, et al. (2020: 79) of high-risk professions as those job processes which involve significant risk for employees and the environment. High risk of injury such as in nuclear power generation, chemical production, aviation, and those of a lesser degree such as occupational accidents in timber harvesting or medicine production, seems fitting. Zhang, et al. (2020: 79); and Hystad, et al. (2014:42) assert that, on account of these safety perils and the dangers coupled with them, considerable resources have been committed to improving safety and accident prevention.

2.2 Theories and Models: Accident Causation Theories

2.2.1 Heinrich's Domino Theory

The goal of the domino theory is to establish a linear cause-effect relationship among various social and individual factors using five metaphoric dominoes. This, according to Heinrich as suggested by, Iqbal, Alrajawy, Isaac and Ameen (2021: 14-15); Zhang, et al. (2020: 78); Awala and Hasegawab (2017: 301); and DeCamp and Herskovitz (2015), that there are five factors in the consecutive sequence of events leading up to and including an accident. Iqbal et al. (2021: 14-15); Awala and Hasegawab (2017: 301); and DeCamp and Herskovitz (2015), summarize these factors as follows:

- Ancestry and social environment: Negative character traits that may lead people to behave in an unsafe manner can be inherited (ancestry) or acquired as a result of the social environment.
- Fault of person: Negative character traits, whether inherited or acquired, are why people behave in an unsafe manner and why hazardous conditions exist.
- Unsafe act/mechanical or physical hazard: An unsafe act or condition, is often the identifiable beginning of a specific incident. This can include a specific act that is unsafe, such as starting a machine without proper warning/ permission, or failing to perform appropriate preventative actions, such as using PPE or other safety measures. In essence,

this stage entails acts (or failures to act) that occasionally cause accidents. These unsafe acts committed by people and, mechanical or physical hazards are the direct causes of accidents.

- Accident: The accident itself is, simply, when something occurs that is undesirable and not intended. Typically, accidents that result in injury are caused by falling or being hit by moving objects.
- Injury: Is the unfortunate outcome of some accidents. Whether an injury occurs during an accident is often a matter of chance and, not always the outcome. This relationship highlights the relationships between stages in terms of causality. An accident occurring is not a sufficient cause for an injury, but it is a necessary one. Similarly, the undesirable characteristics in stage two do not always occur in poor environments but, could not occur without such environments.

Heinrich's theory thus hinges on two central tenets, that, injuries are caused by the action of preceding factors and, that removal of the central factor (unsafe act/hazardous condition) negates the action of the preceding factors and, in so doing, prevents accidents and injuries says, Iqbal et al. (2021: 14-15); Zhang, et al. (2020: 78); Awala and Hasegawab, (2017: 301); and DeCamp and Herskovitz, (2015).

Finally, Iqbal et al. (2021: 14-15); Awala and Hasegawab, (2017: 301); and DeCamp and Herskovitz, (2015), posit that given this necessary causality, the most important policy implication is to remove at least one of the dominos, which can in turn lead to a healthy subculture through positive accident prevention training and seminars. Herewith, an organization may not be able to weed out all of the people with undesirable characteristics, but it can have procedures in place for dealing with accidents to minimize injury and loss.

1. *2.* *3.* *4.* *5.*

1. *Social Environment and Ancestry (Inherited Behaviour); 2. Fault of Person; 3. Unsafe Act/ Condition; 4. Accident/ Incident; & 5. Injury.*

Figure 2.1: Heinrich's Domino Theory

2.2.2 Behaviour Theory

The behavioural theory of accident causation, often referred to as behaviour-based safety (BBS), consists of seven basic principles of behaviour-based safety says, Iqbal et al. (2021: 16) and, presents them as follows:

- Intervention that is focused on employee behaviour.
- Identification of external factors that will help understand and, improve employee behaviour (from the perspective of safety in the workplace).
- Directing behaviour with activators or events antecedent to the desired behaviour and, motivating employees to behave as desired with incentives and, rewards that will follow & reinforce the desired behaviour.
- Focusing on the positive consequences that will result from the desired behaviour, as a way to motivate employees.
- Application of the scientific method to improve attempts at behavioural interventions.
- Use of theory to integrate information rather than to limit possibilities.
- Planned interventions designed with the feelings and attitudes of the individual employee in mind.

In closing, Iqbal, Alrajawy, Isaac and Ameen (2021: 16), posits that this is an innovative and, practical application of standard behavioral theory to the field of occupational safety, by using positive reinforcement in the form of incentives and, rewards to promote desired (safe) behaviours.

2.2.3 Combination Theory

Combination Theory of Accident Causation

The combination theory of accident causation posits that no one model or, theory can adequately explain all accidents. Thus, according to the combination theory, the actual cause may result from factors in several different models (DeCamp and Herskovitz, 2015).

2.3 Definitions and Concepts

2.3.1 Safety

It is herewith that a definition of safety is finally arrived at; however, in so doing, Derdowski and Mathisen (2023: 3) takes great care to illuminate the fact that there are two distinct kinds of safety, in reference specifically to high-risk environments. The distinction here is between process safety and personal safety. This Derdowski and Mathisen (2023: 3) elucidates, through an assertion, that the former process safety relates in kind to the core work assignments of an organisation, on curing patients, energy production or the transportation of people and goods. Potential damages may thus result due to mishaps in the implementation of procedures linked to such undertakings. However, there is no necessary harm to the human

operators involved because of breaches in process safety. Conversely, concerning personal safety, human operators are always concerned about the potential for harm; consequently, they are not necessarily directly linked to core work assignments.

A further, more elaborate, yet accurate definition of safety practices within offshore mining/ drilling environments would call for a distinction of terms. This, as safety and safety practices and processes, are identified and, subsequently find their application globally distinctively, yet they all still relate. That said, the concepts of safety drawn on in this paper with specific reference to safety in high-risk environments, such as offshore mining/ drilling rigs, will be safety philosophy, safety culture, safety climate, safety management system/ practices, occupational health and safety management, safety case, and safety barriers (Horbah, 2020:11).

2.3.2 Safety philosophy

A safety philosophy thus, as allotted to by Enshaei, et al. (2021:11), is an outline of, amongst other things, safety systems that are to be designed which form part of the project Design Basis. Also, it is initiated at the start of a new offshore facility or modification project.

2.3.3 Safety culture

Safety culture then is defined by Opoku, Kosi and Degraft-Arthur (2020:26); Horbah (2020:79-80); and Enshaei, et al. (2021:11) as a collection and assortment of characteristics and attitudes held by individuals of an organisation about plant safety issues and the subsequent precedence they allot to them, necessitated by their relative importance. Enshaei, et al. (2021:11); Opoku et al. (2020: 29-30); Horbah (2020:79-80); and Zhang, et al. (2020: 79) then continue by adding that a safety culture is fundamentally essential in that it sets the precedent from which individual safety attitudes are cultivated and endure, and by which safety behaviours are endorsed. Van Nunen, Li, Ponnet and Reniers (2018: 249), on the other hand, believes that organisational safety culture can be construed as certain practices from which meaning can be derived, or rather through which it is revealed. It provides a frame of reference and is a relatively enduring, multidimensional, holistic construct shared by employees. Enshaei, et al. (2021:11); Opoku et al. (2020: 26); and Zhang, et al. (2020: 79) then delineate the characteristics believed to be possessed by institutions with constructive safety cultures as relationships fostered by a common understanding of the importance of safety and mutual trust, as well as the mastery of aversive actions.

Finally, Horbah (2020:79-80); and Saedia, et al. (2020:241) added that specific characteristics could be said to comprise organisational safety culture. He listed them as follows that: It is a construct, which denotes it’s abstract, conceptual nature as opposed to that of a concrete phenomenon. It is reasonably stable, as researchers have found organisational safety culture to be stable for a period of at least 5 years. It has multiple 'dimensionality', in that it could be

comprised of a focal core paradigm, including secondary paradigms relating to some distinct situations. Whether this is true or specific organisational safety culture manifestations are indigenous variations of a focal theme is open to examination. Corporate safety culture is also identifiable in that a group of people share it. It can thus be identified as the composition of several parts into a synergistic aggregate (Horbah 2020:79-80; and Zhang, et al., 2020:79).

Furthermore, it can be argued that in its entirety, it is greater than the sum of its components. Hence, in so much as it is comprised of several facets, it leads one to understand that distinctive climates could exist within an organisation's safety culture. It also constitutes practices and likens them to that of a national culture. Organisational safety culture (Horbah, 2020:79-80), thus is perceived as comprising many layers, much like an onion, where at every successive stage, it manifests itself distinctively. An example of such, for instance, would see norms and values at the heart of it, with the following levels consisting of rituals, heroes, and symbols, respectively. In closing, Opoku et al. (2020: 29-30); Zhang, et al. (2020: 79); and Horbah (2020:79-80) added a final characteristic to the description, stating that it was also functional, as it provided one with a framework and an indication of how to behave. Conclusively, what was found by Ojuola (2020:20) on organisational safety culture also merits mention, in that it is essentially believed to be resultant and or stem from integrative and adaptive (or rather internal and external) leader-directed group processes.

2.3.4 Safety climate

Horbah (2020:80-81); De Cieri, Pettit, Shea, and Vu (2021:1-2); and Hofmann, Burke and Zohar (2017:5) then proceed with a definition of safety climate as the personification of a safety culture through which the actions or rather conduct of employees, as well as their thoughts and feelings are conveyed. To this, Horbah (2020:80-81); De Cieri, et al. (2021:1-2); Saedia, Majida and Isab (2020:241); and Dahl and Kongsvik (2018:29) add that a safety climate can be defined as the relationship between attributes occurring at an (individual) employee level and those at the organisational level, which interestingly seem to stem from the same policies and practices imposed upon them by an organisation. Nevertheless, another perspective by Horbah (2020:80-81); and De Cieri, et al. (2021:1-2) of safety climate is that it is regarded as the foundation on which a "collective schema of meaning" is constructed, which consequently is believed to hold a more significant bearing on employee conduct than mere safety policies do. Saedia, et al. (2020:241); and Dahl, et al. (2018:34) then, in closing, assert that they find a progressive safety climate essential for sound functioning. That said, a comparison can thus be made between the safety culture and safety climate, with the safety climate relating to the attitudes towards safety in each organisation. In contrast, safety culture denotes those deep-seated doctrines or beliefs that colour employees' attitudes toward safety (Enshaei, et al., 2021:11; Horbah 2020:79-81; and Dahl, et al., 2018:30). To that effect, it is safe to say that a

good safety culture is reflected in the proficiency of its safety management system and safety climate (Dahl, et al., 2018:29-31).

2.3.5 Safety management

Horbah (2020:11); and Wold and Laumann (2015: 23) then point out, in their definition of safety management, that it is more than a mere administrative function of policies and procedures but rather alludes to those tangible routines, tasks and operations charged with maintaining safety. Furthermore, Horbah (2020:11) claim that considerable efforts have been made to isolate specific safety management processes to predict safety performance. Consequently, Ojuola (2020:20); and Saedia, et al. (2020:241) found identifiable features that companies with high safety performance had in common. These are that safety officials occupied lofty positions; that management actively engaged in safety processes; that training for new workers was of very high standards, and that it was carried out frequently for existing workers. In addition, any potential hazards within the designated domain were identified through unique posters. Finally, long-standing conventions dictated that job promotion and placement for managers corresponded with employees' daily health and safety requirements and that work site inspections were regularly carried out.

Furthermore, Opoku et al. (2020: 29-30); Ojuola (2020:20); and Saedia, et al. (2020:241) explain that establishments that were characterised by the following exhibited lower accident rates: personally involved upper managers regarding the implementation of safety procedures; safety taking precedence in meetings and decisions regarding production processes; including a detailed enquiry into accident occurrences and near misses. Other characteristics were that new workers were well prepared and instructed, with existing workers also receiving regular retraining. In addition, the channels of casual interaction involving upper management and employees were more comprehensive. Management would also engage in interaction with their subordinates.

Saedia, et al. (2020:241) propose that because dangerous work environments like offshore oil and gas rigs bear such high and enduring risks of large-scale and fatal accidents, it is imperative to regularly audit the management practices and safety climate of the workforce. Amponsah-Tawiah et al. (2016:12) add that because the mining industry is considered among the most dangerous and hazardous globally, resourceful, and proficient occupational health and safety management is crucial in improving employee safety. Amponsah-Tawiah et al. (2016:12) continue, by further affirming the importance of occupational health and safety management as an essential component in mining, in that it aims to adapt the working environment for employees to advocate and sustain the highest degree of physical, mental, and social well-being for labourers within the industry.

2.3.6 Safety case

Ho (2023:1); and Horbah (2020:30-31) then do well to set out the parameters of a safety case and what it entails, as a record substantiating the competence of the responsible party, to efficiently manage the risks associated with large-scale accidents. Hence, understanding the risks involved is paramount when preparing a safety case. These analyses are then employed when establishing the operation conditions and classifying systems, equipment, and areas concerning the identified risks. Risk, in this instance, about offshore environments, is defined as potential events and consequences. Davatgar, Paltrinieri and Bubbico (2021:1); and Horbah (2020:30-31) further elucidate that those measures employed to reduce risks are known as safety barriers. These safety barriers may be natural or unnatural, functional or inactive, mechanical or human operating systems aimed at preventing, controlling, and mitigating undesired events or accidents (Davatgar, Paltrinieri and Bubbico, 2021:1; Horbah (2020:30-31); and Ramzali, Lavasani and Ghodousi, 2015:50).

2.3.7 Factors impeding safety

With regards to the factors found by previous researchers in the field to be significant aspects of safety impediment and accident causation, Mathisen, et al. (2022: 2) have identified some of these factors as fires, explosions, transit accidents and blow-outs, intensely high-level dependability functioning, the remote location of platforms, stress resultant from coping with these threats daily and, not forgetting the added dangers associated with long distances to medical assistance and hospitals. In addition, Saedia, et al. (2020:240); and Amponsah-Tawiah et al. (2016:13) also did well to identify the lack of compliance with safety regulations as a central contributing factor to offshore accidents. Furthermore, Amponsah-Tawiah et al. (2016:17) also uncovered that most accidents, injuries, and deaths at the workplace are a result of cumulative exposure to risk, frequent misses, and equipment failure. Hence it is not surprising that Amponsah-Tawia et al. (2016:16) found a negative correlation between safety procedures and employee turnover. In conclusion, Saedia, et al. (2020:240); and Abaei, Abbassi, Arzaghi, Garaniya and Toroody (2019: 90) found that, while technical equipment on offshore platforms may play a significant role in safety and accident causation, the human element warrants equal attention.

To conclude, Mathisen, et al. (2022: 2) consider the offshore oil and gas industry-unique because it is the seat where several hazardous elements converge. Therefore, to realise the objective of more excellent safety using managing changes proficiently, what is called for is the integration of knowledge on risk factors contributing to incidents in offshore oil and gas production by representatives and supervisory bodies.

With that said and regarding the above literature review, it is clear where this study is positioned within the existing body of knowledge. Furthermore, the fact that this study will focus specifically on offshore (oil) installations on the South African coast serves to distance the

reflection from others like it and will ensure the creation of new knowledge, as opposed to duplicating past or current research. Finally, concerning the above points and the fact that no such research has yet been conducted on an Offshore Rig on the South African coast, this study is highly merited and viable.

2.4 Review of Prior Literature

Upon review of prior literature, numerous studies were found analogous to the present one, drawing on several of the topics central to the literature reviewed. One such study by Wold and Laumann (2015:23-24), a case study with a sample of eighteen employees, investigated how managers (onshore and offshore) and their subordinates, in the context of an offshore petroleum-producing installation, perceived and used an IT-based Safety Management System. In addition, Wold and Laumann (2015: 23) went a step further through deliberation on the Safety Management Systems' prospects for future development not merely as a tool but as a communication system.

A second study by Bosak et al. (2013:256-257) assessed the impact on risk behaviour posed by the priority of safety, management's commitment to safety, and the pressure for production, not forgetting the synergy between the three in their capacity as components of safety climate. Herewith, risk behaviour refers to the degree to which employees disregard safety procedures when fulfilling tasks, perform prohibited deeds, and carry out tasks inaccurately. Subsequently, the sample of this study was 623 South African chemical production company workers subjected to hierarchical regression analyses. Results herewith revealed a positive correlation between pressure for production and employee risk behaviour. However, the contrary was true concerning the relationship between management commitment to safety and safety priority and employee risk behaviour.

Moreover, the three safety climate components were considerably collaborative in that management commitment to safety exhibited a negative correlation to risk behaviour when there was excessive pressure on production. Despite the degree of safety priority on the plant, conversely, the impact of management commitment to safety on risk behaviour happened to be reversed in circumstances where the importance of safety on the plant was high, compared to low if pressure for production was down too. This study thus elucidates that organisational commitment to safety is essential in environments where employees feel conflicted between production deadlines and safety procedures.

A third study by Hystad, Bartone and Eid (2014:42-45) dealt with positive organisational behaviour and safety in the offshore oil industry. This they did by analysing the resolve of a productive safety climate. Their studies drew on positive organisational behaviour theory to assess employment-related and personal aspects. As a result, the studies could ascertain which potentially impacted a safety climate. Essentially, their primary focus was on safety climate and risk outcomes, dealing with the potential impact posed on them by psychological

capital and authentic leadership style. Through investigation, utilising structural equation modelling performed on oil platform supply ship employees in the form of two samples (220 offshore oil-workers and 513 seafarers), it was found that authentic leadership directly and indirectly impacted safety climate (by way of psychological capital). This reveals that leadership skills and psychological adeptness are vital to successfully reducing the threat of mishaps in the employment environment and cultivating a constructive safety climate.

Another (case) study by Dahl (2013:185) on safety compliance in highly regulated environments dealt with "employees' knowledge of rules and procedures within the petroleum industry". Semi-structured interviews were thus employed on a sample of 24 Norwegian petroleum industry (contractors') employees to distinguish, catalogue and understand those aspects considered influential concerning employees' comprehension of the policies and processes. Subsequently, eight distinct components were uncovered and identified as significant from within employees' work environments and further divided into three predominant groupings, "safety management system, work characteristics and social interaction".

Another study by Gressgård (2014:53) developed and tested theories relating to the relationship between knowledge exchange systems, knowledge exchange in the organisational context, and safety compliance. This research study primarily concerns distributed high-risk petroleum drilling and well operations activities. Thus, data collection took the form of a survey administered to an established petroleum operator company and eight of its leading contractors. The study found that safety compliance can be positively impacted through knowledge exchange processes, including and not forgetting the degree of knowledge exchange in an institutional structure, both within and between units. Therefore, knowledge management is critical for constructive safety behaviour to exist and persist.

Santos-Reyes and Beard (2008:15) undertook a study, too, advocating that safety management be dealt with systemically. 'Systemic' in this instance delineates the ability to view things in their entirety (as a whole) and therefore be able to perceive and appreciate incidents, or occurrences of failure, fatality, injury, property loss, and the like, as products of a functioning system. Consequently, this led to Santos-Reyes and Beard (2008:15) constructing the 'systemic safety management system (SSMS) model to maintain risk at a modest scale within the operations of any organisation. Furthermore, they argued that the likelihood of failure was slim to nothing, provided all the components of the SSMS model (namely procedures, relating tasks, and means of information exchange) are adhered to and proficiently operational. As a result, this fosters the prospect of effective safety management because the SSMS possesses pre-emptive capabilities.

Griffin et al. (2014:156) conducted a study delineating the evaluation and comprehension of 'safety capability' in the offshore gas and oil industry using a systemic methodology. Presenting

a theoretical construct and evaluation manual that caters to the regulators and operators of offshore facilities provides them with a more comprehensive depiction of safety capability. Moreover, it improves their grasp of the fitness-to-operate (FTO) concept. Safety capability was herewith defined as "the capability to maintain the safety of complex systems operating in uncertain and inter-dependent environments". Furthermore, the FTO profile identified three contributing capitals that compose 'safety capability' organisational, social, and human capital. That said, great detail was employed in classifying and cataloguing each contributing capital relative to the most up-to-date safety, management, and organisational procedures studies. Consequently, the assessment guide endorsed the assessment of safety capability through the correspondence of specific characteristics, each to a particular component of the framework. As a result of the systemic nature of the framework and that it promotes the amalgamation of a safety culture and human dexterity with institutional measures and proceedings, it illustrates how dependability and adaptability are facilitated (Griffin et al., 2014: 169).

One further study by Johansen and Rausand (2015:49) discussing the challenges to and central concepts and features of 'barrier management' concerning offshore gas and oil production was instrumental in elucidating the necessity for clarity and integration as central to its systematic approach. This resulted in issuing a barrier management framework stipulating revised rules of engagement for the offshore gas and oil production industry dispensed by the Norwegian Petroleum Safety Authority in 2013. However, findings suggest that scores of mishaps within the sector have emerged due to inadequate barrier management. That said, the manual is now so embraced by the industry that it has been deemed indispensable and outlines the constitution of barrier management. However, the framework implementation still proves somewhat arduous.

Another study by Wachter and Yorio (2014:117) explored the relationship between safety management practices and worker engagement & how they bring about a reduction in, as well as prevention of accidents. This follows endeavours to advance initiatives encompassing the composition of safety management practices to assess resultant correlations with independent safety statistics. The data collection methods were surveys distributed to employees, supervisors, and safety managers to link the safety management system practices resulting from employee perceptions, including safety performance outcomes. Ten specific safety management practices, including their aggregates, were found to have a significantly negative relationship with accident rates. Another negative correlation existed concerning the degree of safety-focused employee emotional and cognitive engagement relative to accident rates.

Furthermore, safety management procedures and the degree of employee engagement were both effective predictors of accident rates, respectively. Moreover, worker engagement levels can be predicted using safety management systems. Finally, the degree of employee

engagement is an intermediary connecting the safety management constructs and the safety performance results (for instance, accident rates). Consequently, the ramifications are that, although safety management system practices' correspond with the decline in incidents and possibly signify a much-needed breakthrough in accident prevention, safety performance could very well rest on intercession by safety-oriented cognitively and emotionally engaged employees. Therefore, human performance-based safety management systems are crucial when introducing safety management system methodologies to institutions to reduce and prevent accidents and improve safety performance. In addition, they would assist in winning over the hearts and minds of employees through encouraging and enhancing employee engagement.

Finally, in a study revealing why safety is such an imperative and fundamentally indispensable component of the offshore (and onshore) gas and oil industry, from before the inception of a rig, drilling unit or platform, to its daily operations, through to the end of its lifespan, Cruz and Krausmann (2008: 620) analysed the damage caused to the offshore gas and oil industry, in the aftermath of the hurricanes' Katrina and Rita'. The hurricanes struck the heart of America's petrochemical operations, closing eight processing plants, hundreds of oil-drilling and production platforms, and countless more commercial structures. Moreover, there were discharges of unprecedented amounts of harmful and dangerous substances (418 occurrences of 'negligible contamination' equating to 500 barrels or less of oil) seeping from damaged or destroyed commercial structures and storage depots onshore. These include gas and oil production plants offshore along the Mexican Gulf, referred to as the ‘Gulf of Mexico' (GoM) (Cruz and Krausmann, 2008: 620-621). Furthermore, Cruz and Krausmann (2008: 620-623) held that the two Hurricanes, 'Katrina and Rita' had brought about the greatest quantity of obliterated (5 rigs; 113 platforms) and severely damaged rigs (19), platforms (163) and pipelines (183), including excessive amounts of portable offshore drilling units, forcibly set adrift (19) to date, concerning operations in the GoM. Fortunately, although the GoM was dealt a harsh blow by the "sister hurricanes", with the gas and oil industry suffering through a halt in production, leading to an upsurge in the cost of oil with global ramifications, it was encouraging that amidst it all there were no casualties, including a minimal impact to the environment in comparison to the damage to the infrastructure (Cruz and Krausmann, 2008: 624). In closing, in the aftermath of the storms, there were alterations suggested regarding the day-to-day and emergency processes, upkeep, and fabrication specifications, in addition to several steps taken by government institutions, corporate coalitions, and offshore proprietors concerning enhancing the functioning and safety of offshore ventures in the event of future such storms (Cruz and Krausmann, 2008: 625).

2.5 Discussion

What appears to be the common denominator concerning the definitions and concepts of safety offshore, as well as the findings of the studies reviewed above and their inquiry into safety, the lack thereof, and improvements to already proven and tested processes, appears to be limited to three different ideals, these being Infrastructural, Behavioural, and Institutional.

Infrastructural: denoting the safety specifications for the fabrication and design of any rigs, platforms, processing plants and storage depots. In general, the physical, material and tangible component of a particular organisation, be it that of the oil and gas industry at large and how it either can or ideally should, be constructed to ensure the most significant degree of safety for its operators, as well as for its structural integrity.

Behavioural: relating to the individual and their understanding, conscious and deliberate application of the safety procedures and processes into all they do. Moreover, taking ownership of the rules of safety and forming a habit of operating safely, so much so that it becomes a normal situation. This, in turn, would ultimately result in the desired state of a 'thriving' safety climate and safety culture.

Institutional: here denoting the safety management systems that govern and regulate installations' everyday functioning. These safety management practices and processes are essentially institutionalised safety management methodologies attempting to reduce/prevent accidents and enhance offshore ventures' functioning and safety by addressing the infrastructural and behavioural components.

The institutions' safety management processes are directed and implemented by the employees and thus rely on their acceptance and ownership to succeed. However, conversely, these institutional safety management practices are equally directed at the infrastructure in that its' continued safe use is predicated on thorough and recurrent maintenance checks and repairs, along with strict adherence to the rules of engagement regarding the use of specific machinery and equipment, of which the conditions under which they may or may not be operated are stipulated via various channels of communication. Consequently, this brings us to the final fundamental pillar of the institutional tier, effective communication, which is essential for successfully merging the three critical components in safety, infrastructural, behavioural, and institutional.

2.6 Summary

This chapter outlined the definitions and concepts of safety offshore in high-risk environments. Furthermore, the taxonomy of personal and process safety was revealed, and various safety management system strategies were elaborated. Thus, it resorts that these strategies are perceived in terms of policies, standard operating procedures, organisational structure, people, and culture. Moreover, knowledge management and leader-directed safety behaviour have

been identified as precursors to a productive safety culture. Furthermore, the importance of management support for safety has been addressed with acknowledgement of its capability to motivate and encourage employee willingness to engage with safety management practices/processes. Hence, these strategies seem to constitute the social determinant driving the institutionalisation of safety within these environments.

2.7 Conclusion

Thus, in closing, one understands why the findings of the above studies, definitions and concept descriptions share either one, two, or even all three of the components that we have identified as fundamental building blocks for a productive and safe work environment, especially concerning high-risk environments such as offshore oil rigs. This is because the existence and persistence of a safe and effective working environment are impossible without them present and working in unison.

That said, and regarding the above literature review, it is clear where this study is positioned within the existing body of knowledge. Furthermore, the fact that this study will focus specifically on offshore (oil) installations on the South African coast serves to distance the study from others like it and will ensure the creation of new knowledge, as opposed to duplicating past or current research. So, finally, regarding the above points and the fact that no such research has yet been conducted on an Offshore Rig on the South African coast, this research study is merited and viable.

CHAPTER 3
RESEARCH DESIGN & METHODOLOGY

3.1 Introduction

Chapter three encompasses a description of the methods employed in the collection of data for this study, as well as an outline of the research philosophy adopted, together which addresses the following research objectives;

a. To determine the factors that influence offshore safety on the selected rig.

b. To determine the main factors that influence safety on the selected rig offshore.

c. To determine to what extent provisions have been made to address the main influencing factors.

d. To determine whether any prospective safety provisions could be recommended for future implementation to enhance rig safety?

Considering the nature of the information sought through this undertaking, a qualitative methodology, which is in the realm of the interpretive research paradigm, was adopted to address the above objectives. Accordingly, this chapter discusses and justifies the qualitative methodology employed herein to collect data. Additionally, it clarifies the population selection technique, which precedes a discussion on the data collection technique and the interview design of this study. A further discussion on the instruments employed in the analyses and interpretation of the data collected follows. Next, the trustworthiness of the study, as well as the limitations of the interview method, are deliberated. Finally, the ethical considerations are expounded, followed by a summary and conclusion of the chapter.

The chapter proceeds with the discussion of the research paradigm in Section 3.2. Next, the use of the qualitative methodology is justified in section 3.3, explaining the grounds for its adoption in this study. The research population of the study is then presented in Section 3.4, followed by a discussion on the data collection methods, tools and techniques in Section 3.5 of this chapter. Section 3.6 then proceeds with a brief description of the interview design and outlines the data analysis process, detailing the instruments it employs in Section 3.7. A detailed deliberation on the study's trustworthiness follows in Section 3.8, with equal consideration of the limitations of the interview method in Section 3.9. Section 3.10 then expounds on the ethical considerations exercised in this study before closing with a summary and conclusion of the chapter in Section 3.11.

3.2 Research Paradigm

Given that the interpretivist research paradigm was adopted for this study, Amin, et al. (2020: 1472); and Bleiker, Knapp, Morgan-Trimmer and Hopkins (2019:5) description of the interpretive paradigm warrants mention. They suggest that understanding is not acquired only through observation and direct experience ('experimentation'), as is believed within the positivist paradigm, which assumes that reality is objectively measured using metrics independent of the researcher, rather, that it's a shared experience, conceptualised through depictions of the motivations, ideals and, morals, held by those involved, about discernment and self-awareness (Kankam, 2019: 86-87). Moreover, Bazen, et al. (2021: 242); and Bleiker, et al. (2019:5) purport that the comprehension of 'observable facts' and experiences for the interpretivist arises through rational and logical deduction; however, they interact with and are influenced by social contexts. Accordingly, the interpretivist paradigm, which is qualitative, had a more significant "goodness of fit", capable of delivering data and findings that would reflect the research questions and be better suited to address the study's research objectives. Moreover, it has a more in-depth approach that relies on qualitative data, which is more exhaustive than quantitative data (Baghlaf, 2023: 32-34; Bazen, et al., 2021: 241; Amin, et al., 2020: 1472; and Bleiker, et al., 2019: 5).

Moreover, because this study's main objective is "to determine what factors influence offshore safety on the selected rig, " a qualitative methodology grounded within the interpretive research paradigm is naturally the most suitable choice. This method allows for numerous subjective points of view. Although the accounts and opinions provided may be individual, collectively, they successfully inform and accomplish the research objective (Kankam, 2019:86-87). Herewith, as with Bazen, et al. (2021: 242); and Bleiker, et al.'s (2019:5) assertion that observation is fallible, imperfect, and by logical deduction proves that all theory is revisable, the interpretive researcher must consult a wide range of data varied sources and methods of analysis in the pursuit of research soundness. Furthermore, different viewpoints of the world to an interpretivist do not refer to relativism but rather create reality, in and through the various means of investigation, because no single researcher can independently capture the world. Consequently, it is therefore plausible that multiple "fallible" perspectives stand a better chance (Kankam, 2019: 86-87).

In closing, Amin, et al. (2020: 1472); and Bleiker, et al. (2019:5) conclude with the sentiment that, although the primary aim of science for the positivist may be to unearth the truth, for the interpretivist, scientific inquiry is concerned with interpreting reality, or multiple realities for that matter accurately, even if not so absolutely (Kankam, 2019: 86-87).

3.3 Justification for Qualitative Method

Before delving into the motivations behind the choice of the methodology adopted for this study, a brief definition of terms by Delgado-Hito and Romero-García (2021: 166); and Bleiker,

et al. (2019:6) aids in elucidating the distinction between the terms "method" and "methodology". The former, "method," denotes a unique manner to conduct an undertaking (a single act). Here, methodology" refers to a distinctive collection of mutually complementary methods, which possess the "goodness-of-fit" capable of producing the information, statistics and figures, able to reflect the research question accurately, while steadfastly remaining aligned with the research objective (Delgado-Hito and Romero-García, 2021: 166).

That said, concerning the methodology employed in this report, the qualitative research methodology will be observed because we are interested in the employee's subjective points of view. Moreover, this approach is warranted, given Baghlaf (2023: 32); Delgado-Hito and Romero-García (2021: 164); Bazen, et al. (2021: 241); and Bleiker, et al. (2019:4) definition of qualitative research as a methodology that draws on complex descriptions to convey the way people respond to situations or experience them. Furthermore, Baghlaf (2023: 32); Delgado-Hito and Romero-García (2021: 164); Amin, et al. (2020: 1472); and Bleiker, et al. (2019:7) argue that analyses in qualitative studies often involve dialogue on peoples' sentiments toward and experiences of significant events. Hence accordingly, qualitative research for Delgado-Hito and Romero-García (2021: 164); Bazen, et al. (2021: 241); Amin, et al. (2020: 1472); and Bleiker, et al. (2019:4) denotes the study, investigation and examination of phenomena within an authentic, unadulterated environment, intending to construe and, or deduce some understanding of it for the meanings assigned to them by the social actors concerned (Baghlaf, 2023: 32) .

Consequently, concerning the above and, taking into account the definition by Delgado-Hito and Romero-García (2021: 166); and Bleiker, et al. (2019:6), which characterises the distinction between the terms' method' and 'methodology', the use of the qualitative methodology in this study is unequivocally justified. The qualitative methodology is best aligned with and, most accurately, satisfies the research objective and research question, yet more so because it (the qualitative methodology) fits so well into the interpretive framework. Moreover, this methodology is advantageous, given that together they work in synergy toward uncovering how social meaning is arrived at through dialogue and how that dialogue is sustained (Baghlaf (2023: 32); and Bleiker, et al., 2019: 5).

3.4 Research Population

Concerning the study's population, which Delgado-Hito and Romero-García (2021: 166); and Bazen, et al. (2021: 242) refer to as the entire body of data (people/ participants) one is interested in. This study will comprise of seven respondents, in that the population's size is dependent on the size of the organisation in question's on-site safety department (Baghlaf, 2023: 34; Delgado-Hito and Romero-García, 2021: 166-167; and Bazen, et al., 2021: 242). The population consists of the safety department personnel (five members), three of whom are Safety Officers, including two Safety Officer Team Leaders and top select management (two

members), the Safety Process Manager and the Plant Operations Manager. Consequently, because said participants amount to the total of the members of the organisation necessary for the study, there is no need for a sample, as the entire population is small enough to manage (Baghlaf, 2023: 34).

3.5 Data Collection

Delgado-Hito and Romero-García (2021: 167); Bazen, et al. (2021: 244); and Bleiker, et al. (2019:6) propose that in the collection of data, an array of empirical resources can be employed, including "case studies; personal experience; introspection; life story; interview; artefacts; cultural texts and productions; observational, historical, interactional, and visual texts" that depict the peoples' experience, and its significance. However, for this dissertation, data collection will take the form of one-on-one interviews, of which the tools used to record the data will be a Dictaphone' tape recorder', as well as notes made by hand. Furthermore, these interviews will assume the form of structured and semi-structured questions, of which two will be open-ended and two closed-ended (Bazen, et al., 2021: 242).

Bazen, et al. (2021: 242); and Bleiker, et al. (2019:6) describes structured questions as neutral, non-prompting, and non-improvisational. In semi-structured questions, probing is encouraged, creating rapport with the interviewee in terms of understanding the aims of the undertaking. Closely linked, open-ended questions allow participants to respond freely and in their own words, giving deep and insightful explanations of their understanding of the topic. In contrast, closed-ended questions force participants to choose from a limited number of predetermined responses, forcing them to stay on topic and not wander off.

Furthermore, data collection ensued, seeing to the selection of the population of respondents required for the study, within the designated organisation once confirmation of its participation had been obtained. The researcher then personally visited the organisation to meet with the selected respondents and explained the study's objectives, the methodology of choice, and the ethical parameters for this study. The researcher also informed participants that there were to be zero risks associated with nor stemming from participation in this study. Finally, the participants identified as potentials' were required to stipulate their reluctance or keenness regarding their involvement in the study.

Assenting to participation in the study then necessitated the formal signing of a consent form by all participants before the commencement of the interviews. Then, after a short introduction, the researcher again reminded the respondent of the purpose of the study. Next, the researcher read the interview questions to participants, and their responses were recorded via tape recorder and on a notepad. The interviews took about 15 minutes on average. Upon completion, the respondents were thanked for their participation. Finally, they were offered the option of being sent a summary of the findings.

3.6 Interview Design

3.6.1 General description of the interview design

The interview consisted of four pages, including the cover page, which was used to state the purpose of the study and assure respondents that all of the information/data collected herein were for the sole use of this study and would be kept confidential and anonymous. Also, there were no risks involved with participating in this study.

A funnelling technique was used to arrange the questions in the interview, as it began with general questions and then progressed to more specific questions. This method provided a natural focus for the participants' thoughts and guided them throughout the interview, an aspect which increased the data quality. The interview questionnaire commenced with a participant profile and job rank/title and then funnelled down to the factors that impede rig safety in general, the most predominant of those factors, provisions in place that address 'said' factor and possible recommendations for future implementation aimed at rig safety.

To encourage the vigorous participation of the safety team and management in the study, specific questions that the respondents could have been reluctant to answer were deemed inappropriate and were thus avoided. Such questions included those related to the accountability/ blame of past workplace accidents allotted to the actions or inaction of a particular manager, employee or department within the organisation. In addition, no questions were asked that could be directly linked to any identifiable employee.

To further encourage participation, the interview questions were designed to be easy to answer as they comprised a single main question with three supporting questions. In addition, two of the questions were closed-ended, compelling a single choice from a limited number of responses. This also minimised the time required to complete the review, estimated to be 20 minutes.

3.6.2 Description of the interview's fields of interest

This interview had five fields of interest; the Respondent Profile, Question 1, Question 2, Question 3 and Question 4. The foremost dealt with the respondent's profile and job rank/ title. Question 1 then dealt with the factors that impede rig safety in general; Question 2 was concerned with which amongst these factors is the most predominant. Question 3 then dealt with the provisions in place at present that address 'said' prevalent impeding factor, with Question 4 focused on possible recommendations for future implementation aimed at rig safety.

3.6.2.1 1st Field: Respondent Profile

The respondent profile was aimed at obtaining information on the respondents' profile and job rank/ title within the organisation. The section included four fields: their name, surname,

position in the business, and their signature. In addition, this section aimed to gather respondents' personal information and their role in the organisation to substantiate their information's validity and credibility.

3.6.2.2 2nd Field: Question 1

Question 1 addressed the question, "What factors influence safety on this rig?"

The second field comprised Question 1, which required an "open-ended" response. Respondents were required to indicate in their own words and, in their capacity as Safety Officers, what they perceived as the factors which influence (impede upon) safety on the offshore rig.

3.6.2.3 3rd Field: Question 2

Question 2 addressed the research question, "Of the factors identified (in Question 1), which is the most predominant factor?"

Question 2, being closed-ended, required a single direct response only, with no expounding necessary. The question simply sought to identify which of the factors identified in the preceding question was the most significant and predominant regarding its impact on the safety aboard the offshore platform.

3.6.2.4 4th Field: Question 3

Question 3 addressed the research question, "Are there any provisions in place at present that address 'said' (identified in Question 2) prevailing factor?"

Sub Question 2, neither an open nor closed-ended question, yet containing elements of both, required an explicatory response allowing respondents to expound on their answers. In that, here respondents were asked to indicate whether there were any provisions in place at present directed at mitigating the identified dominating factors' effects, on safety, on the platform.

3.6.2.5 5th Field: Question 4

Question 4 addressed the research question, "Are there any prospective safety provisions you could recommend for future implementation to enhance rig safety?"

Question 4, an open-ended question, required respondents to provide explanatory or illustrative answers, which necessitated that they expound on their ideas/ suggestions and that they substantiate them too. This question sought to ascertain an understanding of the respondents' subjective points of view and opinions on what they believed would have a tangible impact on improving safety by curbing and, where possible, eliminating the impediments brought on by the factors identified in this paper.

3.7 Data Analysis

Since this is a qualitative study, Delgado-Hito and Romero-García (2021: 168); and Bazen, et al. (2021: 243) suggest that, unfortunately, most traditional research 'instruments' would prove useless because said instruments are limited to the description, analysis and interpretation of quantitative data. Nevertheless, the content analysis should prove more than adequate as a research instrument for this dissertation.

To further elaborate, Delgado-Hito and Romero-García (2021: 168); Bazen, et al. (2021: 243-245); and Bleiker, et al. (2019:7), define content analysis as an assortment of instruments dealing with the analysis of content, which entails evaluating, managing, and categorising a large mass of information. Content analysis involves the classification, summarization and tabulation of data to make sense of and expound on key messages, features and findings (Baghlaf, 2023: 34; and Vespestad and Clancy, 2021: 2-3).

Moreover, content analysis for this report will take the form of a coding frame, defined by Delgado-Hito and Romero-García (2021: 168); Vespestad and Clancy (2021: 2-3); and Bazen, et al. (2021: 243) as a word or short expression through which a comprehensive, fundamental, and suggestive quality is symbolically assigned to a section of verbal or visual data. In laymen's, a coding frame is simply a way of structuring one's data, and one could even call it a filter of sorts through which one can view the data. Consequently, after data collection, the resultant data is transcribed and analysed by a coding (frame) scheme, which is generally constructed concurrently with the process of transcription (Bazen, et al., 2021: 243).

3.8 Trustworthiness

Regarding the soundness of a research undertaking and, in particular, one that is qualitative, Elo, Kääriäinen, Kanste, Pölkki, Utriainen and Kyngäs (2014:2) maintain that there has been much deliberation on the issue of how best to measure for it. Consequently, Baghlaf (2023: 34); and Bazen, et al. (2021: 241) argues that because of the fundamental divergent natures of the methodological building blocks of the qualitative and quantitative research methodologies, one can presuppose the likelihood of entirely distinct means of independently assessing each. Baghlaf (2023: 36); and Amin, et al. (2020: 1473) set out these criteria, starting with validity in a quantitative inquiry and trustworthiness and credibility in a qualitative inquiry. Bazen, et al. (2021: 244) argued that validity here denotes the lengths gone to by researchers, in terms of chronicling the research process from its inception to its conclusion, in order to account for not only the findings of a study, however also, to provide readers (the research community) with the opportunity to examine and evaluate the data, at their discretion. Similarly, trustworthiness is concerned with the means employed in a qualitative study to accurately present and, more importantly, irrefutably substantiate the claims made. In addition, it seeks to ascertain the soundness of the conclusions arrived at, corroborated and accepted by fellow

researchers and the communities to whom the findings matter most regarding their application as policy or practice (Baghlaf, 2023: 36; and Bleiker, et al., 2019: 7).

Unfortunately, as regards qualitative inquiries, Cope (2014:89); and Silverman (2011: 52) posit that there exists a general critique of its tools, methods and, consequently, its findings. Amongst the criticisms are assertions that it is too subjective, subject to researcher bias, and unreliable. Additionally, the propensity for qualitative studies to focus on and amass substantial amounts of data on isolated and distinct phenomena has resulted in it being heavily critiqued, owing to claims that it exhibits an inability to generalise results. Silverman (2011: 52) agrees and posits his concerns with the qualitative method and, in this case, the practitioners thereof, whom he alleges, dissect and curtail the responses and explanations interviewees provide of their experiences and subjective conceptions of various phenomena into somewhat simplified and far-removed descriptions of the 'bigger picture', to which they essentially belong. This, he believes, occurs due to a deliberate and excessive concentration of attention on those interviewee accounts, which correspond with the narrative and focus of the researcher's inquiry, which as the facilitator, the researcher effectively steers and controls. "Disembeddedness" or “decontextualization” as he frames it, indeed, to some degree, affects the authenticity and reliability of the study and its findings. Amin, et al. (2020: 1472); and Bleiker, et al. (2019:4) and others believe that qualitative research seeks to understand and describe phenomena. It does this by investigating people's subjective understanding of their experiences. This informs the premise and generation of viable hypotheses, negating the notion that qualitative research is merely a deviation from conventional research methods and by no means making it a lesser methodology.

In light of the above criticisms on the apparent inherent deficiencies allotted to the qualitative research methodology, Delgado-Hito and Romero-García (2021: 166); and Bleiker, et al. (2019:5) suggest that in order for a qualitative research inquiry to hold water, the methods employed in generating the findings must inform the means of its appraisal, thereby fostering transparency and, as a consequence promoting trustworthiness in the findings, as well as, in the research undertaking as a whole. Therefore, another vital precondition essential for the assurance of a credible and trustworthy research inquiry is the incorporation of 'craftsmanship' into and, throughout the entire research undertaking, from its initial conceptualisation to its execution, documenting and transliteration to its final presentation. What this 'craftsmanship' creates again is transparency, which in turn creates value (trustworthiness and credibility) in the findings and research process (tools and methods employed) at large, Delgado-Hito and Romero-García (2021: 168); and Bleiker, et al. (2019:5), says.

Due to the immense pressure and added scrutiny on researchers operating within the qualitative sphere to ensure and secure credence for their work, they are encouraged to be painstakingly thorough and comprehensive, Amin, et al. (2020: 1478-1479) say. Therefore,

notwithstanding the definition provided above, Delgado-Hito and Romero-García (2021: 168); Amin, et al. (2020: 1473); and Bleiker, et al. (2019:7) identify several complimentary evaluation criteria for the assessment and trustworthiness of qualitative research undertakings, namely credibility, dependability, conformability, transferability, authenticity, as well as, a sixth criterion put forward by Bleiker, et al. (2019:6), reflexivity.

- **Credibility**

Herewith the first of these, credibility, as purported by Baghlaf (2023: 36); Bleiker, et al. (2019:7) is concerned with the goal or purpose of a study, which by extension concerns itself with conviction in the efficacy of the methods of data collection together with their findings, in addressing said goal or purpose. In other words, credibility endeavours to assure the accurate execution and implementation of the processes of a research inquiry to the ends that it assesses and investigates that which it is meant to, adds Amin, et al. (2020: 1473-1478). Simply put, Delgado-Hito and Romero-García (2021: 168); Amin, et al. (2020: 1473-1478); and Bleiker, et al. (2019:7) adds, 'it' (credibility) is how rigour is guaranteed through the progression of a study and, subsequently, how one conveys that they have indeed done so (Baghlaf, 2023: 36).

Amin, et al. (2020: 1473-1478) further adds that credibility alludes to the accuracy of research findings or the perceptions of a study's populous and what is subsequently inferred by a researcher. Similarly, Amin, et al. (2020: 1473-1478) allude to credibility as having to do with the accurate identification and depiction of a study's populous. Moreover, Cope (2014:89) also maintains that a qualitative inquiry is or can be deemed reliable because its participant accounts are easily relatable to others who share those experiences, as Bleiker, et al. (2019:7) echoes this sentiment in her description of credibility as having to do with, the matter of how well research findings correspond with "reality" in actuality.

Amin, et al. (2020: 1473) further asserts the importance of credibility among several elements that foster trustworthiness. To this effect, Amin, et al. (2020: 1473-1478) identify several, the subject matter that will be under investigation; the point of view (stance) from which to approach it; the population (if required) or stakeholders involved/ affected and; finally the method of data collection. If the study does require research participants, a selection of participants with varying points of view and experiences, different age groups, and a representation of both sexes will ensure a much more abounding description and portrayal of the phenomena under inquiry, Delgado-Hito and Romero-García (2021: 166-167) add. Delgado-Hito and Romero-García (2021: 166-167) further add that although qualitative studies do not ascribe to a universal sample size, the ideal sample size for any given study is believed to be achievable through sufficient 'data saturation', which 'by definition', serves to substantiate and foster understanding and absoluteness, through the reproduction of information resulting from there (data saturation). Delgado-Hito and Romero-García (2021: 166); and Amin, et al.

(2020: 1477-1478) refers to this as 'Thoroughness', the thorough examination of the focus of an inquiry through sufficient 'data saturation' and 'sampling' to cement the credibility of its content analysis process.

Another very important yet, often overlooked component to assuring a trustworthy content analysis, as alluded to by Bazen, et al., (2021:243), is one's choice of unit of analysis, which can vary from a letter, to a word, words, or even a sentence. Consequently, using an excessively extensive or unduly limiting unit of analysis poses the threat of loss of meaning through fragmentation and distortion during the summarizing and conceptualisation of the content. Hence, the ideal unit of analysis should neither be too long nor too short but just enough to exact the desired meaning and facilitate the inclusion or exclusion of that which is applicable and, which is not. Baghlaf (2023: 34) add that a clear analysis is essential to demonstrate the process's trustworthiness.

Amin, et al. (2020: 1479-1480) continue with an exposition on the virtues of a self-aware researcher, emphasising the advantage such an individual adds to the credibility of a qualitative inquiry. This relates to the confidence conferred on the trustworthiness of its content analysis due to its ceaseless dedication to constant reflection and a desire to keep personal bias from impinging on the process. Consequently, for Amin, et al. (2020: 1478); and Bleiker, et al. (2019:7), an effective way to achieve this end is using an 'audit trail', displaying appropriate rigour and establishing a transparent data collection process.

Herewith, as is alluded to by Amin, et al. (2020: 1478); and Bleiker, et al. (2019:7) above, the assurance of a credibly sound qualitative inquiry, as a central tenet, heavily relies on the successful employment of an 'audit trail'. Amin, et al. (2020: 1478); and Bleiker, et al. (2019) thus provide a delineation of the term 'Audit trail characterising it as a documentation of all of the suppositions, resolves and actions of a researcher amassed through the course of a study in the form of notes and, other resources employed therein (i.e. 'interview transcripts, data analysis and drafts'), in order to validate the trustworthiness and, the authenticity of the findings.

Finally, regarding credibility in relating to trustworthiness, Bleiker, et al. (2019:7) employs the term 'congruence' as an element of credibility, which denotes the presence of corresponding links between several stages of the research process. These ranged between "the research question and approach, the gathering of data and its analysis, preceding studies and the present one, as well as that of the inquiries implications and the resultant data thereof" (Bleiker, et al., 2019: 7) .

- **Dependability**

Another one of the processes identified as an 'evaluative criteria' by Bleiker, et al. (2019:7) about the assessment and trustworthiness of qualitative research undertakings is

dependability, which has to do with the consistency of research findings, as well as, the means employed in conducting said research, over a prolonged period.

In other words, a research undertaking is considered highly dependable if the 'decision trail' employed by a researcher can be easily replicated, as well as by reproducing research findings using a comparable population in a similar context Bleiker, et al. (2019:7) and (Elo et al., 2014:7).

Hence, the import of full disclosure and documenting of not only a studies population and processes of data collection, analysis and interpretation but also of the criteria and reasoning that dictated its use therein, say Amin, et al. (2020: 1478); and Bleiker, et al. (2019:7) because it then allows for the prospect of replication and transferability of the findings.

- **Confirmability**

However, another of the 'evaluative criteria', as put forward by Amin, et al. (2020: 1478) about the assessment and trustworthiness of a qualitative research inquiry, is Confirmability, which concerns itself with, the factual and impartial (unbiased and unprejudiced) representation of participant accounts, by a researcher. To this end, several researchers endeavour to demonstrate confirmability through the use of direct quotes derived from the data provided by participants, demonstrating the linkages between the data and a study's findings elucidating the deduction process, as well as how conclusions are arrived at, say Cope (2014:89) and Elo et al. (2014:6-7). This, too, has its drawbacks, though, as they add that excessively using quotes can detract from the integrity of a study's analysis.

Amin, et al. (2020: 1478-1479) share the above conception of confirmability. However, they insist that no research study can ever be entirely objective and free of researcher bias. The only way to achieve an accurate depiction of the data, in their view, is complete transparency on the part of the researcher about their convictions, preconceptions and the limitations of their inferences and how best to manage this subjectivity and to best mitigate their influence on both the interpretation process and the findings.

In closing, Bazen, et al. (2021: 244) add that to ensure thoroughness and the trustworthiness of the interpretation process, the execution of the analysis process by several parties is advised.

- **Transferability**

Transferability, another of the 'evaluative criteria', as identified by Amin, et al. (2020: 1477-1478); and Bleiker, et al. (2019:7) in relating to the assessment and trustworthiness of a qualitative research inquiry, deals with the prospect of generalise-ability. In other words, as propounded by Amin, et al. (2020: 1477-1478); and Bleiker, et al. (2019:7), it is the extrapolation of a study's results into an entirely different situation or context.

Moreover, there appears to be a clear consensus amongst researchers on the definition of transferability, as far as Amin, et al. (2020: 1477-1478); and Bleiker, et al. (2019:7), are concerned, in that, they all share the viewpoint of transferability as, the prospect of and, degree to which results of a specific study can be extrapolated to entirely different contexts or situations. Consensus does not end there, though, as each goes on to expound on the necessity and importance of a detailed description by the researcher, detailing the many variables ('methods of data collection, population, analysis processes, context and culture') that play into a reader's decision making when assessing the transferability of a particular studies' findings. Without which, a reader's ability to successfully evaluate a study's trustworthiness and transferability are significantly curtailed, Amin, et al. (2020: 1477-1478) add.

- **Authenticity**

Owing to its classification as an evaluative criterion regarding the assessment and trustworthiness of qualitative research undertakings, Authenticity, as set forth by Amin, et al. (2020: 1479-1480) encompasses the accurate and truthful transmitting of the beliefs, idea's and experiences of the participants of a research undertaking, by those (the one) administering it.

Furthermore, Amin, et al. (2020: 1479-1480) add that because it is in the intrinsic nature of research to allow for the possibility of a multitude of probable inferences to be made from the data, depending on the experiences, beliefs and, consequently the perspective of the researcher, that a researcher must possess and, foster a healthy habit of deliberation and self-critique, throughout the study from its onset. This transparency and honest acknowledgement of the study's limitations serve not only to reassure the reader of its integrity but, more so, to ensure that the interpretations arrived at by the researcher are rooted firmly in the data, and are thus, not merely a product of the researcher's ideals, say Amin, et al. (2020: 1479-1480).

Amin, et al. (2020: 1479-1480) refer to an interesting aspect of qualitative research studies. They postulate that a researcher is forced to 'walk a tightrope' of sorts concerning the necessity for their perspective to be clear in and throughout the text whilst remaining objective enough to allow the data to speak for itself and prevent its misinterpretation, including the assigning of meaning where it does not exist.

- **Reflexivity**

The last criterion, Reflexivity, as defined by Amin, et al. (2020: 1478-1479); and Bleiker, et al. (2019:6) is concerned with researchers' endeavour to identify and come to terms with not only their 'world views' (perceptions, beliefs, biases and prejudices) but, also the limitations that lie therein, and how these could adversely influence and affect the research process, collection of data, its interpretation and, ultimately the findings. Hence, the practice of self-disclosure in

the qualitative research sphere is essential, as it creates a favourable environment for "self-awareness and agency within that self-awareness", as is propounded by Amin, et al. (2020: 1478-1479); and Bleiker, et al. (2019:6).

Amin, et al. (2020: 1478-1479); Bleiker, et al. (2019:6) continues by adding that the deliberation and self-disclosure exercised by researchers can take the form of various reflexive approaches, one such being a conscious effort on the part of the researcher to document (write down/ keep detailed notes of) their "own inner experience" taking place concurrently with that of the research process at large, from its outset to its conclusion. "Inner experience" denotes the personal opinions, beliefs, perceptions, prejudices, biases and their conscious awareness of how these do or may potentially influence their interaction with the data and their interpretation thereof. An alternative approach could be for researchers to draw on the expertise of their colleagues where they are part of a research team. The alternative might be to confer with peer debriefers, as both these groups represent the possibility of divergent views and entirely different points of departure, making for unique interpretations of the data. This minimises group think or the subjective outlook of the researcher.

Furthermore, Amin, et al. (2020: 1478-1479); and Bleiker, et al. (2019:6) adds that reflexivity allows researchers to distance themselves from the research whilst still allowing them to remain fully involved in the process.

With that, Delgado-Hito and Romero-García (2021: 168) close by conveying the sentiment that although categorisation of the criteria above, which together are said to represent and constitute trustworthiness, presents a relatively segregated, compartmentalised view of the concept (trustworthiness), it is, however, essential to remember that these criteria are fundamentally interconnected and function in concert.

Finally, given that this research study has met and proficiently satisfies all of the aforementioned 'criteria', owing to the assessment and trustworthiness of a qualitative research undertaking, it can also be affirmed as trustworthy.

3.9 Limitations of the Interview Method

Limitations of the interview method are well documented in the literature, and the researcher, as the architect of the research instrument, is key to these limitations. This concerns the researchers' competence as a facilitator of the study, which amongst other things, entails the recording of interviews, accurate interpretation of participant's answers, skilful analysis, and interpretation of the data collected. Silverman (2011:54), endorsing this viewpoint, presents his conception of the interview environment as one of trust and accountability, within which an interviewee provides information to an interviewer, who, as a neutral facilitator, elicits said information employing well-directed questions and apt prompts. After which, as is practice, the data is transcribed and analysed, Silverman (2011:54) adds. Moreover, Silverman (2011:55)

further asserts that the standardised interview is grounded primarily on the premise that the apparatus utilised in the interviews and the subsequent data analysis are quintessentially free of distortion. The traditional view of the dialogue between researcher and respondent, as averred by Silverman (2011:54), is that its perception is an impartial and objective 'instrument', as opposed to a reality. 'Instrument' here, denoting a quantifiable process devoid of any inaccuracy or prejudice on the researcher's part. Despite harbouring a distinctly personal and acutely subjective world view and ideology, nevertheless remains' the architect and producer of said 'instrument'.

Silverman (2011:39) continues by adding that social researchers who operate within the non-positivist sphere are reflexive co-creators of the data they produce. They are the chief architects of the meaning derived from and assigned to their works', which consequently necessitate the provision of adequate data and a didactic and scholarly substantiation of how those inferences were derived. Accordingly, the researcher's competence as a note-taker, recorder, interpreter and analyst is under great scrutiny and rightfully so, as any misconception or misunderstanding during note-taking and recording, misinterpretation, or even misrepresentation of data due to their own biases or prejudice would render that information and possibly the entire study with it, unreliable and untrustworthy. In sharing this sentiment, Henning et al. (2004:20) assert that "Reality is assumed to exist but to be imperfectly grasped because of flawed humans, with their biases or theoretical standpoints that underpin their work". Subsequently, Bazen, et al. (2021: 242) also supports this view and adds that there is an inherent disembeddedness or decontextualisation in interviews. This regarding the researcher, who as (interviewer) conductor and facilitator generally exhibits bias in the degree with which they discriminately focus on those responses that are aligned with and suit the subject matter they are investigating, which consequently begs the question of how this affects the data, concerning its trustworthiness and credibility.

Nonetheless, there are still yet other potential limitations associated with the employment of the interview method, of which one such constraint is the respondents' ability or lack thereof, to coherently and effectively articulate their thoughts, emotions, and or experiences that which they wish to convey to the interviewer, in other words, the information/data sought by the interviewer. Language is an obstacle not only in terms of vocabulary or use of the correct terminology but, because of the requisite, necessitating respondents' be knowledgeable on and, in possession of particular cultural acumen, as a basis from which to draw meaning. This is because of how individuals organize or arrange their feelings, beliefs, and lived experiences into the socialized units with which they are familiar and accustomed. Therefore, this suggests that respondents cannot engage in discourse in a mode of language that is different to what they are accustomed. This is reflected in how respondents summon up and extract information from their amassed storehouse of memories in relation to their level of comprehension and

insight, where after they pertinently categorise it as far as their vocabulary allows them to (Silverman 2011:59).

What Silverman (2011:60) means to illustrate here is that all respondents have (social) identities. Moreover, they affiliate with a range of distinct groups, so no interview can be posited as occurring within a social vacuum. Moreover, these social identities that makeup interviewees' self-concepts are created through discourse, which is fundamentally embedded within the social constructs (values, beliefs, ideologies, and notions of reality) of the groups to which they belong. Therefore, to go beyond mere cursory data toward ascertaining the crux and substance of the material, a researcher must successfully discern this 'private' and, or rather 'privileged meaning', that is, how interviewees characterise and classify their lived experiences, Silverman (2011:60) says. In light of this, Silverman (2011:63) suggests that researchers pay special attention to the cultural knowledge and discourse employed during the (dialogue between researcher and respondent) 'construction of the data', as interviewees convey their thoughts, emotions and experiences.

Furthermore, Silverman (2011:63) deliberately refers to the interview process and resultant data as being created rather than as gathered or collected. This is an attempt to convey that respondents are not merely conduits from whom readily prepared information passively flows and can be extracted, but rather, that they actively interact with and create information by reflecting on, processing, selecting, and finally communicating their perceptions on the matter at hand, albeit subjectively. Nevertheless, the end product is a cognitively generated reflection from which deductions can be extracted and formed, not as a mere, easily accessible recollection of data.

Aside from those limitations posed by respondents, or the researcher, as architect and conductor of the interviews, and by extension, the tools and methods employed, there remains another dimension, the methodology, presenting its unique limitations. The methodology being referred to is not the entire process but rather concerning the population sample and the respondents' profiles. Consequently, what distinguishes these two fields and affords them such importance is their diktat on the credibility of the data collected and whether it is indeed an accurate and faithful reflection and representation not only of the subject matter under investigation but also of those accounting for it.

Fortunately, seeing that the environment in which the study is being conducted is rather exclusive and the subject matter under inquiry also quite specialised knowledge, the criteria for the population/ sample of the study was simple. Only select personnel, including middle and senior management, were required because they all possessed specialised knowledge on the subject under inquiry. This group of participants comprised five Safety Department employees, three of whom are Safety officers and two Safety Officer Team Leaders. The Safety Process Manager and Plant Operations Manager made up the remaining two members.

Since this population group was small enough to manage, there was no need for a sample. Regarding respondent profiles, each echelon is well represented, with three employees at the base level, two at the intermediate level, and two in senior positions. Of note also is that of the seven participants, two are female, one of whom occupies a senior position.

Having substantiated the above concerns, that is, the population and participant profiles, it appears limitations of an entirely different kind surfaced as a consequence, these stemming from the realisation that the study is consequently a case study. Thus, in light of this revelation, a necessary acknowledgement of the newfound limitations ensued. The central dilemma posed by it being a case study is the possibility that it may not be representative of other such 'operations' (Offshore Oil Rigs) in the same industry and the same or other geographic locations. This calls into question the credibility of the study and whether or not the data will be generalisable at all, not to mention trustworthy and credible, in as far as the case study may be of questionable relevance and reliability to this end. Because of this, Bazen, et al. (2021: 242-243) point out that the goal of qualitative research and the use of the interview method in a case study is not generalization but the investigation of certain factors within given environments to generate data from there. It begs to mention, however, that although said data is intended to inform and therefore guide the decision-making of lawmakers and practitioners alike, what the qualitative approach does not purport to do, is to produce a universal set of facts and instructions for legislation and their application.

Following on, yet another limitation of the interview method, mainly when administered to employees belonging to the organisation under inquiry, is their reluctance to participate, given their fear of backlash or potential repercussions from management as a direct result of sensitive information that they may provide. This, consequently, propagates a shared unwillingness amongst employees to divulge information perceived as confidential. Therefore, to circumvent this, the researcher sought a formal organisation to interview its employees to obtain the data necessary for the study by reassuring them of the confidentiality with which the data collected would be dealt. This proved successful, as all employees were happy to participate, given that it was at the behest of the organisation, as opposed to a personal appeal from the researcher, which consequently made them comfortable discussing even the most sensitive and confidential information.

As a final point, Silverman (2011:79) posits the importance of astuteness in the development, implementation and execution of the interview process because it fosters and reinforces trustworthiness & credibility in the interview method.

3.10 Ethical Considerations

The following ethics were observed in this study. First, all participants were informed of the nature of the study beforehand, ensuring they understood what it entailed before consenting to partake. Second, it contained no deception, lying or disinformation whatsoever. Third, it was

a transparent, honest study, yet even so, if participants felt they would like to have left or discontinued their part in it, they were free to do so. Fourth, the study was anonymous to guarantee the privacy, confidentiality and anonymity of all the participants involved, particularly the organisation in question. Finally, the nature of the study required ethical approval, which was sought from the faculty ethics committee and acquired before the commencement of the study.

Furthermore, participants were in no way or means subjected to any physical, psychological or other harm. Also, all participants, including their personal, social and cultural values, were respected. In conclusion, since there was no deception present in this study, desensitization was necessary when it concluded. However, if it were, it would have been provided (Delgado-Hito and Romero-García, 2021: 168).

3.11 Summary and Conclusion

This chapter set out to describe the methods of data collection and outline the research philosophy adopted, which addressed the research objectives. Chapter three commenced with a discussion on the interpretive research paradigm, followed by an explication of the grounds for its adoption in this study, which consequently justified the use of the qualitative methodology herein. The chapter then continued with an explication of the population selection technique, which preceded a discussion on the data collection technique and the interview design of this study. A further discussion on the instruments employed in the analyses and interpretation of the data collected followed. A comprehensive deliberation on the study's trustworthiness followed, with equal consideration of the limitations of the interview method. Finally, the end of the chapter saw an expounding of the ethical considerations employed in this study.

In closing, and concerning those mentioned earlier, one can confidently surmise that the research objectives of this study will be adeptly met, owing to the methodology delineated in this chapter. Therefore, conclusively, the following chapter, chapter four, furnishes the results, data analysis and discussion relating to the research objectives identified in the introduction of this chapter.

CHAPTER 4
FINDINGS AND DATA ANALYSIS

4.1 Introduction

The primary purpose of this chapter is to analyse and discuss the interviews' results to explore the factors that influence offshore safety on a selected rig on the South African coast. First, the chapter restates the specific research objectives in section 4.2, followed by the interview questions in section 4.2.1. This is followed by a discussion on the response rate in section 4.3.1. Next, the participants' positions in the business are provided in section 4.3.2. Section 4.3.3. then indicates participants' genders, with section 4.3.4 furnishing participant answers. In section 4.3.5. the coding frame employed is then illustrated, followed by an analysis and discussion of the interview results in section 4.4. Finally, section 4.5 provides a summary and conclusion of the chapter.

4.2 Restatement of the Objectives

As was previously stated, the supreme objective of this study was to determine what factors influence offshore safety on the selected rig. The succeeding objectives were to determine the primary factors influencing offshore safety on the selected rig. To determine to what extent provisions have been made to address the main influencing factors and determine whether prospective safety provisions could be recommended for future implementation to enhance rig safety. To this end, the following questions, as outlined in chapter one, were formulated:

4.2.1 Interview Questions

- **Question 1**
  - What are the factors that influence safety on this rig?
- **Question 2**
  - Of these, which is the most predominant factor?
- **Question 3**
  - Are there any provisions in place at present that address the 'said' prevailing factor?
- **Question 4**

  Are there any prospective safety provisions you could recommend for future implementation directed at enhancing rig safety?

4.3 Data Presentation

4.3.1 Interview response rate

As mentioned in chapter 3, the targeted population of the current study comprised select members of the organisation under inquiry, namely the safety department personnel, as well as two relevant senior managers. Hence, given that this group comprises the entire study population, there was no need for a sample. Moreover, to this end, seven interviews were thus prepared, accounting for each of the members of the population. Subsequently, since all seven interviews were successfully conducted and captured, comprehensiveness was ensured. To this end, a response rate of 100% was achieved, as summarised in Table 4.1.

Table 4.1: Response Rate

	Number	**percentage**
Target Population	7	100%
Participated	7	100%
Declined	0	0%
Response rate	7	100%

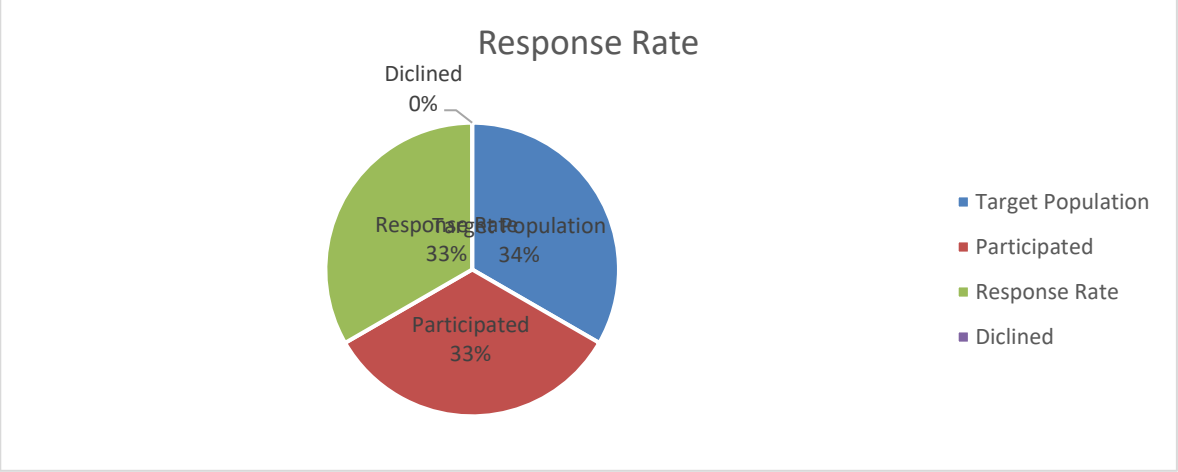


Figure 4.1: Response Rate

4.3.2 Position in the business

Regarding the participants' position in the business, 43% were Safety officers, 28.5% were Safety Team Leaders, and 28.5% were Senior Managers, as summarised in Table 4.2 and Figure 4.2. Given that 100% of the participants were either Safety Department personnel or a

relevant Senior Manager responsible for that department, it can be concluded that the appropriate participants had been selected to be interviewed.

Table 4.2: Position in the Business

	Number of participants	Percentage
Position in the business:		
○ Safety Officer	3	43%
○ Safety Team Leader	2	28.5%
○ Senior Management	2	28.5%
	Total 7	100%

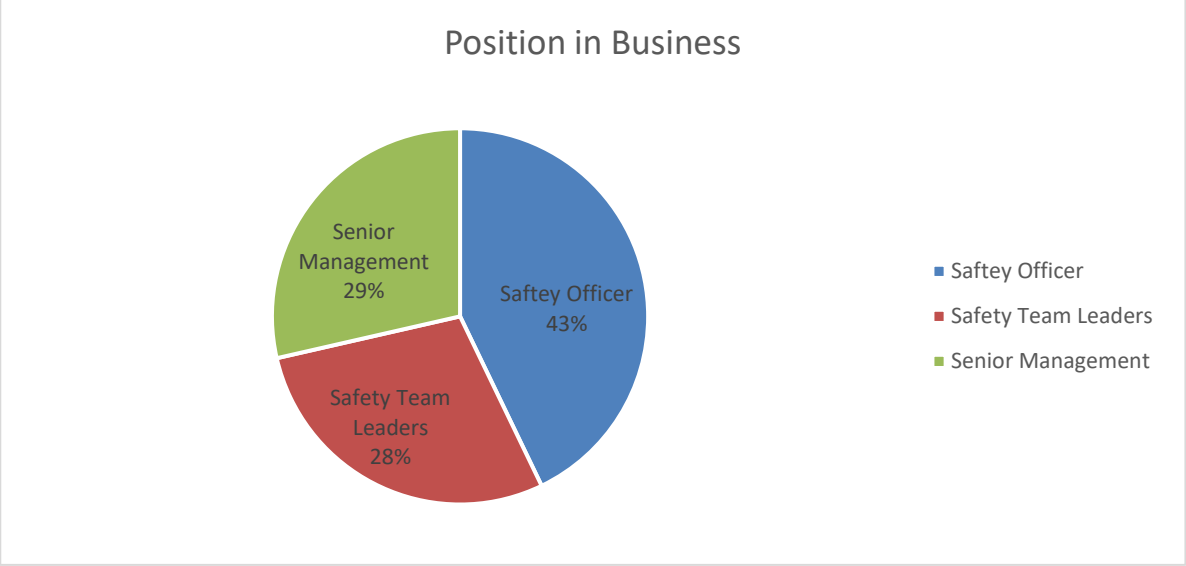


Figure 4.2: Position in the Business

4.3.3 Participants Gender

Regarding the gender of the respondents, the majority (71%) were males, while 29% were female, as indicated in table 4.4 below. This finding indicates the disparity concerning the representation of the two in the safety department. This barring the two Senior Managers responsible for the department, as they are the exception, given that they are more evenly representative of both genders.

Table 4.3: Participants' Gender

	Number of respondents	Percentage
Gender:		
○ Male	5	71%
○ Female	2	29%
	Total 7	100%

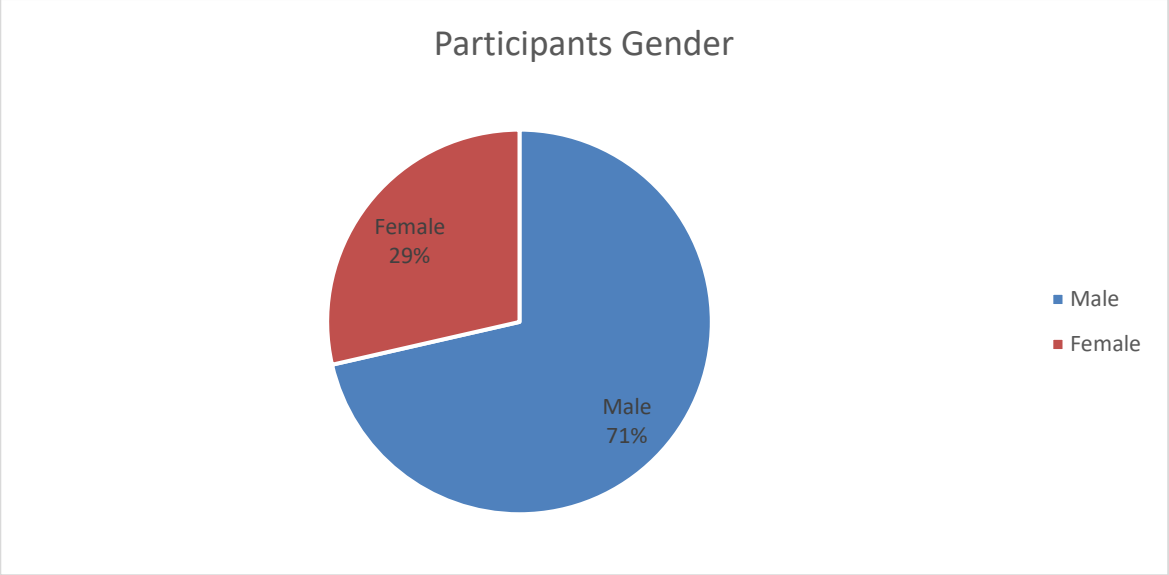


Figure 4.3: Participants' Gender

4.3.4 Participant' response

Question 1

What are the factors that influence safety on this rig?

Participant Answer: Operations Manager

- Process safety.
- Behavioural safety:
  - Human element.
  - Incidents occur because individuals deliberately cut corners.
  - Complacency.
  - Absentmindedness.
  - Dishonesty about the cause of a particular incident or accident because of fear of disciplinary action, unfortunately, prevents the rectification of its root cause and prohibits the opportunity for lessons to be learned from it.

- Deliberately not following procedures because individuals feel they have ample experience and need not take the necessary safety precautions.
- Employees sharing an experience or lessons learned after an incident/accident with other employees is helpful in that colleagues too may benefit from their experience indirectly, as well as gain knowledge from it on how to prevent it from repeating itself, or even how to better deal with a similar situation if ever faced with it in future.

Question 1

What are the factors that influence safety on this rig?

Participant Answer: Process Safety Manager

- Design of rig (safety design):
  - Failure in one area should not affect others.
  - The system should be able to safeguard itself.
- Competency level & training of employees.
- Hazard Management (Fire hazard):
  - Gas and hydrogen condensate can cause fires.
  - High potential for fire, risk has to be managed well.
- Maintenance: Preventative maintenance and proactive inspections.
  - Maintain the integrity of the rig.
- Safety Culture:
  - Safety oriented vs Production oriented.
- Environmental safety:
  - Production should not affect the marine community negatively.
  - Pollution from leakages, faults, etc.
- Aircraft ditching:
  - May result from poor visibility or severe weather conditions.

Question 1

What are the factors that influence safety on this rig?

Participant Answer: Safety Team Leader I

- Emergencies.
- Aircraft Ditching.
- Vessel on a collision course: Ship approaching platform on a collision course.
- Transfer line failure: Subsurface isolation valves allow inventory to transfer to and from the platform.
- Fire on platform.
- Failure to secure/isolate subsea structure.

- The risk from falling equipment.
- Risk of damage to subsea structures by trawler seabed fishing nets.

Question 1

What are the factors that influence safety on this rig?

Participant Answer: Safety Team Leader II

- Workplace factors:
  - Equipment failure.
  - Lack of maintenance due to shortage of staff.
  - Working using defective equipment.
  - Failure to report defective equipment.
  - Failure to timeously execute corrective actions.
  - Failure to report near hits can lead to major accidents if not dealt with or addressed.
  - Housekeeping: Keeping all areas clean, with everything in its place.
- Human factors:
  - Inadequate/ failure (to do) risk assessment.
  - Shortcuts.
  - Unsafe acts or at-risk behaviours.
  - False feedback or information regarding incidents and accidents.
  - Employee's state of mind: Marriage/ social problems may distract employees (inability to focus on the task at hand).
  - Failure to follow procedures.
  - Lack of ownership of safety values by employees.
- Safety culture:
  - A lack of either employee involvement or management commitment to safety can result in bad safety culture.
  - If employees feel that management is not committed enough to their safety, it can cause them to respond in kind by adopting unsafe work habits and, more so, to lose faith in the company.

Question 1

What are the factors that influence safety on this rig?

Participant Answer: Safety Officer I

- Risk of fire.
- Working at heights.
- Confined space entries:
  - Working in confined spaces.

- Hot work:
  - Work involving use of open fire/ electrical sparks.
  - Risk of fire.
- Systems safety:
  - Not followed or adhered to.

Question 1

What are the factors that influence safety on this rig?

Participant Answer: Safety Officer II

- High-risk area:
  - By its very nature, as a Petrochemical plant, it is a high-risk environment.
- Highly flammable substances:
  - Petrol, Diesel, Kerosene and a myriad of other highly flammable gasses.
  - Risk of explosions, fires etc.
- The Process itself:
  - Drilling and processing petroleum and gaseous materials are hazardous.
  - Given that the units within the plant are interconnected, if one were to catch fire, it would quickly spread to others as the petrol and liquefied petroleum gasses are highly flammable substances, and the results would be catastrophic.
  - Leakages of transportation pipelines and or storing facilities.
- Work at heights.
- Confined space entry work.

Question 1

What are the factors that influence safety on this rig?

Participant Answer: Safety Officer III

- Process:
  - The process itself influences safety.
  - Any upsets in process will influence how employees react.
- People (employees):
  - Shortcuts
  - Complacent, because they have experience and knowledge of how it should be, they make careless mistakes or are negligent.
- Personal:
  - An employee may not be in a 'healthy space' mentally or emotionally.

- Absentmindedness.
- Bad decision-making.

Question 2

Of these, which is the most predominant factor?

Participant Answer: Operations Manager

- Behavioural safety (Human aspect).

Question 2

Of these, which is the most predominant factor?

Participant Answer: Process Safety Manager

- Potential for human error.

Question 2

Of these, which is the most predominant factor?

Participant Answer: Safety Team Leader I

- Aircraft Ditching.

Question 2

Of these, which is the most predominant factor?

Participant Answer: Safety Team Leader II

- Employee involvement & management commitment in all work activities.
  - Employees then understand that not only are they expected to execute the tasks given, but to do so safely. Therefore, they are responsible too and thus take ownership of their own safety.
  - Management should not use policy as a 'tombstone'. In other words, policies should not be written for the sake of compliance or the sake of external stakeholders; instead, policies should benefit employees.
  - Need to balance safety and production.
  - One cannot produce at the expense of the safety of employees.

Question 2

Of these, which is the most predominant factor?

Participant Answer: Safety Officer I

- Risk of fire:
  - Fuel, diesel and a myriad of gasses are highly explosive.

Question 2

Of these, which is the most predominant factor?

Participant Answer: Safety Officer II

- Equipment failure.

Question 2

Of these, which is the most predominant factor?

Participant Answer: Safety Officer III

- Employee (people) related:
  - A successful safety culture relies heavily on people (the employees).
  - Complacency, shortcuts.
  - Inspections not done; negligence.

Question 3

Are any provisions in place at present that address the 'said' prevailing factor?

Participant Answer: Operations Manager

Yes,

- Safety Standby:
  - Weekly platform to voice and reflect on all safety issues within the various individual sectors.
  - Discussions on how to conduct work safely, which issues may be impeding safety, and if there were any incidents, how we can learn from these incidents to prevent them in future, or how to better deal with them if faced with the same predicament.
- Also, management has attempted to engage more co-operatively with the workforce by means of addressing and engaging with them in a positive and conducive manner as opposed to what may be received as hostile. For instance, in the case of an employee engaging in unsafe working behaviour, management would address the situation in such a way that said employee should think about their actions and come to an understanding

themselves of how to work more safely and why this would be in their own best interests, as opposed to scolding them and raking them over the coals.

Question 3

Are any provisions in place at present that address the 'said' prevailing factor?

Participant Answer: Process Safety Manager

Yes,

- More dependence on design safety.
- High design safety integrity:
  - More emphasis is put on the design of plants to run effectively without the need for human input.
  - High' safety integrity levels' ensure equipment is designed in such a manner that it has great integrity.
  - The higher the design safety integrity level of a structure, the less confidence one needs in its operators.
  - Firewalls have been improved on platform; it was a design upgrade.
  - Radar safety measures are in place to prevent collisions with vessels.
- Competency level & training of employees.
  - Operating procedures.
  - Employees undergo special training in order to work on the platform.
  - Survival training is a must for all workers on the platform.
  - Certain staff trained for fire fighting in times of emergency.
  - Certain staff are trained to facilitate evacuation in times of emergency.
  - Safety measures and procedures for flights (visibility).
  - In cases of poor visibility, there are no flights in or out.
- Process Hazard Analysis (Every three years):
  - Review of processes and Rig integrity.
  - Risk assessment and Analysis.
- Maintenance: Preventative maintenance and proactive inspections.
  - Maintain the integrity of the rig.
- Permit to work:
  - Prerequisite to execute/perform any work on the plant.
- Both Occupational Safety and Process Safety are vital for the safe and successful operation of the rig.
- The Offshore Installation Manager (OIM) is extremely important because he or she has the power and authority to make critical decisions.
  - This became a universal standard after the Piper Alpha incident.

  - OIM requires licensing to operate the rig.
- Medical checks are also a prerequisite on the platform:
  - Stress levels, physical health, as well as mental health are checked.
- Governing bodies that regulate and control rig operation:
  - Special licenses are required for rig operation.
  - Must comply with SAMSA regulations.
  - Must comply with "Liberian Flag", special international offshore oil installation regulations.
  - Must comply with Department of Mineral Resources (DMR) regulations.
  - Auditing is done annually, and they declare the rig safe to operate.
- Waste management and hygiene are also essential on the platform:
  - For example, plant members recycle seawater for use on the platform, and it is re-cleaned before being released back into the ocean.

Question 3

Are any provisions in place at present that address 'said' prevailing factor?

Participant Answer: Safety Team Leader I

Yes,

- Emergency drills on every crew change.
- Emergency drills every seven days.
- Production Team: Ensure plant safety in emergencies.
- Maintenance Team: Firefighters in case of emergencies.
- Services Team: Helicopter deck firefighters and transport coordinators in emergencies.
- Testing.
- Due diligence.
- Inspection: Safety Risk Engineer.
- Safety-focused Infrastructure: The platform is built to specific safety specifications.
- Competent Pilots.
- Pilot Training (Night Flights).
- An aviation company does helicopter deck assessment for certification.
- Quick access to accident information in order for prompt and appropriate response.
- Emergency onshore backup team.
- Emergency Hospital standby.
- Emergency transportation standby.
- Automatic Platform Shutdown initiation in astringent circumstances.
- Deluge Sprinkler system in case of fire.

- The Offshore Installation Manager (OIM) has complete control of operations in times of emergency, followed by the second in command, the Deputy Installations Manager (DIM).
  - Offshore installation operates under a semi-military hierarchy decision-making structure because of its high-risk status.
  - Offshore Installation Managers (OIMs) have to renew their tickets every five years.

Question 3

Are any provisions in place at present that address the 'said' prevailing factor?

Participant Answer: Safety Team Leader II

Yes,

- MBO Management system in place (Management by Objective):
  - Job observation, observing whether employees are working as expected to by procedure.
- Safety stand-down:
  - Weekly safety shutdown and addresses.
  - An initiative by the company to relay to the employees that management is committed to their safety.
- SHE (Safety Health and Environmental) committee have monthly meetings:
  - Covers all safety aspects of the entire business, safety, health, and environment.
  - They are chaired by senior management and labour representatives.
  - A platform for all problems to be addressed which may not have been successfully resolved at departmental or sectional levels.

Question 3

Are any provisions in place at present that address 'said' prevailing factor?

Participant Answer: Safety Officer I

Yes,

- Safety systems:
  - Work permit.
  - Safety authorisation: must be signed.
  - Risk assessment: evaluate all possible risks that could result.
  - Gas testing.
  - All employees receive special training to perform any work on the plant.

Question 3

Are any provisions in place at present that address the 'said' prevailing factor?

Participant Answer: Safety Officer II

Yes,

- Process Department:
  - Do inspections and submit reports to do with equipment integrity.
- Protective clothing and others.
- Firmanite clamping to secure and cover pipelines.
- Shutdown in severe cases.
- Risk assessment.

Question 3

Are any provisions in place at present that address the 'said' prevailing factor?

Participant Answer: Safety Officer III

Yes,

- Supervision:
  - Job observation: are employees executing jobs as they should be done.
  - Making employees aware of the dangers of complacency and taking shortcuts.
  - Trust is good, but verifying is best.

Question 4

Are any prospective safety provisions you could recommend for future implementation to enhance rig safety?

Participant Answer: Operations Manager

- Disciplinary issues:
  - How to deal with transgressions.
  - It is important to judge each case on its own merits:
    - For instance, to find out what state of mind the individual was in when the incident occurred.
    - Was it deliberate, or was it an honest mistake?
  - If one generalises and treats all cases alike, one could end up victimising employees instead of fostering a safety-conscious workforce which is the ultimate goal.
  - We want employees to come away from any incident with a more safety-conscious mindset and work ethic, making them ambassadors and carriers of safety for others.

- Encourage employees to cultivate a safety-conscious mindset and think for themselves, taking ownership of the safety rules and procedures.
- For employees to commit themselves to working safely for their sake and their colleagues, creating a shared and reciprocal attitude towards safety amongst the workforce, thus fostering a conducive safety culture.

Question 4

Are there any prospective safety provisions you could recommend for future implementation directed at enhancing rig safety?

Participant Answer: Process Safety Manager

- Lessons learned.
- Proper risk assessment is imperative!
- Improve incident investigation:
  - There should be recommendations, and they should be implemented.
  - Feedback after implementation.
- Investigate near misses as you would an accident or incident.

Question 4

Are there any prospective safety provisions you could recommend for future implementation directed at enhancing rig safety?

Participant Answer: Safety Team Leader I

- Sound Aircraft: Very Important.
- Strict adherence to Procedures.
- Competent Staff.
- Lessons learned from past and present accidents.

Question 4

Are there any prospective safety provisions you could recommend for future implementation to enhance rig safety?

Participant Answer: Safety Team Leader II

- Continuous Safety Awareness Program:
  - Safety training as part of the compulsory requirement to do any work on site.
  - Safety (two-minute) checks before engaging in any work tasks.
  - "Beka umakhelwane wakho": Embrace joint safety awareness program and really keep a look out for one another's safety.
  - Employees should take ownership of safety practices and procedures, as it is in their self-interest. It should become the status quo.

- Safety is not only for the workplace; safety consciousness should become second nature and the status quo in all spheres of employees' lives.
- Employees should adopt a safety mentality.

Question 4

Are there any prospective safety provisions you could recommend for future implementation directed at enhancing rig safety?

Participant Answer: Safety Officer I

- Behavioural safety:
  - Employees take shortcuts.
  - Employees use the wrong tools or neglect to use safety equipment.
  - "Human factors", unsafe work practices.
  - Employees tend to take chances when they are not being supervised.

Question 4

Are there any prospective safety provisions you could recommend for future implementation directed at enhancing rig safety?

Participant Answer: Safety Officer II

- Training is essential.
- Special education and training are required for certain jobs for contractors and service providers who are non-permanent employees or staff, as they are not well versed with rules, regulations and safety procedures.

Question 4

Are there any prospective safety provisions you could recommend for future implementation to enhance rig safety?

Participant Answer: Safety Officer III

- Training employees such that they take ownership of safety procedures.
- Safety culture:

  Get employees to embrace a safety culture and be responsible in how they carry out their duties through a lasting safety consciousness.

4.3.5 Coding Frame

4.3.5.1 Question 1: Various factors influencing Rig Safety

I. Fire, risk of fire/explosion. **x5**
II. Behavioural safety: Unsafe working habits. **x4**
III. Maintenance: the Lack thereof. **x3**
IV. Process safety: Did not adhere. **x3**
V. Dishonesty/misinformation about the cause of the incident prevents its rectification. **x3**
VI. Psychosocial aspects. **x3**
VII. Aircraft Ditching. **x2**
VIII. Equipment failure. **x2**
IX. The Process itself: High-risk area by its very nature. **x2**
X. Safety Culture: the lack thereof. **x2**
XI. Confined space entry work. **x2**
XII. Working at heights. **x2**
XIII. Environmental safety. **x1**
XIV. Design of rig (Safety design). **x1**
XV. Transfer line failure. **x1**
XVI. Vessel on a collision course: Ship approaching platform on a collision course. **x1**
XVII. Risk of damage to subsea structures by trawler seabed fishing nets or other. **x1**
XVIII. Competency level & training of employees. **x1**

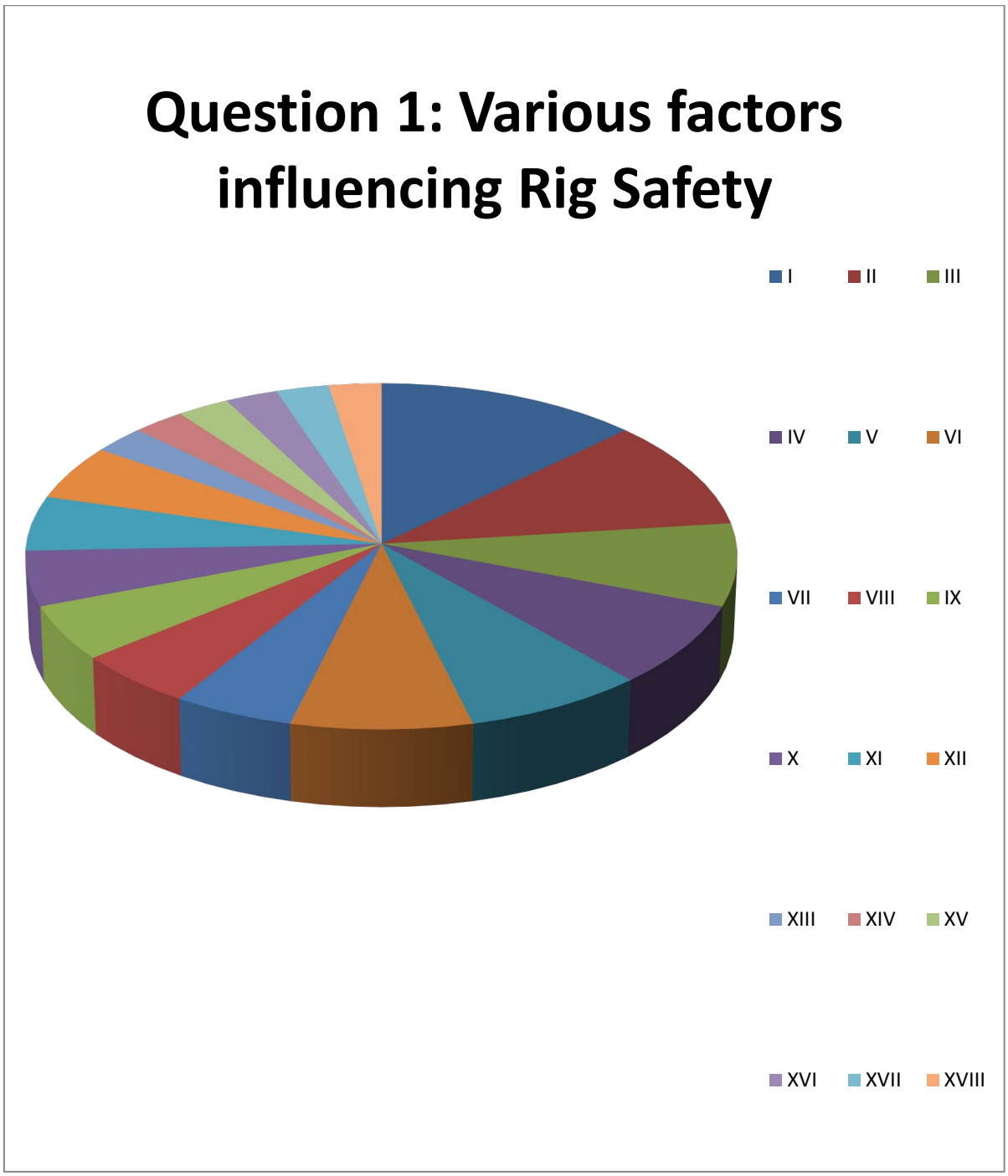


Figure 4.4: Question 1: Various factors influencing Rig Safety.

4.3.5.2 Question 2: The most predominant factors influencing Rig Safety

I. Aircraft Ditching. **x1**
II. Potential for human error. **x1**
III. Risk of fire. **x1**
IV. Equipment failure. **x1**
V. Behavioural safety/ Safety culture (People related). **X3**

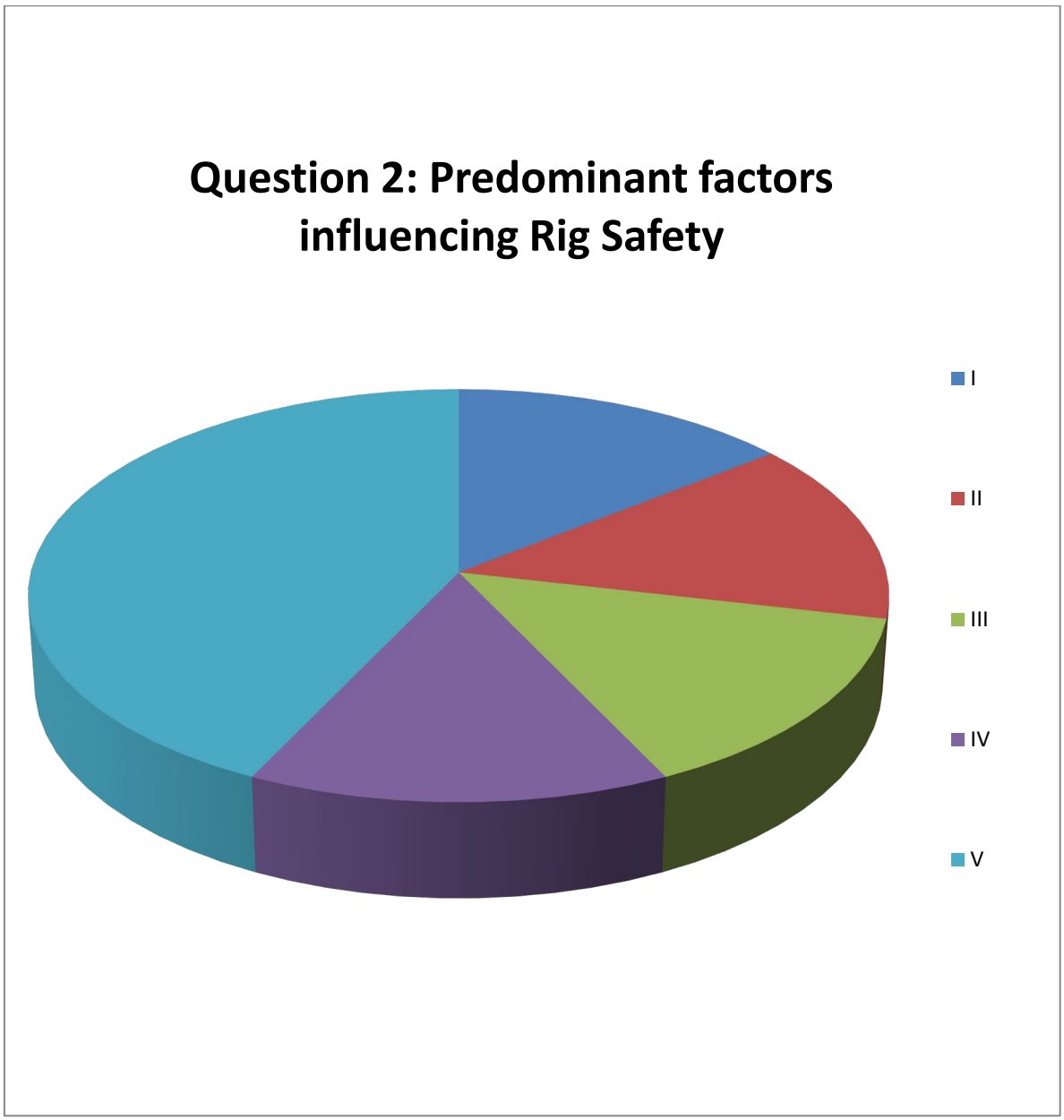


Figure 4.5: Question 2: Predominant factors influencing Rig Safety.

4.3.5.3 Question 3: Present provisions in place which address said predominant factors.

I. Maintenance: Preventative maintenance and proactive inspections by Safety Risk Engineer. **x3**
II. Risk Assessment. **x3**
III. Process Safety. **x3**
IV. Safety-focused Infrastructure: The higher the 'Design Safety Integrity' level of a structure, the less confidence one needs in its operators. **x3**
V. Survival and other training are a must for all employees on the platform. **x3**
VI. Production Team: Ensure plant safety in emergencies. **x2**
VII. Maintenance Team: Firefighters in case of emergencies. **x2**

VIII. Services Team: Helicopter deck firefighters and transport coordinators in emergencies. **x2**

IX. Testing (Gas and other). **x2**

X. Competent Pilots. **x2**

XI. Safety measures & procedures for flights (training for night flights). **x2**

XII. Automatic Platform Shutdown initiation in astringent circumstances. **x2**

XIII. Supervision/Job Observation. **x2**

XIV. Management proactively informs employees of the dangers of unhealthy safety habits through positive & conducive communication. **x2**

XV. Weekly Safety standby (& addresses). **x2**

XVI. Permit to work: Prerequisite to execute/perform any work on the plant. **x2**

XVII. The Offshore Installation Manager (OIM) has the power and authority to make crucial decisions and complete control of operations in times of emergency, followed by the second in command, the Deputy Installations Manager (DIM). **x2**

XVIII. Offshore Installation Managers (OIMs) require licensing to operate a rig and have to renew it every five years. **x2**

XIX. Emergency drills on every crew change. **x1**

XX. In cases of poor visibility, there are no flights in or out. **x1**

XXI. Helicopter deck assessment is done by an aviation company that issues certification. **x1**

XXII. Quick access to accident information in order for prompt and appropriate response. **x1**

XXIII. Emergency onshore back- up team. **x1**

XXIV. Emergency Hospital standby. **x1**

XXV. Emergency transportation standby. **x1**

XXVI. Deluge Sprinkler system in case of fire. **x1**

XXVII. Offshore installation operates under a semi-military hierarchy decision-making structure because of its high-risk status. **x1**

XXVIII. More emphasis is put on designing the plant to run without the need for human input. **x1**

XXIX. Firewalls have been improved on platform; it was a design upgrade. **x1**

XXX. Protective clothing, safety equipment and others. **x1**

XXXI. Process Hazard Analysis (Every three years). **x1**

XXXII. Governing bodies regulate and control rig operation: SAMSA; 'Liberian Flag'; Department of Mineral Resources. **x1**

XXXIII. Annual auditing to declare rig safe to operate. **x1**

XXXIV. Monthly Safety, Health and Environmental 'SHE' meetings. **x1**

XXXV. Medical checks are a prerequisite on the platform. **x1**

XXXVI. Waste management and hygiene are also critical on the platform. **x1**

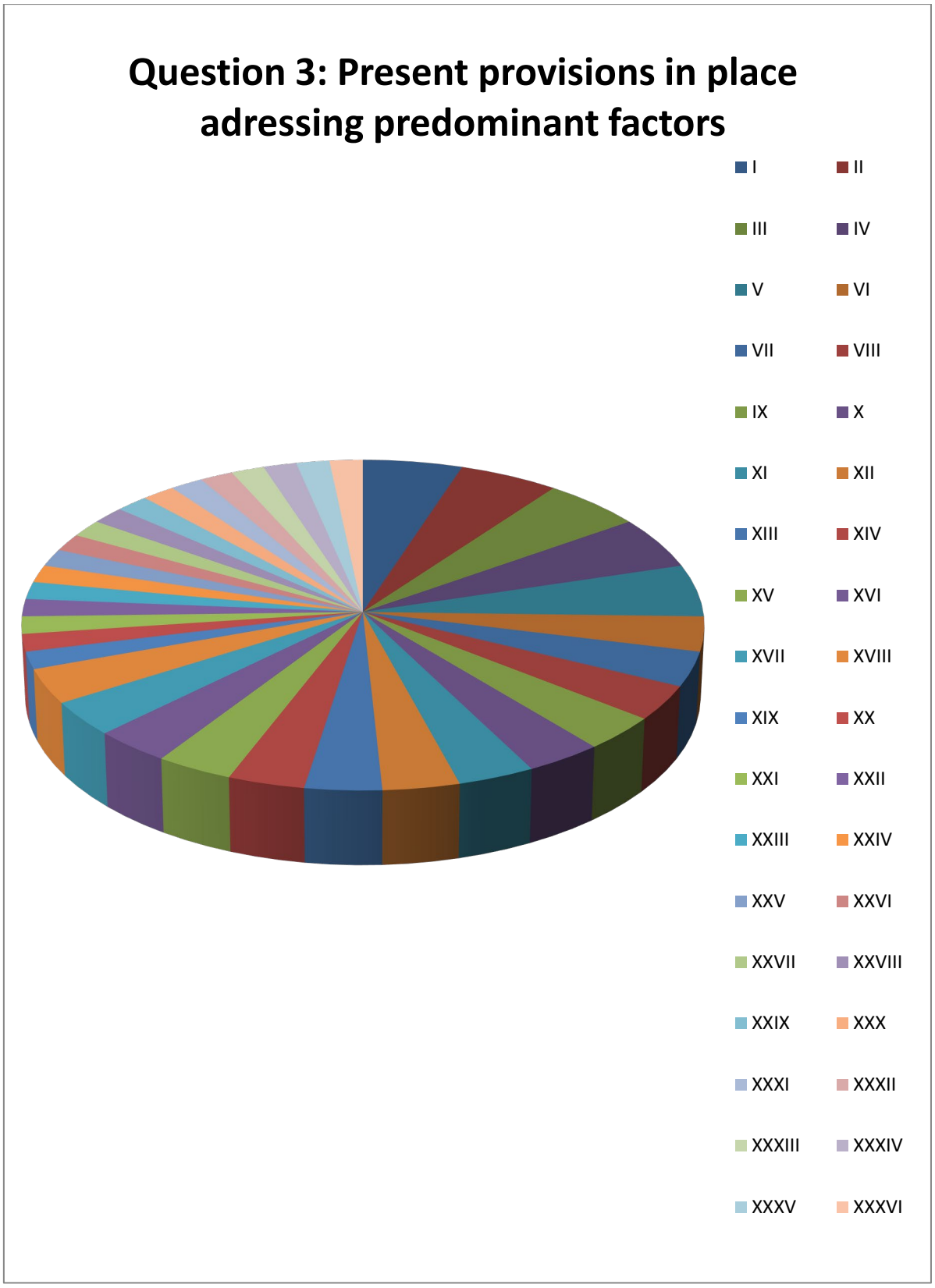


Figure 4.6: Question 3: Present provisions in place addressing predominant factors.

4.3.5.4 Question 4: Prospective safety provisions recommended for future implementation

I. Safety Culture: employees should embrace a safety culture, taking ownership of and responsibility for how they carry out their duties. **x4**
II. Training (safety). **x3**
III. Strict adherence to Procedures. **x2**
IV. Competent staff. **x2**
V. Lessons learned from past and present accidents. **X2**
VI. "Beka umakhelwane wakho": Embrace joint safety awareness program and really keep a look out for one another's safety. **x2**
VII. Safety should become the status quo. **x2**
VIII. Employees should adopt a safety mentality. **x2**
IX. Proper risk assessment is imperative! **x1**
X. Sound Aircraft: Very Important. **x1**
XI. Improve incident investigation. **x1**
XII. Investigate near misses as you would an accident or incident. **x1**
XIII. Improve behavioural safety: stop shortcuts, negligence & unsafe work acts. **x1**
XIV. Employees should work safely & responsibly without supervision. **x1**
XV. Special education and training for contractors and service providers who are non-permanent employees or staff, as they are not well versed with rules, regulations and safety procedures. **x1**
XVI. Continuous Safety Awareness Program. **x1**
XVII. Safety two-minute checks before engaging in any work tasks. **x1**
XVIII. Employees, who have experienced workplace accidents, should be safety ambassadors and carriers of a safety-conscious work ethic for colleagues to learn from. **x1**
XIX. How one deals with transgression is extremely important, as the aim is not to victimise employees but rather to foster a safety-conscious workforce. **x1**

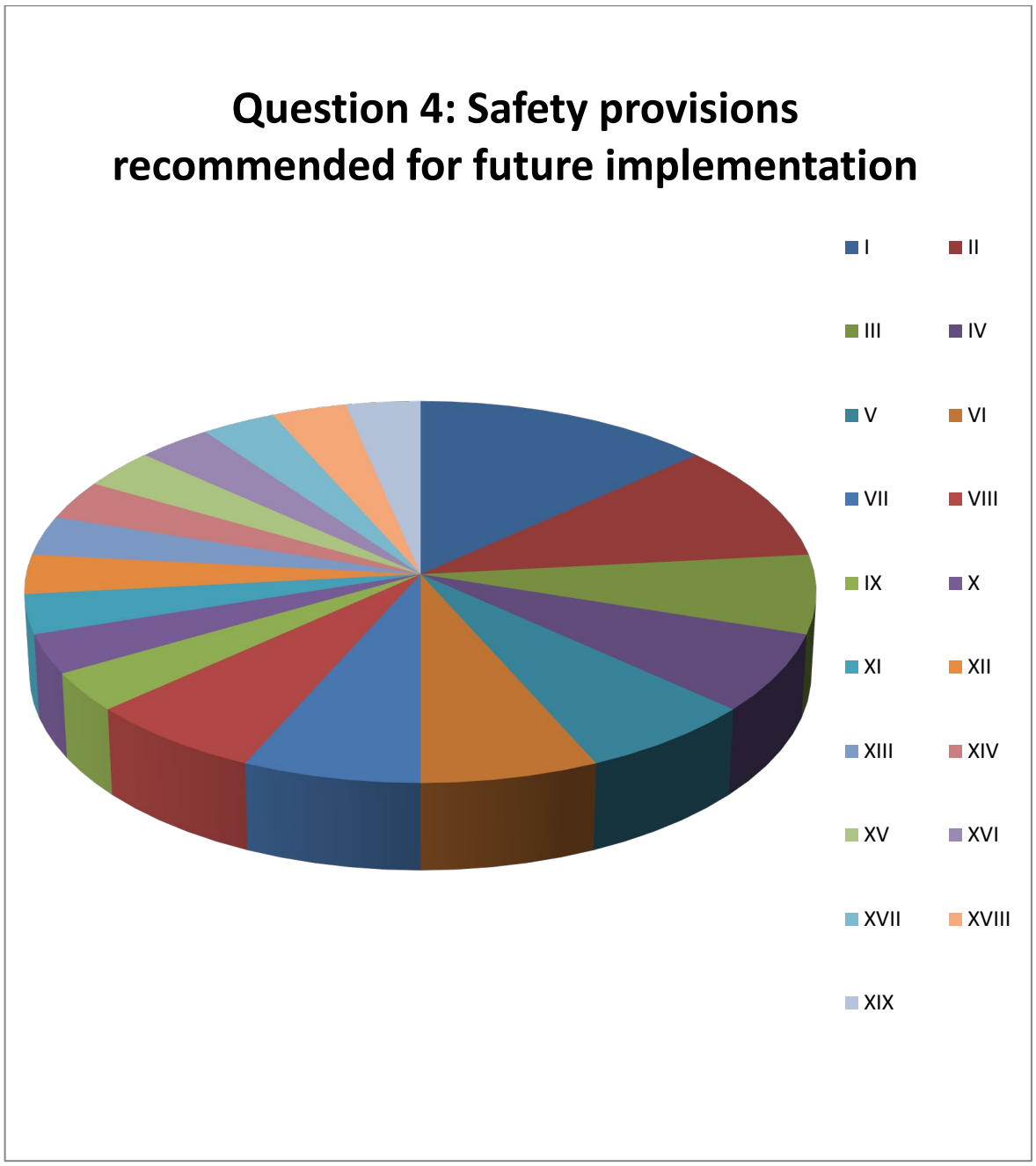


Figure 4.7: Question 4: Safety provisions recommended for future implementation.

4.4 Discussion

What the results reveal concerning the data collected on the factors that influence offshore safety on a selected rig on the South African coast is that fire, risk of fire or explosion, is one such factor, as it was cited by five of the participants (71% of the population). Behavioural safety (unsafe working habits), too was identified by four participants (57% of the population) as a factor which influences safety on the offshore rig, along with, Maintenance (the Lack thereof); Process safety (Not adhered to); Psychosocial aspects; as well as, Dishonesty/misinformation about the causes of incidents which prevent their rectification, each being cited by three participants (43% of the population) respectively, as factors which influence safety on the offshore rig—Aircraft Ditching; Equipment failure; Confined space entry

work; Working at heights; Safety Culture (the lack thereof). The Process itself (a High-risk area, by its very nature) was also cited by two participants (29% of the population) as a factor influencing offshore rig safety. With Environmental safety; Design of rig (Safety design); Transfer line failure; Vessel on a collision course (Ship approaching platform on a collision course); Risk of damage to subsea structures by trawler seabed fishing nets or other; including the Competency level & training of employees, each being cited by a single participant (14% of the population) too, as factors that influence safety on the offshore rig.

Of the factors mentioned above, it was found that Aircraft Ditching; Equipment failure; the Potential for human error; as well as, Risk of fire were all identified as the most predominant factor that influences safety on the offshore rig, each receiving mention by a single participant (14% of the population) respectively. However, behavioural safety/ Safety culture (People related) turned out to be the greatest of these, as it was cited by three participants (43% of the population) as the most predominant factor that influences safety on the offshore rig. Herewith, it illustrates that even with the establishment and means of exacting safety that is in place, be it Process Safety (Davatgar et al. 2021:1; and Horbah 2020:30-31) concerned with the rules and regulations which govern safe working conditions, or Structural Safety (Davatgar, Paltrinieri and Bubbico, 2021:1; Horbah 2020:30-31; and Ramzali, Lavasani and Ghodousi, 2015:50), which has to do with the integrity and safety of the equipment and machinery which is used to undertake said work, what is most valued and held as an essential building block of a safe working environment for these safety specialists, remains Personal/ Behavioural Safety (Horbah, 2020:80-81; and Hystad et al., 2014:43) and, how it relates to the safety culture as a whole (Opoku et al., 2020:26; and Horbah, 2020:79-80). In that, no matter what the organisational rules may dictate or how safe a particular piece of machinery, equipment or the environment in which it is used may be, the primary actor (employee) who engages in this environment with the knowledge of what is to be done and how, remains the individual, who therefore is bestowed with this immense responsibility and power, to not only act in their own best interests but, in that of their colleagues, co-workers and the organisation at large. With reference to the afore mentioned, Heinrich's Domino Theory comes to mind, in that although there is acknowledgement of the interdependent and, causal nature of the relationship which exists between the different elements (the Individual/ employee, their external social environment, the work environment in which they operate/ organisation made up of machinery & equipment) which together culminate in a safe working environment devoid of accidents and incidents. Can unfortunately only come about through the conscious actions and efforts of the individual "actor" employee, through the removal of the central factor (unsafe act/hazardous condition), therethrough negating the action of the preceding factors and, in so doing prevents accidents and injuries (Iqbal et al. 2021: 14-15; Awala and Hasegawab, 2017: 301; and DeCamp and Herskovitz, 2015).

To this end, it was discovered that there are several provisions in place that address the aforementioned prevailing factors which influence safety on the offshore rig. For example, maintenance, Preventative maintenance and proactive inspections by Safety Risk Engineer were identified by three participants (43% of the population) as one such provision, along with Risk Assessment; Process Safety; Survival & other training, which is a must for all employees on the platform; including Safety focused Infrastructure, in that the higher the 'Design Safety Integrity' level of a structure, the less confidence one needs in its operators, and they were all also cited by three participants (43% of the population) each, respectively. In addition, the following were also identified as provisions which are presently in place, that address said prevailing factors which influence safety on the offshore rig, Production Team: which ensure plant safety in emergencies; Maintenance Team: Fire fighters in case of emergencies; Services Team: Helicopter deck fire fighters and transport coordinators in emergency situations; Testing for gas & other; Competent Pilots; Safety measures & procedures for flights (training for night flights); Automatic Platform Shutdown initiation in astringent circumstances; Supervision/Job Observation; Permit to work: Prerequisite to execute/perform any work on the plant; Management proactively informing employees of the dangers of unhealthy safety habits through positive & conducive communication; Weekly Safety standby (& addresses); the Offshore Installation Manager (OIM) possessing the power and authority to make crucial decisions, as well as complete control of operations in times of emergency, followed by second in command the Deputy Installations Manager (DIM); as well as, Offshore Installation Managers (OIM's) requiring a license to operate the rig, & being compelled to renew it every 5 years, and each of the above was cited by two participants (29% of population), respectively. Herewith, the Behaviour Theory of Accident Causation begs mention, as is put forward by Iqbal et al. (2021: 16) in that it has found expression quite clearly in the organization under inquiry, through the dynamic, innovative and, practical applications of its principles and tenets by means of positive reinforcements in the form of incentives and, rewards to promote desired (safe) behaviours. All of the basic principles, as set out by Iqbal et al. (2021: 16), underlying the Behaviour Theory of Accident Causation were represented here in these findings. This from the employee focused behavioural intervention; to, the identification of external factors to help understand and, improve employee behaviour; to, incentive and, reward focused employee motivation; to, being positively oriented toward the outcomes of desired behaviours, as a means of fostering employee motivation; to, improving attempts at behavioural interventions by employing the scientific method; to, information integration through the use of theory rather than the limiting of possibilities, therethrough; as well as, planned interventions designed with the feelings and attitudes of the individual employee in mind (Iqbal et al., 2021: 16).

Finally, the remainder which were identified as provisions in place at present that address the prevailing factors that influence safety on the offshore rig, were all cited by a single participant (14% of population) each, and were as follows, Emergency drills on every crew change; In cases of poor visibility, there are no flights in or out; Helicopter deck assessment done by aviation company which issues certification; Quick access to accident information in order for prompt and appropriate response; Emergency onshore back- up team; Emergency Hospital standby; Emergency transportation standby; Deluge Sprinkler system in case of fire; the Offshore installation operates under semi-military hierarchy decision making structure because of it's a high risk status; More emphasis is put on design of plant to run without the need for human input; Firewalls have been improved on platform, it was a design upgrade; Protective clothing, safety equipment & other; Process Hazard Analysis (every 3 years); Annual auditing to declare rig safe to operate; Monthly Safety, Health & Environmental 'She' meetings; Medical checks a prerequisite on the platform; Waste management and, hygiene also important on platform; including the regulation and control of rig operations by Governing Bodies: SAMSA; 'Liberian Flag'; Department of Mineral Resources.

Conclusively, participants did quite well with the recommendations they provided relating to prospective safety provisions for possible future implementation to enhance rig safety. Consequently, the provision which was jointly recommended by the most significant number of participants four (57% of the population) as a safety provision that could be implemented in future in order to enhance rig safety was Safety Culture, suggesting that employees should embrace a safety culture, taking ownership and responsibility for how they carry out their duties. Safety training was a close second as it was identified by three participants (43% of the population) as a prospective safety provision too, ideal for future implementation to enhance rig safety. The recommendations of prospective safety provisions for future implementation directed at enhancing rig safety followed, namely, Strict adherence to procedures; Competent staff; Lessons learned from past and present accidents; making safety the status quo; Embracing the joint safety awareness program "Beka umakhelwane wakho" and, really keeping a look out for one another's safety; as well as, Employees adopting a safety mentality, were all cited by two participants (29% of the population) each, respectively.

The remaining recommendations of prospective safety provisions for future implementation directed at enhancing rig safety received only a single citing each by participants (14% of the population), and they were:

- Proper risk assessments as it is imperative!;
- Sound Aircrafts, Very Important;
- Improvement of incident investigations;
- Investigating near misses as one would an accident or incident;
- Improving behavioural safety (stop shortcuts, negligence & unsafe work acts);

- Employees should work safely & responsibly without supervision;
- Special education and training for contractors and service providers (non-permanent employees/staff), as they are not well versed with rules, regulations and safety procedures;
- A Continuous Safety Awareness Program;
- Safety two-minute checks before engaging in any work tasks;
- Employees, who have experienced workplace accidents, should be safety ambassadors and carriers of a safety-conscious work ethic for colleagues to learn from;
- how one deals with transgression is extremely important, as the aim is not to victimise employees but, instead, to foster a safety-conscious workforce.

Herewith, the conclusion that one can draw from these results is that even with the myriad of safety protocols, infrastructure and additional safety measures taken to ensure the safety of the workforce, their workspace, as well as the natural environment at large, particularly considering the high potential for environmental damage, given the respective industry and demarcation of the organisation under study, the most vital and by extension influential component it appears remains the personal and behavioural safety habits of employees. This is in that employees' personal and behavioural safety habits determine whether elements of process safety are indeed practised and employed as stipulated or whether the guidelines for the operation of machinery and equipment are adhered to and followed in the manner that they should. Of course, this does not say that accidents are always subject to negligence. However, it does lower the chances of said accidents occurring when the "human element" in safety is not one more addition to the risk of safety and the successful operation of an offshore oil platform.

That said, it is, however, as suggested by DeCamp and Herskovitz, (2015), with reference to the Combination Theory of Accident Causation, essential to acknowledge that it does indeed take all of the separate elements of safety, Design and Infrastructural Safety, Process Safety and Personal and behavioural safety to work in unison to create the best and most conducive space in order for the optimal and successful running of an offshore installation, whilst simultaneously ensuring the safety of its workforce and the environment at large, too. Nevertheless, the role of the individual (employee) as actor, proliferator and frankly administrator, of the safety (safety culture) within an organisation, in so much as it concerns its success or failure, can clearly be said to hold a little more weight than that of the Design/ Infrastructural and, Process Safety of an organisation, in as far as the results of this study have revealed.

This chapter presented the study's findings and data analysis and interpretation.

4.5 Summary and Conclusion

The chapter started with a restatement of the research objectives, followed by interview questions. The data presentation then ensued using the interview response rate, the participants' positions in the business, and their gender. The participants' answers followed the coding frame and discussion, wherein the data was analysed and interpreted. A brief extrapolation is then made in the discussion; however, the crux of the conclusion and recommendations are reserved for the ensuing chapter (chapter five). This chapter herewith closes with this summary and conclusion.

The conclusion and recommendations for this study are provided in Chapter Five.

CHAPTER 5
CONCLUSION AND RECOMMENDATIONS

5.1 Introduction

The preceding chapter presented and deliberated on the research findings, data analysis and interpretation. This study aimed to explore the factors influencing safety on an offshore rig on the South African coast. Accordingly, this chapter, through significant extrapolation, was able to conclude and thus offer practical recommendations to enhance said offshore rig safety in the designated location.

What follows is a restatement of the research objectives and their findings. Recommendations are then offered, along with suggestions for future research. Finally, the chapter closes with the conclusion.

5.2 Objectives and Findings

This study aimed to explore the factors influencing safety on an offshore rig on the South African coast. To this end, the following objectives were devised to address said aim.

5.2.1 Objective I

To determine the factors that influence offshore safety on the selected rig.

The findings reflected that, of the many elements identified as factors that influence offshore safety on the selected rig, elements belonging to each of the three, process safety, design (structural) safety and behavioural safety were identified, fire, risk of fire or explosion which can be allotted to a combination of both process and design/structural safety, was identified by the most significant number of participants, as one of the factors that influence offshore safety on the selected rig. However, behavioural safety was close, receiving the second most citings by participants as a factor influencing offshore safety on the selected rig.

5.2.2 Objective II

To determine the main factors that influence safety on the selected rig offshore.

The findings here reflected that behavioural safety was the most influential factor concerning safety on the selected offshore rig.

There was also mention of design or structural safety, but not in the numbers that behavioural safety received.

5.2.3 Objective III

To determine to what extent provisions have been made to address the main influencing factor if there are any.

The findings here reflected an earnest effort on the part of the organization to address said main influencing factor as there are innumerable process safety measures in place to help curb the influence of a lack of (or detrimental) behavioural safety practices. These serve as both guidelines to a safe and conducive work environment, but also crucially as mandatory rules of engagement, set in place to help ensure both the safety of the workforce, the infrastructure of the organization itself but, also importantly, that of the natural environment, because of the dangers an accident in this industry poses to it and, the habitat which it sustains.

Fortunately, process safety provisions are not the only ones in place to address behavioural or personal safety, which is considered the most significant factor influencing offshore rig safety. Another is design/ structural safety. Therefore, much effort is put into creating safety-focused infrastructure, as this puts fewer demands on the humans operating them pertaining to their safe use and the undertaking of work in said environments without incident or accidents. The understanding here is that the higher the 'Design Safety Integrity' level of a structure, the less confidence one needs in its operators.

Finally, there are provisions in place which address behavioural/ personal safety, which is themselves behavioural/ personal safety centred. These provisions seek to incite change by appealing to the personal capacity of all individual employees to assume responsibility for their actions, and in this case, that means creating and fostering a shared safety culture. The organization employs several channels of communication, and continuous training on the subject of safety, aimed at fostering a moral as well as behavioural/ personal internalization and ownership through the action of the safety rules and regulations which govern the performing of all work tasks and undertakings.

5.2.4 Objective IV

To determine whether any prospective safety provisions could be recommended for future implementation to enhance rig safety?

The findings here reflected a complete focus on behavioural/ personal safety, emphasizing that a better 'safety culture' and responsible workforce would go a long way in improving and ensuring a safe working environment. Much emphasis is placed on employees owning the safety rules and regulations and making it a habit in their everyday functioning. This is reiterated in that the common perception is that with a workforce who is vigilant and attentive in how they carry out their duties, there would be fewer incidents, and even if there were to be an incident, the likely hood of it happening again would be minimal because employees would have studied and learned from the incident/ accident.

A strong appeal was also made that employees refrain from engaging in unsafe work acts by using shortcuts and simply being negligent. It is believed that a healthy safety culture adopted by all employees of their own volition, not because they are mandated to, but because they

see sense in it for their health and safety, as well as that of their colleagues, is what will change the behaviour of employees and make them act more responsibly.

Finally, continuous training and safety awareness programs are also suggested as they are the drivers of the conversation around safety and the bridge towards making safety the status quo. It is also crucial how one deals with transgressions because the aim is to foster a safety-conscious workforce and not to victimize employees.

5.2.5 Closing remarks

Herewith, from the findings above, it is pretty clear that the study's objectives were successfully met, and the following conclusions could be construed from there. First, as regards the factors that influence offshore safety on the selected rig, it is clear that no matter the specific individual manifestation of a particular problem or impediment to safety in this environment, what is evident is that they all stem from one of three sources, design/ infrastructural safety, process safety, as well as behavioural/ personal safety, and more often than not, it is a combination of two or all of them. That said, in this instance, it was clear that design safety was of extreme importance, as it was most frequently identified as a factor that influences offshore safety on the selected rig. Fortunately, although many participants did not identify behavioural/ personal safety as a factor influencing offshore safety on the selected rig, concerning satisfying 'Objective I' of the study, it was still a very close second. As regards' Objective II', the findings above revealed that the greatest of all the factors influencing offshore safety on the selected rig was behavioural/ personal safety. This in that behavioural/ personal safety underpins the implementation and undertaking of all the safety protocols and rules of engagement concerning all work performed on the offshore rig. Therefore the brunt of responsibility inevitably starts and ends with the individual. Whether there are process safety measures in place, or infrastructure designed in such a way as to maximize safety and avoid incidents or accidents, the possibility for human error, behaviour/ personal safety, still exists and, therefore, will always demand the most significant attention and reinforcement, to ensure it is successfully achieved.

As concerns' Objective III', what could be drawn from the findings above was that there are indeed multiple provisions in place which seek to address the main influencing factor to safety on the offshore rig. As was identified, these provisions arise in various forms and manifestations, but they all stem from one of the three streams: safety, process safety, design/ infrastructural safety, and behavioural/ personal safety. It is safe to say that these provisions seem to work best together rather than mutually exclusive.

Finally, concerning Objective IV, what could be drawn from the findings was that the recommendations for prospective safety provisions for future implementation directed at enhancing rig safety were unanimously targeted at behavioural/ personal safety. Fundamentally, calling for the internalization of safety awareness and the adoption of a safety-

conscious mindset and attitude by all employees. This personal identification with and ownership of the organisation's safety culture would create a safer work environment and foster an open and transparent relationship between employees and the organization. Furthermore, this would allow them to take responsibility when incidents or accidents happen, instead of fearing persecution or victimization, because they will be able to learn from them instead and teach others, thereby not repeating them in future. This is the ultimate goal, creating a safety-conscious workforce.

5.3 Recommendations

The recommendations were derived from the findings, analysis, and closing remarks. These recommendations will shed light on the factors that influence safety on offshore rigs along the South African coast, providing offshore mining operations and individuals who operate in the region with valuable insights regarding progressive safety practices that reduce the risk of possible accidents—enabling them to be better positioned to respond to, those environmental and situational demands which they face daily.

The following recommendations were derived from the findings above.

5.3.1 Recommendation I

Fire, risk of fire, explosion, and equipment failure, together as a combination of both process and design/structural safety, were identified as the foremost factor identified as an impediment to offshore safety on the selected rig, with behavioural/ personal safety identified as the second.

What is recommended to address the former of the two factors identified is the continued focus on perfecting the design safety element of their facilities as it dramatically improves the level of safety and reduces the chances of incidents that are ordinarily prone to happen as a result of more behavioural/ personal safety input. Secondly, emphasis should also be put on the process safety element that ensures fires, risk of fires and explosions are avoided, and this, in particular, refers to preventative maintenance and proactive inspection of the facility and the equipment regularly. In addition, there needs to be strict adherence to procedures, proper risk assessment, testing (for gas and other), and continuous training at regular intervals for all employees to ensure they remain competent and able to meet the demands of a possible incident or accident. Finally, behavioural/ personal safety should also be reinforced, although it is already implemented quite effectively. Initiatives such as the 'beka umakhelwane wakho' safety awareness program can be embraced more by employees, motivating them to look out more for one another's safety and simultaneously encouraging them to take more ownership and responsibility for how they carry themselves and carry out their duties.

5.3.2 Recommendation II

Behavioural and personal safety was identified as the main factor influencing safety on the selected rig.

It is recommended that the design/ infrastructural safety and process safety measures be maintained and improved where possible because they go a long way in supporting the behavioural/ personal safety element. Also though, the behavioural/ personal safety measures rely on the employees' involvement and application of them in order for them to be successful, so there needs to be an attempt by management to motivate employees to engage and internalize the safety protocols, thereby creating a safety culture which endures and, no longer relies on the supervision to ensure the application of safety practices in the performing of duties.

5.3.3 Recommendation III

A significant number of provisions address the main factor influencing offshore safety on the selected rig, which considers the suggestion found in recommendation II.

One could briefly add and recommend that with all the efforts made to improve employees' acceptance of the safety culture and make it their own through constant communications about safety, regular training as well as all the procedural mandates on the safe operation using process safety regulations, that it is essential to marry the two, together with the design and infrastructural safety course. This is because they all work best together and not necessarily when performed or, at least, attempted individually without the necessary collaboration and support, which is essential for their success.

5.3.4 Recommendation IV

Finally, regarding the safety provisions recommended for future implementation, directed at enhancing rig safety, recommendations toward this end have been sufficiently expressed and exhausted in all of the preceding recommendations. Both recommendations II and III give good suggestions to satisfy the findings of 'Objective IV', which recommended safety provisions for future implementation, directed at enhancing rig safety, concerned with behavioural and personal safety.

Nevertheless, to reiterate, what is recommended is the maintenance of the already robust and effective safety infrastructure (design safety), practices and guidelines (process safety), as well as conduct (Behavioural/ personal safety) which are already in place and then to improve where necessary and possible. Furthermore, more significant efforts should be made to encourage employees to have more safety awareness and, to that end, embrace a safety culture which will always keep them conscious of the importance of safety for their well-being, but also for that of their colleagues, and the environment in which they operate. This ownership of a safety culture and the assumption of responsibility by each individual will not only create

a safety-conscious workforce which is the ultimate goal but will allow for easy collaboration of the three safety 'streams', the behavioural/ personal element, the design/ infrastructural element, and the process and procedural safety elements. This is important because, as much as the behavioural element may at times be allotted a more significant stake in terms of influence, in the end, it takes all three working together to make a success of it.

5.4 Recommendations for Further Research

Further research around this subject will improve the state of offshore mining operations on the South African coast regarding safety through the acquisition of greater knowledge and skills, which could even allow for its implementation elsewhere globally, where applicable, and beneficial.

- Henceforth, this study focused solely on exploring the factors influencing safety on an offshore rig on the South African coast. Future studies could focus on exploring the factors that influence safety on offshore rigs elsewhere.
- Since this study's focus was only to explore what the factors that influence safety on a single offshore rig on the South African coast, future studies could focus on exploring the factors that influence offshore safety on several offshore rigs and thereby obtain much richer and wholistic data of the subject under inquiry, also allowing for a comparative study.
- Furthermore, since this study's focus was only to explore the factors that influence safety on an offshore rig on the South African coast, future studies could focus on exploring the factors that influence safety on a rig inland in South Africa or elsewhere.
- Finally, although this study population group was limited to the safety department personnel and select top management of the organization under inquiry, future studies could have a much larger pool of participants not limited only to the safety department personnel and select top management but other members of the general employee population of the organization too, for a more holistic view of the phenomenon under inquiry.

5.5 Conclusion

As was alluded to in the problem statement by Derdowski and Mathisen (2023: 1); Zhang, et al. (2020: 79); and Amponsah-Tawiah et al. (2016:12-13); due to a lack of safety, occupational accidents have had and continue to exact high costs in mining, both socially and economically, and that therefore as is asserted by Enshaei, et al. (2021:11); and Zhang, et al. (2020: 79); in order to overcome occupational health and safety challenges on offshore platforms, as well as to better control the factors influencing them, that safety and security objectives need to be clearly defined and communicated to employees, risk data updated and analysed continuously,

and risks identified so corrective actions can be taken and evaluated to calculate their level of success.

This study aimed to explore the factors influencing safety on an offshore rig on the South African coast. Furthermore, the qualitative research methodology was employed herein for data collection, analysis and interpretation. What was found by the study is that there are an array of factors that influence safety on an offshore rig on the South African coast; however, the factor considered to be the greatest among them is behavioural/ personal safety or rather the lack thereof. Nevertheless, there are provisions in place that address this and other factors considered influential to safety on an offshore rig on the South African coast, such as design/ infrastructural safety and process safety factors. However, even the recommendations provided by participants for possible future implementations directed at enhancing rig safety all emphasised that the greatest need for improvement rested with behavioural/ personal safety. Conclusively, several recommendations were thus made, stemming from the findings of this study.

REFERENCES

Abaei, M. M., Abbassi, R., Arzaghi, E., Garaniya, V. and Toroody, A. B. 2019. A dynamic human reliability model for marine and offshore operations in harsh environments. Ocean Engineering, 173: 90-97

Adumene, S. and Ikue-John, H. 2022. Offshore systems' safety and operational

challenges in harsh Arctic operations. Journal of Safety Science and Resilience, doi:

https://doi.org/10.1016/j.jnlssr.2022.02.001 [7 February 2022].

Amin, M. E. K., Nørgaard, L. S., Cavaco, A. M., Witry, M. J., Hillman, L., Cernasev, A., Desselle, S. P. 2020. Establishing trustworthiness and authenticity in qualitative pharmacy research. Research in Social and Administrative Pharmacy, 16 (10): 1472–1482

Amponsah-Tawiah, K., Ntow,M.A.O. and Mensah, J. 2016. Occupational Health and Safety Management and Turnover Intention in the Ghanaian Mining Sector. Safety and Health at Work, 7: 12-17

Awala, Z. I. and Hasegawab, K. 2017. A Study on Accident Theories and Application to Maritime Accidents. Procedia Engineering, 194: 298 – 306

Baghlaf, K. 2023. Necessity and relevance of qualitative research in

pediatric dentistry. A literature review. Saudi Dental Journal, 35: 31-38

Bazen, A., Barg, F. K. and Takeshita, J. 2021. Research Techniques Made Simple: An

Introduction to Qualitative Research. Journal of Investigative Dermatology, 141: 241 – 247

Bleiker, J., Knapp, K., Morgan-Trimmer, S. and Hopkins, S. 2019. Navigating the maze: Qualitative research methodologies and their philosophical foundations. Radiography, 25: 4 – 8

Bosak, J., Coetsee, W.J. and Cullinane, S.J. 2013. Safety climate dimensions as predictors for risk behaviour. Accident Analysis and Prevention, 55: 256– 264

Cope, D.G. 2014. Methods and Meanings: Credibility and Trustworthiness of Qualitative Research. Oncology Nursing Forum, 41 (1): 89-91

Cruz, A.M. and Krausmann, E. 2008. Damage to offshore oil and gas facilities following hurricanes Katrina and Rita: An overview. Journal of Loss Prevention in the Process Industries. 21: 620–626

Dahl, Ø. 2013. Safety compliance in a highly regulated environment: A case study of workers' knowledge of rules and procedures within the petroleum industry. Safety Science, 60: 185–195

Dahl, Ø. and Kongsvik, T. 2018. Safety climate and mindful safety practices in the oil and gas industry. Journal of Safety Research, 64: 29-36

Davatgar, B.H., Paltrinieri, N. and Bubbico, R. 2021. Safety Barrier Management: Risk-Based Approach for the Oil and Gas Sector. Journal of Marine Science and Engineering, 722(9):1-21. https://doi.org/10.3390/jmse9070722

DeCamp, W. and Herskovitz, K. 2015. The Theories of Accident Causation. 10.1016/B978-0-12-800113-4.00005-5.

De Cieri, H., Pettit, T., Shea, T. and Vu, T. 2021. How is safety climate measured? A review and evaluation. Safety Science, 143: 105-413

Delgado-Hito, P. and Romero-García, M. 2021. Elaboration of a research project using qualitative methodology. Enfermería Intensiva, 32: 164-169

Derdowski, A. L. and Mathisen, G. E. 2023. Psychosocial factors and safety in high-risk industries: A systematic literature review. Safety Science, 157: 1–19

Elo, S., Kääriäinen, M., Kanste, O., Pölkki, T., Utriainen, K., and Kyngäs, H. 2014. Qualitative Content Analysis: A Focus on Trustworthiness. SAGE Open, 1–10, DOI: 10.1177/2158244014522633

Enshaei, H., Fan, H. and Gamini Jayasinghe, S. 2021. Safety philosophy and risk analysis methodology for LNG bunkering simultaneous operations (SIMOPs): A literature review. Safety Science, 136:1-19

Geng, F. and Saleh, J.H. 2015. Challenging the emerging narrative: Critical examination of coalmining safety in China, and recommendations for tackling mining hazards. Safety Science, 75: 36–48

Graneheim, U.H. and Lundman, B. 2004. Qualitative content analysis in nursing research: concepts, procedures and measures to achieve trustworthiness. Nurse Education Today, 24: 105–112

Griffin, M.A., Hodkiewicz, M,R., Dunster, J., Kanse, L., Parkes, K.R., Finnerty, D., Cordery, J.L. and Unsworth, K.L. 2014. A conceptual framework and practical guide for assessing fitness-to-operate in the offshore oil and gas industry. Accident Analysis and Prevention, 68: 156-171

Gressgård, L.J. 2014. Knowledge management and safety compliance in a high-risk distributed organizational system. Safety and Health at Work, 5: 53-59

Henning, E., Van Rensburg, W. and Smit, B. 2004. Finding your way in qualitative research. Pretoria: Van Schaik Publishers.

Ho, P. 2023. Do safety cases demonstrate risks have been reduced so far as is reasonably practicable? an Australian study examining the methods of presenting safety cases. Safety Science. 159: 106042

Hofmann, D. A., Burke, M. J., & Zohar, D. 2017. 100 Years of Occupational Safety Research: From Basic Protections and Work Analysis to a Multilevel View of Workplace Safety and Risk. *Journal of Applied Psychology*. Advance online publication. http://dx.doi.org/10.1037/apl0000114

Horbah, F. 2020. Developing a Framework for Robust Safety Management in Ghana's Upstream Oil and Gas Industry. Unpublished PhD thesis, University of Salford, United Kingdom.

Hystad, S.W., Bartone, P.T. & Eid, J. 2014. Positive organizational behavior and safety in the offshore oil industry: Exploring the determinants of positive safety climate. The Journal of Positive Psychology, 9:1, 42-53, DOI: 10.1080/17439760.2013.831467

Iqbal, M.I., Alrajawy, I., Isaac, O. and Ameen, A. 2021.Study the Impact of Safety Awareness Program (SAP) as Moderating Variable for Reduction of Accidents in Oil and Gas Industry: A Proposed Framework. International Journal of Management and Human Science, 5 (1): 10-20

Johansen, I. L. and Rausand, M. 2015. Barrier management in the offshore oil and gas industry. Journal of Loss Prevention in the Process Industries, 34: 49-55

Kankam, P. K. 2019. The use of paradigms in information research. Library & Information Science Research, 41 (2): 85-92

Krausmann, E., Necci, A., Ponte, L., Tarantola, S., and Vamanu, B. 2019. Lessons learned from offshore oil and gas incidents in the Arctic and other ice-prone seas. Ocean Engineering, 185: 12-26

Mathisen, G. E., Tjora, T. and Bergh, L. I. V. 2022. Speaking up about safety concerns in high-risk industries: Correlates of safety voice in the offshore oil rig sector. Safety Science, 145: 1 – 11

Morrow, S.L. 2005. Quality and Trustworthiness in Qualitative Research in Counseling Psychology. Journal of Counseling Psychology, 52:2, 250–260, DOI: 10.1037/0022-0167.52.2.250

Muehlenbachs, L., Cohen, M.A. and Gerarden, T. 2013. The impact of water depth on safety and environmental performance in offshore oil and gas production. Energy Policy, 55: 699–705

Ojuola, J. 2020. Safety Leadership in the Oil and Gas Industry: The Mediating Role of Complexity Science Principles. Unpublished PhD thesis, Griffith University, Queensland.

Opoku, F. K., Kosi, I. and Degraft-Arthur, D. 2020. Enhancing Workplace Safety Culture in the Mining Industry in Ghana. Ghana Journal of Development Studies, 17(2):23–48, October.

Ramzali, N., Lavasani, M.R.M. and Ghodousi, J. 2015. Safety barriers analysis of offshore drilling system by employing Fuzzy Event Tree Analysis. Safety Science, 78: 49–59

Saedia, A. M., Majida, A. Ab. and Isab, Z. 2020. Relationships between safety climate and safety participation in the petroleum industry: A structural equation modeling approach. Safety Science, 121:240-248

Santos-Reyes, J. and Beard, A.N. 2008. A systemic approach to managing safety. Journal of Loss Prevention in the Process Industries, 21:15–28

Shenton, A.K. 2004. Strategies for ensuring trustworthiness in qualitative research projects. Education for Information, 22: 63–75

Silverman, D. 2009. Interpreting Qualitative Data. 3rd edition. London: Sage Publications.

Silverman, D. 2011. Interpreting Qualitative Data: A Guide to the Principles of Qualitative Research. 4th edition. London: Sage Publications.

Stacey, A. and Sharp, J.V. 2007. Safety factor requirements for the offshore industry. Engineering Failure Analysis, 14: 442-458

Van Nunen, K., Li, J., Ponnet, K. and Reniers, G. 2018. Bibliometric analysis of safety culture research. Safety Science, 108: 248-258

Vespestad, M. K. and Clancy, A. 2021. Exploring the use of content analysis methodology in consumer research. Journal of Retailing and Consumer Services, 59: 102427

Wachter, J.K. and Yorio P.L. 2014. A system of safety management practices and worker engagement for reducing and preventing accidents: An empirical and theoretical investigation. Accident Analysis and Prevention, 68: 117–130

Wold, T. and Laumann, K. 2015. Safety Management Systems as communication in an oil and gas producing company. Safety Science, 72: 23–30

Zhang, J., Fu, J., Hao, H., Fu, G., Nie, F. and Zhang, W. 2020. Root causes of coal mine accidents: Characteristics of safety culture deficiencies based on accident statistics. Process Safety and Environmental Protection, 136: 78 – 91

APPENDICES

APPENDIX A: CPUT ETHICS APPROVAL CERTIFICATE

Cape Peninsula University of Technology

P.O. Box 1906 • Bellville 7535 South Africa •Tel: +27 21 4603534 • Email: majamanin@cput.ac.za
Symphony Road Bellville 7535

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

At a meeting of the Research Ethics Committee on 02 November 2017**, Ethics Approval was granted to** Zwelibanzi Jantjies (216288789) **for research activities Related to the MTech/DTech**: Mtech Business Administration **at the Cape Peninsula University of Technology**

Title of dissertation/thesis/project:	FACTORS INFLUENCING OFFSHORE SAFETY OF A SELECTED OIL RIG ALONG THE SOUTH AFRICAN COAST Lead Researcher/Supervisor: Dr M Twum - Darko

Comments:

Decision: APPROVED

	**02 November 2017**
Signed: Chairperson: Research Ethics Committee	**Date**

Clearance Certificate No | 2017FBREC472

APPENDIX B: CPUT HDC 1.2 APPROVAL CERTIFICATE

Cape Peninsula University of Technology

January 2013

PAGE 3 OF HDC 1.2: REVIEW FORM

Student's surname	Ngculu	**Student no.**	216288789
First names	Zwelibanzi Virgil Neil		
Confirmed title of dissertation/ thesis: Factors influencing offshore safety of a selected rig along the South African coast			
Indicate whether a 50% dissertation or 100% thesis:		**50% dissertation**	**100% thesis**

Faculty approval:

Review Panel*	**Qualifications**
Mr Jay Barnes	MTech: Information Technology
Dr Stanford Cronje	DTech: Public Administration

Recommendations	APPROVED		
Signed (Panel Chair)		**Date**	23 JANUARY 2019

**The Panel reviews the merit and viability of the research project proposed and so must be comprised of experts in the field to be researched, and at least one member of the FRC.*

Date on which proposal was presented in the Faculty:	2 November 2017
Date of FRC Minutes in which recorded:	7 February 2019

Signed .....**Date** January 23, 2019

(Chair: Faculty Research Committee)

1

APPENDIX C: LETTER OF CONSENT

PetroSA

The Petroleum
Oil and Gas Corporation
of South Africa (SOC) Ltd
Reg. No. 1970/008130/07

151 Frans Conradie Drive
Parow
7500
Private Bag X5
Parow 7499

Tel: +27 (0)21 929 3000
Fax: +27 (0)21 929 3144

Date: 05 July 2017

I **Michael Nene**, in my capacity as **Acting Vice President for Operations Division** at **PetroSA**, give consent in principle to allow **Zwelibanzi Jantjies**, a student at the Cape Peninsula University of Technology (CPUT), to collect data in PetroSA as part of his Master of Technology research. The student has explained to me the nature of his research and the nature of the data to be collected.

This consent in no way commits any individual staff member to participate in the research, and it is expected that the student will get explicit consent from any participants. I reserve the right to withdraw this permission at some future time.

In addition, PetroSA may or may not be used as indicated below. (Tick as appropriate).

	Thesis	Conference paper	Journal article	Research poster
Yes				✓
No	✓	✓	✓	

Michael Nene

01/08/17
Date

APPENDIX D: INTERVIEW COVER LETTER

Cape Peninsula University of Technology

GRADUATE CENTRE FOR MANAGEMENT
Faculty of Business and Management Sciences

To whom it may concern

Re: Introductory letter for the collection of research data

Zwelibanzi Jantjies is registered for the MTech: Business Administration degree at CPUT with student number **216288789.** The thesis is titled **"Factors influencing offshore safety of a selected rig along the South African coast."**, and aims to explore what the factors are that influence safety on an offshore rig on the South African coast. The main supervisor for this research is Dr Michael Twum-Darko.

In order to meet the requirements of the University's Higher Degrees Committee (HDC) the student must get consent to collect data from organizations which they have identified as potential sources of data. In this case the student will issue a questionnaire to gather relevant data.

If you agree to this, you are requested to complete the attached form (an electronic version will be made available to you if you so desire) and print it on your organisation's letterhead.

For further clarification on this matter please contact either the supervisor(s) identified above, or the Departmental Research Committee Secretary at 021 460 3833.

Regards

Dr. Michael Twum-Darko

Postgraduate Studies and Research
Graduate Centre for Management
Faculty of Business and Management Sciences

Date: 10 May 2017

APPENDIX E: INTERVIEW QUESTIONS

Graduate Centre for Management

Faculty of Business and Management Sciences

Dissertation; Course M Tech – Business Administration

Factors influencing safety on a Petro SA offshore rig

Dear participant

You are invited to participate in a research study titled "Factors influencing offshore safety of a selected rig along the South African coast". This study is being conducted by Mr Zwelibanzi Ngculu, a Masters student at the Cape Peninsula University of Technology (CPUT). The purpose of this study is to explore what the factors are that influence safety, on an offshore rig on the South African coast.

Because you are an employee within the Safety Department on the rig, your opinions are very valuable for this study. Your participation in this study is voluntary and you are free to withdraw your participation at any time without obligation. The interview should take at most Thirty minutes. This study has been approved by the Research Ethics Committee within the Cape Peninsula University of Technology. There are no risks associated with participating in this study. This study will also be of an anonymous nature, guaranteeing the privacy, confidentiality and anonymity of all participants. While you will not receive any compensation for participating, the information collected in this

study may benefit the organization, along with the offshore mining industry at large as well as other offshore ventures, through the provision of new knowledge on the subject, together with possible solutions.

I hope you will take a few minutes to answer these questions. Without the help of someone like you, research on how to improve rig safety offshore cannot be conducted. By signing this document, you are indicating your consent to participate in the study. Your participation is appreciated. Thank you for taking time to assist me in my educational endeavours.

Respondent Profile	
Name	
Surname	
Position in Organization	
Signature	

Interviewer Profile	
Name	
Surname	
Signature	

Interview Questions	
Question 1.	What are the factors that influence {impede upon} safety on this rig?
Response:	
Question 2.	Of these, which is the most predominant factor?
Response:	
Question 3.	Is/ are there any provision ('s) in place at present that address 'said' prevailing factor?
Response:	
Question 4.	Is/ are there any prospective safety provisions, you could recommend for future implementation directed at enhancing rig safety?

Response:	

If you would you like feedback of this study, you may E

mail and request feedback from the researcher's supervisor:

ENOWS@cput.ac.za

APPENDIX F: LETTER FROM GRAMMARIAN

PROFESSIONAL EDITING SERVICES
Stand out for the Write reasons

Gerald T du Preez
PhD

22 Clivia Avenue
Brantwood, Kuils River, 7580
+27 (21) 903-3145 | +27 (83) 325 1842
geralddu9@gmail.com

Certificate of Editing

This serves to confirm that copy-editing and proofreading services were rendered to

for a master's thesis entitled

FACTORS INFLUENCING OFFSHORE SAFETY OF A SELECTED OIL RIG ALONG THE SOUTH AFRICAN COAST

by

ZWELIBANZI VIRGIL NEIL NGCULU

with the initial word count of 27 455 and final word count of 26 072 on 3 July 2022

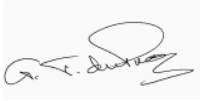
I am a member of the Professional Editors' Guild (member number DUP015) and commit to the following codes of practice (among others):

- *I have completed the work independently and did not sub-contract it out*
- *I kept to the agreed deadlines and/or communicated changes within reasonable time frames*
- *I treated all work as confidential and maintained objectivity in editing*
- *I did not accept work that could be considered unlawful, dishonest or contrary to public interest*

I uphold the following editing standards:

- *proofreading for mechanical errors such as spelling, punctuation, grammar*
- *copy-editing that includes commenting on, but not correcting, structure, organisation and logical flow of content, formatting (headings, page numbers, table of contents, etc.), eliminating unnecessary repetition*
- *checking citation style is correct, punctuating as needed and flagging missing or incorrect references*
- *commenting on suspected plagiarism and missing sources*
- *returning the document with track changes for the author to accept*

I confirm that I have met the above standards of editing and professional ethical practice. The content of the work edited remains that of the student. *Disclaimer: The correlation and synchronizing of the intext citations with the references is the responsibility of the student. The editor does not accept responsibility for any discrepancies in this area.*



Gerald T du Preez, PhD

Membership: Southern African Freelancers' Association and Professional Editors' Guild (Membership #DUP015)