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An investigation of factors influencing leadership style and safety culture development within a sugar mill in South Africa

by

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ABSTRACT

The study explored factors that influence leadership styles in the development of a safety culture within a South African sugar mill. An examination of the relationship between leadership approaches and safety practices was conducted, together with an exploration into the impact of different leadership styles on employee safety behaviour and overall sugar mill safety culture. There have been several interventions aimed at mitigating safety risks, but there is a lack of understanding regarding the correlation between leadership styles and their effectiveness in fostering a robust safety culture. Transformational and transactional leadership theories underpinned the study and the effects of reducing safety incidents were evaluated. The study's primary objectives were the following; to identify the predominant leadership styles used by leaders in driving a safety culture within the sugar mill, to investigate the factors that influence leadership in driving a safety culture within the sugar mill, analyse the main challenges faced by leaders in fostering and maintaining a safety culture in the sugar mill, to provide strategies for improving leadership styles to enhance the development of a safety culture within the sugar mill. A qualitative research approach was employed, using semi-structured interviews with sixteen key stakeholders, which included first line leaders, middle leaders and senior leaders within the sugar mill. Additionally, secondary data thematic analysis from reputable journals, books and industry reports was utilised to identify patterns and build themes related to leadership styles and safety outcomes. The findings of the study revealed key factors such as communication, employee engagement, training and commitment to continuous improvement as influencing the leadership style and safety culture development. The study's conclusions provide insights into how leadership styles influence safety culture in the sugar mill industry. The study also covered the importance of transformational leadership in inspiring and encouraging workers to put safety measures in place first and highlighted successes of transactional leadership in ensuring the safety procedures are followed. The research offers useful recommendations for the appropriate enhancement of leadership practices in the sugar mill industry by identifying the critical elements that influence leadership styles and their effect on safety within the sugar mill industry.

Keywords: leadership style, safety culture, transactional leadership, transformational leadership

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LIST OF ACRONYMS

BBS	Behavioural Based Safety
IOD	Injury-on-Duty
LMX	Leader Member Exchange
LSB	Leadership Safety Behaviour
OCB	Organisational Citizenship Behaviour
OHSA	Occupational Health and Safety Act
PO	Participant Observation
PRISMA	Preferred Reporting Items For Systematic Reviews
PsyCap	Psychological Capital
SCB	Safety Compliance Behaviour
SHE	Safety, Health and Environmental
SL	Safety Leadership
SLR	Systematic Literature Review
SME	Small and Medium Enterprise
SP	Safety Participation
SPSS	Statistical Package for Social Sciences
SSTFL	Safety Specific Transformational Leadership
STAL	Safety-Specific Transactional Leadership
STFT	Safety-Specific Transformational Leadership
WSB	Workers' Safety Behaviours

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Chapter 1: Introduction

1.1. Introduction

Organisations must strive to provide a safe workplace in the ever-changing work environment. This is especially applicable in South Africa, where all organisations are required by the Occupational Health and Safety Act (85 of 1993) to ensure a risk-free, harmless and non-threatening workplace for all employees. Not only does a safety incident affect the injured worker, but it also affects the productivity of the organisation. In South Africa, the Occupational Health and Safety Act (OHSA) No. 85 of 1993 provides an essential basis for the safety and protection of an employee. However, challenges still exist in several organisations, including the sugar mills, notably in compliance and enforcement. For example, sugarcane workers in KwaZulu-Natal face severe occupational risks such as respiratory issues, musculoskeletal problems and heat-related disorders, illustrating the dangers prevalent in agriculture and manufacturing industries (Boonruksa, Maturachon, Kongtip and Woskie, 2020). These difficulties are like those faced by the mining and industrial sectors, where workers are still subjected to risks, including physical harm and hearing loss from noise exposure, even in the face of laws (Rikhotso, Morodi and Masekameni, 2022).

Moreover, the effectiveness of OHSA is undermined by inadequate surveillance and inconsistent reporting of occupational diseases, which are essential to assessing workplace safety measures. This problem is not limited to one industry, as research shows that these systemic issues also hinder the sugar industry's ability to fully protect its workers (Pillay and Manning, 2020). Further, a partial representation of workplace risks is created by inadequate reporting systems and macro environmental factors, which makes the underreporting of illnesses and injuries received at work a significant issue, particularly for low-income workers (Mudenha, Naicker and Singh, 2022). A more robust national occupational disease surveillance system is required to address these problems and ensure better health outcomes in the mining, manufacturing and sugar milling sectors.

Mutegi, Joshua and Kinyua (2023) deduced that employee productivity may be hampered by inadequate workplace safety. Leadership is a crucial and vital component that is important in reducing safety incidents in organisations (Mutegi, Joshua and Kinyua, 2023). Safety leadership practices such as clear safety communication, consistent safety training and a strong leadership

commitment to safety positively correlate with better safety performance, boosting overall employee productivity (Saleem and Malik, 2022). Leadership that fosters a safety-conscious environment reduces workplace accidents and promotes psychological safety, enhancing employee performance and engagement (Petrov, Oprea and Opariuc-Dan, 2023). As demonstrated in various industries, when leaders prioritise safety, employees are more likely to follow safety procedures, thus preventing incidents that could disrupt productivity and negatively impact business outcomes (Khairy, Liu, Sheikhelsouk, EI-Sherbeeny, Alsetoohy and Al-Romeedy, 2023).

Leadership and workplace safety are strongly associated, and this relationship is interesting and significant, because it effects the aversion of accidents and the advancement of a safe working environment. The relationship is more than about formulating safety rules and adhering to regulatory requirements (Negoro Eliyana, Anggraini and Khairunnisa, 2022). It also includes establishing and maintaining a safety culture within the work environment where employees know they are responsible for their health and safety and that of their co-workers (Negoro et al., 2022). Negoro et al. (2022) concluded that leaders are accountable for ensuring that followers can reach their personal and organisational safety objectives.

According to Molnar Schwarz, Hellgren, Hasson and Tafvelin (2019), there is sufficient proof to conclude that workplace safety is influenced by leadership. However, little is known regarding the importance of various leadership styles for safety. Drawing on the existing gap in research, this study seeks to investigate the factors influencing leadership styles in developing a safety culture within a South African sugar mill. Ultimately, the study identifies critical determinants that shape leadership approaches and their influence on fostering a robust safety culture within the organisation. The chapter comprises the background of the study, it then explains in detail the research problem, followed by the research aim. Research questions and research objectives are then described and eventually the significance of the study.

1.2. Background of the study

Developing a robust safety culture is a critical concern in industries worldwide. Leadership is pivotal in cultivating and sustaining this culture, with transformational leadership being particularly influential (Fischer, 2023). Bao and Jolly (2024) stressed that transformational leadership significantly engages employees by enhancing their emotional energy. This energy in

turn is useful in promoting a safety-conscious environment and as result in places such as Indonesia particularly in the electric power sector; Afrianda, Zainal and Siswanti (2023) expressed the strategic importance of organisational performance. They emphasised that leadership's role in safety culture is paramount, highlighting transformational leadership as key for a safety culture environment which enhances organisational performance. Similarly, Lal (2022) placed emphasis on the necessity of fast-tracking safety culture in various industries to prevent incidents and losses.

Leadership effectiveness in developing a safety culture has been studied across different sectors and regions. Njoki, O.K'obonyo, Muindi and Rucha (2023) explored the facilitating role of human resource management systems in the relationship between transformational leadership and competitive advantage in Kenyan manufacturing firms. The study further explored the broader applicability of these leadership principles. Likewise, Gloria, Michael and Joyce (2023) explored the transformational leadership competencies among editors-in-chief in Jordan and the results of their examination offered valuable insights into leadership's impact on organisational culture and safety.

Within the African context, safety culture development in industries such as construction and manufacturing has garnered significant attention. To illustrate the focus on the construction industry, Skeepers and Mbohwa (2015) examined the relationship between safety practices and leadership behaviour in South Africa's construction industry, revealing a strong relationship between establishing a safety culture and leadership. Gracia et al. (2020) further examined this correlation, revealing the vital role that leadership plays in encouraging a safety mindset and performance in businesses.

Leadership promotes and influences workplace safety, further reducing the occurrence of incidents that lead to poor performance (Ta, Kim and Gausdal, 2022). As Sadiq (2020) noted, leadership that is effective significantly improves the safety performance of the organisation, empowering employees, developing comprehensive health, safety and environmental management systems while nurturing a corporate culture that prioritises safety. Leaders who have open communication that allows for open engagement with their teams establish a workplace atmosphere where everyone on the team has responsibility for safety (Zhao, Yng, Liu and Nkrumah, 2022).

Formal and informal leadership both contribute towards the development of a rich safety culture. While formal leaders establish policies and procedures, informal leaders influence attitudes and behaviours through continuous interactions with employees. The informal leadership concept was discussed by Wu, Yao, Ning and Wang (2021) is vital in reinforcing safety practices in the workplace. Wu et al. (2021) additionally found that frontline workers within high-risk industries generally practice informal leadership through cognitive and social interaction, which increases certain kinds of voluntary safety acts that contribute to a safer workplace environment. Similarly, Mieroop, Clifton and Verhelst (2020) emphasised the success of informal leadership as dependent on the support of formal leadership. This shows the complex interplay between different leadership roles in the promotion of a hazard and risk-free workplace (Wu et al., 2021; Mieroop et al., 2020).

Furthermore, Syaiful and Dwiyanti (2022) pointed out that various leadership styles can change and share the safety climate and worker behaviours in an organisation. Ta, Kim and Gausdal (2022) highlighted that leadership styles such as transformational, transactional, ethical and charismatic leadership directly influence compliance, participation and safety climate in high-risk industries. The styles aligned with the safety goals of high-risk industries lead the workers to conform with safety standards and actively participate with a safety mindset (Ta et al., 2022; Syaiful and Dwiyanti, 2022). To establish safety procedures, guarantee compliance and reduce risks, leadership in high-risk industries is very important (Ta et al., 2022). According to Ta, Kim and Gausdal (2022), creating a strong safety climate in which adherence to safety procedures becomes the rule rather than the exception, requires strong leadership. To guarantee high levels of engagement, leaders in high-risk businesses must both engage staff in safety activities and provide clear safety objectives (Shi and Zainal, 2021).

In support, as Hasanspahić et al. (2021) pointed out, insufficient leadership in industries such as shipping can lead to devastating outcomes, including accidents that result in fatalities, environmental degradation, and huge financial losses. The results of this investigation emphasize the necessity of having competent leadership that is especially focused on controlling safety hazards in intricate and dangerous settings. Habib (2023) also examined the idea of safety citizenship behaviour, pointing out that safety leadership can enhance employees' voluntary safety behaviours. But there is also a chance of citizenship fatigue, in which employees are too

stressed out trying to uphold strict safety regulations all the time (Habib, 2023). The notion emphasizes the necessity for sensible leadership that promotes safety without becoming overbearing to staff members.

Fischer (2023) identified safety-specific transformational leadership (SSTFL) as a particularly effective leadership style in high-risk industries. SSTFL has been demonstrated to positively improve the safety climate and outcomes by promoting a sense of collective accountability for safety and encouraging workers to put safety first when embarking on their daily work activities (Fischer, 2023). Finally, Mendes-Silva, Facchini and Hosenen (2023) stressed that effective safety leadership is vital in managing risks and reducing the likelihood of process safety incidents, particularly in complex industrial settings such as manufacturing sites.

The sugar mill industry in South Africa, like many others in the region, faces unique challenges in implementing effective safety culture practices. To identify some of the challenges, Dlamini et al. (2020) explored the leadership effectiveness within the sugar mill industry. The findings showed the relevance of leadership in driving safety culture and performance and revealed a close link between leadership and communication. Communication in high-risk industries is essential and needs to be effective as it is one of the most important aspects of ensuring safety and mitigation of workplace risks (Nordin, Rizal, Rashid, Omar and Priyadi, 2021). Zara, Nordin and Isha (2023) found that safety commitment is highly influenced by clear safety communication, a positive communication atmosphere and communication satisfaction, particularly in high-risk industries. In industries where hazardous environments prevail, workers face daily challenges and exposure to hazardous conditions; therefore, there is a need for clear communication regarding safety protocols and emergency procedures (Nordin et al., 2023; Zara et al., 2023).

Song and Awolusi (2020) suggested that incorporating safety in all work processes in industries with high-risk activities promotes improvement on injuries, illnesses and fatalities. Having an organisation which have embedded safety into the organisational flow creates a culture where the workers take safety as an integral and key part of the running of the organisation (Naji, Isha, Alazzani, Saleem and Alzoraiki, 2022). Organisations should refrain from treating workplace safety separately or secondary to the organisational workflow (Masuin, Latief and Zagloel, 2020). The integration of workplace safety and organisational flow in high-risk industries is

critical as these environments are consistently dangerous. Therefore, there is a need for vigilance and adaptability to changing conditions (Zhang, Hua, Huang and Shi, 2022). In a nutshell, the study findings show the regional significance of leadership in enhancing safety culture while reflecting the broader trends observed in other African industries.

Over the years, the South African sugar industry has experienced its fair share of safety-related incidents. There are accidents involving machinery where a person gets caught in moving parts and/or machinery fails or runs out of control (Taranusic and Tsymbal, 2021). Some employees were exposed to chemicals that are widely used within the sugar processing industry (Taranusic and Tsymbal, 2021). Due to the nature of the industry, there are also fire and explosion hazards. In high-risk organisations, it is important to maintain safety and this is the number one rule that cannot be overstated. Wang, Shen, Saravanan and Luhach (2021) emphasised that maintaining workplace safety increases overall organisational productivity in addition to protecting workers from damage, by reducing absenteeism and lowering disability rates. Workplace safety benefits the organisation through the preservation of a strong safety culture where an investment in safety measures leads to improving the morale of the employees and decreasing workplace disruption and workplace accidents (Egbe, 2023).

Additionally, Priyanka and Basaria (2023) argued that high-risk industries should ensure that safety is crucial and a priority to reduce the occurrence of serious incidents in the workplace. The scholars further emphasised that workplace accidents in high-risk sectors often lead to disability and death in the worst cases, which further explains the importance of workplace safety (Benson, Dimopoulos, Argyropoulos, Mikellidou and Boustras, 2021; Priyanka and Basaria, 2023). In hazardous industries such as sugar mills, manufacturing, oil and gas, there are disastrous consequences to safety failure, which affects the workers and the stability of the organisation, its reputation and functionality (Jahangiri, Zinat-Motlagh, Ghaem, Zinat-Motlagh, Kamalinia and Banaee, 2021; Mohamed, Abd-El-Aal and Ibrahim, 2022). Safety in high-risk environments is essential and relies on strong leadership, which moves to ensure the company's safety is aligned to organisational objectives and workers are placed first (Gadalla, 2024; Shi and Zainal, 2021).

Rathor et al. (2022) further highlighted the need for rigorous safety protocols to be in place in environments which have hazardous activities, harmful material, technical malfunctions and the presence of dangerous conduct which can cause severe harm to the workers. Hazardous

situations or ongoing risks include malfunctioning technology and toxic chemicals. According to Noh et al. (2022) a comprehensive safety measure is key for high-risk industries and this safety measure is even more important for the sugar industry, because according to Mohammed, Iwuozor, Anyanwu and Olaniyi (2023) sugar dust is a fire hazard as the fine particles become explosive when ignited, exposing workers to danger and causing property damage. Taranusic and Tsymbal (2021) concurred that a dusty or dehydrated form of sugar poses a risk of burning due to self-heating. Sugar mills are one of the long existing industries with old buildings and silos, which are susceptible to collapsing, causing actual injuries (Taranusic and Tsymbal, 2021). Occupational health illnesses are also prevalent because of long-term exposure to occupational stressors such as noise and dust, which are inherent in the sugar-making process.

The sugar mill under study lies within the picturesque landscapes of KwaZulu-Natal province. The mill employs approximately five hundred employees on a full-time basis. During maintenance periods, fixed-term contractors are also employed and the total number at any given point can increase to seven hundred or more, depending on the work activities. The mill is a division that forms part of a bigger group founded in 1924. The year 2024 marked the 100th year since the group was established. The division's mission is to provide a clean working environment where employees are valued and empowered to work safely and efficiently. Its core values include integrity, loyalty, innovation, passion, transparency, accountability, belonging, respect and people development. The sugar mill processes sugar cane into very high-polarity brown sugar. The by-product of the sugar-making process, molasses, is sold to customers for animal feed or pharmaceutical purposes.

The sugar mill is led by the general manager of operations, who is legally appointed and is responsible and accountable for the entire operations of the mill. Then, there are several other leaders responsible for various functions, which include production, engineering, technical, human resources, procurement, research and development, food safety and quality, training and development, together with health and safety. Spicer (2020) defines organisational culture as signs, symbols and shared practices of an organisation. The culture of mill leadership is driven by effective communication, teamwork and proactive asset care. The aim is to improve the provision of innovative solutions and high-quality products that meet stakeholders' expectations while impacting the community positively, as indicated in the mission statement.

In the last five years, the sugar mill has experienced multiple safety incidents related to both employees and physical property (Sugar Mill, 2023). Safety incidents are a critical concern as they affect not only the employees but also the people related to them, their families, the organisation itself, and other stakeholders. Leadership has been considered as the talent of influencing individual or group activities in attempts to attain goals in all fields (Zhang et al., 2020). On an alternative perspective, leadership is a technique of inspiring others to achieve an intended or planned goal (Aarons et al., 2021). Safety leadership is viewed as a leadership strategy that places a high priority on worker safety in the workplace. It is typified by the development and implementation of safety-promoting policies, protocols, procedures and regulations, the development of a safety mindset for employees within the company, and the allocation of resources and training to staff members to enable them to perform their jobs safely and confidently (Clissold, Fu and Zhu, 2020).

In addition to safety, concepts of leadership have a significant influence on wider organisational outcomes like productivity, creativity and worker engagement (Alblooshi et al., 2020). Creating an organisational atmosphere that is supportive of learning and information sharing is one way that different leadership styles can stimulate innovation, as discussed by Alblooshi, Shamsuzzaman and Haridy (2020). Leaders who foster cooperation and honest communication have the power to both, directly and indirectly, impact innovation, increasing the organisation's capacity for adaptation and competitiveness (Gurbuz and Gulec, 2022).

According to Gomathy (2023), the implementation of leadership styles, comprising transactional, transformational and democratic leadership, has potential to enhance organisational performance by establishing unambiguous plans and expectations. Transactional leadership, for example, relies on organized processes and clear rewards for attaining safety goals, while transformational leadership encourages people by integrating safety programs with broader company values and goals (Gemeda and Lee, 2020).

Moreover, Gomathy (2023) highlighted that performance can be improved and a more positive work atmosphere can be created by leadership styles that are in line with organisational culture and values. In high-risk sectors, where long-term performance depends on integrating safety and operational goals into leadership strategies, this connection is essential. According to Karie and Kulmiye (2023), the efficacy of various leadership philosophies is frequently dependent upon

organisational conditions. This implies that adaptability in leadership methodologies is imperative while navigating intricate industrial settings (Ismail et al., 2021).

While incident investigations were conducted for safety incidents within the case study sugar mill, as legally expected, no relationships have been established on how much impact the leadership styles have on influencing the incidents (Friend et al., 2023). The absence of these connections indicates extensive study gaps, and one of the gaps is that there are too few studies that show the influence of leadership styles on safety outcomes in sugar mills (Friend et al., 2023).

1.3. Research problem

There is deficiency of value-adding leadership in promoting a culture of safety within the sugar mill industry in South Africa (Nomakhwezi and Smallwood, 2020). Notwithstanding the recognized value of a safety culture in reducing workplace accidents and promoting employee well-being, a considerable number of sugar mills struggle to implement and sustain such a culture due to inadequate leadership practices (Prinsloo and Hofmeyr, 2022). This problem is particularly significant as it affects employee safety and the state of their health, operational efficiency and the productivity of the industry (Rambakus, Hoque and Proches, 2020).

The relevance of this problem is reflected by the high incidence of workplace accidents and the associated human and financial costs. Lal (2022) revealed the critical lapses in safety culture behaviours that lead to incidents and losses. This scholar discussed the necessity for robust safety practices. As such, the sugar mill industry, a vital sector in South Africa's economy, cannot afford to overlook these safety concerns. Therefore, effective leadership is crucial in developing a safety culture, as it influences organisational attitudes, practices, and adherence to safety protocols.

This problem's scope is both wide and narrow. Although safety culture leadership is an international issue, this study focuses only on the South African sugar mill sector, enabling a more focused and controlled investigation. The objective of the study is to make meaningful contribution to the larger understanding of safety culture development while offering insights that are specifically pertinent to the South African sector by focusing on the local context. Prinsloo and Hofmeyr (2022) underscored the significance of leadership engagement in improving workplace safety by emphasizing that safety climate and leadership responsibility are

important contributors to safety behaviours. A discussion of the continuous difficulties with South Africa's safety management systems by Nomakhwezi and Smallwood (2020) emphasized the necessity of strong leadership in promoting a proactive safety culture.

Evidence of the problem is visible in various studies and reports, Botha et al. (2020) demonstrated an important correlation between leadership, safety mind-set and safety performance in South African organisations. These scholars indicated gaps in leadership effectiveness. Dlamini et al. (2020) explored the challenges in the sugar mill industry and stressed that leadership deficiencies impede the formation of a rich and strong safety culture. Bao and Jolly (2024) showed that transformational leadership can enhance employee engagement and safety from a global perspective, yet these practices are not uniformly adopted in South African sugar mills.

Failure to improve leadership in safety culture development could lead to continued high rates of workplace accidents, resulting in injuries or fatalities, therefore the consequences are severe. Workplace without safety culture not only affects the well-being of employees but also has financial repercussions for organisations due to lost productivity, legal liabilities and increased insurance costs. Harbans (2023) stressed that without accurate forecasting and proactive measures, organisations risk significant harm. Moreover, the broader community and economy could suffer from the negative impacts on the sugar mill industry, which is essential in maintaining stability within the economy and enhancing employment in South Africa.

1.4. Research aim

The aim of the study was to investigate the factors influencing leadership styles and the development of a safety culture within a South African sugar mill. The study identified the key determinants shaping leadership approaches and assessed their impact on fostering a robust safety culture.

1.5. Research questions

The following questions attempted to address the research problem:

- What leadership styles are predominantly used by leaders in driving safety culture within the sugar mill?

- What are the factors that influence leadership in driving a safety culture within the sugar mill?
- What are the main challenges faced by leaders in fostering and maintaining a safety culture in the sugar mill?
- What strategies can be implemented to improve leadership styles for better safety culture development in the sugar mill?

1.6. Research objectives

The specific objectives of this research were:

- To identify the predominant leadership styles used by leaders in driving safety culture within the sugar mill.
- To investigate the factors that influence leadership in driving a safety culture within the sugar mill.
- To analyse the main challenges faced by leaders in fostering and maintaining a safety culture in the sugar mill.
- To provide strategies for improving leadership styles to enhance the development of a safety culture in the sugar mill.

1.7. Significance of the research

This kind of research closes a knowledge gap about the connection between safety culture and leadership in sugar mills. Specifically, the research addressed the understudied relationship between the different leadership styles and their impact on safety culture in highly hazardous environments like sugar milling. By investigating this relationship, the research provided valuable insights that are not only applicable to the sugar mill sector but may also inform leadership practices in other high-risk environments, such as mining, manufacturing and construction.

Results from this study provide useful recommendations to improve the safety protocols, thereby making the working environment much safer and productive. An improved safety culture minimises workplace risks and increases general operational productivity. If accidents are low along with the costs attributed to them, sugar mills can become more profitable while improving

the welfare of the workers. In turn, the study has social and economic relevance that allows the workers and the industry to benefit.

In addition, since sugar milling occupies a central place in terms of generating revenue within the South African economy, improvements concerning the safety standards of the sugar milling organisations resulting from leadership practices have played an influential role in ensuring the welfare of the greater community. A reduction in workplace injury would affect not just the individuals but also their immediate families and communities through social stability maintained and economic sustainability ensured. It is, therefore, in the interests of society at large, apart from that of the concerned organisations themselves.

Finally, this study fills a very specific knowledge gap in the body of literature on safety culture in sugar mills. This research, therefore, focuses on the contribution to understanding how leadership facilitates or hampers the development and sustainability of safety culture and provides practical recommendations for industry professionals, policymakers and researchers. The results will be of immense use to the practitioners of the sugar milling industry, which is considered one of the most hazardous sectors in view of its involvement with machinery, chemicals and environmental factors.

1.8. Structure of the dissertation

Chapter 1: Introduction

The thesis explores the essential role of leadership in adopting a culture of safety within the South African sugar mill industry. The Occupational Health and Safety Act advocates for the working environment to be safe, though a high rate of safety incidents has indicated that there is a breakdown in the pattern of leadership across the sugar mill industry. The study points out leadership styles that support safety, specifically transformational and transactional leadership theories. Chapter one introduces the thesis and lays the background of the research, sets the context, outlines the statement of the problem, states research questions and research objectives and places significance on the role of effective leadership in reducing accidents at work.

Chapter 2: Literature Review

This chapter provides an overview of the literature relevant to the study, which examines the body of knowledge regarding the variables impacting leadership in the sugar mill sector. The

chapter also highlights the impact of educational background, work experience and organisational culture on leadership styles. The chapter offers an integration of the existing literature, identifies gaps and justifies the study's focus and presents the theoretical framework of the thesis.

Chapter 3: Research Methodology

The study's methodology and qualitative research approach, which employs a case study to explore deeper the leadership styles used within sugar mills, are summarized in this chapter. The study conducts semi-structured interviews under census sampling with 20 leaders of the sugar mill to explore the leadership styles and the difficulties they encounter in fostering a culture of safety in the sugar mills. Data collection methods include pilot testing, interviews with leaders and NVivo software for thematic analysis and this approach ensures rigorous analysis. Ethical considerations are appropriately addressed, such as informed consent and confidentiality of all the participants.

Chapter 4: Results

The findings from the study's data collection thematic analysis are presented. The main themes and subthemes linked to safety culture and leadership philosophies are presented in this chapter. The results show the leadership philosophies that are most popular, which influences the values and how well they function to create a safe workplace. For the in-depth, qualitative insights and rich data into the leaders' viewpoints and experiences, the chapter presents direct quotes from the responses collected.

Chapter 5: Discussion

The discussion chapter provides an interpretation of the results in the context of the reviewed literature. It investigates the primary study topic of how safety culture in the sugar mill industry is impacted by transformational and transactional leadership styles. It examines leaders' challenges, such as resistance to change and resource constraints and discusses strategies for overcoming these barriers. The chapter offers an extensive view of effective leadership in the formation of safety cultures by connecting theoretical concepts to real-world applications.

Chapter 6: Conclusion and Recommendations

This chapter presents the study's conclusion, a summary of the important findings from the research study, and the study's implications for theory and practice. The study's recommendations are presented, study limitations and suggestions are also included for more investigation for further learning about the intricate relationship between safety and leadership in industrial settings.

1.9. Delimitations of the study

The extent of the study delimitations is the specific boundaries that researchers intentionally and consciously establish to preserve the feasibility and focus of the study's objectives (Theofanidis and Fountouki, 2018). The delimitations of this study define the scope and boundaries within which the research was conducted. These choices were made to focus the investigation on specific aspects of sugar mill leadership relevant to the research questions and to make the study feasible within the available resources and time frame. In this study, those leaders who were employed on a seasonal, temporary or fixed-term and agency contract basis were not taken into consideration because their association with the sugar mill was too narrow and temporary to serve the purpose of the study. The study included only leaders that were permanently employed within the sugar mill, incumbents responsible and accountable for the safety of the workforce on a full-time basis. The study was also confined to the manufacturing section of the company. The sample also excluded leaders from other divisions that comprise the same corporate group. In that regard, the outcome of this study was never intended to generalise in the whole group but only limited to the sugar mill that was the subject of the study.

1.10. Conclusion

In conclusion, by describing the main elements of this study, chapter one gave it a thorough foundation. Setting the scene for the investigation, it started with an overview of the case study sugar mill, covering its characteristics and applicability. The study's aim, objectives and research questions which direct the investigation were articulated after the research problem was well-defined. The chapter further emphasized the importance of the study and its prospective contributions to the research area of sugar mill safety. Lastly, a summary of the dissertation's structure was given, providing summarised information for each of the chapters that follow. The literature is examined in the following chapter to establish the theoretical foundation of the study.

Chapter 2: Literature Review

2.1. Introduction

Building on the overview provided in Chapter one, this chapter reviews the key literature on leadership styles and their impact on safety culture within industrial settings, specifically focusing on the sugar milling sector. Chapter two looks at theoretical viewpoints and empirical research that demonstrate how leadership styles affect employee behaviour, create a culture of workplace safety while managing operational risks. By exploring leadership theories, including transformational and transactional models, alongside the dynamics of safety culture development, this chapter aims to provide a theoretical foundation for comprehending the factors that shape safety outcomes and guide leadership practices in hazardous work environments such as sugar mills.

This chapter offers a comprehensive analysis of the literature, critically examining and synthesizing studies on leadership philosophies and how they affect the safety culture of the sugar mill sector. The chapter highlights gaps in the current and existing literature to give a theoretical foundation supporting the research aims. The factors that influence leadership within the sugar mill industry specifically focusing on this sector's unique challenges and dynamics are discussed first. Secondly, the review presents the concept of safety leadership. Thirdly, leadership styles used in driving safety culture within the sugar industry are presented, followed by the correlation between safety leadership and a culture of safety. Additionally, it also outlines the theoretical framework that provides a foundation of the study by focusing on transactional and transformational leadership theories that will be grounding the investigation. Lastly, this chapter discusses how different leadership styles affect the handling of safety incidents.

2.2. Factors that influence leadership in the sugar mill industry

Empirical studies clarify the varying concepts of leadership among researchers. Wilson (2022) discussed how the notion of leadership can be formal and informal concepts which are governed by different entities. The way a leadership style is implemented in a structured environment affects many facets of organisational life. Thus, Wilson's research indicates that although informal leadership is more flexible and influenced by personal connections and unofficial networks, formal leadership aligns with organisational objectives. However, leadership is put into place to achieve an organisational goal and this highlights the multifaceted process that is

crucial at all organisational levels (Johnson, 2023). Benmira and Agboola (2021) contribute to this understanding by characterizing leadership as an influencing process intended to achieve goals in formal and informal organisational settings. Moreover, the scholars drew attention to how leadership is a multidimensional idea and that no widely acknowledged definitions accompany this argument and both internal and external factors influence the function and form within an organisational context.

In contrast, the more transformational view of Vieyra-Reyes *et al.* (2022) conceptualizes leadership as a lifestyle which is above the frameworks and environments of organisations. According to this perspective, leadership involves social transformation within the context in which it unfolds. The authors further argued that leadership styles improve life, maximize ability and provide practical solutions to daily problems. This indeed creates a broader perspective on leadership above organisational management into a societal influence. On the other hand, Carton (2021) classified leadership to person-centred and process-centred categories. The person-centred category primarily focuses on individual leaders and their behaviour, while the process-centred category primarily focuses on the processes of leadership and the communicational interactions among them (Anders, 2021; Backman, Sandman and Sköldunger, 2021). This helps to frame leadership as an individual and collective activity where the nature of the outcomes reflects both the actions and behaviours of individuals who are designated as leaders and the dynamics of the leadership process.

Rajoria *et al.* (2022) further explored the perspective of leadership in business settings, explaining that business leadership is characterized by management's capacity to create and realize ambitious goals, respond to pressures for efficiency, and allow employee empowerment. From this perspective, studies show that effective leadership is an important determinant of organisational success in cases where operational efficiency cannot be preserved and top management needs to decide quickly to fulfil organisational objectives. Yang (2023) added the similar discussion, stating that leadership is complex and multifaceted with no universally accepted definition, similar to Benmira and Agboola's (2021) argument, which noted that leadership can be understood and practised in various ways and in different contexts and sectors. This alludes to the adaptability of leadership based on situational factors, just like the sugar mill industry, as identified by Manyuchi and Sukdeo (2021).

The studies depict the complex form of leadership and its implementation in different spheres such as organisational, social and business surroundings. The way that a leadership style is implemented in a structured environment affects several organisational life circumstances. Wilson's research so suggested that while informal leadership is more adaptable and impacted by informal networks and personal relationships; formal leadership is in line with organisational goals. Vieyra-Reyes *et al.* (2022) also discussed the function of leadership in achieving organisational goals and success and referred to the obligation of leadership in the context of social transformation. Carton (2021), however, categorised the framework to understand leadership as both person and process-centred and functions in dynamic processes.

The research by Nasim, Yadav, Dash and Bamel (2022) investigated how leadership style relates to the safety culture within organisations based on a meta-analytical approach. This study determined which leadership styles, across various organisational situations, have the biggest effects on safety culture. The study also investigated how risk levels in organisational processes modified safety culture, providing an in-depth comprehension of how leadership variations affect safety culture in contrasting settings. The outcome was that leadership styles were greatly related to safety culture. Lyubykh *et al.* (2022) similarly concluded that leadership is a strong influencer of the institutional safety culture and this association does not differ between highly hazardous and less hazardous work environment settings. The identified relationships provide evidence that leadership, including enabling or empowering leadership, is everywhere a vital driver for the safety culture. In a high-risk setting the enabling leadership proved to impact the safety culture positively, by empowering employees to take ownership of safety practices, as highlighted by Nasim *et al.* (2022). The conclusion, therefore, is that the practice of empowering leadership is particularly very effective in building a strong safety culture where risks are highly elevated, which Gracia, Tomás, Martínez-Córcoles and Peiró (2020) also identified. The study used a rigorous methodology and its practical implications are that organisations should prioritise empowering leadership styles to enhance safety culture, with special regard to those environments where safety risks are prevalent (Nasim *et al.*, 2022).

The sugar sector in South Africa has faced numerous challenges. Rambakus *et al.* (2020) investigated these challenges, they include the sugar tax and unfavourable consumer perception, to climate change and the competition coming in from cheap sugar imports. The researchers

investigated the entrepreneurial climate within a major sugar-producing organisation in South Africa, where the strengths, weaknesses and constraints were highlighted with strategies proposed for enhancing entrepreneurial behaviour. The findings indicated that weak leadership style aspects are a result of a low entrepreneurial climate with low organisational structure, culture, system, and core activities (Rambakus *et al.*, 2020). The authors identified important barriers to mill intrapreneurship as limited capital, bureaucratic processes, resource constraints, innovation processes poorly understood, and weak management and leadership support. This study highlighted that a potential drive for intrapreneurship already exists among leaders with a strong entrepreneurial orientation. The recommendations to overcome the challenges from this study were to enhance the company's recognition and rewards programs, adopt a teamwork policy and a cross-functional communication system, make use of the vision of younger employees, establish a board for new ideas, participate employee exchange programs to benchmark and executing training and development which is focused on entrepreneurial leadership. Also, the study suggested that intrapreneurship should be implemented in organisations. This would help the firms in the sector with innovation, flexibility and sustainability from within.

The study by Liashenko, Kundenko, Kis and Fesenko (2023) highlighted the significance of considering environmental factors and occupational safety in sugar mills. The study claimed that modern efficiency assessments in sugar production companies go far beyond traditional cost-related measures, including a wide strategic context with energy efficiency, technological safety, ecological impact and labour conditions. Such an approach is indispensable for the development of new technologies aimed at resource-saving and ensuring the maintenance of high standards of product quality in Ukrainian sugar factories (Liasheko *et al.*, 2023). The study highlighted the need for an effective management system that improves occupational safety and assists with an economic component of environmental impact assessments. The study analysed the numerous environmental factors associated with sugar production and discovered that the elements significantly affect the workplace environment and broader ecological systems. The study's findings demonstrated that enhancing workplace design within the context of managing sugar production can boost employee productivity by up to 20%. To increase operational effectiveness and sustainability, assessments that consider safety, legal and environmental factors must be incorporated into sugar production management (Liasheko *et al.*, 2023). The management of the

sugar mill sector can benefit from the integration of social and economic techniques to enhance environmental and occupational safety within the human-machine environment system (Liashenko *et al.*, 2023; Cardoso *et al.*, 2018).

Debela, Deyessa, Begosew and Azage (2023) examined the shortcomings in occupational health and safety protocols within Ethiopia's sugar sector, with a particular focus on the factories located in Metehara and Wonji between December 2021 and May 2022. A convergent parallel mixed design was used in the study to evaluate the workers' adherence to occupational health and safety procedures. The gathering of quantitative data comprised the use of stratified random sampling to select 1,648 participants for 20 in-depth interviews that were performed using the purposive sample technique. The questionnaire rated the safety procedures as poor if fewer than 60% of the questions were correctly answered, and as good if at least 60% of the questions were answered correctly. The study found that 29.6% of the sugar mill workers had good occupational health and safety practices. This showed there is a missing link to safety measures as several factors were identified that contributed to the shortcomings of the sugar mill. These included the availability of appropriate personal protective equipment, strict safety regulations, present incentives and adequate support from the sugar mills management. The qualitative findings highlighted similar problems as the participants showed that many had employed undesirable safety practices in the mill. The authors pointed to potential areas for future intervention to enhance workplace safety and safeguard the health of industry workers are what fuel the inadequate application of occupational health and safety requirements in these sugar businesses.

In their comprehensive assessment of the major elements pertaining to workplace safety and health, Lee, Zheng, Aung, Seidmann, Li, Aroor, Lwin, Ho and Theng (2020) filled a major vacuum in the field of health communication research by emphasising awareness on safety, safety risks, health risks and awareness. The principal aim of the research was to find out about and categorize the human, organisational and cultural elements influencing these dimensions of workplace health and safety. Six categories of organisational factors were identified by the study through a thorough coding process: physical work environment, overall organisational environment, safety management systems, management commitment and safety communication within the organisation (Zheng *et al.*, 2020). The authors additionally found that perception, motivation, attitude and behaviour are the four individual-level determinants, and that

interpersonal support and organisational culture are the two cultural aspects that are most important. Though the scholars presented problems on different levels within the findings, the focus of the study in the discussion is the theoretical and practical implications for health communication as a foundation for improving the safety of workers and their health situation at work. It was underlined that dealing effectively with workplace safety and health requires a comprehensive strategy encompassing organisational, cultural and individual concerns.

These studies show the complex interplay of various factors that go on to influence leadership in the sugar mill industry. According to Nasim *et al.* (2022), the kind of leadership style followed in an organisation forms the core of safety culture in any organisation. Moreover, Rambakus *et al.* (2020) are focused on the sugar tax and climate change concerns that strike the industry and the entrepreneurial leadership needed in innovations that industry employees need for organisational benefits. Meanwhile, it also appeared from the literature findings that increasing best practice and demonstrating support from senior management are areas that become very crucial for improvement. Lee *et al.* (2020) indicated that organisational, cultural and individual factors will play crucial role in implementing improvements to safety and wellbeing of the workplace. Current literature featured leadership as an influential factor in the assurance of effective safety, productivity and sustainability within the sugar mill industry. Leadership styles, combined with good safety culture and proper organisational practices, are the basis for tackling the many different issues confronting this industry.

2.3. Safety leadership

There are conceptual distinctions to safety leadership identified by the work of various scholars. The study by Bazzoli *et al.* (2020) showed that various safety leadership styles like transformational, transactional and passive leadership, can predict discretionary communications among employees about changing safety matters at the workplace. This research uncovered that the type of leadership style used has a vast effect in the way employees go about making their issues on safety known, especially how transformational leaders facilitate more proactive engagement in safety. Bazzoli *et al.* (2020) also emphasized that the concept of leadership style is not only a tool of management but also an essential component in organisational settings in the culture creation of workers who are confident enough to raise concerns regarding safety improvements. Similarly, Lyubykh *et al.* (2022) provided an analysed perspective of task-

oriented and relational-oriented leadership styles and highlighted that these two leadership styles are the primary influencers of workplace safety and additionally identified change-oriented leadership to not have as substantial an impact. Lyubykh *et al.* (2020) claimed that building an open culture of workers' relations will be a complementary power that guarantees stability and cohesion to the standards of safety in the organisation.

Tao *et al.* (2020) explored the multifaceted roles played by safety leadership in achieving organisational safety. This study pinpointed the factors that affect safety leadership the most, including transactional leadership, safety climate, transformational leadership and member exchange. This study emphasised that effective safety leadership leads to improved safety performance, hence reducing workplace incidents. Similarly, Zhao *et al.* (2022) also focused on how effectively transformational leadership is affecting the safety climate and the involvement of employees in initiatives that are focussed on safety. The findings of this study indicated that transformational leadership has positively influences the safety climate, which increases proactive involvement by employees regarding their safety concerns.

Zhang *et al.* (2022) demonstrated that five crucial elements of safety leadership include commitment to the management of safety, communicating safety by providing feedback, formulation of safety policy, recognition of efforts through safety incentives and continual training in safety. These attributes of safety leadership provide the foundation for safety leadership, each contributing to a workplace atmosphere that is much safer. However, Ta *et al.* (2022) found nine frequently used leadership theories which are transactional, authentic, leader-member exchange, ethical, empowering, passive, paternalistic and charismatic leadership styles. The study argued that these safety styles affect the dimensions of safety climate, compliance and participation as they are effective in different contexts.

The studies underpin the pivotal contribution of leadership to establishing a strong safety culture within organisations (Bazzoli *et al.*, 2020; Zhao *et al.*, 2022). The studies additionally highlighted how leadership is central in establishing and maintaining a safety-conscious workplace where employee participation and safety climate are two of the important components (Lyubykh *et al.*, 2022; Tao *et al.*, 2020). This also supports the research conducted together. In this regard, Ravi, Tawfik, Sexton and Profit (2020) characterised organisational safety culture as the norms of operating in the workplace regarding safety and thus form the very foundation upon

which high-quality care is delivered. In addition, the studies highlight the definition of safety leadership by Timbang, Prasad and Azri (2023) as a process of understanding and mitigating workplace risks and challenges around leaders, their teams, and their organisations while simultaneously cultivating a rich safety culture.

Zhao, Yang, Liu and Nkrumah's (2022) study delved into the subject of safety participation (SP), which is becoming increasingly significant in behavioural safety management and research. The study aimed to evaluate the link between safety leadership (SL) and safety participation by developing a theoretical model. A meta-analysis on this was conducted, with 33 articles spanning from year 2000 to year 2021 covering 35 independent samples. The meta-analytic review assessed the effect of various leadership philosophies, transformational, transactional, and passive leadership on workplace safety outcomes. The study's results indicated that safety leadership had a significant, positive effect on both safety climate and safety participation. The study also showed that STFL and STAL positively affected safety participation, but the effect of transformational leadership was greater. The study underlined that in industries with extremely hazardous activities, with a less developed economic state, the effects of safety leadership are weaker on the engagement in safety. This result underlines the relevance of controlling for the safety climate and the larger macro-environment in efforts to raise employee safety engagement. This study highlights how transformational leadership can promote worker safety involvement. Therefore, this paper calls for considering environmental elements that might moderate this relationship.

According to Haas (2020), leadership is integral to setting up a safety culture in any organisation, more so in high-risk environments such as mining. Through constant leader-employee interactions, leadership not only has effects on safety outcomes but also has a powerful impact on worker perceptions. The linkage between safety and leadership was modelled in this paper. Pre- and post-interviews with 20 managers and 48 workers were conducted to assess the different supervisory communication types influencing how miners perceived safety performance and safety culture. The researchers concluded that informational support in these industries most influenced the behaviours of the workers, and this behaviour further translated into the general worker relationship in the setting of the industry's environment. Emotional support was observed to help promote compliance and initiative. However, it was much harder to tailor and ensure that

the miners got it in the right measure. The study findings showed that high-risk company procedures for supervisory communication should be assessed and reviewed to determine the right approach to balance information and material to improve safety culture and performance.

Mrugalska and Dovramadjiev (2022) highlighted the significant development that industries related to safety had experienced in the previous decades due to the efforts of associations of industries with agencies of regulation, whose work is centred on raising standards within industries and learning from critical events. Besides, there is recognition of technological developments and applying excellent practices. The enormous effect of human factors on industrial output makes understanding the effect of human behaviour and cultural background concerning safety vital, emphasising how crucial it is in today's business world to have a safety culture. The study used a mixed-methods approach to examine the relationship between safety culture and human factors in industries. A safety culture assessment was completed through a survey of 243 participants, complemented by five interviews conducted among leaders in the industry. Mrugalska and Dovramadjiev (2022) research findings suggested that human behaviour in the industrial context was mainly driven by safety training, safety awareness, hazard recognition, risk management, incident response and proper communication. The findings concluded that there is a positive safety culture, which is supported by employee behaviour awareness, which affects safety practices. These have been identified to directly affect safety procedures, hazard control, and incident reporting and ultimately decrease the incidence and severity of workplace accidents. To improve overall safety performance, the study suggested the necessity for businesses to give human factors top priority in their safety strategy.

Researchers have also stressed that the cultivation of a good safety culture and strong safety performance is of the highest priority through safety leaders. Zhao *et al.* (2022) showed a favourable connection between safety leadership and safety participation and the general safety climate. In industries with high risk, it also clarifies the function of transformational leadership. Mrugalska and Dovramadjiev (2022) provided an explanation of the links between human factors and safety culture, focusing on how safety leadership in an organisation may be implemented through adequate training, increased awareness, and enhanced communication. According to these authors, good safety leadership is primarily necessary for establishing a

strong safety culture that can enable safe behaviour and reduce workplace accidents, as stated by Haas (2020).

2.4. Leadership styles in driving safety culture within the sugar industry

It is imperative to distinguish between leadership and management and highlight their key components. Benmira and Agboola (2021) argued that managers oversee the organisation's direction, while leaders are typically thought of as visionaries and strategists who set the direction to reach the objectives and goals of an organisation. It is crucial to know the distinction between management and leadership to recognise the power sources of an organisation's problem-solving approaches and leadership styles. Markina, Voronina and Dmytrenko (2020) highlighted that leadership balances management by being able to address the problems and produce strategies where management fails to retain operational efficiency (Petrova, 2022).

As indicated by Nasibullah (2023), leadership is instrumental in proficient management and serves as an essential element in the organisation and strategic planning of human resources. Rajoria, Sharma, Sharma and Sumaiya (2022) contended that successful leadership requires the formulation of ambitious goals, rapid adaptation to alterations and the empowerment of employees to achieve a competitive advantage. In addition, Durmaz, Hawrami and Hamasaeed (2022) suggested that for the improvement of employee relations and the overall effectiveness of the organisation, there is a dire need to have effective leaders based on updated knowledge and skilful communication. Meanwhile, in some industries, such as the sugar industry, it is crucial for leadership to build trust and enhance effectiveness at work (Purbowo, Sunaryo and Waluyowati, 2022; Wakisi, 2021). Domínguez *et al.* (2020) and Singh *et al.* (2020) expressed that leadership is a determining factor in developing trust, especially through the dimensions of commitment and emotional intelligence. In corroboration, Wakhisi (2021) described leadership as an important element in strategy formulation and execution processes.

Lyubykh *et al.* (2022) investigated the function of maintaining workplace safety as a critical function and indicated that leadership requiring both task-oriented and relational-oriented approaches is necessary to sustain safety standards. Organisations can recognise the different but interrelated functions of leadership and management to apply both elements in their approach to improve performance and achieve strategic goals. Empirical studies indicated that the establishment of a mature safety culture in various industries acts as a fundamental cornerstone

for the avoidance of accidents and safety-related practices with a focus on ensuring organisational sustainability. Furthermore, Mrugalska and Dovramadjiev (2022) showed that human factors such as behaviour, awareness, training, and the methods applied in hazard identification and risk management play a crucial influence on positive safety culture. These human factors collectively have an impact in the accident frequency and a generally prevailing safety climate within the organisation. Furthermore, Moreira, Ramos and Fonseca (2021) highlighted that safety culture maturity in an organisation is affected by elements such as information dissemination, employee involvement, and organisational commitment, which can moderate unsafe practices in an organisation or aggravate unsafe practices. Suhanyiova, Irwin and Flin (2020) further stressed this point by alluding to safety culture involving six key dimensions, which are management commitment, trust, communication, understanding of safety protocols, communication, safety systems and ethical considerations regarding product integrity. These scholars emphasise the importance of building a safety culture which has a well-structured approach which addresses systemic factors of the organisation, human factors, organisational safety performance and its resilience.

The topic of small and medium-sized businesses' (SMEs') health and safety in developing countries was explored in the study by Asad, Kashif, Sheikh, Asif, George and Khan (2021). The researchers indicated that the growth in health and safety events is mainly due to a lack of workplace safety culture and a lack of resources available to such businesses, thereby making it difficult to develop a solid safety climate. This research underpins the vast body of literature on safety culture, such as the investigation by Siuta *et al.* (2022), which identified what an advanced safety culture plays in accident prevention and in maintaining organisational sustainability. Asad *et al.* (2021) examined the moderation effect of leadership in enhancing safety performance through safety culture and safety climate, identifying that leadership behaviour has a major effect on safety. Employees' responses to a structured questionnaire were used to gather data., including labourers and managers, in this section of SMEs. Structural equation modelling was employed to analyse the results. Findings showed that safety culture and climate play an essential role in influencing the performance of safety in this SME sector. The findings proved that the association between performance in safety and the culture of safety moderates transformational leadership. The study further provides advancement to the social cognitive

theory. Additionally, the findings put emphasis on the significance of transformational leadership to help in enhancing safety performance through a robust safety culture in the SME industry.

In terms of cleaner and more sustainable production, Cavazotte, Mansur and Moreno (2021) specifically assessed the crucial link between leadership behaviours and occupational safety in frontline operations. The authentic leadership theory grounds the research on data gathered from 307 workers at a sizable private corporation engaged in the manufacture, marketing and distribution of fuels in Brazil. The study tested two hypotheses: leaders' morality and selflessness can have positive effects on safety outcomes through two important routes: first, by improving the frontline employees' psychological capital (PsyCap) and second, by improving organisational citizenship behaviour (OCB). The findings of the investigation using structural equation modelling demonstrated that leader morality and selflessness could enhance frontline employees' psychological capital, and the selflessness within a workplace toward the leadership helps to improve employee behaviours regarding belonging to an organisation. The study's conclusions show the importance of virtuous leadership in raising an organisation's safety performance because it instils morality and selflessness in those in positions of authority. Leaders tend to go above and beyond the requirements of their positions because they can impact the psychological resources of their workforce. The findings of the study indicate possible avenues for training programs that aim to promote sustainable practices grounded in genuine modes of management, especially in sectors where safety is a critical concern.

The study by Ta, Kim and Gausdal (2022) emphasised the importance of leadership in guaranteeing employee safety in high-risk industries, where several leadership philosophies on safety performance are discussed. The study focuses on the varying styles of leadership that help determine the impact on safety performance within the health and workplace safety domain. The literature published earlier on the current comprehension of the concept of safety leadership idea was reviewed and analysed considering this study. As per the results, nine common forms of leadership, such as transformational, transactional, passive, charismatic, empowering, paternalistic, ethical, authentic as well as leader-member exchange leadership were mainly identified to have been studied in the development and testing of theories related to safety leadership. These have been scrutinised to determine their effects on key safety-related results, such as the climate of safety, compliance with safety regulations and participation in the field

across various high-hazard industries. However, at the same time, there are considerable difficulties that make it difficult to understand how much safe performance can be influenced by effective leadership, particularly concerning some blurred boundaries between constructs of leadership and inconsistencies in the conceptualisation and measurement of safe performance. As a result, Ta *et al.* (2022) suggested that upcoming research should use consistent methods and incorporate systems thinking to understand better the intricate connections between leadership styles and safety outcomes. The researchers discovered that following these suggestions will result in a better comprehension of how leaders can enhance workplace safety measures in high-risk industries.

Zhang, Hua, Huang and Shi (2022) investigated the important function of leadership safety behaviours (LSBs) in maintaining workplace safety within high-risk industries. The research indicates that not much research has been done on the behaviour of leaders in mining environments. Regression analysis and structural equation modelling are used in the study to investigate how leadership safety behaviours in Chinese mines are related to safety performance outcomes. The information was gathered from 305 miners using factor analysis which are confirmatory and exploratory methods, which revealed the five main aspects of leadership safety behaviours: commitment to safety management, communicating safety with feedback, safety policies, safety incentives and safety training. The authors additionally identified employee safety participation, safety compliance and safety accidents as the dimensions of safety performance in industries with dangerous activities. The research examines how safety performance in high-risk industries such as mines is influenced by leadership safety behaviours. Moreover, the researchers discovered that training in occupational safety has the greatest impact on employees' safety compliance and participation in safety measures. Afterwards, safety incentives, feedback-based communication, safety management commitment and safety policy were effectively implemented. The study showed that safety management commitment and safety incentives in these industries are facilitated by safety policies, safety training, and feedback-based safety communication. The research results highlight how specific safety actions by leaders are crucial for enhancing safety in high-risk sectors such as mining. These results demonstrate that safety compliance and worker participation can be promoted and enhanced through effective safety training, communication, management commitment and incentive programs.

Researchers clarified that safety performance could be influenced by different elements of safety culture (Mrugalska and Dovramadjiev 2022). Nawi, Zainol, Naim, Mamat, Hamzah and Nawi (2023) explored the role played by employees on the culture of safety within the manufacturing industry. The research gathered information from 108 factory employees regarding their views on safety culture, focusing on four key aspects: managerial support, staff involvement, communication and training. In addition, Nawi *et al.* (2023) examined aspects of safety culture and employees' safety performance based on sociodemographic factors and the length of time they spend in their jobs. The research indicated that demographic variables do not affect employees' perspectives on the safety culture within the sector. The data gathered indicated that safety performance and safety culture aspects are positively correlated. Communication was also found to be a strongly correlated factor, followed by training and education. The results of this investigation showed that the improvement of communication and training programs in the workplace can greatly enhance workers' safety.

Investigations of leadership styles and safety culture within the sugar industry have emphasised the different approaches to leadership, which play an important role in realising exemplary safety performance (Ta *et al.*, 2022). Transformational, empowering and authentic leadership styles are relevant to the enhancement of safety cultures and the enhancement of safety performance within sugar milling (Nasim *et al.*, 2022). Simultaneously, the existing literature evidence still indicates that successful leadership, manifested through transformational, empowering and authentic methodologies to promote safety culture and performance, is pertinent and pragmatic within the sugar mill sector. Asad *et al.* (2021) found how the link between safety performance and safety culture was mediated by transformational leadership for SMEs. It is supported by Cavazotte *et al.* (2021) that authentic leadership can ensure safety outcomes because of psychological capital and organisational citizenship behaviour. Ta *et al.* (2022) extended this further and found transformational, transactional and empowering leadership to receive substantial attention. Zhang *et al.* (2022) detailed how leaders' safety behaviours help to promote safety performance in high-risk industries. Lastly, staff engagement and communication were identified by Nawi *et al.* (2023) as further factors in safety culture in the industrial sector. Businesses must implement greater training and improve communication to raise employee awareness of workplace hazards and lower the frequency of accidents to build a strong safety culture that supports workers' well-being in the manufacturing sector.

2.5. Relationship between safety leadership and safety culture

Comprehending the overarching effect of leadership on organisational culture is crucial prior to analysing its impact on safety culture. Leadership not only defines workplace standards but also dictates how organisations respond to safety concerns. Leadership is pivotal in developing and influencing organisational culture, as it establishes the vision, values and behavioural standards that characterise the work environment. The research by Lee (2022) highlighted how transformational leadership, with its potential to inspire, motivate and unify common goals, has been helpful in developing shared and innovative culture that supports the commitment and employee engagement. Somenzari, Neto, Ganga and Lizarelli (2023) contended that organisational leaders function as cultural designers, shaping employee relationships, decision-making processes and alignment with the organisation's objectives.

The research conducted by Muhammad Wibisono, Afrizal, Asep, Indrayani and Husen (2022) assert that effective leadership fosters a culture in which people feel valued and empowered, leading to increased job satisfaction, innovation and long-term commitment to the organisation. Shukla and Nagpal (2022), however, contended that authoritarian leadership frequently results in rigid, compliance-driven societies where creativity is suppressed, and decision-making is centralised. Studies indicate that transformational leaders promote flexibility and resilience, thereby facilitating organisations' responsiveness to change, while transactional leaders focus on preserving established cultural norms that uphold hierarchical ordering and predictability (Shukla and Nagpal, 2022; Butt et al., 2023). This dynamic shows that, in an organisation depending on how leaders engage with their staff and carry out their vision, leadership styles not only define and shape organisational culture, but also actively maintain and potentially change it.

Furthermore, leadership and organisational culture share a reciprocal relationship, where cultural norms and values also shape leadership behaviours and decision-making processes. The study by Kulović, Husaković, and Dedić-Grabus (2022) and similarly the study by Lokaj and Sadrija (2020) emphasises that in several organisations, existing cultural frameworks shape the leadership styles that develop as leaders frequently modify their methods to conform to dominant organisational norms. This interaction indicates that although leadership can facilitate cultural transformation, the leaders inside the organisation are also shaped by historical precedents and ingrained cultural norms. In higher education institutions, hierarchical and bureaucratic cultural

norms typically promote paternalistic leadership approaches, hence reinforcing authority and conformity (Jabbar, Akmal and Hassan, 2024).

But, the recent study of Fadhilah, Nasution, Natalie and Kolin (2024) notes that in the present dynamic business environments, organisations which invest in the cultivation, adaptation and innovation-driven culture, empower leaders to embrace participative and visionary leadership styles, fostering a climate of creativity and continuous improvement (Fadhilah et al., 2024). This relationship underscores the necessity for leadership development programs inside organisations that align with cultural transformation initiatives, thus ensuring competitiveness and sustainability in rapidly evolving market conditions (Randolph, 2021). This suggests that leadership serves as both a cause and a result of corporate culture, impacting long-term profitability, employee engagement and overall organisational effectiveness.

Mirza and Isha (2020) suggested that occupational safety culture focuses on the ingredients of safety leadership, safe behaviours and safety climate. The research fraternity has largely researched such ingredients, an aspect revealed by Draghici, Dursun, Bașol, Boatca and Găureanu (2022). The paper discusses the way these elements help prevent accidents and create an ergonomic working environment. The main aim of the research was to investigate the mediating effect of safety climate on the correlation between transformational leadership and safe behaviour within the context of the manufacturing industry. The study was conducted with 287 participants in Turkey and Romania. The data was analysed under SPSS 21, using the Preacher and Hayes plugin because its relevance is decided in examining the mediating effects applied in safety behaviour-related research. According to the findings of the analysis, a safety climate partially mediates the relationship between transformational leadership and safety behaviour, which proposes that a positive safety climate may improve the effects of transformational leadership on motivating safety behaviour among employees. Further, the results demonstrated that transformational safety leadership has a significant impact on the perceived safety climate and, consequently, the development of behaviours connected to occupational safety. These findings put emphasis on the need for the development of a sound safety climate and adherence to transformational leadership practices to achieve a safe working environment in manufacturing industries.

Schulman (2020) explored the ideas of safety and safety culture in organisational analysis, which have been observed to be underdeveloped. The scholar stressed that the relationship between organisational structure, such as roles, rules, authority and even communication with safety culture, is more complex than normally assumed. Additionally, Schulman (2020) argued that appropriate cultural norms are needed to support formal structural elements of an organisation to make them work effectively. Schulman (2020) claimed that the process of change in organisational structure and safety culture involves several stages starting with the first step of cultural or sub-cultural changes that create the potential for unsafe acts, followed by the establishment of a safety culture and ending with the ongoing struggle to maintain that culture overtime. According to the study, successful safety performance requires more than just a well-crafted safety management framework in areas as wide as this spectrum of activities and stretching over longer time scales encompassing development and change. This is exclusively reliant on a safety culture that is reinforced. According to the researcher, improving organisational structure and safety culture through regulatory standards can improve safety performance in these industries. Egbe (2023) determined how both human and organisational factors impact safety behaviour in environments with serious hazards, specifically in the oil and gas industry. The study shows that, though technological advancement and strict safety standards are important, a safety management system is heavily dependent on safe human behaviour. The study focuses on how transformational and transactional leadership styles, along with leader attributes such as trust and fairness, impact safety behaviours in addition to the highly researched safety compliance. Data were collected from around 200 employees from the oil and gas industry using the usual measures, such as the Multifactor Leadership Questionnaire, which employs Baron and Kenny's guidelines to test mediation and moderation effects. Egbe (2023) found that trust is an important element in promoting safety behaviour in high-risk industries. Trust has been identified as closely linked to fairness and the personal identification of leaders, which affects the safety behaviour in the organisation. Strong evidence of the reinforcement of a robust safety culture in safety compliance has been found in the promotion of safety culture. According to Egbe (2023), the key to improving safety performance in these industries is transformational leadership, as evidenced by the body of research on the subject. According to the study, the strong emphasis on transformational leadership in safety contexts should be reconsidered, with a new priority placed on the processes of encouraging safety compliance behaviour creation of a

mindful and accountable safety culture, fairness and trust-building. The results provide helpful information for firms to improve safety leadership training programs and for leaders to comprehend the critical qualities required to produce favourable safety outcomes.

A relevant study by Negoro *et al.* (2022) identified the safety leadership dimension with different types of incidents related to safety factors that impact workplace safety. The conduct of a literature review for this study justifies the concept of safety leadership within a wide range of research settings and its likely interaction with various aspects of workplace safety in a range of industries. For added measure, a bibliometric analysis is carried out that can denote the association of safety leadership with other related factors, hence giving an overview of its impact. The study shows that safety leadership, according to defined and variably interpreted research findings, is among the key factors in the quest to improve workplace safety. Safety leadership exerts a beneficial effect on employees' attitudes towards safety and safety-related behaviour, hence reducing workplace incidents. Such results are an important reminder that good safety leadership is essential for a safer workplace, given the fact that good safety leadership has the capacity to develop a strong safety culture and minimize accidents or injuries.

Draghici, Dursun, Bașol, Boatca and Găureanu (2022) revealed the connection between safety leadership, safe behaviour and safety climate, stating that all elements are equally significant in the framework of occupational safety culture for manufacturing. Furthermore, these authors challenge the notion that safety climate serves a mediating role regarding the relationship between safe behaviour and transformational leadership. The study analysed two manufacturing facilities in Romania and Turkey, which produced identical goods for the same customer in the automotive industry, revealing some crucial information about the potential impact of leadership styles on workplace safety outcomes. The results of this study add to the body of literature by indicating that the safety climate only partially supported the impact of transformational leadership on safe behaviour. Furthermore, the results suggested that the positive safety climate could magnify the effect of transformational leadership on actual safety behaviour performance among employees. Additionally, this study offers strong proof that transformational safety leadership affects workers' perspectives. Further, this study provides evidence that transformational safety leadership influences employees' perceptions of their safety climate, which in turn determines their safety-related behaviour.

Safety leadership and safety culture have been interactive in nature regarding these two conditions in the safety of workplace leaders. The perception and practice of safety are shaped at all levels of the organisation by leaders who place a high priority on safety and provide an example of safe behaviour. For instance, Draghici *et al.* (2022) proved the mediating role of the safety climate in explaining how transformational leadership influences safe behaviour. An investigation by Schulman (2020) indicated that both organisational structure and safety culture are positively related to effective safety performance. Furthermore, Negoro *et al.* (2022) showed how safety leadership affects employee attitudes and actions, placing it at the centre of efforts to improve workplace safety. According to this research, safety leadership and safety culture play an essential role in preserving a secure and effective workplace (Egbe, 2023).

2.6. Impact of leadership styles on reducing safety incidents

The impactful study by Lyubykh, Turner, Hershcovis and Deng (2022) explored the very critical leadership behaviours that shape the context of workplace safety. The study focused on workplace safety incidents that result in extreme human and economic costs. A meta-analysis was employed to investigate and understand how different leadership styles, such as change-oriented, relational-oriented, task-oriented, passive and destructive leadership, impact seven variables of workplace safety. Lyubykh *et al.* (2022) seek more effective leadership styles to facilitate safety in the workplace and additionally search for possible contextual and methodological factors that might moderate these relationships. The study analyses 194 samples from 100,000 participants to study how leadership behaviours impact workplace safety outcomes. The findings showed that leadership behaviours significantly affect better workplace safety. However, not all leadership styles contribute equally. The research also discovered evidence of publication bias and common-method variance, which may mean that current literature overstates the impact of some styles of leadership on safety at workplaces. The scholars differentiated between the task-oriented and relational-oriented approaches of leadership in the workplace and pointed out that while modelling leadership across different settings, context-sensitive approaches should be adopted by various industries.

Bazzoli, Curcuruto, Morgan, Brondino and Pasini (2020) explored the various safety leadership styles that affect employees' change-oriented discretionary communications. The communication channel known as safety voice is vital in the improvement of an organisation's sustainability. The

study searched to find an understanding of how different styles of leadership affect the ways in which employees suggest improvements to safety procedures, using a multidimensional model of safety voice. The outcomes of this study demonstrate that different styles of leadership significantly predict various forms of safety voice among employees. Transformational safety leadership predicted a promotive safety voice, with an active suggestion of improvements in safety practices by employees, which was similarly found in Silla, Gracia and Peiró (2020) study. On the contrary, Bazzoli *et al.* (2020) found that transactional safety leadership relates to a preventive safety voice, oriented to preventing risks and maintaining the present level of safety. Passive safety leadership predicted a hostile safety voice, which involves negative or resistant communication about safety. The study highlights the important role of leadership style in moulding how employees engage in discourses related to safety and suggests that organisations need to be mindful of the leadership approaches deployed to enable constructive safety communication (Bazzoli *et al.*, 2020; Silla *et al.*, 2020).

To contribute to existing research, Ismail, Ramli and Aziz (2021) conducted a systematic literature review (SLR) on the critical factors that influence the safety culture of the mining section to bridge the gap in the existing literature. This study systematically identifies the key factors that shape safety culture in this high-risk sector. Ismail *et al.* (2021) employed the Preferred Reporting Items for Systematic Reviews and Meta-Analyses (PRISMA) method. The data findings indicate that a positive safety culture in the mining industry is best constructed by the behavioural dimension, commanding 47% of influence. The next in line is the situational dimension with 29%, followed by the psychological dimension with 24%. Additionally, commitment from management was found to be the most critical factor in developing a sound safety culture. The study emphasizes behavioural improvements in safety, which should go in tandem with situational and psychological factors to enable the building of a sound safety culture in mining. The authors concluded that the systematic review conducted can bring awareness and provide a complete comprehension of the effective application of safety culture initiatives in the mining industry to curtail accidents.

Sinha and Muduli (2021) explored how safety culture and safety leadership play a critical role in driving the safety behaviour of organisational members. The scholars defined safety culture as the collective effort put in by members of the organisation to make safety a top priority and act

accordingly. The study focuses on reciprocal determinism in an organisation where employees in the work environment mutually influence each other, which affects the safety outcomes and culture of an organisation. The study outlines the contribution of competent safety leadership roles to the development of safety-related behaviour in high-hazard industries. Sinha and Muduli explore the interlinkages among safety culture, safety leadership and Workers' Safety Behaviours (WSB). Data for this study were extracted through a critical analysis of about 20-25 published research articles from the period 2000 to 2019. The authors used an adapted version of the Cooper reciprocal model of safety culture, which was integrated with behavioural, situational and psychological factors. That evidence from the studies reviewed indicates that psychological variables are either weakly or unrelated to safety outcomes and behavioural and situational factors strongly and reliably correlate with safety outcomes. In addition, this research has suggested that those industries associated with high risks should focus 80% of the improvements to safety cultures to improve the situational and behavioural aspects for an effective safety prevention and major incidents process. Moreover, the scholars recommend that behavioural-based safety (BBS) processes be the comprehensive intervention tools to change and improve at-risk behaviours. Therefore, interventions based on BBS could thus result in more resilient and persistent improvements in WSB. The study conducted brings forth the need for more research to establish stronger links between safety culture, safety leadership and safety outcomes, thus helping practitioners better design improvement methods for workplace safety.

Zhao, Yang, Liu and Nkrumah (2022) reviewed and deliberated the growing concern of safety participation in behavioural safety research and its importance to management practice. The study employs meta-analysis, including 33 studies from 2000 to 2021, identifying the relationships of several styles of leadership, such as transformational, transactional and passive, on workplace safety outcomes. Outcomes indicate that safety leadership (SL) has a positive effect on both safety climate and safety participation. The scholars advert to identifying active leadership that engages employees in safety practices as important in promoting safety practices. The study also shows that safety climate partially mediates the link between transformational leadership and safety participation. This mediating relationship is proof that a robust safety climate enhances the positive effects of transformational leadership in relation to employee participation in safety measures. The findings additionally indicated that Safety Leadership's influence on safety participation is stronger in environments with a developed economic level or

in dangerous environments. The study highlights the importance of implementing efficient leadership styles at the workplace in minimising safety incidents and improving general safety.

The impact of leadership styles on reducing safety incidents in the sugar industry is profound, with certain leadership styles being more effective in minimising safety risks than others. Transformational leadership, which focuses on inspiring and motivating employees, has been shown to significantly reduce the occurrence of safety incidents by fostering a proactive approach to safety. As observed by Bazzoli *et al.* (2020), transformational leaders encourage team members make extraordinary efforts not for mere compliance and actively seek out ways to improve safety, leading to a reduction in accidents and near-misses. Lyubykh *et al.* (2022) have underscored change-oriented, relational-oriented and task-oriented leadership styles as influencing workplace safety. A study by Ismail *et al.* (2021) moreover identified important factors that affect safety culture in the mining industry, such as leadership commitment and behavioural dimensions. Sinha and Muduli (2021) further ascertained the interplay among safety culture, safety leadership and worker safety behaviour. Zhao *et al.* (2022) further emphasised the role of safety leadership in promoting safety participation and reducing workplace incidents. Scholars significantly advert that effective leadership, characterised by specific styles and approaches, is crucial for reducing safety incidents and improving overall safety performance within the sugar mill industry.

2.7. Theoretical Framework

2.7.1. Transactional leadership theory

2.7.1.1. Origins of the transactional leadership theory

Burns (1978) and Bass (1985) are linked to the origins of the transactional leadership theory and the transformational leadership theory introduced in the 1980's. Scholars have argued that these theories emerged from the reciprocal interactions of leaders and employees as a means of effective leadership with improved working performance (Kidney, 2015). Kuhnert and Lewis (1987) additionally discussed that these theories' development has been shaped by the critical personality differences of leaders as Burns (1978) adverted and later Bass (1985) expanded upon.

Further research by Hinkin and Schriesheim (2008) highlighted the identification made by Bass of the presence of the three dimensions of transactional leadership and the additional category of

laissez-faire leadership, which represents non-leadership. The study by Bass (1997) asserted that the paradigm of transactional-transformational leadership has universality and can be applied across organisational and industry cultures. Young, Glerum, Joseph and McCord's (2021) recent study, in addition, showed that transactional leadership induces follower performance of leader-member exchange (LMX) and psychological empowerment of followers or employees. This underpins the consistent relevance of the transactional leadership theory in studies of contemporary organisational settings.

2.7.1.2. Transactional leadership theory definitions

Transactional leadership has been greatly acknowledged to influence the performance of an organisation as it manages to use the predictive power of reciprocal interaction between leaders and followers with the purpose of achieving effective leadership and performance (Kidney, 2015). Efianda and Iswahyuni (2021) defined transactional leadership as an approach that mainly centres on being goal-oriented and aims at strategic rewarding, guiding and controlling such that subordinates or employees of an organisation work effectively and efficiently. However, Dong (2023) study suggested that the unnecessary emphasis on transactional leadership may hold back and decrease innovation and continual growth in organisations. Moreover, the transactional leadership theory encompasses beyond permanent organisational settings and applies in temporary organisations effectively, with an influence on project-based environments and leadership dynamics in follower commitment (Tyssen, Wald and Spieth, 2014). The centrality of transactional leadership is goal attainment through structured interactions between leaders and followers.

2.7.1.3. Transactional leadership theory application

The study by Bass and Avolio (1993) applied the transactional leadership theory in analysing the United States military base. The use of transactional leadership was effectively implemented to maintain discipline and achieve the short-term goals of the U.S. military. The application provided a clear structure and direct exchange between leaders and subordinates to be effective. Leaders in settings underscored with transactional leadership often try to increase compliance and performance by dispensing rewards, such as promotions or simple recognition, and punishments, such as demotions or disciplinary actions. Furthermore, transactional leadership theory has been widely applied in the field of educational administration. For example,

Leithwood and Jantzi (2005) investigated the use of transactional leadership by school administrators to oversee the performance of teachers in the classroom. Principals used the transactional leadership method to primarily set clear expectations for instructors, including rewards and incentives in addition to goals. These rewards come in the form of recognition and the application of professional development programs following the adoption of rules and the accomplishment of predetermined academic goals in a learning environment.

Within the corporate sector, transactional leadership theory is commonly used to achieve short-term goals and maintain operational efficiency in organisations. A study by Judge and Piccolo (2004) applied the theory in the manufacturing industry which demonstrated the improvements of specific production target goals. Managers in the manufacturing industry employed transactional leadership theory through setting performance expectation and introducing monetary reward systems for the employees who meet the target goals of the organisation.

The distinction between transactional and transformational leadership was initially made by Burns (1978), where he argued and found fault with transactional leadership for focusing primarily on the exchanges between leader and follower, which potentially missed the development of a deeper relationship which occurs in transformational leadership. Burns posited that transactional leadership takes a narrow view, considering that it is limited to only compliance and extrinsic motivation. Moreover, Bass (1985) explored the limitations of transactional leadership discovered by Burns. Bass argued while transactional leadership works to ensure continuity it fails to bring about change or innovation in organisational settings. Also, the scholar alludes to Transactional leadership as requiring high-performance levels and innovation among followers, which it fails to bring in its framework.

2.7.1.4. Transactional leadership theory most recent applications and development

Recently, scholars have applied transactional leadership theory to enhance safety compliance and performance in high-risk industries like sugar production. The study by Zohar and Polachek (2014) applied the theory to communication and safety policy enforcement. The study highlighted transactional leadership to influence safety climates in high-risk environments. The employment of transactional leadership aids in practices that are essential to the improvement of safety cultures and increases employee engagement in safety practices. However, the findings of Zohar and Polachek's study indicated that transactional leadership aids in the improvement of

safety compliance. There is still a need for a deeper adoption of safety culture, which requires the integration of relational and transformational leadership behaviours.

Similarly, Clarke (2013) applied transactional leadership in the manufacturing sector, like a sugar mill industry, which demonstrated transactional leadership on safety behaviours improves the safety performance of the employees as the theory emphasizes the use of the observation method and controlling employee behaviour in the workplace. However, the scholar also posited that the transactional leadership framework may need improvements to its promotion of safety innovation and participation of the workers. Kapp (2012) explored the enforcement of safety policies and performance monitoring in high-risk industries. The study affirms that the theory effectively promotes the improved management of risks as the employees ensure they adhere to the set safety protocols of the organisation. Additionally, the study suggests the transactional leadership theory development needs to encourage employee engagement in safety practices aligned with the organisation's safety protocols.

2.7.1.5. Limitations of the transactional leadership theory

Clarke (2013) pointed out that transactional leadership theory is underpinned by compliance there is a developmental need for the adoption of innovation and proactive engagement to implement safety practices in high-risk environments such as sugar mills. Clarke (2013) identified that transactional leadership limits the empowerment of innovation and proactive safety behaviour of employees in its framework, which is essential for the evolving safety culture of dynamic industries like sugar mills. Similarly, the study by Zohar and Polachek (2014) presented the transactional leadership theory to be limited to short-term safety improvements and cannot sustain the long-term goals of the organisation. The study found that the framework fails to effectively engage with employees continuously for cultured preservation of improved performance. The scholars found the framework to not address the underlying attitudes and beliefs of employees that are essential for long-term safety culture development in high-risk industry organisations. In addition, Kapp (2012)’s application of the transactional leadership theory found that the framework was limited to focus on external rewards and punishment rather than the use of internal motivation in an organisation. The scholar argued that the frameworks limitation hinders the development of a safety culture which continuously motivates the workers and has a genuine concern for their safety in the work environments than just their compliance.

2.7.2. Transformational leadership theory

2.7.2.1. Origins of the transformational leadership theory

Gaston (2021) stated that the transformational leadership theory was originally initiated by James MacGregor Burns in 1978 and further developed by Bernard Bass throughout the 1980s and 1990s. The theory developed during the 1980s focuses on the interplay between the leader and follower in the establishment of valid leadership and performance (Kidney, 2015). A bibliometric analysis of 6,877 articles showed the high influence and active contribution of co-authors related to this field, which showed its prominence over other streams in leadership studies. Bass's (1985) theory specifically stresses more on individualised consideration at the three different levels of individual, team and organisational culture. Moreover, Turnnidge and Côté (2016) suggested that psychosocial development is influenced by transformational leadership philosophy of the follower in that their intrapersonal, interpersonal and environmental experiences are affected.

2.7.2.2. Transformational leadership theory definitions

The study by Bush (2018) identified transformational leadership as the characterization of leaders sharing new visions, showing increased interests and confidence in the workplace, setting responsible standards and motivating followers or employees to bring to reality the leader's vision for the organisation beyond the normal work activity. Quiro (2020) added to the transformational leadership theory approach as being a process which involves not only the transformation of organisational behaviour culture, and followers, but also the transformation of the leader and is strongly driven by passion, confidence, ethics and accountability. The theory has significantly developed from early leadership theories that focused on traits, skills, and style, emphasizing consistency between beliefs, words and actions (Korejan and Shahbazi, 2016). By creating new and a motivating concept, such as enthusiasm, obsession and commitment, transformational leadership facilitates the development and growth of organisations (Korejan and Shahbazi, 2016). Furthermore, Bass, Waldman, Avolio and Bebb (1987) argued that it is expected that the transformational leadership theory employed in practice by the top level will be followed by the bottom level of management.

2.7.2.3. Transformational leadership theory application

The recent study by Boamah, Laschinger, Wong and Clarke (2018) applied the transformational leadership theory in the healthcare sector to enhance patient care and heighten job satisfaction

among healthcare employees by fostering innovative clinical practices. Infusing job satisfaction and patient outcomes are further concerns that must be researched about how such transformational leadership theory can be effective continuously over time within this high-stress healthcare environment during crises like the COVID-19 pandemic. Scholars have previously employed the transformational leadership theory in various settings. Judge and Piccolo (2004) applied the framework in corporate settings and found that it had a significant relationship with an improved lease on organisational effectiveness and satisfaction of its employees. Although the theory applied in various fields, there is a greater need for more insight into the exact mechanisms that would show how transformational leadership leads to employee creativity and innovation is needed, particularly in fast-changing industries like that of technology. Previously, Barling, Loughlin and Kelloway (2002) study applied the transformational leadership theory to the manufacturing sector. The study results prove transformational leadership leads to a safer workplace because it induces the workers to actively participate in safety procedures and protocols. However, the study proved that transformational leadership theory cannot be applied in different industrial situations within cultures and special operational needs, particularly in developing countries where standards and safety conditions are lacking or even near absent.

2.7.2.4. Transformational leadership theory most recent applications and development

In recent research, Asad *et al.* (2021) applied the transformational leadership theory to assess its moderating role in the relationship between safety culture and safety performance in SMEs. The use of the theory in the study identified that transformational leadership theory produced better results in safety performance because of the adoption of a safety culture. This application further underlines the transformational leadership theory's potential development to act as a critical factor in magnifying the positive effect of a sturdy safety culture, especially in the resource-limited setting of small and medium-sized enterprises. Similarly, Mirza and Isha (2020) assessed the theory of transformational leadership to understand the impact it has on reducing occupational accidents through the enhancement of safety climate. The study proved that transformational leaders were proven to highly influence their subordinates to accept safety attitudes and acts, therefore forming an ensured safety culture.

Draghici *et al.* (2022) extended transformational leadership theory application to the development of safety climate and behaviours in manufacturing plants. The theory was applied

in this study to determine how leaders with such transformational behaviours as inspiring a shared vision, providing individually tailored support, and challenging the status quo can raise the safety climate that acts as a mediator in the relationship between leadership and safe behaviour among employees. Additionally, Fischer (2023) recently applied the theory of transformational leadership to high-risk industries and argued that the application of the theory has extended to health. Fischer posited that the transformational leadership theory application beyond traditional industrial contexts means that safety-specific transformational leadership (SSTFL) is effective in shaping safety climates and improving safety outcomes in high-risk industries, further underlining the theory's flexibility and relevance in dynamic settings.

2.7.2.5. Limitations of the transformational leadership theory

According to Draghici *et al.* (2022), even though transformational leadership had a significant effect on safety climate and behaviours, such effects differed across several contexts within manufacturing and, therefore, are not applicable in all settings of the industry. Siangchokyoo, Klinger and Campion (2020) added that the theory application may not be possible within the industrial context as it would be a challenge to maintain over time in environments where the turnover rate tends to be higher and the leader continuity is not guaranteed. The scholar's accent reliance on stable leader-follower dynamics can limit the theory's effectiveness in industries like sugar mills, where workforce changes are common.

Fischer (2023) stated that although transformational leadership has been well documented, the operationalisation of this leadership style within safety-specific contexts is underdeveloped, which may lead to measurement discrepancies. There are concerns regarding the construct validity of transformational leadership in highly specialised environments. These limitations identified reflect the awareness of being extremely cautious with respect to contextual factors, leader-follower relationships and measuring the real impact on safety outcomes while applying transformational leadership in safety culture development within a specialised industry like sugar mills (Fischer, 2023; Siangchokyoo *et al.,* 2020).

2.8. Justification of the transactional and the transformational leadership theories

2.8.1. Transactional leadership theory

The transactional leadership theory foundation is the concept of reciprocal interactions between leaders and followers (Bass and Avolio, 1993). This leadership style is structured and goal-

orientated and the focus is compliance, reward systems and short-term achievements. It is highly structured and goal-oriented and focuses on compliance, reward systems and short-term achievements. This type of leadership works especially well in settings where upholding regulations, hitting deadlines and maintaining discipline are critical. Transactional leadership can efficiently enforce safety regulations in high-risk industries like sugar mills, but it may not be enough to encourage continual innovation and the creation of a profound safety culture (Clarke, 2013; Zohar and Polachek, 2014).

In transaction leadership theory, the leaders are significantly goal-orientated, emphasise clear objectives for the company and use a structured approach to achieve the goals of the organisation (Efianda and Iswahyuni, 2021). Judge and Piccolo (2004) emphasised the use of rewards and punishment in transactional leadership. The leadership style significantly relies on rewarding the compliance of followers and punishing non-compliance so that the objectives of the company are achieved. Additionally, transactional leadership is primarily effective for short-term goals and does not necessarily apply effectively to long-term innovation for an organisation (Dong, 2023). Leaders who employ a transactional leadership style closely monitor and control the employee's performance to ensure the employees adhere to the rules of the organisation (Kapp, 2012).

2.8.2. Transformational leadership theory

The foundation of transformational leadership theory is the leader's capacity to encourage and inspire followers to put the organisation's needs ahead of their own (Bass, 1985). The theory's primary goal is to innovate, provide employee development and adopt strong organisational culture. Transformational leadership can play a crucial role in establishing a deeply ingrained safety culture in high-risk businesses such as sugar mills. This culture should go beyond mere compliance and positively impact the attitudes and behaviours of employees. (Draghici *et al.*, 2022).

The transformational leadership framework requires the organisation leaders to be inspirational and motivate the employees. The leaders foster enthusiasm and commitment to their work through compelling company visions (Bush, 2018). Korejan and Shahbazi (2016) asserted the role of intellectual stimulation from the leaders to the employees in transformational leadership. Leaders continuously encourage innovation and creativity from the workers to challenge the status quo and promote continuous improvement. Additionally, Turnnidge and Côté (2016)

allude to the individualised consideration of transformational leadership, where the leaders provide more personalised support and pay attention to their follower's independent needs. Fischer (2023) highlighted the long-term focus of this leadership style, aiming to achieve the long-term goals of the organisation. The goals of the theory are achieved through the creation of a robust, encouraging company culture, which is especially useful for promoting a safety culture in high-risk settings.

2.9. Conclusion

In conclusion, the literature review in this chapter analysed the different styles of leadership and their eventual impact on safety culture in the sugar mill industry. Moreover, there has also been empirical support for the role played by leadership in determining organisational performance along with safety performance at organisations operating in a high-hazard industry like that of the sugar mill industry. Furthermore, literature evidence showed the complexity of leadership, which highlighted both formal and high-performance informal structures contribute to meeting organisational goals and are relevant in risky sectors. The literature review alluded to the fact that an effective safety culture requires both transactional and transformational leadership styles to be successful in industries such as sugar mills. The integration of different leadership styles, along with organisational commitment and employee engagement, could help reduce incidents of safety and retain overall operational efficiency related to the sugar industry. The findings of this review are used in designing and developing the research stated methodology in chapter three that attempts to investigate what factors influence the leadership style when creating a safety culture in the sugar mill based in South Africa.

Chapter 3: Research Methodology

3.1. Introduction

After the thorough literature review that was provided in Chapter two, which examined theories and research related to leadership styles and their influence on safety culture in industrial contexts, Chapter three details the research methodology adopted for this study. This chapter outlines the design, approach, and methods used to investigate the factors influencing leadership style and safety culture development within a sugar mill setting. It explains the qualitative approach chosen to capture in-depth insights from the sugar mill leaders, including the rationale for employing semi-structured interviews as the primary data collection method. Additionally, Chapter three discusses the selection criteria for participants, ensuring a diverse representation of roles and perspectives within the sugar mill to provide a well-rounded understanding of leadership and safety dynamics. Ethical considerations, data analysis methods and the steps taken to ensure reliability and validity are also addressed, establishing a strong methodological basis for evaluating and interpreting the results of the study. The structure of the chapter is illustrated with an onion diagram, as shown in Figure 3.1.

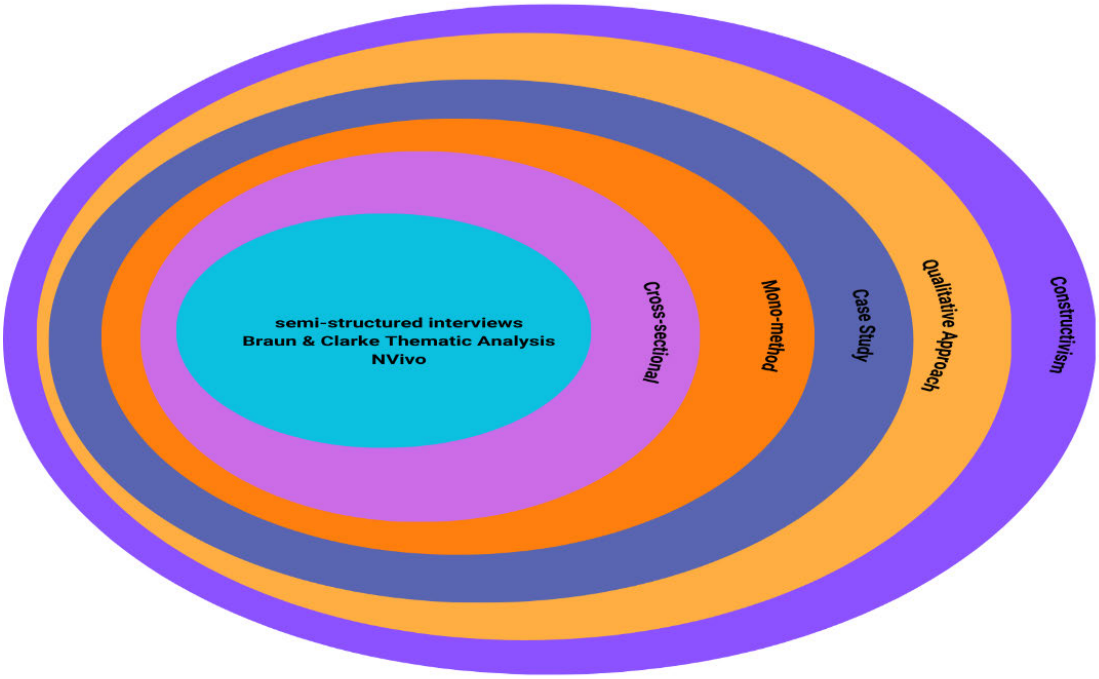

Figure 3.1: Research Onion Diagram

Source: Adapted Saunders (2007)

3.2. Research design

In the research methodology, the concepts of convergent and divergent research designs are essential to understand to choose the appropriate research design for the study (Abutabenjeh and Jaradat, 2018). Indu and Vidhukumar (2020) defined a research design as a thorough plan employed in scientific studies that differs in its methodological approaches, including qualitative to quantitative approaches, as well as from experimental to non-experimental methods, covering a broad spectrum of study types. Qualitative research designs have been identified to gain knowledge about human experiences and find meanings through phenomenology, ethnography and grounded theory (Charli, Eshete and Debela, 2022; Busetto, Wick and Gumbinger, 2020). As per Nichols (2020), qualitative research design in research is instrumental in exploring the reasoning behind phenomena and can yield reliable and trustworthy data insights. Furthermore, Gephart and Saylors (2020) argued that qualitative research design has a future-orientated

strategy which connects the study's research goals and observation, data collection methods, the research analysis and the study's outcomes.

However, scholars indicate that quantitative research design is more systematic in its approach to investigate scientific problems related to attitudes, opinions and behaviours through research, involves the collection and analysis of numerical data to measure the variables (Charli, Eshete, and Debela, 2022; Sharma, Jha, Koirala, Aryal and Bhattarai, 2023). Mahajan (2020) asserted that quantitative designs quantify these variables and generalise the results from a larger sample population by generating numerical data. Academics have defined experimental designs as the comparisons of groups exposed to different treatments, while non-experimental designs, such as quasi-experimental designs, estimate the effects of interventions without randomisation (Miller, Smith and Pugatch, 2020; Andrade, 2021). However, Indu and Vidhukumar (2020) highlighted that experimental studies compare experimental groups and Gopalan, Rosinger and Ahn (2020) stated that quasi-experimental designs are for the understanding of cause and effects in relationships such as the causal effect of education policies and interventions in education research.

For the study to investigate the factors influencing leadership style and the safety culture development of a sugar mill in South Africa, a qualitative research design was selected and deemed appropriate. Qualitative research is recommended for understanding complex phenomena, providing detailed insights and producing reliable and credible information (Busseto *et al.*, 2020; Nichols, 2020). Therefore, aligned with the study's aim to investigate the factors which influence leadership styles, examine the impact of leadership styles on safety incidents, and look for detailed insights on the development of safety culture development in sugar mills, qualitative research is suitable. Additionally, scholars Gephart and Saylor (2020) emphasised that qualitative research designs offer a naturalistic perspective on social phenomena, facilitating the creation of situated narratives, reasoned explanations and theory testing. Similarly, the study contributes to the knowledge of the impact of leadership styles on safety incidents by capturing the point of view of the participants involved.

The qualitative research design approach addresses the research objectives, including identifying the predominant leadership styles used by leaders in driving a safety culture within the sugar

mill, investigating the factors that influence leadership in driving a safety culture within the sugar mill, analysing the main challenges faced by leaders in fostering and maintaining a safety culture in the sugar mill and to provide strategies for improving leadership styles to enhance the development of a safety culture in the sugar mill. Furthermore, Tomaszewski, Zarestky and Gonzalez (2020) accentuated that employing a qualitative research design for a study allows for the comparisons of approaches and enables comparisons among methods, therefore suitable as the study compares approaches and methods of leadership styles and safety culture development of employees in sugar mills for in-depth insights.

3.3. Philosophical assumptions

Coates (2020) identified philosophical assumptions in research methodology as the foundation of a research study that influences the methods adopted in a study. Additionally, Muchanga (2020) highlighted that each research study is to be grounded by a specific philosophical framework, which is significant in its guiding foundation. Therefore, philosophical assumptions are vital to serve as the foundational framework that guides the research sequence of the study, shapes the methodologies employed and affects both the evaluation and social implications of the research findings (Buriro, Ednut and Khatoon, 2021; Brentnall and Higgins, 2022).

In qualitative research, scholars note that there are a range of philosophical assumptions that influence the way the data of the study is collected and interpreted. These philosophical assumptions include positivism, constructivism, interpretivism, critical theory and pragmatism (Dhobi, 2022; Matta, 2021; Urcia, 2021). Positivism can be the foundational framework of industrial and preindustrial research contexts (Riley, Emigh, and Ahmed, 2021). Meanwhile, interpretivism, is a qualitative paradigm that explores the meanings behind social interactions and human behaviour, characterising itself outside of natural science. The findings of these studies often influence judicial decision-making and constitutional interpretation (Shah 2021; Junjie and Yingxin, 2022).

Constructivism, alluding to Brau (2020), is the theory that suggests knowledge grows when people are actively engaged in subjective cognitive building and reflection employing an intersubjective decoding mechanism (Saleem, Kausar and Deeba, 2021). The philosophical assumptions of the critical theory aim to critique the hegemonic epistemological patriarchal

power that obstructs societal transformation rooted in a change in beliefs, convictions and social institutions (Hammer, 2023). Kelly and Cordeiro (2020) regard pragmatism as a qualitative research paradigm that is grounded on pragmatic outcomes and actionable knowledge-enhancing experience to profess inquiry, not just purely experiential.

The philosophical assumption selected for the study was constructivism. Constructivism is a philosophy of how the world becomes what it looks like in people's minds. This assumption finds a philosophical connection within the area of the role of leadership styles helping or hindering safety culture development. Also, this philosophical assumption implies that safety is dynamic, not static, and it evolves from interactions between organisational leaders and workers.

3.4. Research approach

Research approaches can be described as inductive for qualitative research or deductive for quantitative research (Azungah, 2018). The research strategy for a qualitative, inductive study involves interviews or focus groups. Qualitative research methods described by Busetto *et al.* (2020) include document analysis, focus groups, semi-structured interviews and non-participant observations. Additionally, Mason (2021) stated that compared to quantitative methods, qualitative research procedures are less generalisable and are mostly focused on groups, in-depth interviews and reviews. Denny and Weckesser (2022) stated that in addition to focus groups, interviews and observation, qualitative research approaches also involve sample techniques such as convenience sampling, intentional sampling and snowball sampling.

One prominent qualitative research method is the case study which is appropriate suitable for this study. It entails looking at particular social units or circumstances to comprehend complicated phenomena, create theories, assess programs, and produce more general theoretical insights within their contexts (Khan, 2022; Viera, 2023). According to Cooke (2023), a case study focuses on a single social unit to examine the problem and find generalised findings for similar populations within a specific group. Furthermore, Sitorus (2021) highlighted that by examining the complexity and dynamics of a specific instance within a significant context, a case study seeks to improve understanding of individual, group, social, political and other phenomena.

3.5. Study site

Figure 3.2: Study Area Map

Source: Google (2024)

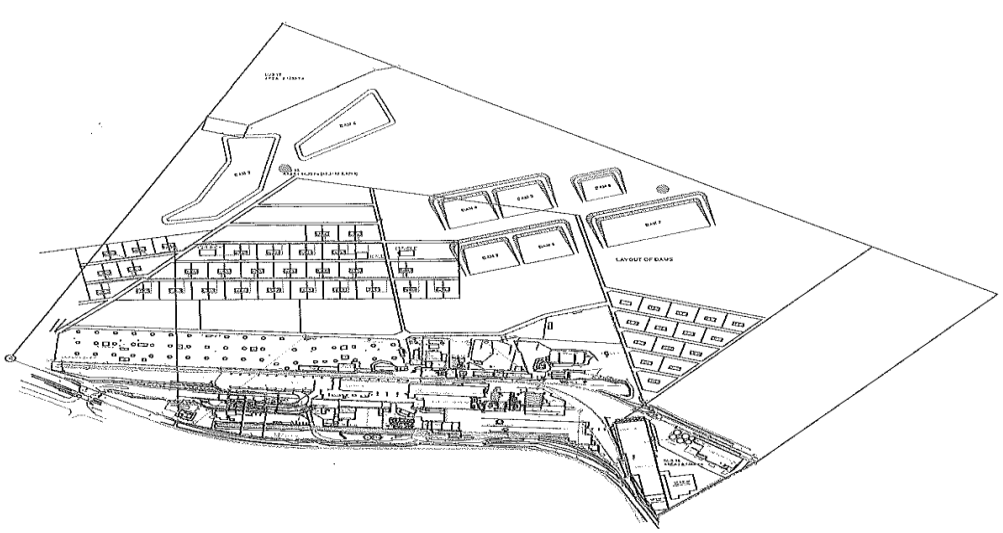

Figure 3.3: Site Map of the Sugar Mill

Source: Umshwathi Local Municipality (2023).

3.5.1. Study area description

3.5.1.1. Geographical location

The case study sugar mill is in the Natal Midlands under the authority of Umshwathi Local Municipality with GPS coordinates (Latitude -29.33805556; Longitude 30.62861111) which is 649 560 square meters and 1049m above sea level. Situated in the KwaZulu-Natal Province's uMgungundlovu District, next to Pietermaritzburg, is the uMshwathi Local Municipality, a Category B municipality. Out of the seven municipalities in the district, it is the largest. Although there is some urban growth in the larger towns, most of the land is used for agriculture. Very few economic prospects and highly limited access to basic physical and social requirements are experienced by the communities residing in underdeveloped areas. The main economic activities around the area are agriculture and manufacturing. The population around the municipal area is approximately 118 478 (Municipalities of South Africa, 2021). A portion of the surrounding land is used for residential areas, approximately 2 km from the centre of the sugar mill, as well as small businesses, including engineering, shops, banking and other industrial businesses. Most of the surrounding land is used for agricultural purposes.

3.6. Target population

Pradhan, Abrahami, Yin, Yu, Sahasrabudhe, Andre and Azoulay (2021) defined the target population as the selective group of people chosen for a research study from which data sample will be collected during the data collection process. This population is identified by variables such as self-eligibility based on the minimum requirements of demographics required for contribution inclined with a research study (Willie, 2023). To guarantee exact data collection, accurate analysis, and successful strategy implementation in research projects, it is crucial to distinguish between the target group and the public for the purpose of the study (Willie, 2023).

The target population is under cross-sectional research that investigates the leadership styles influencing safety culture in a sugar mill at one particular moment. Wang and Cheng (2020) defined cross-sectional studies as a study that observes and analyse data from a target population at a single point in time. The study's target population appropriate participants are all the leaders from the sugar mill in the Natal Midlands for the period of the study. The study aimed to investigate the existing leadership dynamics and safety practices of the sugar mill industry. The

existing target population of 20 leaders was appropriate for drawing conclusions about the relationships and factors influencing leadership styles and safety culture as the participants worked during the study period in the sugar mill and were leaders within the sugar mill.

3.7. Sampling strategy

Turner (2020) and McEwan (2020) stated that a sampling strategy must be considered in research when selecting the subset of the population and using a method such as probability sampling or non-probability to complement accuracy factors with consideration for potential bias alongside the fulfilment of the objective. Haute (2021) explained that sampling techniques involve a selection strategy which chooses a subset from the larger population. Additionally, the scholar emphasised that this process may sacrifice accuracy and comprehensiveness compared to studying the whole population. Gill (2023) noted that qualitative methods are vital in the enhancement of the research rigour by providing appropriate sampling techniques and sample size.

The appropriate sampling strategy can ensure that, from the population, a selected subset is identified, which expresses its characteristics. This provides the validity, reliability and accuracy of findings and conclusions. Different strategies are applied in view of a set of objectives for the research based on the resources available and in relation to the nature of the population that the researcher is studying (Turner, 2020; Haute, 2021; Spolarich, 2023). In research the sampling methods are primarily categorised into two types which are namely, probability sampling and non-probability sampling. The probability sampling employs methods that ensure each member of the population has an equal and identifiable chance of selection, hence preserving representativeness and minimising selection bias (Yang and Kim, 2020). These examples include random sampling and systematic sampling, which are widely used for quantitative research to generalise findings (Latpate, Kshirsagar, Gupta and Chandra, 2021). However, non-probability sampling, in contrast, does not utilise random selection. According to Cornesse et al. (2020) this implies that not every population member has the same opportunity to be selected from the population. Instead, the researchers apply methods such as convenience sampling, purposive sampling, or census sampling, which are founded on accessibility and the objectives of the study (Turban, Almazan, Reisner and Keuroghlian, 2022).

Random sampling is a method by which an unbiased sample from a population can be selected, essential to produce valid and unbiased data analysis and modelling, in turn enforcing an unbiased experimental design (Latpate, Kshirsagar, Gupta and Chandra, 2021; Cohen, 2023). Contrasting with unbiased sampling, scholars have identified biased sampling as a method with systematic errors because it does not represent the target population. The results of biased sampling will be skewed and reduce the validity of research findings (Cao, Koning and Nanda, 2023; Derreumaux, Bergh and Hughes, 2020). Yang and Kim (2020) emphasised that probability sampling, which is inclusive of random sampling, assures that every member of the population has an equal chance of selection in the sample process, which enhances the generalizability of the findings. Conversely, Andrade (2020) and Winton and Sabol's (2021) research contend that non-probability sampling methods, including convenience sampling, are founded on the availability of participants being selected, and that this reduces the external validity of the study (Andrade, 2020; Winton and Sabol, 2021).

Cornesse *et al.* (2020) described that non-probability sampling relies on models for validity and generates inferences about a larger population based on the sample design. Additionally, Turban, Almazan, Reisner and Keuroghlian (2022) stated that even though non-probability sampling uses non-random participant selection the sampling method offers valuable advantages for research. According to Righi, Falorsi, Daddi, Fiorello, Massoli and Terribilio (2021), there are distinct approaches aimed at complete data collection from all possible units within the population, including census sampling. Burakauskaitė and Čiginas (2023) suggested census sampling is a research method which uses extensive data from individual settings. This method can be used in non-probability sampling to ensure detailed data collection. Additionally, Saputra and Manullang (2022) stated that census sampling is a technique where one chooses every individual in the sample from the population, which indicates that everyone has an equal probability of being chosen.

For this study, a census was deemed the most suitable method. The study findings are more accurate and reliable using census sampling. This approach reduced the margin of error and provided a complete picture of the phenomena under study, which is crucial when making recommendations for leadership practices and safety culture development (Bafarasat, 2021; Burakauskaitė and Čiginas, 2023). In this instance, the sugar mill in the Natal Midlands was

examined for having a safety culture, and the data from each leader were different but equal value to have input about what attitudes prevailed amongst employees regarding current practices toward safety and leadership dynamics of that safe or unsafe work environment working on these types of conditions. Including the entire population for the study was critical because the concern of the study was to identify the leadership styles within the sugar mill industry, which are intricate and are not required to be similar across individuals. Therefore, census sampling enabled the inclusion of all the relevant data. Census sampling is a non-probability sampling technique in which the sample provides for the removal of possible bias in a sample by including every member in the general population (Qader, Lefebvre, Tatem, Pape, Jochem, Himelein, Ninneman, Wolburg, Nunez-Chaim, Bengtsson and Bird, 2020).

3.8. Sampling and sample size

As stated by Mohaptra (2020), sampling is the process of recruiting a small group from any big population that represents that massive whole when probability theory principles are applied. The sampling process is vital in ensuring that the study group represents the source and the target populations precisely through various techniques that include, among others, probability and non-probability methods of sampling (Spolarich, 2020). Andrade (2020) argued that the sample size is a critical element, as it refers to the number of individuals that need to be included in a research study and must be evaluated at the time of the proposal to avoid a sample that is too large or too small.

According to Gumpii and Das (2022), the correct sample size is essential in research for detecting statistically significant differences and ensuring scientifically valid results. In the research study, properly determining the sample size will allow the researcher to avoid making any incorrect inferences about the population and the subset of the population. A variety of methods is used to establish the exact sample size and in this research study, the census sampling method is considered best for deriving accurate results (Nanjundeswaraswamy and Divakar, 2021). The study population comprised 20 leaders of the sugar mill in the Natal Midlands. The 20 leaders within the sugar mill were identified as suitable for the research to gather the needed in-depth, qualitative insights through semi-structured interviews.

3.9. Participant demographics

The demographic data of the leaders participating in the study is presented here, giving background information to help comprehend the traits and backgrounds of these participants whose leadership philosophies and impact on safety culture are being examined. The demographic profile includes key factors such as age, gender, years of experience in the sugar milling industry, educational background and current leadership roles. By examining these demographics, it becomes clearer how leaders' approaches to safety and interactions with employees may be influenced by their personal and professional characteristics. This background may also shed light on the findings on how leadership styles influence and promote safety culture in the sugar mill setting.

The demographic profile of the workforce examined in this study, characterised by considerable experience, diverse educational backgrounds, and varied cultural identities, appears to significantly shape the findings on leadership practices and safety culture within the sugar mill. As can be seen from this sample in Table 3.1, most participants have a tenure of more than ten years and similarly long-time exposure to safety training. The exception is one leader who had not received training as he had been recently promoted. Their embeddedness in the safety norms of the organisation would, therefore, be high, which can reinforce a preference for transformational leadership and zero tolerance for violating safety policies.

The educational background of participants ranged from matric qualifications to postgraduate degrees, which further causes variation in approaches towards safety management. The academically qualified participants placed emphasis on compliance with regulations and organised safety campaigns, while those with practical qualifications favoured pragmatic and direct involvement methods of safety promotion. Ethnic diversity ranged from African to Indian/Asian and White ethnic backgrounds, which had an influence on the cultural attitudes toward authority, compliance, and communication styles that may affect how both the adoption and perceived effectiveness of safety practices are viewed.

Concerning gender, although predominantly male, females in senior leadership can enrich the spectrum of leadership styles by incorporating distinct strategies for communication and employee engagement in terms of safety-related decision-making processes. Combined, these demographic aspects yielded a multifaceted prism through which the implications of the present

study can be considered, revealing the deeply ingrained nature of personal and professional backgrounds of leadership practices and the collective safety culture in high-risk industrial settings.

Table 3.1: Demographical Information

Participant no.	Age	Gender	Years working for the company	Position	Educational /Professional Qualifications	Ethnicity	Occupational Health and Safety Training
1	Above 40 years	Female	10 years+	Senior Leader	Postgraduate degree	African	Yes
2	Between 31-40 years	Female	6-10 years	Senior Leader	Postgraduate degree	African	Yes
3	Above 40 years	Male	10 years+	Senior Leader	Degree	Indian/Asian	Yes
4	Between 31-40 years	Male	Less than 5 years	Senior Leader	Degree	African	Yes
5	Above 40 years	Male	10 years+	First line leader	Matric or equivalent	Indian/Asian	Yes
6	Between 21-30 years	Male	Less than 5 years	Senior Leader	Degree	White	Yes
7	Between 21-30 years	Male	6-10 years	First line leader	Diploma	Indian/Asian	Yes
8	Between 21-30 years	Male	6-10 years	Senior Leader	Postgraduate degree	White	Yes
9	Above 40 years	Male	10 years+	Middle Leader	Diploma	Indian/Asian	Yes
10	Between 31-40 years	Male	6-10 years	Senior Leader	Postgraduate degree	White	Yes
11	Between 31-40 years	Male	10 years+	Middle Leader	Matric or equivalent	Indian/Asian	No
12	Above 40 years	Male	6-10 years	Middle Leader	Matric or equivalent	White	Yes
13	Above 40 years	Male	10 years+	Middle Leader	Matric or equivalent	White	Yes
14	Above 40 years	Female	6-10 years	Middle Leader	Postgraduate degree	African	Yes
15	Above 40 years	Male	10 years+	Middle Leader	Diploma	Indian/Asian	Yes
16	Between 31-40 years	Male	10 years+	Senior Leader	Diploma	Indian/Asian	Yes

3.10. Data collection

Data collection is a critical process in the research framework since it involves collecting relevant data to address the research problem under investigation. The data collecting techniques to carry out the process of data collection could be observed in Mazhar (2021) and include

observation, interviews, surveys and information from databases. The study by Chadli, Gretete and Moumen (2021) defined data collection in research methodology as identifying the research problem. Mazhar additionally alluded to research methods as being diverse and including observation, interviews and questionnaires. According to Olsson (2021), participant observation (PO) is the process of data collection, which is based on direct observation using all five senses in real time and focuses on first-hand experience. Observational methods are crucial in the research of behavioural sciences and serve as a basic tool for data collection (Mazhar, 2021). Ranganathan and Caduff (2023) identified a questionnaire as another method of collecting data from participants, for which careful design, implementation, and validation ensure that the shared information remains valid.

Additionally, according to Dursun (2023), interviews are yet another important collection tool in qualitative research. The scholar highlighted that interviews require deep thoughts informed by the definition of an interview, the purpose, the planning process, strengths and weaknesses, ethical implications, and validity, to enable validity. According to Tavory (2020), interviews can be open, closed or refracted, and the same data offer different inferences due to differing interview contexts and researcher perspectives. Open-ended, semi-structured interview questions were used to gather the study's data. According to Wong *et al.* (2023), semi-structured interviews enable progressive improvements that contribute to a comprehensive understanding of the research question. Thille, Rotteau and Webster (2021) described these interviews as having an established framework of topics comprising pre-formulated questions and prompts, which may be modified in response to the participants' answers.

According to Kakilla (2021), semi-structured interviews are a particularly suitable concept for qualitative research because of the flexibility and adjustability they offer, which enables a better achievement of some objectives in completing this study. Wong *et al.* (2023) also pointed out that semi-structured interviews offer the possibility of a deeper exploration of research questions, but modifications in an interview may decrease the depth to what extent data is being captured. Utilising open-ended questions in semi-structured interviews enables the attaining of deeper insights into investigating the determinants shaping leadership approaches and allows for the in-depth assessment of their impact on the adoption of innovative safety cultures in the sugar mill industry (Galura, Horan, Parchment, Penoyer, Schlotzhauer, Dye and Hill, 2022).

The study employed a one-method data collection technique, as only semi-structured interviews were used. This study collected detailed, qualitative responses of the chosen employee participants from the sugar mill via semi-structured interviews. This is justifiable within the research context of a case study that utilised a mono-method approach as it enabled an in-depth exploration and meaning to be sought from sugar mill employee participants' experiences and understandings of leadership style and safety culture using rich, detailed data appropriate for qualitative analysis. The interview schedule that was used is attached as Appendix 4.

3.10.1. Pilot study

Pilot studies are essential for researchers to examine logistical factors on a smaller scale. This prevents errors from being made in larger studies (Díaz-Muñoz, 2020). Rather than assessing the efficacy of the intervention itself, these pilot studies are meant to determine whether a research approach is feasible (Dibartola and Hinchcliff, 2022). According to Laws and Maishman (2022), pilot studies are important as they can show significant impacts or the lack of effects and offer insights that can guide future research. Furthermore, qualitative pilot studies contribute to ethical research practices as these demonstrate the researcher's commitment to ensure that the research maintains a high standard (Lees, Walters and Godbold, 2022). The purpose of the pilot study is to safeguard future research's success and integrity, a point that is further emphasised when discussing the ethical ramifications.

The pilot study was conducted to test whether the interview questions were appropriate, assess the flow of the interview, time the interview duration, identify potential issues, and ensure the questions effectively gathered the needed data. The pilot study was done on the 09th of September 2024, and it involved one participant, who is a middle leader from the sample of the sugar mill leaders. The pilot study leader was chosen based on the history he has with the sugar mill. He has worked for a much longer period than the rest of the leaders that were part of the study. He has seen and experienced the evolution of the safety culture within the sugar mill over the years and therefore was the perfect choice for the assessment of the suitability of the interview guide. Informed consent was obtained from the pilot participant and confidentiality was ensured, as it was the case with all other participants. An appointment was made with him

using the company’s email system and the interview took place in person in an office setting and audio recorded. The interview session took approximately 20 minutes.

What was learnt from the interview was that the questions were appropriate and relevant to the research objectives. However, it became clear that some of them had to be elaborated further for better clarity and to avoid ambiguity. Another challenge was the issue of anonymity. The pilot participant had been informed not to mention any names of individuals or the name of the company during the interview, but there was a slip of the tongue during the interview. The identified shortcomings assisted in ensuring that emphasis on the remainder of the participants to be vigilant was made. The completion of the form with demographical information also proved to be time-consuming and a decision was made by the researcher to complete all the demographical information for the remainder of the participants prior to the actual interview, to save time. The insights gained from the pilot interview gave a clear indication that the questions would yield valid data results.

3.10.2. Research instrument

Primary research data was collected through semi-structured one-on-one interviews, which were done in person from the 09th to the 13th of September 2024. Semi-structured one-on-one interviews were appropriate as they allowed flexibility and in-depth exploration of multifaceted issues. Each interview was 20 minutes and open-ended questions were deemed appropriate as they allowed for probing and follow-up questions, which additionally allowed for the gaining of in-depth data, which is useful information regarding participants' experiences and perspectives. The semi-structured interviews were designed to facilitate the pursuit of the study's research objectives and questions. The purpose of the open-ended questions was to provide respondents the freedom to openly share their thoughts and experiences.

Data collection and analysis were done through individual interviews, as this would ensure a more in-depth and personal kind of interaction. The interviews were audio-recorded using the Echo Smartpen to ensure that the transcription and analysis were accurate. The interviews were imported into NVivo, thematic analysis was performed, and the coding System of NVivo developed the codes to identify important themes and patterns within the responses.

3.11. Data analysis

According to Braun and Clarke (2022), thematic analysis is a method for finding, examining, and summarizing patterns or themes in data. Thematic analysis was used because it analyses qualitative data related to opinions, feelings, thoughts and descriptive information. Furthermore, thematic analysis is easy to learn and can be done manually or with technology without advanced statistical knowledge. It is flexible for qualitative researchers and can also be used to address a wide range of research questions (Cammock and Andrew, 2023). The researcher used this data analysis tool because of its holistic understanding, which allowed the researcher to explore multiple recurring themes in context with the research objectives. Hence, it created a comprehensive understanding of the topic. Thematic analysis can address various research questions (Braun and Clarke, 2022). The other reason for using this data analysis tool is that it enabled the researcher to get information regarding how the leadership styles at the sugar mill can be improved to enhance employee safety.

Data analysis was done using the NVivo process. NVivo is a powerful software suite for the management, analysis and synthesis of non-numerical data. While the intended census population quantity was 20, when 16 leaders had been interviewed, data saturation had been reached. Braun and Clarke (2022) described it as data redundancy or a point where no themes emerge from data. Eighty percent of the census population had been interviewed and no new themes were expected to emerge after reviewing the responses that had already been obtained. Thematic analysis of the data obtained from semi-structured interviews with leaders in the sugar mill (N = 16) was carried out by NVivo in this research. The following steps were taken:

1. Familiarization: Transcripts of interviews were imported into NVivo as individual case files. Transcripts were read repeatedly to get a general sense of the data.
2. Coding: Tentative coding was done based on the research questions and an initial reading of data, in which a list of potential codes was developed. These were then applied to relevant sections of the transcripts by using the NVivo coding features.
3. Searching for Themes: examination of the patterns and relationships between the codes to determine the dominant themes. To elaborate on these more general themes, the codes were organised hierarchically in graphic schemas.

4. Reviewing Themes: The coherence and relevance of the identified themes were reviewed. Adjustments were made to the themes and new themes were created based on the review and the analysis process.
5. Defining and Naming Themes: Each theme was titled with a name that best described what the theme speaks about.
6. Writing Up the Analysis: Reports were produced summarizing the identified themes with included codes. A consideration of the implication of these themes in relation to the research questions and the dominating literature was then made. Furthermore, the findings were also related to the broader context of the safety culture in sugar mills and to the leadership theory to highlight their relevance and impact.

Participants were then coded based on their positions, for example, as Middle Leader 1, Senior Leader 1, or First Line Leader 1, as depicted on Table 3.2 below.

Table 3.2: Participant Coding

Participant no	**Position**	**Code**
Participant 9	Middle Leader	Middle Leader 1
Participant 11	Middle Leader	Middle Leader 2
Participant 12	Middle Leader	Middle Leader 3
Participant 13	Middle Leader	Middle Leader 4
Participant 14	Middle Leader	Middle Leader 5
Participant 15	Middle Leader	Middle Leader 6
Participant 1	Senior Leader	Senior Leader 1
Participant 2	Senior Leader	Senior Leader 2
Participant 3	Senior Leader	Senior Leader 3
Participant 4	Senior Leader	Senior Leader 4
Participant 6	Senior Leader	Senior Leader 5
Participant 8	Senior Leader	Senior Leader 6
Participant 10	Senior Leader	Senior Leader 7
Participant 16	Senior Leader	Senior Leader 8
Participant 5	First Line Leader	First Line Leader 1

Participant 7	First Line Leader	First Line Leader 2

3.12. Data quality control

According to Adler (2022), in qualitative research, one ensures the data quality by ensuring the trustworthiness of the research. Trustworthiness is measured in the four main criteria: credibility, transferability, dependability and confirmability. In qualitative research, credibility is essential to guaranteeing the study's quality. The achievement of the four main criteria involves the processes of prolonged engagement, member checks and clear communication of findings (Megheirouni and Moir, 2023). To maintain superior quality standards along the entire research, it was essential to address each of these elements rigorously (Byram, 2022).

According to Velloso and Tizzoni (2020), confirmability is the ability of researching results to be validated. NVivo was used for the thematic analysis to support confirmability as it documents a clear trail of coding, including codes and themes from the data.

According to Madondo (2021), transferability is a process of discerning whether research findings can be generalised elsewhere. The full description of the research setting was detailed and context-specific, and it was conducted in Umshwathi Local Municipality in a sugar mill. Additionally, it provided details for the sugar mill participants. The study successfully identified the cases that do not align with the themes that did not emerge from the data. Furthermore, the study offers a nuanced understanding of the influences of leadership style in the safety culture development of a sugar mill. The findings of the studies were compared with other literature to identify similarities and differences and to get an impression of the transferability of these results.

Dependability, as defined by Janis (2022), is recognised through method, source and data triangulation. The study’s methods and procedures were described in detail and their methodological stance justified. The detailed descriptions increase the dependability by allowing other researchers to replicate the study. The study identified the research biases assumptions to avoid undue influences on the research data findings. Additionally, the study provides a comprehensive, context-specific description of the data to further improve dependability, making it easier for academics and others to understand and interpret the results of the study.

Credibility, as defined by Crick (2020), is strengthened by the researcher's selection of the appropriate participants, reporting on large samples, conducting a pilot study and using triangulation. Credibility is achieved through the qualitative pilot study. The interviewer additionally spent the needed time with the participants through the one-on-one interview to build the needed rapport and gain deep insights into their experiences of the adopted leadership style and the safety culture development for employees in the sugar mill. The one-on-one setting during interviews allowed for the observation of participants and provided a broader view of their behaviours and attitudes when they answered the questions so that the study could be credible.

3.13. Ethical considerations

3.13.1. Permission

A gatekeeper's letter was issued to the researcher by the General Manager (Operations) to be able to conduct the interviews at the sugar mill (Appendix 1). Once granted then ethical clearance approval was obtained from the University's Ethics Committee (Appendix 3).

Each interview began with an explanation of the research's objectives, the rationale behind recording the conversation, the participants' voluntary involvement, the confidentiality of the responses, the interviewer's identity, and the acquisition of signed consent. All participant information was kept private and anonymous; that is, codes were provided to them for the analysis rather than their identities, as per Table 3.3.

3.13.2. Psychological and physical harm

Mays and Pope (2020) believe that the researcher must recognise and protect the participants' feelings, health, and freedoms when planning a study to avoid physical, mental, or emotional damage. As such, no harm to participants can be caused by not exposing them to any situations that might render them vulnerable to harm, whether intentionally or unintentionally. No harm was recognised, and had it been, appropriate steps were going to be taken to ensure medical or psychological assistance was obtained via consulting and approval of the researcher's supervisor.

3.13.3. Informed consent

According to Ellis and Hart (2023), each research must be accepted by the participating individuals after they have agreed to participate, providing the study's actual purpose and

everything related to the study. This meant that participants were not forced to participate. Before doing the interviews, the researcher informed the participants of the purpose of the study and they became participants only by signing the consent forms once they had given their consent (Informed Consent Resource Template is attached as Appendix 2).

The interviewer explained the study's purpose and procedure and that participation was voluntary. Then, the researcher sought informed consent from the research subjects who showed an interest in participating in the study.

3.13.4. Confidentiality

Protection of confidentiality is an integral part of this investigation, and additionally, anonymity is one way of keeping confidentiality (Alharahsheh and Pius 2020). The interviewer did not intentionally or unintentionally disclose any information obtained from the interview that could identify a person. The confidentiality of the study and the safeguarding of the data collected from it were guaranteed to the participants. Therefore, pseudonyms were used to refer to the participants' identities, not their names, further ensuring their anonymity and confidentiality.

3.14. Conclusion

The research methodology was described in the chapter, along with the strategy, resources, and procedures used to investigate the factors affecting safety culture and leadership styles in a sugar mill. In this chapter, the study methodology was outlined to address the primary objectives of the study, which are to identify the predominant leadership styles used in driving safety culture within the sugar mill, investigate the factors that influence leadership in fostering a safety culture, analyse the main challenges faced by leaders in maintaining a safety culture, and provide strategies for improving leadership styles to enhance the development of a safety culture in the sugar mill. To efficiently collect data from a census sample of the leaders in the sugar mill factory, the study used a case study methodology. Semi-structured interviews made it possible to gather detailed information while enabling participants to offer their own perspectives on safety dynamics and leadership techniques.

The data was collected and analysed through thematic analysis, which was facilitated by NVivo software to analyse data from the qualitative interview. NVivo facilitated the classification of complex qualitative data, ensuring that the results accurately reflected participant viewpoints and

could be linked to their narratives. The use of thematic analysis was appropriate because it revealed recurring themes and gave a thorough understanding of the ways in which safety culture is impacted by leadership styles. To ensure data validity and trustworthiness, several quality control measures, including pilot testing and member checks, were conducted. All procedures adhered to ethical guidelines, ensuring participant confidentiality and data integrity. This chapter's methodological framework ensures that the study's findings in the next chapter are grounded in a reliable and replicable analysis.

Chapter 4: Results

4.1. Introduction

The previous chapter detailed the methodology and research design utilized in this study, including the strategy used to gather and analyse qualitative data through interviews. The results of the qualitative information gathered through in-depth semi-structured interviews are presented in this chapter, providing insights into the participants' experiences, perceptions and perspectives related to leadership and safety culture development. The four main research objectives serve as the framework for how the study's findings are presented. The chapter begins by outlining the key themes from thematic analysis, each aligned with the study's research objectives. To address the objectives, empirical evidence was collected through consensus sampling of the sugar mill leaders through qualitative interviews. Thematic analysis developed by Braun and Clarke was used to examine the responses from the qualitative interviews to uncover the findings of the identified themes relevant to each research objective. Detailed narratives and direct quotations from participants are used to illustrate these themes, capturing the richness and depth of their responses.

The themes are structured to flow logically, beginning with broad topics that provide context, followed by more specific themes that address aspects of the research objectives. By organizing the findings in this way, the chapter aims to build a comprehensive narrative that reveals the complexity of participants' experiences. These experiences collectively form a basis for the interpretation and critical discussions of these findings in the next chapter, where the ramifications of these findings will be evaluated in respect to the overall literature and study objectives. The concluding section of the chapter sums up the major insights from the presented findings.

4.2. Presentation of findings

The study reveals a variety of themes relating to each research objective. The findings from the semi-structured interviews are organized around key themes identified through thematic analysis, which are presented to address the study's main research objectives. Each theme reflects a significant aspect of participants' experiences and perspectives on the research topic. The presentation of findings here serves as the basis for understanding the impact and relevance of the participants' contributions to the overall research inquiry. An overview of the research

objectives explored in the study, alongside the corresponding themes are derived from the qualitative analysis of the results collected from the leaders of the sugar mill in the Natal Midlands. Each of the themes identified under each research objective represents the key findings that emerged through the research findings. These findings reflect their insights and experiences regarding leadership and safety culture within the sugar mill context. The identification of these themes underlines what factors affect such styles and what the leaders are up against. This structured presentation serves to enhance the understanding of how leadership practices go along with safety culture. Table 4.1 presents a concise review of the research objectives investigated in the study and the themes identified through data analysis.

Table 4.1: The key research objectives aligned with the themes of an investigation of factors influencing leadership style in the safety culture development of a sugar mill in South Africa

Key Research Objectives	**Themes**
1. To identify the predominant leadership styles used by leadership in driving safety culture within the sugar mill.	Transformational leadership and employee engagement Adherence to policies and regulatory compliance Commitment to continuous improvement and training
2. To investigate the factors that influence leadership in driving a safety culture within the sugar mill.	Employee engagement and communication Organisational support and resources
3. To analyze the main challenges faced by leaders in fostering and maintaining a safety culture in the sugar mill.	Production pressures and operational demands Employee complacency and resistance to change Insufficient resources and support
4. To provide strategies for improving	Enhancing training and development

leadership styles to enhance the development of a safety culture in the sugar mill.	programs Fostering open communication and feedback loop Promoting a culture of accountability and recognition

Source: Constructed by the researcher

4.3. Research objective one: to identify the predominant leadership styles used by leaders in driving safety culture within the sugar mill

4.3.1. Transformational leadership and employee engagement

The responses from the senior leaders and the middle leaders highlighted the essence of transformational leadership styles that have helped drive the engagement of employees through open communication. The narration obtained in this aspect reflects leaders as reporting the implementation of regular safety meetings and toolbox talks, besides encouraging team members to voice their concerns regarding safety issues at the sugar mill. This methodology is helpful in bringing about a cooperative atmosphere and showing employees that their contributions regarding safety are welcome, which in turn further strengthens their attitudes toward safety. The participants provided information on how regular safety meetings and toolbox talks were conducted and how team members were motivated to contribute towards raising their concerns on issues related to safety. To make the point above, Senior Leader 1 stated,

"Firstly, my style is to teach. I first teach or inform them of all the safety precautions, like the assessments that are supposed to be done and other required tasks by the department." (Participant 1)

This statement of Senior Leader 1 emphasised the importance of leaders teaching and informing their terms on the safety precautions of the organisation to ensure that they are followed. This is supported by Senior Leader 4,

"I think it's to lead by example. Just be a role model for the guys, show them how it's done, and then they should follow." (Participant 4)

Senior Leader 4 further emphasised the significance of leaders setting an exemplary example to their teams so that they can perform within the organisational safety standard.

Leaders can bring a proactive safety culture into the workplace through continued dialogue and feedback with the workers. Across the research findings, the participants consistently emphasised the necessity of including workers in safety discussions and decision-making. This method creates an environment that values employees and encourages them to communicate problems and participate actively in maintaining standards of safety.

"I encourage my guys to talk... my instruction is simple to my team: you stop the plant, identify the risk, get help, let's sort it out." (Participant 12)

Middle Leader 3 emphasized the significance of open communication between leaders and employees in the sugar mill, stating that in this way, they can identify risks and are able to sort them out as a team due to the open engagement channel established. Middle leader 6 also drew attention to the used approach,

"My motto is simple: remember you came to work fit and healthy; you need to go out the same way." (Participant 15)

This statement of Middle Leader 6 emphasised the importance of open safety risk engagement through the motto of one coming to work healthy and leaving healthy. This showed that the sugar mill environment ensures a safety culture through the leader's approach of open engagement with employees to decrease the risk and increase safety culture.

The findings of the study from the senior leaders and the middle leaders showed that the sugar mill safety culture relies heavily on transformational leadership. Leaders who practice this approach involve their workers in the safety conversation and in the decisions made about the functioning of the mill. The use of this approach promotes openness and inclusivity, where the team members feel competent, are able to voice their concerns and take part in establishing safety measurements of the work environment. The use of the transformational leadership

approach promotes collaboration, accountability and ownership of safety from organisation members, working as a unit to improve workplace wellbeing and reduce incidents.

The participants from the senior leaders and the middle leaders revealed how leaders make use of transformational approaches to establish an inclusive safety culture in which workers actively participate in safety procedures in addition to being informed about them. Additionally, the findings highlighted how transformational leaders embed a safety-first culture through engaging with and openly communicating about safety and these leaders make their followers more proactive about safety.

4.3.2. Adherence to policies and regulatory compliance

In the sugar mill, the research results showed a more formalised, strict approach to leadership, with more emphasis on adherence to policy to reduce risk on behalf of the management. The responses pointed this out, with most of the leader participants expressing that strict observance of the policies is important to ensuring a safe workplace. Further, many of the participants in the empirical observations identified leadership as adherence to previously agreed rules and regulations concerning safety. In the context of the sugar mill, good leaders prove to be those who consistently apply and enforce the corporation's safety policies, risk assessment and compliance with legislation.

> *"I would describe my leadership style as being close to the people. I engage with my staff and try to ensure that they understand the importance of safety. I make it clear that safety is something that applies to all of us, and we are all responsible for following the procedures and protocols in place."* (Participant 12)

Middle Leader 3 highlighted that safety talks are crucial in the used leadership style. The participants expressed the need for close engagement with the employees to ensure that adherence to policy is implemented within the team. The participants further expressed that adherence to policy is the responsibility of leaders and employees, showing shared accountability. First Line Leader 1 further emphasised the importance of leaders engaging and informing the employees of the safety protocols of the organisation:

> *"I motivate my team by explaining the potential consequences of not following safety protocols. I also give them real-life examples of incidents that occurred due to safety negligence."* (Participant 5)

First Line Leader 1 additionally stressed the need for proper training and understanding of safety protocols among employees. This highlighted that safety talks are crucial, as past incidents help motivate the team to prioritise safety.

Participant leaders indicated that effective safety leadership involves understanding and implementing the company's safety protocols and ensuring that all team members are trained in these regulations. This approach of compliance-oriented analysis is very significant for industries with high risks, as leaders can minimise risks and provide a safe working environment for employees.

> *"I believe in leading by example. I try to follow all safety rules meticulously, and I make sure my team sees me doing that. I think it's important for the team to know that the rules apply to everyone, including me."* (Participant 8)

Senior Leader 6 highlighted leading by example and the importance of training in creating a successful safety culture. The participants emphasise making use of following safety rules along with the leaders following the safety rules to show that they themselves follow the safety rules they have shared with employees. Middle Leader 5 further emphasised the leading by-example point, stating,

> *"For an example, even if the occupational health practitioner is not there, the law that will guide me will be the Occupational Health and Safety Act 85 of 1993."* (Participant 14)

Middle Leader 5 highlighted that the participants lead the team by using the law set for safety to provide guidance for the team and themselves. Additionally, Middle Leader 5 emphasized how important occupational health is to high-risk industries' safety cultures and the importance of using the act as a guide for the employees and the leaders to follow in the functionality of the sugar mill.

Strong emphasis on adherence to safety policies and regulatory compliance was a common theme across the interviews. The First Line Leader, Senior Leader and Middle Leader participants highlighted that leaders prioritise understanding and implementing the company's safety protocols in the functioning of the sugar mill. Additionally, participants emphasized that leaders can reduce risks and establish a safer work environment by ensuring that all team members receive training on safety laws and procedures.

These findings from the First Line Leaders, Senior Leaders and Middle Leaders underlined that leaders see compliance with developed safety procedures as important, explaining further that following regulations played an important role in enhancing the culture of safety. The research findings also showed that effective leadership is significantly defined by adherence to safety policies, where leaders reinforce their responsibilities in sustaining proper compliance levels at the workplace.

4.3.3. Commitment to continuous improvement and training

The Middle Leader participants emphasised that training and development should be a continuous process throughout the employee's duration with the organisation. This strengthened the culture of safety within the sugar mill. The findings from leader participants of the mill showed how leaders noted the importance of training for the self-development of the employees. The findings showed that the training assisted the employees in understanding and executing safety protocols effectively at the sugar mill. The emphasis on continuous improvement indicates a leadership style that values learning and adaptation, where leaders seek to enhance safety practices through regular training sessions, workshops and updates on safety measures.

> *"My leadership style is to lead by example. When it comes to safety, I make sure that I am always demonstrating the correct protocols. I believe that employees watch what we do, even when they don't say anything."* (Participant 13)

Middle Leader 4 highlighted that leading by example is key to ensuring that employees commit to safety protocols. This emphasises leading by example, and it alludes to the importance of daily checks with the team to maintain safety standards. However, Middle Leader 2 noted the use of

reflecting on past incidents as providing them guidance in the approach used to maintain the commitment to safety in the mill:

> *"I measure effectiveness by looking at the incident reports. So far, there have been no significant incidents in my department, which suggests that the approach is working."* (Participant 11)

Middle Leader 2 highlighted that leaders employ the leadership style and evaluate its approach and effectiveness within the sugar mill. This approach informs leaders of whether to improve the approaches and find out the needed training improvement methods to employ.

The findings from participants indicated that, at present, there is a commitment to continuous improvement and training, forming an important part of the safety culture of the mill. Participants were indicating that education among leaders and employees was necessary as a continuing process. This theme represents views that safety procedures and practices must evolve with time and that plans for development and training are imperative for leaders.

> *"My leadership style is hands-on. I focus on setting clear expectations with the team, especially around safety. I actively monitor the work environment and ensure that all safety protocols are being followed."* (Participant 13)

Middle Leader 4 highlighted the use of a hands-on approach, which allows the team to be trained through practical approaches by the leader. The leader is involved in the engagement of safety protocols and training to emphasise the commitment to the set safety standards of the sugar mill. The importance of following safety policies and engaging employees in safety discussions is further emphasised by Senior Leader 8, who stated,

> *"I think the training that has been provided is sufficient for me to make decisions and to guide safety in my sphere of work."* (Participant 16)

This statement further stressed the commitment to continuous improvement and training established in the sugar mill. Additionally, the statement alluded to the presence of a leadership

style which allows for the leaders and employees to work together to guarantee that the mill's safety culture remains steady.

The Middle Leader participants underlined that leaders acknowledged the fact that the well-trained workers would not only tend to follow safety procedures but also make valuable contributions to building up a safer workplace culture. The leaders must provide the employees with the required knowledge and skills to improve the safety measures and foster a proactive safety culture within the sugar mill. Emphasis on training by mill leaders shows that it has dawned upon the leadership that an informed workforce is crucial for minimising risks.

These results highlight the significance of continual training and improvement as it relates to safety culture development. Furthermore, it also appears from the interview data that leaders are committed to enhancing the skills and knowledge of the employees.

4.4. Research objective two: to investigate the factors that influence leadership in driving a safety culture within the sugar mill

4.4.1. Employee engagement and communication

The findings from the study reveal that one of the leading factors in influencing leadership towards driving a safety culture was employee engagement and effectiveness of communication within the organisation. These findings also provided the details of leaders who engaged with teams actively to build the right environment where safety becomes the concern and responsibility of all. As Senior Leader1 noted,

> *"We are guided by the company's policies and the training department's requirements, which we must adhere to for safety. What we also do, which has become part of our culture, is that every Friday, we look at all the toolbox talks communicated by the SHE department to ensure we are on par with everything happening in the factory."* (Participant 1)

The statement of Senior Leader1 noted that they are guided by the policies set by the sugar mill and highlighted that they ensure continuous engagement with the employees to build a stable communication channel that fosters a safety culture. This highlighted that leadership involves

regular safety meetings and open communication to ensure compliance with safety protocols. Additionally, Senior Leader 4 noted that the leaders communicate with the employees:

> *"By 'independence,' I mean they have the skills necessary for their jobs. They are competent in their tasks. If I need to highlight something as a manager, I do so, making sure they adhere to everything that needs to be done."* (Participant 4)

Senior Leader 4 further highlighted employee engagement in the adherence to safety protocols set by the company and controlled by the leaders.

The participant's results showed that open communication channels enable employees to air their views and contribute ideas, which consequently leads to an improvement in their commitment to safety practices. The responses indicated that leaders stressed the importance of conducting regular safety meetings, toolbox talks and one-on-one interactions with employees to promote a culture of safety.

> *"I encourage my guys to talk... my instruction is simple to my team you stop the plant, identify the risk, get help, let's sort it out."* (Participant 12)

Middle Leader 3 stated that there is an open communication platform for workers as the participants allow them to voice out their concerns as they happen and find ways to get the concerns addressed. Similarly, Middle Leader 6 asserted this through the motto,

> *"My motto is simple: remember you came to work fit and healthy; you need to go out the same way."* (Participant 15)

The motto used by Middle Leader 6 confirmed the available open communication channels in the mills and showed the leadership style used by the leaders is fostered in the culture of the mill.

The participants from Senior Leaders and Middle leaders highlighted how active engagement and open lines of communication between leaders and employees are critical for encouraging a strong safety culture. The results showed that employees are more inclined to put safety first in their day-to-day tasks when they believe their opinions are respected and heard.

4.4.2. Organisational support and resources

The response set from the Senior Leaders and Middle leaders showed that one of the most powerful emerging themes is organisational support and availability of resources influencing leadership to drive a safety culture in the sugar mill. Accordingly, as indicated in the research evidence, leaders have emphasized the value of managerial assistance, training, and tools in developing the appropriate safety practices. For instance, Senior Leader 3 stated,

> *"One of the biggest challenges is dealing with employees who take shortcuts. They might think it's okay if nothing happens, but I don't agree with that. Even if no incident occurs, the lesson is the same safety rules were not followed."* (Participant 3)

Senior Leader 3 emphasised that organisational support is essential in allowing leaders to convey the safety message constantly and ensure proper training equipment and management procedures for maintaining good safety are available. Senior Leader 3 statement highlighted that when resources are scarce, employees may frequently feel forced to compromise on safety by using shortcuts.

> *"I evaluate it by the number of incidents reported. Fewer incidents indicate that we are maintaining a safe environment. I also rely on feedback from the safety committee and regular inspections to ensure that we are on the right track."* (Participant 11)

Middle Leader 2 highlighted the role of leaders in tracking safety performance. Participants highlighted fewer incidents and feedback from safety committees showed the direct result of appropriate resources being in place in the sugar mill. There is also emphasis on the mill's use of a strong reporting system and periodic safety evaluations.

Additionally, the participant's analysis showed that when organisations provide the necessary resources, leaders can focus on developing their teams and addressing safety concerns effectively. Insufficient resources hinder the leaders' efforts to adopt a safe working environment and impact overall safety outcomes. Organisational tools put the leaders in a position to understand whether their safety functions are serving effectively.

"We're still working on this. I'd like to eventually have the team take turns leading toolbox talks and explaining safety protocols. Right now, I do most of it myself, but I want to give the team more responsibility so they can also see the importance of safety." (Participant 13)

Middle Leader 4 expressed that it is the duty of leaders to provide support and training tools to let the leaders assign the responsibilities regarding safety to their teams. The participant shared that they wished to take responsibility for safety protocol training and communication to the rest of the team. The approach will help develop a collaborative safety culture where employees are empowered to lead safety initiatives themselves.

"I think the training that has been provided is sufficient for me to make decisions and to guide safety in my sphere of work." (Participant 16)

Senior Leader 8 focused on training and addressed how organisational resources, in the form of proper training, enable leaders to make the right decisions regarding safety. This supports the idea that when resources are sufficient in terms of training, leaders are better equipped to lead and uphold safety standards.

The findings from the Senior Leader and the Middle Leaders showed that a safety culture required sufficient organisational support and resources agreed upon by leaders. Results from the findings also showed that with tools and training, leaders could implement safety effectively and observe a flow in the worker's development that reflects positively toward organisational objectives and functionality.

4.5. Research objective three: to analyse the main challenges faced by leaders in fostering and maintaining a safety culture in the sugar mill

4.5.1. Production pressures and operational demands

Results indicated that one of the major challenges for participants is the pressure of meeting the production targets, which normally clashes with the implementation of safety protocols. The participant leaders expressed concern that the relentless pursuit of productivity can lead to shortcuts in safety practices. The participant's analysis showed that there is a significant tension,

which is notable between the operational demands and there is a need to ensure that within the high operational demands, there is a high safety standard maintained in the sugar mill. The results indicated that the mill leaders realised that when workers are under pressure, they may unconsciously bypass safety measures so that their operation environment is vulnerable to risks. The Senior Leader 5 indicated,

> *"The biggest challenge is complacency. It's easy for employees to become complacent over time, especially when they think that nothing has gone wrong before. This creates a challenge in ensuring safety rules are consistently followed."* (Participant 6)

Senior Leader 5 contributed that it becomes a question of complacency as employees get comfortable with not following the rules about safety since nothing has gone wrong before. Complacency encourages the occurrence of safety risks. Additionally, Senior Leader 1 explained how the team uses regular toolbox talks to keep everyone on the same page regarding the processes in safety:

> *"What we also do, which has become part of our culture, is that every Friday, we look at all the toolbox talks communicated by the SHE department to ensure we are on par with everything happening in the factory."* (Participant 1)

The statement of Senior Leader 1 explained how the team uses regular toolbox talks to keep everyone on the same page regarding the processes of safety in the sugar mill. Senior Leader 1 statement highlighted that even with this approach in place, the tension between production and safety persists.

The findings interpretations revealed the dichotomy leaders face in the process of striving for zero incidents. The empirical analysis also showed that the demands of production can complicate safety enforcement in the mill, which increases the safety risk in the mill's function. Moreover, participants argued that communication should be carried out routinely and underscores the effort required to prioritise safety despite operational demands. The participant findings underlined the need for regular communication to continue, and it underlined efforts necessary to prioritise safety in the face of operational demand. Research findings also showed that, at present, safety is threatened by the pressure of production. The evidence also revealed

there is a present threat that production pressures pose to safety standards, which can be identified as a critical challenge leaders must navigate.

> *"One of the main challenges is carelessness. Sometimes, despite the rules being in place, there is a tendency for people to overlook them. It's not necessarily resistance, but more of an attitude of carelessness."* (Participant 2)

Senior Leader 2 pointed out that carelessness can arise when employees overlook safety protocols, even when they are well-known. The sugar mill employees tend to have negative and poor attitudes around protocols and safety culture standards due to the pressure to meet the production. Middle Leader 2 asserted this further and stated,

> *"The biggest challenge is the pressure to perform. We often have production targets, and when people are rushed, safety standards tend to get compromised."* (Participant 11)

Middle Leader 2 noted that there is a compromise of standards for safety, especially where the target must be achieved at all costs. With increasing production targets, the urge to make the deadline often conflicts with carrying out the safety procedures and thus creates unsafe shortcuts.

These findings from the Senior Leader and the Middle Leaders showed that one of the leading challenges the leaders face is the production pressures in the mill, which make it very difficult to focus on safety without compromising operational efficiency. The tension between production goals and safety standards requires a delicate balance.

4.5.2. Employee complacency and resistance to change

Another major issue that arose from the empirical analysis involved employee complacency over safety practices. Most participants reported that there are some employees who slack in showing attention to some of the safety practices, especially when they feel that the task at hand is routine or of low risk. This contentment of the employee can lead to unsafe behaviours and a lack of accountability. Furthermore, leaders from their responses highlighted the difficulties in introducing and instilling a culture of safety among employees who resist changes to established

practices. The leaders expressed that the employees often view the changes as unnecessary and burdensome to them and stated,

> *"I motivate my team by explaining the potential consequences of not following safety protocols. I also give them real-life examples of incidents that occurred due to safety negligence."* (Participant 5)

The First Line Leader 1 put an emphasis on the importance of making employees understand the repercussions of not following the proper procedures for safety. First Line Leader 1 further highlighted this using a real-life example approach, where First Line Leader 1 gave the employees actual scenarios. Senior Leader 3 noted the presence of employees who undermine safety protocols in the mill:

> *"One of the biggest challenges is dealing with employees who take shortcuts. They might think it's okay if nothing happens, but I don't agree with that. Even if no incident occurs, the lesson is the same safety rules were not followed."* (Participant 3)

Senior Leader 3 described a major challenge faced by the sugar mill of employees taking shortcuts and not recognising the risks because no immediate incidents occur. The participant's statement reflects how complacency and resistance to change undermine safety efforts.

The findings from the First Line leader 5 and Senior Leader 3 have underscored the role of education in battling complacency to make employees appreciate the rationale behind the safety protocols. It is also important that leaders lead by example to counter complacency and show that safety is a concern that requires constant vigilance in high-hazard industries. The analysis also points out that engagement is necessary to overcome resistance of employees in relation to the stipulated safety protocols, especially in those situations where employees themselves are actively engaged in discussions relating to safety.

> *"We're still working on this. I'd like to eventually have the team take turns leading toolbox talks and explaining safety protocols. Right now, I do most of it myself, but I want to give the team more responsibility so they can also see the importance of safety."* (Participant 13)

Middle Leader 4 shared that they are working to empower employees to take more responsibility by leading safety talks, which helps reinforce the importance of safety. Leaders must find ways to motivate and engage employees in safety practices through education and open dialogue. Middle Leader 5 further alluded to the existing problem and noted,

> *"Sometimes what's documented in policies is not what's practiced. For example, there's an employee with hearing issues who should have been moved to a quieter environment long ago, but the employee is still in the same noisy environment."* (Participant 14)

Middle Leader 5 referred to the fact that sometimes employees do not adhere to safety policies, which happens more in the sugar mill when employees' practices contradict what is written in the safety policy of the mill. This phenomenon is evident in both leaders and employees. In the above-mentioned example, the leader is complacent by not relocating the employee though he may have had challenges in allocating an alternative work area. Simultaneously, the employee might have resisted the proposed change, forgetting to prioritize his own health and safety.

The results of the Middle Leader participants showed evidence of active engagement of the employees in the discussion that may allow for more acceptance of changes in safety practices. Also, the findings highlight the challenge of changing the mind-sets of the employees, as the participants indicated that some employees may view safety protocols as an inconvenience rather than an essential practice.

The research findings from the First Line Leaders, Senior Leader and Middle Leaders participants presented the challenge of overcoming complacency and resistance among employees, which can hinder efforts to foster a strong safety culture. Therefore, it is important for leaders to navigate these attitudes to effectively promote safety awareness and adherence.

4.5.3. Insufficient resources and support

The most significant challenges influencing leaders' behaviour in promoting a safe culture were found to be insufficient resources and absence of organisational support. Participants in the research analysis suggested that the hindrance of leaders due to scarce budgets, poorly developed training programs and insufficient safety equipment is highly influential within the sugar mill.

Since the resources of leadership are inadequate, it is a disadvantage, as effective measures associated with safety and training cannot be established to make employees aware of how to maintain safety.

> *"One challenge is the lack of certain facilities, like a proper wash bay for vehicles. It makes it harder to maintain cleanliness, and that affects how well we can inspect equipment for defects."* (Participant 8)

Senior Leader 6 highlighted the lack of basic facilities within the sugar mill, such as wash bays, which can compromise safety inspections and cleanliness standards. These are obstacles in the development of the mill's safety culture and hinder the leadership as the leaders do not have sufficient resources to properly lead the safety culture in the mill. Middle Leader 2 highlighted the need for resources:

> *"I evaluate the effectiveness through feedback from safety audits and inspections. I also look at the number of incidents reported and the feedback I get from my team. If there are fewer incidents and more engagement from the team, I take that as a sign that we are doing things right."* (Participant 11)

Middle Leader 2 states that the effectiveness of safety measures is achieved by tracking incidents and feedback from safety audits. This statement further stressed the need for proper resource allocation. It further highlighted the lack of sufficient resources for leaders in the mill to properly employ safety practices.

The findings from Middle leaders and Senior Leaders highlighted the importance of training as an essential part of a high-risk sugar mill industry, yet insufficient resources can limit the effectiveness of such programs. Additionally, the findings directly addressed the need for organisational commitment to resource allocation, which is crucial for effective safety management for leaders.

> *"I think the training that has been provided is sufficient for me to make decisions and to guide safety in my sphere of work."* (Participant 16)

Senior Leader 8 acknowledged that while current training programs are adequate, they believe more resources would better equip employees to maintain safety standards. However, Middle Leader 3 highlighted the need for resources in the mill by stating,

> *"We need more resources to effectively train employees on safety measures. I believe in leading by example. I try to follow all safety rules meticulously, and I make sure my team sees me doing that."* (Participant 12)

Middle Leader 3 called for more resources for employee training, stating that leading by example is key, but resources are necessary to support this.

Although these research findings do show the leaders recognise that the training was adequate, they further portrayed the consistent support and availability of resources important in sustaining safety standards. These statements from the Senior Leader and the Middle Leaders highlighted a clear demand for more resources. The responses further reiterate that leaders cannot possibly promote safety without the tools and proper training being provided. The results underlined the lack of resources in the sugar mill for managing proper training and development of the employees to instil the right kind of safety culture. The response set also indicated that there is high demand along with insufficient resources for the leaders to support the encouragement of safety in hazard-prone surroundings of the sugar mill.

4.6. Research objective four: to provide strategies for improving leadership styles to enhance the development of a safety culture in the sugar mill

4.6.1. Enhancing training and development programs

The findings interpretation showed that fully implemented training and development programs were among the most suggested strategies for improving leadership styles and enhancing safety culture. The participants strongly stressed that training must occur regularly; both for leaders and employees to understand fully the safety protocols and adapt to new safety challenges. The findings of the participants highlighted the need for targeted training that addresses specific safety issues relevant to the sugar mill to combat the safety risk challenge effectively.

Organisation leaders can ensure that their teams are properly equipped with training, skills and knowledge which prioritise safety by fostering a culture of continuous learning.

First Line Leader 1 stressed the importance of continuous training and reinforcement of safety rules, emphasising the need to regularly remind employees about the dangers they face and the necessity of adhering to safety protocols:

> *"Continuous training and reinforcement of safety rules would help. It is important to keep reminding employees of the dangers they face every day and the need to adhere to safety protocols."* (Participant 5)

Additionally, Senior Leader 6 pointed out that the use of specialised training tailored to the specific risks of their work is crucial, as generic safety training might not address the unique challenges faced in the mill. Senior Leader 6 stated,

> *"We need to provide more specialized training that is focused on the specific risks of our work. Generic safety training isn't always enough for the unique challenges we face."* (Participant 8)

These findings highlighted the critical importance of the leaders making certain that every employee understands the safety protocols, which is foundational for effective implementation. Additionally, the findings underscored how leaders in the mill can model safe practices with the employees. Therefore, leaders should reinforce the importance of training to the employees as a tool for cultivating a safety-oriented mind-set. Moreover, the reinforcement would positively impact the mill and boost the cultivation of a safe working environment.

Middle Leader 2 added that training is necessary not just for employees but also for leaders, who must be well-versed in safety procedures to guide their teams effectively. Middle leader 2 stated,

> *"Training isn't just for the workers; leadership needs it too. Leaders need to be up to date with the latest safety procedures so they can guide their teams effectively."* (Participant 11)

The findings from the participant showed that frequent training programs are needed to shape the leadership styles of the leaders and enhance the safety culture. Moreover, Senior Leader 8

confirmed this need for periodical training in order not to get complacent; through repetition, the procedures will become second nature. Senior Leader 8 noted,

> *"It's crucial to have periodic training so that people don't become complacent. Repetition helps to make safety procedures second nature."* (Participant 16)

The research findings of Senior Leader 8 accented to the challenge of insufficient resources, emphasising that without sufficient resources dedicated to training, safety culture may stagnate and increase the probability of accidents. Also, the participants recognised the need for training in empowering leaders to make informed safety decisions which affect all employees. This indicated the reciprocal relationship between training and leadership efficacy.

The findings overall from First Line Leaders, Middle Leaders and Senior indicated the presence of a clear consensus among participants regarding the importance of training in the mill. For instance, Middle Leader 2's emphasis on the need for resources highlighted the necessity for the sugar mill to invest adequately in training initiatives for the employees and the leaders. Additionally, the analysis promotes training programs and the importance of training programs in improving leadership. The improved leadership increases the effectiveness and cultivates a safer workplace culture.

4.6.2. Fostering open communication and feedback loops

From the results of the Senior Leaders and Middle Leader participants, one of the most important strategies identified is to encourage openness in communication and establish feedback loops within the organisation. Leaders who encourage open communication create an environment where employees feel secure to express their current workplace safety concerns, share ideas and give feedback on safety practices. The presence of transparency is an essential need for a leader and their work team to build trust in the work environment, which is a cornerstone of an effective safety culture.

The findings from the analysis showed that regular safety meetings, toolbox talks and one-on-one interactions with employees facilitated the needed free flow of information. Setting up

formal channels for collecting and responding to employee feedback can also enable leaders to know where improvement and the building of a safety culture can be developed.

Senior Leader 1 described how, at the mill, the team holds toolbox talks every Friday to ensure that all members are aligned with the safety protocol communicated by the shift department.

> *"What we also do, which has become part of our culture, is that every Friday, we look at all the toolbox talks communicated by the shift department to ensure we are on par with everything happening in the factory."* (Participant 1)

Senior Leader 4 additionally emphasised that sharing each step of one's safety process clearly with one's team is important because it makes the employees feel heard once they make some suggestions and they can start talking without fear.

> *"I make sure that I communicate every step of the safety process to my team. They need to know that their input is valued and that they can raise concerns without fear."* (Participant 4)

The response set underlined how the leaders themselves play an active role in facilitating communication, which is considered one of the essential keys to sustaining compliance and keeping safety awareness in hazardous work environments. Additionally, the participants highlighted the importance of addressing safety concerns as they arise in the workplace to effect safety control measures to be implemented. Also addressing the safety concerns as they arise further adopts a culture of openness and responsiveness in the organisation.

Middle Leader 3, for instance, introduced a platform of open communication as a means of ensuring continual communication. He urges his group to show him where there might be a problem early on to prevent any incident in the first place.

> *"The key is to talk constantly. We can't wait for something to happen before we discuss safety issues. I encourage my team to flag problems early on."* (Participant 12)

Middle Leader 6 further asserted this and underlined that every meeting starts with the issue of safety, which sets the tone for the whole day and reminds people that safety is the number one priority.

> *"In every meeting, I make sure to start with safety. It sets the tone for everything we do and reminds everyone that safety is a priority."* (Participant 15)

These participants highlighted that the sugar mill strategies contributed to establishing an open and responsive culture that could enable workers to be more actively involved in discussions about safety.

The findings showed how leaders can empower employees to take the initiative regarding safety, which reinforces communications' importance in the millwork environment. This further emphasises the leaders' commitment to safety within the work environment and encourages the employees to share their concerns about safety practices actively and openly.

These findings from the Senior Leaders and Middle Leaders participants emphasised the benefits of communication towards ensuring an improved safety culture within the sugar mill. For example, the research results suggested that Senior Leader 1 emphasised the aspect of regular meetings, which outline how organised communication works to build and maintain safety practices. However, Middle Leader 3 highlighted the encouragement of team discussions, which underlined very significantly the importance of collaborative problem-solving in a high-risk working environment. The overall findings in this regard indicated that leaders can be very effective in encouraging safety in the sugar mill through open communication.

4.6.3. Promoting a culture of accountability and recognition

The findings pointed out that there is a need to create accountability and recognition at the workplace culture level so that leadership styles can be improved, hence improving safety cultures. Responses from participants indicated that leaders in the sugar mill should clarify expectations for safety behaviours and make people accountable for their actions. Additionally, the leaders should recognise and reward the safe practices of employees to motivate the employees to continuously prioritise safety in their daily tasks.

In the research results many of the participants highlighted that when employees are recognised for their commitment to safety, it encourages the importance of behaviours which encourage others to follow the pattern set. The culture of accountability adaptation in the working environment at the mill ensures that each employee understands their responsibility to maintain safety standards and recognition fosters a positive and proactive safety environment.

Senior Leader 2 emphasised the discussion of every safety incident, no matter how minor, so that employees can learn from mistakes and will not repeat them.

> *"We discuss every incident, no matter how small, so that everyone understands the consequences. We don't want to repeat mistakes."* (Participant 2)

Additionally, Senior Leader 3 stressed that accountability starts with leadership, stating that if leaders do not follow the rules, in return, they cannot expect their team to do so.

> *"Accountability starts with leadership. If I don't follow the rules, I can't expect my team to. I lead by example."* (Participant 3)

The findings underscored the importance of discussing safety incidents with the employees on a regular basis to emphasise the importance of accountability and for the employees to learn from their mistakes. Additionally, the analysis highlighted the leader's role in setting work expectations and modelling safety behaviours in high-risk work environments.

Middle Leader 5 added that employees must understand why it is more than just following protocols and that there is a reason behind it all.

> "*It's not just about following the rules but about understanding why we have them. I make sure my team knows the reasoning behind every safety protocol."* (Participant 14)

According to Senior Leader 8, the identification of employees going that extra mile in safety serves to reinforce that the practices of being safe are very important.

> *" We make it a point to recognise when someone goes above and beyond with safety. It's important to show that we value these efforts."* (Participant 16)

These findings proved the need for leaders to appropriately address employee perceptions about safety protocols and encourage a sense of ownership. Furthermore, the findings reflect a need for a commitment to safety that is deeply ingrained and adopted in the leadership approach used. This approach would significantly promote a high-risk safety working environment that has a shared responsibility for maintaining a safe work environment for all employees.

These responses from Senior Leaders and Middle Leaders accentuated the significance of accountability and recognition in the cultivation of safety culture within high-risk environments. For instance, Senior Leader 2's reference to safety talks suggests that discussing past incidents can serve as both a warning and a motivator for the employees to ensure they follow the set safe practices and protocols in the sugar mill. Combining accountability with recognition the leaders can effectively introduce a work culture that values safety and encourages continuous improvement to safety practices amongst the employees when working.

4.7. Conclusion

The results of the semi-structured interviews with leaders in the sugar mill sector were thoroughly reviewed in Chapter four, with an emphasis on their opinions on the creation of a safety culture and leadership philosophies. Several important themes that showed how different leadership philosophies affect safety procedures, employee attitudes and the organisation's overall safety culture surfaced through thematic analysis using NVivo.

Analysing the first research objective highlighted the complex connection between the different leadership styles used by leaders and their effect on safety culture at sugar mills. The findings show that transformational leadership promotes involvement and confidence, whereas the practice of following policies guarantees conformity and reduces risks in the sugar mill's high-risk environment. Moreover, the findings revealed an emphasis on the presence of ongoing improvement and training, which emphasizes how crucial it is to create safety procedures in the sugar mill industry. The themes identified combined provided a thorough insight into the impact of leadership on safety culture at work, which offers a valuable tip for leaders to improve safety in industrial environments.

The examination of the second objective, showed that there are many factors which play a role in influencing the leadership which drives the safety culture within the sugar mill. Cooperation and

trust are fostered by employee engagement and communication, and conformity with policies guarantees compliance and creates a secure operating environment. Moreover, organisational resources and support enable leaders to put into practice efficient safety procedures. The results showed that these themes enable a comprehensive understanding of how critical leadership is in promoting a safety culture in a high-risk working environment of a sugar mill. Additionally, the themes highlighted the many factors which work together to shape the safety culture adopted within the high-risk work environment.

The assessment of the third research objective highlighted that the pressures of production and operational needs clash with the need to prioritise safety in the sugar mill. This forces the employees to make decisions that could jeopardise safety and result in life-threatening risks as the sugar mill functions as a high-risk industry. The findings revealed a high number of employees who lack motivation and are reluctant to adjust and adopt changes. The research results also revealed the employees challenge the leaders when it comes to following safety procedures, requiring leaders to take a proactive approach through engagement and training. Moreover, the findings showed the present lack of resources and support from the organisation are major obstacles in the way of implementing successful safety programs.

The analysis of the fourth research objective identified several effective approaches: Improving leadership styles to enhance the development of a safety culture in the sugar mill and identifying several effective approaches. Improving training and development programs will ensure that the leaders and employees are properly prepared with the capacities required to deal with safety challenges. It also provided that instilling a culture of accountability and recognition strengthens safe practices and encourages a collective commitment to safety. Collectively, these strategies give an extensive approach in which effective leadership can be enhanced along with a strong safety culture in industries.

Results from this chapter show how leadership behaviours influence workers' safety behaviours and how organisational issues affect leaders' capacity to consistently enforce safety procedures. The following chapter presents a discussion of the findings from Chapter four.

Chapter 5: Discussion

5.1. Introduction

In Chapter four, the findings from the semi-structured interviews were presented, highlighting the main themes that emerged from the data analysis and capturing the perspectives and experiences of the leaders. The findings of this study were presented and structured according to the key research objectives. These findings offered valuable insights, revealing both shared and unique viewpoints and laid the groundwork for a deeper understanding of the issues being explored. Chapter five builds upon these findings, aiming to interpret and contextualize them within the broader literature and theoretical framework outlined in earlier chapters.

The chapter seeks to provide a comprehensive discussion of the themes that emerged from the research to uncover the leadership styles that influence the safety culture development in the sugar mill. In this chapter, the implications of the findings are discussed in relation to the study's research questions and objectives. The chapter explores the implications of the themes identified that are aligned with the research objectives and discusses their relevance to the existing literature. By examining how the results align or contrast with existing research, chapter five explores the significance of the themes uncovered and considers their impact on the field. This chapter also addresses potential limitations in interpreting the findings and reflects on the strengths and contributions of the study. Ultimately, chapter five aims to synthesize the findings and provide a comprehensive understanding of their relevance, offering insights that may inform future research, policy or practice within the area of safety in sugar mills.

5.2. Objective one: to identify the predominant leadership styles used by leaders in driving safety culture within the sugar mill

5.2.1. Transformational leadership and employee engagement

Transformational leadership has been defined by scholars as a leadership approach wherein leaders consistently inspire and motivate their staff for the benefit of the organisation (Zhao *et al.,* 2022; Bazzoli *et al.,* 2020). Moreover, according to Nasim *et al.* (2022), transformational leadership promotes and influences a positive safety culture in high-risk industries like the sugar mill. Transformational leadership introduces open communication channels between the leaders and the workers to positively benefit the company. This communication becomes important as it aligns with the requirements of Section 13 of the Occupational Health and Safety Act (Act no.85

of 1993), which imposes a duty on the employer to communicate with the employees regarding the hazards and risks associated with the work they are doing. As employees are the doers of the work, they are in a better position to highlight areas of concern regarding their safety at work, if their participation is encouraged. This in turn will ensure that the work environment becomes safe for all employees.

Middle Leader three exemplified the open communication and empowerment characteristic of transformational leadership. The leaders in the sugar mill showed they significantly encouraged dialogue about risks with the employees. The leadership style of the leaders is aligned with the practice of transformational leadership and the style practice fosters a culture where safety is prioritised and valued. It was found that there are regular safety meetings which underscore the engagement strategy inherent in transformational leadership, promoting a proactive approach to safety.

The responses of the qualitative interviews correspond with transformational leadership theory, which asserts that effective leaders motivate their followers to actively participate in safety measures. Bazzoli *et al.* (2020) affirmed that transformational leaders introduce working environments which allow for open communication and engagement in safety in the workplace. The transformational leadership style employed by leaders promotes employees to be actively engaged and participate in the workplace. The literature supports the view that leaders who actively engage with their teams cultivate safety culture development in the workplace which is often characterised by shared responsibility and proactive risk management. However, Siangchokyoo *et al.* (2020) noted that challenges arise if leaders fail to maintain the standard of transformational leadership by consistently maintaining engagement. Additionally, the failure to maintain the leadership style can lead to a decline in the safety culture in the workplace (Siangchokyoo *et al.*,2020).

Moreover, the empirical answers of Senior Leader One showed that transformational leadership is a continuous leadership practice that requires regular engagements with employees by the leaders to ensure the safety protocols are complied with, which benefits the mill's productivity and functionality. Similarly, the literature indicates that transformational leadership not only promotes employee engagement but also significantly affects the organisation’s performance.

For instance, Zhao *et al.* (2022) showed that transformational leadership by leaders in an organisation leads to better functioning of the organisation as there is an active practice of a positive safety climate where employees are encouraged to take ownership of safety practices in the organisation. The participant responses underlined that leaders in high-risk settings, such as sugar mills, must maintain their transformational properties over time to sustain engagement in safety. Such responses, combined with theoretical perspectives, point out the fundamental role taken by transformational leadership in high-risk settings in the development of a resilient safety culture.

5.2.2. Adherence to policies and regulatory compliance

As per Section 7 of the Occupational Health and Safety Act (Act no.85 of 1993), employers are required to develop, implement and maintain a health and safety policy that addresses the unique risks and hazards in the workplace. The policy should include information on how the workers' health and safety will be protected. It must be well-documented and communicated to all employees to ensure that everyone understands the safety protocols and their responsibilities. Furthermore, The Act requires employers to continuously monitor and review their health and safety practices and the policy itself, to ensure it remains relevant to the company's prevailing risks.

According to Gracia *et al.* (2020), leadership that communicates the need for adherence to safety policies leads to an improved safety culture for an organisation. Moreover, Haas (2020) emphasised that leaders play a major role in ensuring that enforcement for safety compliance occurs regularly. Policy and regulatory compliance consider the commitment of the leadership within an organisation to ensure there is always compliance with safety measures and with the regulatory standards within the mill. The leadership styles that emphasise strict policy adherence, sustain safety standards in risky working environments (Lyubykh *et al.*, 2022).

The responses highlighted the leader's important role in ensuring that employees are aware of workplace safety policies and ensure that they adhere to safety policies continuously. For instance, First Line Leader One alluded to the need for proper employer training so the team understands the set safety protocols. In addition, the responses indicated a need for transactional leadership to ensure adherence to safety rules. The approach of transformational leadership is

significantly effective for short-term safety management by leadership, which may pose a challenge to the overall development of a strong safety culture that relies on intrinsic motivation and long-term engagement, as identified by Kapp (2012). Furthermore, the study revealed that participants expressed a perspective that is consistent with Dong's (2023) viewpoints that while they value clear requirements, they also felt that compliance-driven leadership does not really promote a safety-first approach. While this may be the case, the requirements of The Occupational Health and Safety Act (Act no.85 of 1993) from a transactional leadership point of view still stand, because of explicitly stated requirements of compliance, accountability and corrective actions. Leaders need to find a balance between these two leadership styles.

The examination of the literature also emphasised the need to balance regulatory compliance with transformative features to foster a more engaged workforce. For instance, the study by Gracia *et al.* (2020) argued that strict adherence to policies can lead to a culture of compliance. In the findings of the study, Middle Leader Five underscored that the leaders are reliant on the established regulations of the Occupational Health and Safety Act (Act no.85 of 1993), which guide the safety practices as they are the set laws which ensure that workers adhere to the regulations. Furthermore, participants' responses affirmed Gracie *et al.* (2020) that policies are followed even in the absence of the occupational health practitioner.

The Occupational Health and Safety Act (Act no.85 of 1993)’s emphasis on compliance, structured roles and clear accountability aligns with the transactional leadership approach in creating a disciplined and regulated environment. However, research on transactional leadership's potential downsides showed that, when depending exclusively on compliance-driven strategies, creating a culture of compliance without engagement might not be able to support a long-term safety culture. This means that both methods of transformational and transactional leadership must be combined by the organisation to successfully manage safety that encourages compliance and participation.

5.2.3. Commitment to continuous improvement and training

The Occupational Health and Safety Act (Act no.85 of 1993) emphasizes the importance of training employees to ensure they understand and can effectively manage the health and safety hazards and risks associated with their work. Several sections of The Act outline the employer’s

responsibility to provide training to promote a safe working environment. Training should not only be provided at the start of employment but also on an ongoing basis, especially if there are changes in equipment, processes, or the introduction of new hazards. Regular training and refresher courses help employees stay updated on safety protocols and improve their awareness and response to potential risks.

The presence of ongoing training encourages employees' compliance and safety awareness (Lee *et al.*, 2020). Establishing an ongoing commitment to training and development is essential to creating a safety culture. According to Khattak, Zolin and Muhammad (2020), leaders who place a high priority on continuous improvement create workplaces where workers receive regular training on safety procedures, which improves overall safety performance and compliance. A study by Nawi *et al.* (2023), enhanced communication and training have a good impact on the safety culture in manufacturing settings. Similarly, Middle Leader Two, Four and Senior Leader Eight highlighted the leader's understanding of the need for ongoing safety practice development and training.

The participants' responses significantly focused on ongoing development and employee improved understanding of safety practices significantly aligns with the key principles of transformational leadership theory which puts emphasis on the cultivation of continuous growth and development amongst the employees. As highlighted by the study of Lee *et al.* (2020), in an industry such as the sugar mill, effective training is key to promoting safety awareness. Additionally, other responses from participants asserted effective training as a key to the development of high-risk industries. For instance, Senior Leader Six supported continuous training, which assisted the employees in gaining more knowledge about safety protocols. Also, the presence of continuous training evidently aids in the adoption of a safety culture and worker commitment to safety culture awareness and development in the sugar mill. Zhang *et al.* (2022) have highlighted that there is still an issue in guaranteeing that training programs receive sufficient resources and are given priority within organisational structures.

The analysis of the literature also showed that safety culture improvements are likely to come from a combination strategy that includes transformative leadership and robust training initiatives. According to Nawi *et al.* (2023), leadership should emphasise training and open

communication for the good development of an effective safety climate. The responses of Middle Leaders Two and Four additionally asserted this as they suggest that an integrated approach is required, with a strategic emphasis on investment in employee training as the cornerstone of effective safety management. There is consensus that, while transformational leadership encourages a proactive approach, that organised compliance and monitoring, are both essential for maintaining safety practices.

5.3. Objective two: to investigate the factors that influence leadership in driving a safety culture within the sugar mill

5.3.1. Employee engagement and communication

A study by Schulman (2020) revealed that establishing a positive safety culture within an organisation requires excellent communication between the leadership and employees. Furthermore, Nguten *et al.* (2023) showed that a high degree of staff engagement leads to better safety outcomes. Effective leadership in fostering a safety culture is influenced by several important elements, including employee involvement and communication. Open communication about safety concerns among engaged staff members fosters a proactive safety environment where hazards are recognised and cooperatively handled. Senior Leader One, Four and Middle Leader three demonstrated how leaders listened to their staff members and helped them feel heard, emphasising the critical impact that open communication plays. Similarly, the literature by Zhao *et al.* (2022) emphasises how employee engagement plays a role in the enhancement of employee participation in safety activities.

In a positive safety culture, communication flows freely in both directions. Employees feel comfortable in raising health and safety concerns and leaders listen and act or respond as appropriate. This is especially important as within Section 14 of The Occupational Health and Safety Act (Act no.85 of 1993), the law states that an employee must report to their supervisor if he has been involved in any incident which may affect his health, or which has caused an injury to himself. If there is poor communication, an employee in that position may opt not to report, fearing his supervisor might reprimand or take disciplinary action against him for being careless. The result may be an employee who suffers latent occupational health effects or incurs medical costs out of his own pocket since the injury or illness would not have been recorded as an injury-

on-duty (IOD). This may further grow into a norm resulting in a negative safety culture because of poor communication.

The responses correspond with extant literature that highlighted the importance of staff engagement and communication in the advancement of a safety culture. In line with the findings that engaged employees feel more accountable for safety outcomes, Schulman's (2020) study contended that effective communication creates a common awareness of safety obligations among employees. This is further corroborated by the study by Zhao et al.(2022), which showed that when leadership actively engages with staff, employee participation in safety measures increases. However, problems still arise when there is a lack of consistency or bias in communication. Nguyen *et al.* (2023) study suggested that effective employee engagement requires leaders to both solicit and act upon feedback. This highlighted an important finding from the interviews, where Senior Leader and Middle Leader participants stated leadership must continue to work to foster an environment of openness and trust to achieve participation.

5.3.2. Organisational support and resources

Organisational resources and support include the framework, managerial assistance and training required for leaders to successfully carry out safety measures (Galanti, Fiore, Fantinelli and Cortini, 2021). Organisational support and resources emphasise how important it is to have enough resources to promote a culture of safety. Lee *et al.* (2020) highlighted continuous training in the enhancement of safety awareness in high-risk environments. Furthermore, the scholars indicated that the enhancement of safety awareness is effective through continuous engagement by the employees. The Senior Leader Eight asserted training to enhance safety practices. Similarly, the study by Nawi *et al.* (20203) referred to the vital role of training, which results in favourable impacts on safety culture.

The responses of Senior Leader Three and Middle Leader Two highlighted that organisational support and adequate resources are pivotal for effective safety leadership. Similarly, the literature by Lee *et al.* (2020) stressed the need for continuous training to improve compliance and safety awareness. The research findings additionally showed that leaders must be provided with the support needed to implement effective training programs to improve the safety culture of the sugar mill. For example, Senior Leaders Eight pointed out the leadership's commitment to

continual improvement, which embodies the commitment to setting an example of safe behaviour for their staff.

Additionally, the results pointed to the problem of inadequate resources. Senior Leaders and Middle Leaders specifically emphasised how a sugar mill's lack of resources affects the leaders' ability to respond and maintain safety. The absence of proper training resources led to disengagement and increased safety risk because the sugar mill business is a high-risk workplace, as the study of Zhang *et al.* (2022) similarly noted. Additionally, the literature emphasised the necessity of safety resources and the need for organisations in high-risk environments to invest in safety resources correctly to ensure that the workplace is conducive to effective safety protocols being followed. This asserts the importance of a high-risk safety environment to have sufficient safety infrastructure and resources for the sustenance of a safety culture.

5.4. Objective three: to analyse the main challenges faced by leaders in fostering and maintaining a safety culture in the sugar mill

5.4.1. Production pressures and operational demands

Production pressures and operational demands can greatly impact the development of a positive safety culture, as they can create a work environment where safety takes a backseat to meeting productivity goals and deadlines. Under high production pressures, employees and supervisors may prioritize speed and efficiency over safety procedures. This often leads to shortcuts, such as skipping safety checks, using improper tools, or rushing through tasks without following established safety protocols. When workers feel pressured to meet demanding targets, they may feel forced to choose productivity over safety, undermining the consistent adherence to safety practices that a strong safety culture requires.

It was noted that the leaders' biggest obstacles to preserving the safety culture at the sugar mill were the demands of production pressure and operation. Employees frequently feel under pressure to prioritise production over safety, which can weaken safety protocols. This is generally the result of supervisors' unwavering focus on productivity. The study by Kapp (2012) similarly noted the high production demand present in big industries like the sugar mill industry, which leads to safety violations by employees. This alludes to the leader's need to balance

between the prioritisation of safety and productivity to effectively achieve the organisation's goals. Senior Leaders Five and One highlighted the tension that exists between operational demands and safety enforcement, emphasising how production pressures have the potential to take precedence over safety considerations.

Intense operational demands can foster a mentality where safety is seen as an obstacle to productivity rather than an integral part of it. Employees may perceive safety protocols as barriers that slow them down, creating an environment where safety is not valued or respected. This mind-set can erode a safety culture by reinforcing the idea that production is more important than worker well-being, which can lead to frequent risk-taking, disregard for safety guidelines and an overall lack of commitment to safe practices.

Additionally, the study conducted by Siangchokyoo *et al.* (2020) addressed the tension that emerges in high-risk industries between the requirement to uphold safety regulations and meet production objectives. Bascur and O'Rourke (2020) stated that operational needs that conflict with the objective of maximising the profitability of the organisation present executives with safety difficulties frequently. The participants' results made this difficulty in the mill very evident as Senior Leader Two indicated clearly the possible safety trade-offs that can arise when efficiency and speed are prioritised. The results demonstrated that leaders' capacity to successfully implement safety procedures is severely hampered by production pressures. This is reiterated by Kapp (2012), who said that industries with better production disregard safety precautions.

High production demands often lead to longer work hours and minimal rest periods, which can result in fatigue and burnout among employees. When workers are exhausted, they are more likely to make mistakes, overlook hazards and be less vigilant about safety measures. Fatigue impairs cognitive and physical functioning, which increases the likelihood of accidents and injuries. A positive safety culture, however, promotes awareness of personal well-being and encourages employees to recognize and respect their limits.

Additionally, the results highlighted the work of Siangchokyoo *et al.* (2020), whose literature emphasised the need for leaders to negotiate the challenging terrain of operational demands to prevent productivity gains at the expense of safety. The responses highlighted the First Line

Leaders, Senior Leaders and Middle Leaders participants' worries about potential safety violations when under pressure to meet production targets, illuminating the real-world applicability of these theoretical concepts. Moreover, the corpus of evidence indicated that safety should not be sacrificed for operational performance, even if it is vital. This is consistent with the argument made by Bascur and O'Rourke (2020) that it is necessary to establish strategies for balancing production goals with safety objectives. This suggests that organisations need to cultivate a culture in which safety is ingrained in operational procedures. This will help executives avoid having to choose between meeting production targets and upholding safety regulations. Overcoming this challenge requires leadership to balance production demands with a steadfast dedication to safety, integrating safety as a fundamental component of productivity rather than an obstacle to it. A well-developed safety culture recognizes that safe operations ultimately lead to better long-term productivity and success.

5.4.2. Employee complacency and resistance to change

Employee complacency and resistance to change can significantly hinder the development of a positive safety culture, as both attitudes can undermine safety initiatives, limit adherence to protocols and weaken collective accountability. When employees become complacent, they may develop a false sense of security, if no accidents have occurred recently, safety protocols are less critical. This can lead to a gradual decline in vigilance, where employees skip or overlook essential safety procedures, increasing the risk of incidents. Complacency often emerges when employees perform routine tasks repeatedly without incidents, leading them to underestimate potential risks. In a safety culture, however, every task is approached with caution and attention to detail, regardless of how familiar it may be. When complacency sets in, it can weaken the entire safety culture, as others may observe these lax behaviours and assume they are acceptable, creating a ripple effect that normalizes shortcuts and unsafe practices. Resistance to change can be a major barrier to establishing or improving safety culture, especially if new safety protocols, technologies, or training programs are introduced. Employees who are resistant to change may perceive new safety initiatives as unnecessary or disruptive to their established routines, resulting in pushback or passive non-compliance. This resistance can stem from a lack of understanding about the importance of safety.

Complacency and resistance to change by employees seem to be two of the major obstacles that leaders must contend with in the process of developing a safety culture in the sugar mill. According to Olcay and Erdem (2021), employee complacency at work is one of the contributing factors in accidents. The responses from the participating leaders brought out the issue of complacency and revealed that safety measures are needed. This evidently showed the great stress the participants experienced by emphasising the way leaders should build a compelling business case for change, with respect to safety matters as the core component of an open environment.

It was indicated that employee complacency and resistance to change pose significant barriers to effective safety leadership. For instance, First Line Leader 1 highlighted the employees' resistance to safety measures. Furthermore, the Senior Leader 3 noted the challenge leaders face with workers regarding complacency and the perception of safety measures as unnecessary. A study by Jonidis, Nauert and Gillan (2022), stated that employee complacency at work is one of the contributing factors in accidents., which coincides with Participants' worries regarding the routine disregard for safety protocols. Senior Leader and First Line Leader participants illustrated the resistance to change that can hinder safety culture development. Zohar (2014) emphasised the importance of altering employee attitudes to promote a proactive safety culture, stressing the need for leaders to address complacent behaviours actively. In addition, the author highlighted the importance of overcoming resistance to change for successful leadership in safety culture.

5.4.3. Insufficient resources and support

The South African Occupational Health and Safety Act (OHSA) No. 85 of 1993 emphasizes that employers are responsible for providing adequate resources and support to ensure a safe and healthy working environment for employees. Although the Act does not specifically detail every type of resource, it outlines certain responsibilities that imply the need for resources, support and a commitment to safety. Through these provisions, the Act emphasizes that adequate resources, financial and otherwise, are essential for meeting health and safety obligations. Employers are encouraged to create an environment that not only complies with safety standards but also actively supports and promotes safe practices through the provision of necessary resources and ongoing support.

The overall outcomes showed that the main obstacles to leaders' capacity to successfully promote a safety culture within the mill are a lack of organisational support and inadequate resources. The leaders require adequate tools, training and backing from management to implement safety initiatives successfully. For instance, Middle Leader Two highlighted the need for adequate resources to support safety initiatives as the sugar mill workers expressed the lack of safety gear used by the workers in everyday functions. In addition, the Senior Leaders Six reflected the dependency of the leader's leadership style on organisational support for successful safety leadership.

Insufficient resources greatly impede leaders' effectiveness in promoting a safety culture, as emphasised by the analysis. Senior Leader Eight expressed a need for better training programs and instruments to help with the enhancement of safety in the high-risk work environment, Lee *et al.* (2020) stated that having adequate resources is vital for training and compliance. Additionally, Zhang *et al.* (2022) confirmed that poorer levels of adherence and safety outcomes can be caused by resource limits.

The literature evaluation demonstrated that organisational support is essential for effective safety management, which validates these findings. The significance of leaders possessing resources to sustain safety culture initiatives among staff members is emphasised by Nawi *et al.* (2023). The responses by participants emphasised that inadequate investment in safety practices makes it difficult for leaders to establish a robust safety culture. Leaders also alluded to the lack of availability of training gear available as a shortfall, which further puts emphasis on the importance of the organisation's need to focus on allocating resources to support their leaders in driving successful safety management practices for effective safety culture development.

5.5. Objective four: to provide strategies for improving leadership styles to enhance the development of a safety culture in the sugar mill

5.5.1. Enhancing training and development programs

As per Section 13 of The South African Occupational Health and Safety Act (OHSA) No. 85 of 1993, employers are required to inform employees of the scope of their duties and any associated

health and safety risks. This involves training employees not only on the nature of hazards but also on specific practices to mitigate these risks. Training in this regard will help leaders acquire the skill needed to identify certain hazards and risks, enabling them to implement effective mitigation measures. Employers must also communicate the employee's duties under the Act and ensure they understand the procedures for reporting unsafe conditions.

The responses of the participants made it clear that training and development programs need to be improved to improve the leadership styles associated with safety culture. Scholars have discovered programs that provide executives and employees in high-risk industries, such as sugar mills, with the essential information and abilities to effectively promote safety and adhere to procedures (Molnar, Schwarz, Hellgren, Hasson and Tafvelin, 2018). Additionally, the empirical evidence asserted that with the proper safety awareness and safety protocol, there will be an effective safety culture followed by the workers. For instance, First Line Leader Two reflected the perceived need for enhanced training to strengthen safety practices.

The responses emphasised that augmenting training and development programs is an essential technique for developing leadership styles and promoting a safe culture. Burke *et al.* (2016) supported the idea that effective leadership training significantly improves safety performance in high-risk industries. The participants underscored the leaders' appeal to more robust training initiatives, which alludes to Middle Leader Two's emphasis on the connection between training and leadership commitment to safety. Furthermore, Lee *et al.* (2020) deduced that ongoing training enhances employee compliance and fosters a culture of safety awareness. This is consistent with the findings of Nawi *et al.* (2023), who stressed the role that structured training programs have in the overall creation of a culture of safety. As a result, companies need to give training and development top priority as a fundamental tactic for improving leadership efficacy in safety management.

5.5.2. Fostering open communication and feedback loop

According to the study's findings, creating a feedback loop and encouraging open communication are crucial tactics for assisting in the improvement of leadership styles at the sugar mill. Effective communication channels allow leaders to quickly communicate safety

information and establish transparency, according to Zara, Nordin and Isha (2023), while feedback systems facilitate the identification of safety concerns and cooperative problem-solving (Dai, Olorunfemi, Peng, Cao and Luo, 2021). Communication that is clear and consistent ensures that all employees understand safety protocols, procedures and policies put in place by the company. When the expectations are clearly communicated, employees are more likely to follow safety practices correctly, reducing misunderstandings that could lead to accidents. Excellent communication also means the leaders, as representatives of employers, are complying with Section 8 of The Occupational Health and Safety Act (Act no.85 of 1993), which requires the employer to provide information and instructions related to their health and safety. Employees in turn comply with Section 14 of the same Act by carrying out the lawful orders as instructed by the leaders or challenge unlawful ones, obeying health and safety rules, completing the feedback loop.

The responses show that adopting open communication channels and leaders establishing a feedback loop from the employees are key strategies for improving leadership styles, which will aid in the development of a safety culture. For instance, Senior Leader Three underscored the importance of creating a culture where safety can be openly discussed. A study by Schulman (2020) stated that the creation of open communication for open safety discussions develops the safety culture of an organisation, and employees should communicate in a clear and consistent manner to develop a common knowledge of their obligations regarding safety. This is corroborated by the findings of the study, which emphasises the necessity of having more candid conversations to advance safety awareness and advancement.

Nguyen *et al.* (2023) further supported the notion that effective feedback mechanisms encourage employees to engage actively in safety initiatives. The literature and participant experiences suggest that organisations must prioritise communication strategies that facilitate ongoing dialogue about safety. For instance, Senior Leader Seven reflected on the positive impact of feedback on employee engagement in safety practices. This proactive approach can significantly enhance the overall safety culture and improve leadership effectiveness.

5.5.3. Promoting a culture of accountability and recognition

The Chief Executive Officer, who in the case of the case study sugar mill would be known as the Managing Director, as the highest-ranking leader within the organisation, is charged with certain duties according to Section 16 of The Occupational Health and Safety Act (OHSA) No. 85 of 1993. This section establishes top-level accountability, while this top leader can delegate responsibilities to other leaders beneath him, the ultimate accountability for ensuring the sugar mill's safety remains with him. If the top leader displays a culture of accountability in ensuring the health and safety of employees, the culture will easily cascade down to the rest of the leaders under his control and ultimately to the employees too.

The result of the study revealed that a culture of accountability and recognition is one of the identified strategies for improving safety culture leadership styles. As such, Fiore, Fantinelli, Giffi, Curcuruto, Cortini and Galanti (2023) indicated that leaders within an organisation create expectations and appreciative acts toward employee contributions, hence motivating employees to own and be committed to safety standards. Similarly, Rashid, Salleh and Nordin (2023) agreed and estimated that if the leadership is in communication with the teams, then working in a high-risk environment could bring a good improvement in the safety commitment of workers.

Based on the responses, the required strategy for enhancing leadership styles and creating a safety culture within the sugar mill is creating a culture of accountability and recognition. First Line Leaders One and Two identified how accountability strengthens an individual's commitment to safety practices. Similarly, Natria, Yasmina and Riantoputra (2023) study asserted that the use of the accountability mechanism encourages employees to take the needed proactive safety measures. In addition, Zohar (2014) added credence to this idea by emphasising the link between accountability, trust in leadership and a supportive safety environment. Trust is a cornerstone of a positive safety culture, and it is built through open, honest and regular communication. When leaders communicate openly about safety goals, challenges and improvements, it demonstrates a commitment to employee well-being. This trust motivates employees to take personal responsibility for safety and hold each other accountable, reinforcing safe behaviour across the organisation.

The responses suggest that the positive recognition of workers in the efforts to commit to safety practices reflects the positive impact of acknowledging safety efforts on overall employee engagement. Gracia *et al.* (2020) stressed the development of a safety culture that requires leadership to instil accountability and be accountable. This allows for the continuous enhancement of the organisation's safety culture. Therefore, this mechanism of accountability is an essential key to the development and improvement of safety culture. This implies that an acknowledgement-based culture both encourages and strengthens workers' dedication to safety procedures.

5.6. Conclusion

Thematic analysis established the associations between various philosophies of leadership and how they influence safety culture in the sugar mill environments. In instances where policies, by the nature of transformational leadership, are adhered to, there is guaranteed assurance of employee adherence to procedures on safety. This fosters a vital foundation for building an effective framework by the leadership. The framework encourages proactive safety employee behaviour. Furthermore, the commitment to continuous improvement and training increases the promotion of safety practices in the mill by leadership. An integrated approach balancing transformational and transactional leadership is required in the sugar mill context to tackle the difficulties of developing a positive safety culture in the sugar mill settings. The results and body of literature emphasise how crucial strategic leadership is to promoting safety outcomes in high-risk settings such as sugar mills.

The participants' responses further identified there are critical factors that influence leadership in driving safety culture within the sugar mill. Employee engagement and communication enhance the effectiveness of safety initiatives, while adherence to policies ensures compliance and establishes a robust safety framework. Organisational support and resources are critical in facilitating leaders to carry out safety practices effectively. The analysis underlined that, for the development of a resilient safety culture in operationally high-risk environments, an integrated approach of engagement, compliance and resources is needed. Strategic leadership and organisational commitment were shown to be the essential components for creating long-term safety outcomes in the findings and research.

The investigation also revealed the difficult obstacles that managers must overcome to create and preserve a safety culture at the sugar mill. Production constraints put safety first, yet employee complacency and reluctance to change make following procedures difficult. Furthermore, major obstacles to putting effective safety programs into action include a lack of organisational support and resources. To overcome these obstacles, the organisation must take strategic measures to strike a balance between these operational needs and a strong commitment to safety, maintaining safety as the top priority. Other important strategies are developing a safety accountability and recognition culture, promoting effective open communications and creating feedback loops. The strategies also included improving training and development

In conclusion, the chapter provided a comprehensive analysis of the results in Chapter four, interpreting the ways in which safety culture in the sugar mill division is influenced by leadership styles. The influence of transactional and transformational leadership philosophies on safety culture, the value of clear communication, and the function of constant accountability in upholding safety regulations are some of the major topics covered. The difficulties leaders encounter in striking a balance between safety priorities and productivity demands were also covered in the discussion, which provided insight into workable solutions that might improve the growth of a safety culture. The insights gained provide a deeper understanding of how leadership can be leveraged to foster a safe work environment. The chapter then sets a foundation for the next, where practical recommendations, limitations and future research directions are explored.

Chapter 6: Conclusion and Recommendations

6.1. Introduction

In Chapter five, the findings from the interview data were discussed in relation to existing literature and the theoretical framework guiding this study. The discussion provided an in-depth interpretation of the key themes, highlighting how these findings contribute to a broader understanding of the relationship between leadership styles and safety culture development. By analysing the ways in which the study's results align with or diverge from previous research, Chapter five offered insights into both the significance and potential implications of the leaders' experiences and perspectives. This laid the groundwork for a final assessment of the study's contributions, limitations, and recommendations for future research.

Following the presentation and discussion of the findings of this investigative study, Chapter six aims to tie the study's objectives to the main findings and conclude the study. This qualitative case study investigates factors influencing leadership style in the safety culture development within a sugar mill in South Africa. The study adopted the transactional and transformational leadership theories. Transformational leadership plays a crucial role in establishing a deeply ingrained safety culture in high-risk businesses such as sugar mills, and transactional leadership efficiently enforces safety regulations in high-risk industries such as sugar mills. The chapter provides recommendations for future research.

The chapter concludes the dissertation by summarizing the key findings and reflecting on their implications within the context of the research objectives. This chapter begins with a concise summary of the study's main insights, revisiting the research objectives and outlining how they were addressed through the findings. This synthesis allows for a holistic view of the research outcomes, highlighting the study's contributions to knowledge and practice in the field of sugar mill safety. Chapter six also considers the limitations of the study, acknowledging aspects of the research design or data collection that may have influenced the results and suggesting ways these limitations could be addressed in future research.

Finally, this chapter presents recommendations based on the study's findings and implications. These recommendations may be relevant to other sugar mills, other industrial setting organisations, legislators, practitioners, and future researchers interested in further exploring the relationship between leadership styles and safety culture development. By providing actionable

insights, Chapter six aims to demonstrate the study's value beyond academic settings, suggesting practical applications that could benefit the sugar industry and support continued inquiry into the issues explored in this dissertation. This chapter serves as a closing reflection on the research journey of leadership and safety culture in a sugar mill setting, offering both a conclusion to the study and a foundation for future work.

6.2. Addressing the research objectives

Within the context of sugar mills, the study identified important leadership styles, variables impacting safety culture, obstacles faced by leaders and methods for development. While transactional leadership placed more emphasis on adhering to safety procedures, transformational leadership was primarily acknowledged for encouraging employee participation and proactive safety initiatives. Effective leadership was shaped by elements including organisational support, policy observance and effective communication. The data analysis highlighted leaders had to deal with issues including staff complacency, demands for output, and a lack of resources, which made it difficult to foster a safety culture. The study suggested improving training and development programs, encouraging open communication and feedback loops, and advancing an accountability and recognition-focused culture as ways to enhance leadership styles.

Objective one: to identify the predominant leadership styles used by leaders in driving safety culture within the sugar mill.

The findings from the study indicate that the predominant leadership style used to drive safety culture within the sugar mill is transformational leadership. The responses showed that transformational leadership became very important, underpinning the role that leaders must play in inspiring and motivating employees. The responses support that when leaders engage their teams, they create a safety culture of shared responsibility and pro-activeness in risk management.

Transactional leadership points toward compliance and structure in safety practices. The combination of a transformational style of leadership toward engagement and a transactional style aimed at compliance is the multi-faceted approach that management takes in developing a healthy, robust safety culture. The findings additionally show that effective leadership must

demonstrate a commitment to continuous improvement and training. Leaders who prioritise training initiatives result in benefits for the organisation's employees' knowledge about safety procedures, but it is also a positive reflection of the leaders' commitment to implementing an environment concerned with safety. This supports the literature, which has recognised that training is an important intervention for improving safety culture and overall safety performance.

The first objective was achieved by the study in the identification and analysis of the dominant leadership styles that management utilised in driving a safety culture within the sugar mill, namely transformational and transactional. A broad understanding of how leadership affects safety procedures in this high-risk setting is demonstrated by the inclusion of employee involvement, compliance and ongoing training. In addition to accomplishing the goal, this comprehensive strategy offers insightful information about the dynamics of leadership in the development of safety cultures.

Objective two: to investigate the factors that influence leadership in driving a safety culture within the sugar mill.

The results from the study indicate various factors influence leadership in driving sugar mill safety culture. The responses showed that employee engagement and communication are rated high and proved that leaders who open a line of communication with their teams tend to promote a safety culture more effectively. In this regard, participants showed that approachable leaders provide an environment where open discussions of safety concerns can be done without any retribution. It also supports the literature when Schulman (2020) established that communication is core to the control of safety.

Moreover, the theme of adherence to policies and regulatory compliance shows how clear-cut guidelines and an understanding of safety protocols are at the very core of any functional leadership. The participants made a realisation that knowledge of the rules not only clarifies expectations but also serves to upkeep the safety protocols and standards in their work. This is reflected by Gracia *et al.* (2020), who indicated that compliance-driven leadership is influential in a positive safety culture. Additionally, responses identify organisational support and resources as one of the most dominant determining variables of leadership effectiveness. The responses revealed that for leadership to be effective, it requires full resources and support from

management to help leaders operate successfully regarding promoting safety. This is consistent with Lee *et al.*'s (2020) assertion that improving safety standards requires ongoing investment in resources and training.

The study achieved its second objective by investigating and identifying the factors of employee engagement, adherence to policies and organisational support that influence leadership in driving safety culture within the sugar mill. The interrelationship among these factors signals an expansive understanding of how multiple elements interact in constructing effective leadership in safety management. This fulfils the objective, but there is also considerable insight into the dynamics of leadership in influencing safety culture in high-risk settings.

Objective three: to analyse the main challenges faced by leaders in fostering and maintaining a safety culture in the sugar mill.

The findings from the study identified the main challenges that leaders face in fostering and maintaining a safety culture within the sugar mill. The identification of production pressures and operational demands as significant obstacles implies that leaders may disregard safety whenever they are under pressure to guarantee high productivity in their processes. This is consistent with the observations made by Kapp (2012), who discussed how increased production needs can jeopardise safety initiatives.

Additionally, the theme of employee complacency and resistance to change highlights the internal challenges that leaders must navigate. Concerns about complacency resulting in disregard for safety procedures were highlighted by participants. The research by Zohar (2014), which stressed that leaders must actively promote proactive safety behaviours and cultivate a proactive safety attitude, similarly emphasised this. Additionally, the results highlighted the difficulty caused by inadequate organisational support and resources. The responses are consistent with Lee *et al.* (2020), who concluded that resource limitations greatly impede safety performance and suggested that leaders cannot effectively implement strong safety programs without the right equipment and training. This highlights that organisational commitment becomes necessary for providing the right support for the leaders to endorse a culture of safety.

The study successfully realised its third objective by analysing and identifying the main challenges of production pressures, employee complacency and insufficient resources that leaders face in fostering and maintaining a safety culture within the sugar mill. These are linked to providing an understanding of the barriers to effective safety leadership in high-risk environments, satisfying the objective and providing insight into the dynamics of leadership in safety culture development.

Objective four: to provide strategies for improving leadership styles to enhance the development of a safety culture in the sugar mill.

The study's conclusions offer important tactics for improving leadership philosophies with the goal of creating a strong safety culture inside the sugar mill. Improving training and development programs was identified as the main tactic. Participants suggested that thorough and continuous training is essential since leaders and staff members need to fully comprehend safety procedures and adjust to emerging challenges in safety. The evidence from the responses is relatively definite that focused training indeed restored safety practices. This also aligns with research evidence on such training as a sure way to improve performance in risky industries.

Furthermore, as an approach to increase leadership effectiveness, the results emphasized the value of encouraging open communication and feedback loops. When an organisation fosters a culture of open communication, employees feel comfortable to discuss safety-related issues without fear. This enables high-risk industries to adopt a safer work environment that prioritises the safety of its employees. Effective leadership necessitates continuous involvement with team members, and clear communication is essential in creating a common knowledge of safety duties.

In addition, promoting a culture of accountability and recognition was identified as a crucial strategy. A sense of ownership and dedication to safety standards is fostered by outlining expectations for safety behaviours in clear terms and recognizing the contributions made by employees in this regard. Emphasizing accountability makes employees feel more invested in the leadership and strengthens their sense of shared accountability. This approach is crucial for creating a welcoming and encouraging environment for safety where workers feel valued and motivated to adhere to protocols.

The study successfully realised its fourth objective by identifying and articulating the strategies for enhancing training and development programs, fostering open communication and promoting a culture of accountability and recognition. These provide understandable insights into how leadership styles are to be improved in developing a sound safety culture in the sugar mill. Such analysis give insight into how the contribution of leadership can be made effectively in safety management within high-risk environments and meet the objective of providing useful guidance for organisations

6.3. Limitations of the study

While this study provided valuable insights into the factors influencing leadership style and safety culture development, limitations should be considered when interpreting the findings. Akanle, Ademuson and Shittu (2020) define study limitations as factors that could not be satisfactorily explored for specific reasons, which might suggest areas of interest for future studies. These limitations may also involve unexpected problems or aspects outside the researcher's control. The limitations of the research were as follows: Leaders may have provided socially desirable responses instead of true and accurate ones, potentially skewing the data. Moreover, the duration of the study was too short to make any observations about long-lasting effects of the leadership styles on the growth of safety culture. The relatively short duration of the study may have only captured the initial effects, limiting the full understanding of long-term impacts. This constrained the study's capacity to ascertain long-term alterations in leadership styles and their enduring effects on safety culture. The impact of leadership on safety practices is bound to unfold over a longer period. The inaccessibility of some leaders for interviews at certain periods was a challenge. Some interviews had to be conducted outside working hours as it was the only time other leaders were available. Additionally, self-reported data from the interviews may not have fully captured actual workplace behaviours and practices. Also, the impaired concentration of leaders who were participating willingly but under pressure to deliver on production work, may have influenced the quality and the quantity of responses given.

6.4. Recommendations

6.4.1. Improve communication

The sugar mill should encourage and enforce regular safety meetings and organise communication routes to facilitate open information exchange between managers and staff. There can be a rule that states that all meetings must have safety as the first item on the agenda. In that way, safety will become a way of life for all employees as all workers are, at one or other point involved in a meeting. The establishment of a safety culture depends on the use of effective communication. Leaders at the sugar mill may foster an atmosphere where workers feel appreciated and empowered to raise concerns about safety by instituting frequent meetings and feedback procedures. It is in these meetings where leaders will engage with their teams, give feedback on pressing matters and acknowledge positive safety behaviours displayed by employees.

6.4.2. Invest in training and development programs

A learning organisation is the one that puts an effort in upskilling their workforce and encourage innovation. It is important that the sugar mill designs and deliver a continuous training program for its leaders and its workers likewise, training that is focused on safety procedures and best practices. Since leaders are also legally accountable, the sugar mill can also invest in legal liability awareness training for its leaders, so they may understand precisely what their role is and inform them of potential consequences they would face should there be a major safety incident. This will not only protect the workers, but it will ensure that leaders are always conscious in their daily decision making where safety is concerned. With such worthy investment in training programs, the sugar mill will be assured that all workers, which comprise leaders and employees at large, know how to handle themselves to ensure everyone's safety.

6.4.3. Foster a culture of trust and accountability

If the sugar mill can create a culture of trust, it will surely help the leadership approach to effective safety management. Leaders need to inspire confidence through transparent and accountable decision-making and good practices, which would enable workers to take responsibility for safety. When leaders encourage open communication from employees about

safety concerns, this will promote accountability as employees understand their role in maintaining safety standards. The findings from the research indicate that trust is a significant factor in enhancing employee engagement and proactive behaviour regarding safety. Employees will find it easier to trust a leader who leads by example where safety is concerned. Leaders of the sugar mill should ensure they practice what they preach, for example, if there is safety sign that requires hearing protection to be worn, then the leader must be the first person to show what is supposed to be done. That is an indication of genuine commitment to safety and employees will follow suit, because they trust their leader.

When incidents in the workplace occur, the leaders are quick to look for who to blame. If leaders can approach such situations from a learning and coaching perspective, rather than a blaming one, employees will gradually learn and not shy away from taking accountability for their actions for fear of punishment. This will both create trust in the leader and encourage accountability on the employee.

6.4.4. Regularly evaluate safety culture initiatives

The sugar mill should establish a system of continual evaluation through employees' responses and actual safety performance measures to assess the efficacy of its initiatives on safety culture and leadership styles. If the leaders adopt the use of continuous evaluation, it will allow the identification of areas that need improvement and, at the same time, make the initiative relevant and effective concerning the safety culture. Employees can also be encouraged to bring innovative ideas on how to make their workplaces safer and recognition can be made for such efforts. Regular assessment also informs leaders about perceptions among employees regarding safety and the consequences of leadership practices, allowing modification of strategies where necessary. Similarly, the leaders should be constantly evaluated, formally, by their seniors on their safety performance. If a leader is only made aware of their performance only from a technical point of view, the focus and effort will be on the technical side and less effort will be on safety and justifiably so.

6.5. Future Research Directions

6.5.1. Impact of leadership development programs on compliance with the OHS Act

Based on the South African Occupational Health and Safety Act, 85 of 1993, there is a legislative framework that places an obligation on employers to provide a safe working environment. Considering this, the OHS Act provides that non-compliance with safety regulations will entail serious legal consequences, future research could examine how leadership development programs, specifically transformational leadership, influence the leaders to bring about a culture of safety in compliance with the said Act. The leadership approach that encourages and promotes employee involvement and communication can be studied in relation to how it sustains adherence to the legal safety standards provided under the OHS Act.

6.5.2. Longitudinal studies on the role of leadership

While leadership might impact immediately upon styles of safety practice, the sustainability of such effects is less well explored. In the future, longitudinal designs could investigate if the benefits from the leadership-driven improvements in safety are sustained or whether it is necessary for leadership engagement to be sustained through examining the impact of leadership interventions on safety culture and incident rates over longer time periods. Moreover, since the OHS Act adopts a continuous adherence to safety approach, further research can be done on how different kinds of leadership impact adherence to the Act over a period. Studies can also investigate whether leadership interventions lead to long-term adherence to the Act and if such an intervention helps reduce incidents within workplaces in line with the continuous approach to managing safety under the OHS Act.

6.5.3. Cultural and contextual variations in safety leadership

Although cultural and geographical differences often impact leadership approaches, not enough research has been done on how much these differences impact safety culture. Conducting comparative evaluations across diverse industries and geographical regions can provide valuable insights into the modifications that safety protocols and leadership styles must undergo to align with local cultural norms. Gaining an understanding of these variations may help create more context-specific leadership models that function well in a variety of work settings.

6.6. Conclusion

These findings indicate that leadership plays an important role in achieving and maintaining a robust safety culture, especially within high-risk industrial settings such as sugar mills. Effective leadership practices, particularly those adopted from transformational leadership, are likely to lead to a safety culture because there is increased employee participation and a free flow of information along with continuous improvement. Leaders who ensure safety, create inspiration among their teams, and enable active participation in safety initiatives create an environment in which the employees can share values and responsibilities on safety.

In contrast, transactional leadership is about adherence to policies and regulatory compliance to ensure safety standards. However, this research has shown that a complete compliance-based model may be insufficient for long-term buy-in into safety activities. Indeed, it is a mix of both transformational and transactional leadership that best drives employees intrinsically to engage in the activity while maintaining structured guidelines for safety. The study also identified that the support and resources from the organisations are very critical in enabling leaders to successfully work at creating a safety culture. It is impossible for leaders to work in isolation and promote a safety culture without the necessary support of their organisations in terms of resources, training and safety being part of core organisational values.

In conclusion, the development of a robust safety culture is directly related to the quality of leadership present in an organisation. A leadership strategy that includes organisational support, employee involvement, compliance and continuous improvement can significantly reduce workplace accidents and foster a culture where safety is given top priority in day-to-day operations. This study demonstrated how leadership influences safety culture and is critical to the implementation of long-term safety measures in high-risk settings.

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Appendices

Appendix 1 – Gatekeeper's Letter

UCL COMPANY (PTY) LTD
Registration No.: 2005/017711/07

Telephone: +27 33 501 1600

Address: 16 Noodsberg Road, Dalton
Postal: P.O. Box 1, Dalton, KwaZulu-Natal, 3236, South Africa

Website: www.ucl.co.za

16 July 2024

Lungile Majola
12B Ekamanzi Road
Dalton
3236
Email: 221052401@stu.ukzn.ac.za

Dear Ms Lungile Majola

RE: PERMISSION TO CONDUCT RESEARCH

Gatekeeper's permission is hereby granted for you to conduct research at the sugar mill, provided Ethical Clearance from the University of KwaZulu Natal has been obtained. We note the title of your research project is:

"**An investigation of factors influencing leadership style and safety culture development within a sugar mill in South Africa.**"

It is noted that you will be constituting your sample as follows:

- Twenty leaders at senior and middle management positions.
- A request to participate will be sent to them via email. On the email the company secretary must be copied on email SibuyiZ@ucl.co.za. A copy of this letter (Gatekeeper's approval) must also be simultaneously sent to her.
- Interviews will be conducted with the leaders using an interview guide

Please ensure you attach the following on your email request:

- Ethical clearance approval.
- Research title and details of the research, the researcher and the supervisor.
- Consent form to be signed by the respondent before continuing with the interview.
- Gatekeeper's approval by the General Manager: Operations.

You are authorized to contact the participating leaders using the company email address system. Names and identity numbers of all participants may not be recorded on the data collection forms as per POPI Act. Data collected must be treated with due confidentiality and anonymity.

Sincerely,

[redacted]
Clinton Vermeulen
General Manager: Operations

[redacted]

Appendix 2 – Informed Consent Resource Template

UKZN HUMANITIES AND SOCIAL SCIENCES RESEARCH ETHICS COMMITTEE (HSSREC)

APPLICATION FOR ETHICS APPROVAL
For research with human participants

Information Sheet and Consent to Participate in Research

Date: 06 September 2024

Dear Respondent

My name is Lungile Majola from the SHE Department within the sugar mill (contact number 033 5011600/[redacted]and email 221052401@stu.ukzn.ac.za)

You are being invited to consider participating in a study that involves investigating factors that influence leadership styles and safety culture development within the sugar mill. The aim and purpose of this research is to identify key determinants shaping leadership and assess their impact on fostering a robust safety culture. The study is expected to enroll twenty leaders from the Manufacturing Division. It will involve conducting recorded interviews with the participants. The duration of your participation if you choose to enroll and remain in the study is expected to be twenty minutes, at most.

The study will not involve any risks and/or discomforts. I hope that the study will create the following benefits: 1) the outcomes of the study may contribute towards improving safety in the workplace, specifically in sugar mills; and 2) the study will bridge a gap in knowledge on the correlation of leadership styles and safety outcomes in sugar mills. The findings of the study will also be shared with other divisions within the group as well as other sugar mills.

This study has been ethically reviewed and approved by the UKZN Humanities and Social Sciences Research Ethics Committee (approval HSSREC/00007387/2024).

In the event of any problems or concerns/questions you may contact the researcher at 221052401@stu.ukzn.ac.za, supervisors Prof Cecile Gerwel Proches (gerwel@ukzn.ac.za / 0312608318) / Prof Bibi Chummun (ChummunB@ukzn.ac.za / 0312609111), or the UKZN Humanities & Social Sciences Research Ethics Committee, contact details as follows:

HUMANITIES & SOCIAL SCIENCES RESEARCH ETHICS ADMINISTRATION
Research Office, Westville Campus
Govan Mbeki Building
Private Bag X 54001
Durban
4000
KwaZulu-Natal, SOUTH AFRICA
Tel: 27 31 2604557- Fax: 27 31 2604609
Email: HSSREC@ukzn.ac.za

Kindly note the participation in this research is voluntary and you may withdraw participation at any point. In the event of refusal/withdrawal of participation you will not incur any penalty or loss of treatment or other benefit to which you are normally entitled. If you would like to withdraw from participating in the study, please inform me on the provided contact information or visit me at the factory office. If a participant is found to be influencing other participants negatively, he/she may be withdrawn from the study. No costs will be incurred by participants because of participation in the study.

As no names are required to answer interview questions, the identity of you as a participant will be protected. All collected data will be analyzed, used specifically for this study and will not be shared for anything else other that what is it is intended for.

CONSENT

I …… have been informed about the study entitled **An investigation of factors influencing leadership style and safety culture development within a sugar mill in South Africa** by Lungile Majola.

I understand the purpose and procedures of the study are to identify key determinants shaping leadership and assess their impact on fostering a robust safety culture; and to investigate the factors influencing leadership styles in the development of a safety culture within the sugar mill.

I have been given an opportunity to answer questions about the study and have had answers to my satisfaction.

I declare that my participation in this study is entirely voluntary and that I may withdraw at any time without affecting any of the benefits that I usually am entitled to.

If I have any further questions/concerns or queries related to the study I understand that I may contact the researcher at 221052401@stu.ukzn.ac.za, supervisors Prof Cecile Gerwel Proches (gerwel@ukzn.ac.za / 0312608318) / Prof Bibi Chummun (ChummunB@ukzn.ac.za / 0312609111).

If I have any questions or concerns about my rights as a study participant, or if I am concerned about an aspect of the study or the researchers then I may contact:

HUMANITIES & SOCIAL SCIENCES RESEARCH ETHICS ADMINISTRATION
Research Office, Westville Campus
Govan Mbeki Building
Private Bag X 54001
Durban
4000
KwaZulu-Natal, SOUTH AFRICA
Tel: 27 31 2604557 - Fax: 27 31 2604609
Email: HSSREC@ukzn.ac.za

Additional consent, where applicable

I hereby provide consent to:

Audio-record my interview YES / NO

_____ _____

Signature of Participant **Date**

Appendix 3 – Ethical Clearance Letter

UNIVERSITY OF KWAZULU-NATAL
INYUVESI YAKWAZULU-NATALI

02 September 2024

Lungile Monette Majola (221052401)
Grad School of Bus & Leadership
Westville Campus

Dear LM Majola,

Protocol reference number: HSSREC/00007387/2024
Project title: An investigation of factors influencing leadership style and safety culture development within a sugar mill in South Africa
Degree: Masters

Approval Notification – Expedited Application

This letter serves to notify you that your application received on 24 July 2024 in connection with the above, was reviewed by the Humanities and Social Sciences Research Ethics Committee (HSSREC) and the protocol has been granted **FULL APPROVAL**.

Any alteration/s to the approved research protocol i.e. Questionnaire/Interview Schedule, Informed Consent Form, Title of the Project, Location of the Study, Research Approach and Methods must be reviewed and approved through the amendment/modification prior to its implementation. In case you have further queries, please quote the above reference number.

PLEASE NOTE: Research data should be securely stored in the discipline/department for a period of 5 years.

Incidents of adverse events and serious adverse events (AEs and SAEs) should be reported in writing to HSSREC, the study sponsors, and any regulatory authority (where appropriate), within 7 working days of the occurrence for local sites and 14 days for all other South African sites.

This approval is valid until 02 September 2025.
To ensure uninterrupted approval of this study beyond the approval expiry date, a progress report must be submitted to the Research Office on the appropriate form 2 - 3 months before the expiry date. A close-out report to be submitted when study is finished.

HSSREC is registered with the South African National Health Research Ethics Council (REC-040414-040).

Yours sincerely,

[redacted]

Professor Dipane Hlalele (Chair)
/nng

Appendix 4 – Interview Guide

Semi-structured Interview Guide

Section A: Demographic Information (Please Tick)

1. Age

	Between 18-20 years
	Between 21-30 Years
	Between 31-40 Years
	Above 40 years

2. Gender

	Male
	Female
	Prefer not to say

3. How long have you been working for the company?

	Less than 5 years
	6-10 years
	10 years +

4. Position

	First line leader
	Middle leader
	Senior leader
	Executive leader

5. Educational/Professional Qualifications

	Matric or equivalent
	Diploma
	Degree
	Postgraduate degree

6. Ethnicity

	African
	Coloured
	White
	Indian/Asian
	Other

7. Occupational Health and Safety Training

	Yes
	No
	Not sure

Section B: Guiding questions

1. Can you describe your leadership style in managing safety outcomes in the sugar mill?
2. What factors do you believe most influence your leadership style in driving a safety culture within the sugar mill?
3. What are the main challenges you face in fostering and maintaining a safety culture in the sugar mill?
4. What strategies could be implemented to improve leadership styles for better safety culture development in the sugar mill?

5. How do you typically motivate or inspire your team to prioritise safety in their daily activities?
6. How do you make decisions related to safety protocols within the sugar mill?
7. In what ways do you involve employees in safety initiatives and decision-making processes?
8. How do you evaluate the effectiveness of your leadership approach in achieving and maintaining a safe working environment?

Your participation and cooperation are highly appreciated. Thank you for your valuable insights and time.

Appendix 5 – Editor Certificate

MATSHUTSHA HOLDINGS

AFRICAN GROWTH

Date: 27 November 2024

Certificate of Proofreading

This document serves to confirm that the thesis/dissertation listed below was proofread and edited for appropriate use of punctuation, spelling and grammar by a professional language editor.

Author: Lungile M Majola
Thesis/Dissertation title: An investigation of factors influencing leadership style and safety culture development within a sugar mill in South Africa.

Signature .....

Date: 27/November/2024

[redacted] [redacted] 104 Folkestone Rd., Seaview, Durban 4(