UNIVERSITY OF CAPE COAST

THE EFFECT OF ETHICAL LEADERSHIP ON EMPLOYEE HEALTH AND SAFETY IN THE OIL AND GAS DOWNSTREAM SECTOR IN GHANA:THE MEDIATING ROLE OF SAFETY CLIMATE AND SAFETY CULTURE

SHARIF SHANI AMADU

2022

UNIVERSITY OF CAPE COAST

THE EFFECT OF ETHICAL LEADERSHIP ON EMPLOYEE HEALTH AND SAFETY IN THE OIL AND GAS DOWNSTREAM SECTOR IN GHANA:THE MEDIATING ROLE OF SAFETY CLIMATE AND SAFETY CULTURE

BY

SHARIF SHANI AMADU

Thesis submitted to the Institute for Oil and Gas Studies, Faculty of Social Science, College of Humanities and Legal Studies, University of Cape Coast, in partial fulfilment of the requirements for the award of Master of Philosophy Degree in Oil and Gas Resource Management

DECEMBER 2022

DECLARATION

Candidates Declaration

I hereby declare that this thesis is the result of my original research and that no part of it has been presented for another degree at this university or elsewhere.

Candidate's signature……..Date……

Name: Sharif Shani Amadu

Supervisors' Declaration

I hereby declare that the preparation and presentation of the thesis were supervised following the guidelines on supervision of thesis laid down by the University of Cape Coast.

Principal Supervisor's signature……. Date……

Name: Prof. Abraham Ansong

ABSTRACT

The study investigated the effect of ethical leadership on employee health and safety using safety climate and safety culture as mediating variables. The study adopted the positivism philosophy, thus depending on the quantitative approach and explanatory research design. A convenience sampling technique was used to draw 226 pump attendants within the Accra Metropolis in Ghana using a self- administered questionnaire on the phenomenon for data analysis. The study data were processed using IBM SPSS (version 26) and SmartPLS-SEM (version 3.3.3) software. Inferential statistics through the partial least square structural equation technique was adopted to examine the research objectives in the study. The result showed ethical leadership had a significant positive relationship with employee health and safety, safety climate and safety culture. Again, both safety climate and safety culture mediate ethical leadership and employee health and safety nexus. The study recommends that various stakeholders in the petroleum sector, particularly the National Petroleum Authority, Ministry of Energy and Chief Executive Officers of Oil marketing companies, should emphasize employing and promoting managers who are ethically leadership driven to occupy positions at the various fuel stations owned by either government or private sector. The study concludes that only ethical leaders won't engage in unethical behaviour that will adversely affect employees and, by extension, the local and national economy. By so doing, ethical leadership will ensure the health and safety of employees are protected, which will benefit the company in terms of profit-making and boost both the local and national economies in Ghana. This study appeared to be a novelty within the context of the petroleum downstream sector in Ghana.

KEYWORDS

Downstream oil and gas

Ethical leadership

Safety Climate

Employee Health and SafetySafety culture

ACKNOWLEDGEMENT

I want to convey my gratitude to my supervisor, Professor. Abraham Ansong the head of Department of Management, school of business, University of cape coast, for his expert direction, counsel, inspiration, and enthusiasm with which he oversaw this endeavour. I will always be thankful.

Likewise, I appreciate Dr Moses Ahomka Yeboah of Cape Coast Technical University for his kind assistance in improving this study. Last but not least, I want to thank my family and friends, particularly my wife, Francis Adehe and his family particularly his mother, for their unwavering support throughout this time.

I would like to sincerely acknowledge the Director of the Institute for Oil and Gas Studies, Professor Simon Marwan, and all lecturers and administrative staff of the institute, particularly Dr Edward Nunoo, Dr Sulemana Shafiq, Professor Wumi Eledare, Mrs. Boampong and Madam Diana.

I want to appreciate Butler Brew foundation for tremendous effort in providing grant (financial grant) that enabled me complete this thesis successfully.

Finally, I also want to acknowledge Mohammend Baba Zuweira of medical school, university of cape coast and all members of DASA- Dagbon Students Association for their brotherly support at all times.

DEDICATION

To my mother Sayibu Nasike, my wife Abdulai Huzeima, my Son Abdallah Mahama Katari Sharif, and my Daughter Salma Tunteiya Sharif

TABLE OF CONTENT

LIST OF TABLES

LIST OF FIGURES

LIST OF ACRONYMS

EHS	Employee health and Safety
ETL	Ethical leadership
REL	responsible leadership
SAB	safety Behaviour
SAC	safety Culture
SCM	Safety climate

CHAPTER ONE

INTRODUCTION

Introduction

Organisations worldwide are solemnly responsible for providing good working conditions and an environment for employees devoid of hazards, risks, and diseases. Hence, enhancing the health and safety of employees (EHS) in the downstream petroleum sector in executing their mandate to improve the general profitability of their companies has become significant to scholars. Thus, studies focusing specifically on improving employee health and safety are needed. The study examines how ethical leadership could affect employee health and safety in the Ghanaian petroleum downstream sector. The background of the study, the statement of the problem, the purpose of the investigation, the study objectives, the study hypotheses, the significance of the research, the delimitations, and the organisation of the study will all be specifically featured in this chapter.

Background to the Study

Ghana has made some strides in industrialization, starting with Dr Kwame Nkrumah's vision of industrialization to the current regime's policy of one-district-one- factory. Petroleum sector is one that have seen great transformation over the past few decades globally. According Jefreda and Brown (2022), the petroleum sector contributed significantly $2.1 trillion in 2021 to global economy. That said, Sasu, (2022), indicated that Africa contributed roughly eight percent of global oil output in 2021. He indicated the region produced about 345 millions metric tons of oil same year. Ghana's commercial discovery of oil contributed significantly to annual budget

funding of about US$273.38 in 2020 (Annual report on the petroleum fund, 2020). Petroleum service stations have recently been established nationwide, especially in cities like Accra, Kumasi, Takoradi, and Tema (Ansah & Mintah, 2012). The continual establishment of fuel stations across the country has increased the number of people employed in the downstream sector (Dollard & Bakker, 2010). Nonetheless, industrial accidents and diseases deny 2.2 million Men and women have the right to work globally (International labour organisation, 2018). Workers are estimated to be involved in 270 million workplace accidents and 160 million workplace diseases yearly (ILO, 2018). This is likely only the tip of the iceberg, as most underdeveloped countries lack statistics for assessing nonfatalillness and injury (DCPP, 2007). In Ghana, it is reported that about 2,697 and 1,096 fatal accidents occurred at various workplace in 2015 and 2016 respectively (Ampofo, 2017).

Upstream, midstream, and downstream are the three segments of the petroleum sector. The upstream sector refers to phases of the petroleum industry's activities, including exploration and production (Hayes, 2021). The Petroleum Commission, formed by an Act of Parliament in 2011, mainly regulates Ghana's upstream industry (Act 821). The downstream sector involves processing gas, refining crude oil, marketing, and distributing products.

The National Petroleum Authority (NPA), which an Act of Parliament created, oversees the downstream sector in Ghana (NPA Act 2005, Act 691) to ensure the industry remains efficient, profitable, fair, and gives consumers value for money. As of 2020, there were 2,900 fuel service stations, 116 oil marketing companies, 37 bulk distribution companies (BDCs), and 42

liquefied petroleum gas marketing companies (LPGMC).

According to Kapur (2018), human resource specialists are anticipated to substantially boost EHS. In his work, he stressed that employee health and safety are critical issues that must be resolved for businesses to thrive and develop effectively. Employees will contribute significantly to attaining organisational objectives if they are healthy and feel secure and congenial in the workplace (Kapur, 2018). However, workers who feel uneasy or are exposed to the work environment will find it Challenging to adapt to their work responsibilities. Consequently, the significance of excellent health is widely recognised and encouraged (Kapur, 2018).

It has been suggested that ethical leadership involves acceptable normative modelling behaviour taking responsibility for one's behaviour, social communication and motivating supporters to follow suit using two-way communication, affirmation, and decision (Brown et al., 2005). Trevino, Hartman, and Brown (2000) indicated ethical leadership as having two dimensions: a person of moral integrity and one who can control their morality. Having a moral persona implies that ethical leaders have particular personality qualities, participate in certain behaviours, and make decisions by ethical norms. These leaders are trustworthy and honest, and they act ethically and follow ethical principles while making decisions (Hoch et al., 2018; Trevino et al. 2000). These individuals conduct morally in both their personal and professional endeavours because they have a strong concern for other People's well-being (Treviño, Brown, & Hartman, 2003). To encourage ethical behaviour among subordinates, ethical leaders employ "role modelling through obvious conduct, positive and negative reinforcement, and discussion of

morals and values" (Trevino et al., 2000).

According to Clarke (2013) and Mullen et al. (2017), supportive administration and exemplary leadership practices significantly influence EHS behaviours and attitudes. Ethical leadership leads to beneficial workplace outcomes such as positive employee behaviours. According to Lievens and Vlerick (2014), moral leaders are frequently concerned with their workforce's health, security, and happiness. Additionally, they try to uphold the most significant standards of morality, honesty, and ethical decision-making in the workplace (Brown &Trevino, 2006). Ethical leaders often maintain the best levels of EHS and occupational health because they have a genuine interest in the wellbeing of their workers (Okpozo et al., 2017).

As a consequence of social learning theory (Bandura, 1986), ethical leaders would win the respect of their workforce by actively implementing practices for safety and health and serving as role models for adherence to these laws (De Ceiri et al., 2012). Employees will be thrilled to follow their manager's ethical footprints by adhering to all health and safety regulations. It is also stated that ethical leaders will accurately and honestly monitor and evaluate their employees' actions by relying on self-control. Ethical leaders will use rewards to encourage and reinforce improved EHS while punishing poor employee health and safety with negative repercussions (Kapp, 2012). Employees, therefore, would be reluctant to take acts that threaten workplace health and safety out of concern for ethical leaders' reprisal (Flin, Mearns, Gordon, & Fleming, 1996).

Neal and Griffin (2006) define safety climate as an individual judgement of workplace safety policies, procedures, and practices. Zohar (2010) positsthat safety climate is the degree to which workers consider that the firm's primary focus is keeping everyone safe. Ethical leaders may improve employees' impressionsof the safety climate within organizations by demonstrating active and genuineconcern for their safety and well-being.

Ethical leaders who create the atmosphere inspire employees to enhance new methods to increase the impression of the safety climate by strengthening safety rules and forcing employees to confront their notions about safe procedures. Increasing the number of people who become aware of safety policies and programs boosts management's image of providing more employee support. In the view of Bigelow (2007), a safety climate improves employee health and safety. Bigelow further opines that if an organization examines its safe atmosphere regularly and makes efforts toenhance it, it may lead to long-term sustainable employee health and safety improvements. According to several empirical kinds of research (Chan, Woon, & Kankanhalli, 2005; Choudhry Fang Lingard, 2009), SCM and EHS have a significant link. For example, Choudhry, Fang, & Lingard (2009) postulated that an SCM promotes EHS by educating them on the attitudes and views that might contribute to improved EHS.

Due to their emphasis on moral and ethical issues, ethical leaders would guarantee that adequate health and safety policies and rules are developed, that essential training is delivered, and that performance expectations are communicated, and a safety culture is promoted (Cooper, 2000). All ranks of leaders have a critical role in improving the organisation's

safety culture (Zohar, 2010). According to some scholars (Means, Whitaker, & Flin, 2003; Wadsworth & Smith, 2009), positive safety culture is required for improved EHS.

Safety culture elements such as management's commitment, work environment, and engagement between leadership and subordinates will aid employees' health and safety behaviours. Management commitment improves employee health and safety, which helps any firm save lives, relieve anxiety, and avoid injuries. By doing this, workers who are part of a culture that emphasises safety are more likely to feel that management appreciates their efforts and comments. By actively participating in safety-related events, employees have a higher propensity to change or modify their conduct since it benefits their well-being and tacitly endorses safety.

The study setting offers a unique context for employee health and safety investigations because very limited literature is accessible on Ghanaian workers' health and safety conditions, especially those in the downstream oil marketing companies. Therefore, understanding how ethical leadership practices affect employee health and safety in downstream oil marketing companies is essential. The study aimed to ascertain the effect of ETL on worker health and safety in Ghana's downstream industry.

Statement of Problem

The Petroleum sector, particularly oil marketing companies, has faced a series of challenges for some time now, spanning from high taxes, diminishing profit margins. The NPA boss in 2017 expressed worrying public concern about workers health and safety in the downstream sector and its general effect on economic development (Association of oil marketing

companies, 2017). Too many workers and their families are still hurt due to their employers' inability to offer safe and healthy working conditions in Ghana (Asumeng, Asamani, Afful, & Agyemang, 2015). The June 3rd flood incident in Accra that resulted in the death of 159 people, including fuel service station attendants, highlights the need to protect employee health and safety (Syme, 2015).

According to Ansah and Mintah (2012), threats encountered by fuel station workers in Ghana's Central and Western Regions included fires, armed robberies, car accidents, significant leakage, and client abuse. Various related incidents included armed robberies (Olaotse, 2010), fires (Ghana News Agency, 2011), and hostile behaviour by clients, all of which resulted in the deaths or severe injuries of fuel service attendants (Ansah, 2017). For instance, citifmonline reported that armed robbers killed four fuel service station attendants in some fuel stations in Tamale. Additionally, these attendants are dispensing fuels that contain high amounts of Sulphur (3,000 parts per million) and other volatile organic compounds (VOCs), both of which have immediate and long-term detrimental effects on worker health and safety (Attfield et al., 2012; Gueniat et al., 2016).

Although improving employee health and safety is essential, Clarke and Ward (2006) pointed out there is limited research and comprehension of how leadership affects safety results worldwide. Other forms of leadership issues have not received enough attention in this context, except transformational leadership and empowering leadership, which attracted more research attention (Bavik, Tang, Shao, & Lam, 2017; Chughtai, 2015; FernandezMuniz, Montis-Peon, & Vazquez-Ordos, 2017; Martnez-Córcoles,

Gracia, Tomas, & Peiró, 2011).

Research suggests that safety compliance and involvement variables may be positively correlated with ethical leadership (Chughtai, 2015; Christian et al., 2009, & Morgeson, Hofmann,2011). Leaders who uphold moral principles are more likely to promote worker health and safety (Lievens and Vlerick, 2014). Although it may have implications for fostering a positive work environment, the link between ethical leadership and employee health and safety has not been studied.

This study further examines the mediating role of safety climate and culture because EHS is enhanced if a company reviews its safe environment regularly by initiating credence to safety regulations and policies and efforts made to emphasise the knowledge and creation of safety behaviours that might reduce workplace accidents and by so doing, improve employee health and safety. The resultant effect of stress: melancholy, worry, and rage can incur considerable expenses that would stress the business (Naji et al., 2021). A consistent reviewof a company's safety regulations could identify measures to improve EHS, such as providing information about attitudes and perspectives to help them achieve better EHS outcomes (Choudhry, Fang, & Lingard, 2009). As a result, including mediators may be beneficial in outlining the specifics of the ethical leadership – EHS relationship in downstream oil firms. Again, because employees tend to learn from their role model (the leader) is likely to affect the strength of the ETL and EHS link.

In light of the preceding concerns and arguments, the research aimed to address gaps in the knowledge base and contribute to it by analysing the effects of ETL on EHS in Ghana's downstream oil marketing companies by

investigatingthe mediating roles of SCM and SAC.

Purpose of the Study

The research's primary purpose is to analyse how ethical leadership affects employee health and safety in the downstream oil and gas sector through the intervening function of safety climate and safety culture.

Objective of the Study

Precisely, the research aimed to;

1. Analyse the effect of ethical leadership on employee health and safety in Ghana's downstream oil marketing companies.
2. Examine the effect of ethical leadership on the safety climate in Ghana's downstream oil marketing companies.
3. Examine the effect of safety climate on employee health and safety in Ghana's downstream oil marketing companies.
4. Assess the mediating role of safety climate on ethical leadership employee's health and safety nexus in Ghana's downstream oil marketing companies.
5. Examine the effect of ethical leadership on safety culture in downstream oil marketing companies in Ghana.
6. Examine the effect of safety culture on employee health and safety in Ghana's downstream oil marketing companies.'
7. Assess the mediating role of safety culture on ethical leadership and employee health and safety nexus in Ghana's downstream oil marketing companies.

Research Hypotheses

The study dwelt on the list of systematic hypotheses provided below to address the study issue under investigation.

H1: Ethical leadership significantly influences Employee health and safety in the downstream oil marketing companies in Ghana.

H2: Ethical leadership has a significantly positive relationship with the safety climate in Ghana's downstream oil marketing companies.

H3: Safety climate has a significantly positive influence on EHS in Ghana's downstream oil marketing companies.

H4: Safety climate mediates the nexus between ethical leadership and EHS in Ghana's downstream oil marketing companies.

H5: Ethical Leadership has a significantly positive relationship with safety culture in Ghana's downstream oil marketing companies.

H6: Safety Culture has a significantly positive influence on EHS in Ghana's downstream oil marketing companies.

H7: Safety culture mediates the nexus between ethical leadership and EHS in Ghana's downstream oil marketing companies.

Significance of the Study

Investigating ethical leadership and employee health and safety in downstream marketing companies in Accra Metropolis in Ghana is important to the institutions and decision-makers within the sector. It would help officials within the downstream sector, like the National Petroleum Authority (NPA) design suitable policies. It would also support managers in the downstream marketing companies, particularly the filling stations, to improve employee health and safety and boost their capability and

commitment to the sector's growth. The study's findings would assist both employers and employees in understanding their responsibility for ensuring their safety at work.

Research outcomes and suggestions will serve as a basis for a more thorough discussion of addressing EHS concerns in oil marketing companies and, by extension, the entire country. By and large, this research will also add to the body of literature on ethical leadership, employee health and safety, safety climate, and safety culture in the downstream sector. It obviously will also serve as a guide or serve as a guide for evaluating other theories that might be used in future research, such as SLT and social SET. Finally, the findings of this research will help researchers adopt an appropriate research methodology while solving ethical leadership and employee health and safety issues. It will also guide researchers to understand new philosophies, research approaches, and research designs for their studies.

Delimitation of the Study

The scope of work of this research covered the effect of ethical leadership on employee health and safety with a specific concern for the mediating role of SCM and SAC in the downstream petroleum sector. This study was delimited to registered petroleum marketing firms in Ghana and their retail outlets. Thus, this study did not focus on other aspects like the bulk distribution companies and liquefied petroleum gas marketing companies.

Limitations of the Study

During the study, the researcher encounters some challenges worth mentioning to guide other future researchers in the sector on how to go about similar studies. First, time-consuming is one challenge the researcher faced

during data collection. Due to the nature of the industry and how busy the Accra metropolis is, where employees are always working, it becomes extremely difficult for them to fill out the questionnaire. They usually decide to fill it during the night when free.

Second, another major challenge is the cost of moving from one filling station to another within the metropolis. Despite the challenges, theresearcher ensured all due process was followed to ensure the authenticity of the findings stipulated in the study.

Finaly, another challenge the researcher encountered during data collection has to do with the sample and selection. Because of the nature of the work environment, majority of the employees at the fuel stations are causal workers, meaning that there are few permanent workers. So it was difficult to used probability sampling procedure. As a result, it was extremely difficult to getting same employees for selection.

Definition of Terms

Ethical leadership refers to honourable and just people who use various forms ofcommunication, rewards, and punishments to influence the behaviour of their followers (Brown and Trivino, 2006).

Safety climate is when managers' policies, procedures, and behaviours are seen as showing care for the safety of their employees (Zohar,2002). The difference between safety culture and safety climate is that the former is an organisation's permanent and stable feature. At the same time, the latter is a transient characteristic that might vary owing to operational and economic factors (Von Thaden & Gibbons, 2008).

Safety culture Is regarded as a group of values, conventions, attitudes, roles, and social-technical practices targeted at lowering the danger of exposure to potentially harmful substances for workers, management, clients, and members of the public against dangerous or damaging situations (Turner, Pidgeon, Blockley, and Toft, 1989).

Downstream oil and gas refers to processing gas, refining crude oil, marketing, and distributing its products and is regulated by National Petroleum Authority (NPA Act, 2005; Act 691).

Employee health and safety refers to changes in both the physical and psychological mindset of individuals that has benefaction at the workplace.

The Organisation of the Study

There were five primary chapters in this research report. Chapter One involved the background of the study, problem statement, objectives, research hypothesis, the purpose of the study, delimitations, and limitations, the significance of the research, definitions of key terms, and the organization of the research. The Second Chapter reviewed important literature on prior studies pertinent to this research. They include the theoretical review, conceptual framework, and literature review summary. It also discussed the idea of different ethical leadership and how it affects EHS at Downstream Oil and Gas companies in Ghana. It was followed by Chapter Three, which also thoroughly explained the methodology. The target population, sampling methods, sample size, research tools, validity and reliability, data collecting processes, and analytical techniques were all covered under methodology. Furthermore, the concepts of data analysis, interpretation, and discussion of the study findings were covered in Chapter Four. Chapter Five finalised the

issues raised in the study. Additionally, the study incorporated judgments and suggestions based on the research outcomes and areas that required additional study.

CHAPTER TWO

LITERATURE REVIEW

Introduction

This section discussed similar literature about the study's objectives. The chapter also presented theories enabling the research, a theoretical analysis, an empirical analysis, and a conceptual framework. The summary of this chapter will inform the reader of what is known and readily accessible about the topic and what is unknown, which will inspire additional research. Thus, the survey of relevant literature would highlight points of agreement and disagreement, enabling researchers to avoid mistakes made by prior researchers in the past. Examining the relevant literature offered theoretical, conceptual, and empirical foundations for the research and clarified the main notions, theories, and associated models of the subject under study. The approach, analyses, presentation of the data, comments, conclusions, and recommendations will be further helpful in thereview.

The study, therefore, investigated the effect of ETL on employee health and safety among downstream oil marketing companies in Ghana—particularly fuel service station attendants.

Theoretical Review

Ethical leadership, safety climate, safety culture, employee health and safety draw majority of their theoretical underpinnings from several theoretical traditions. Social learning theory and social exchange theory stand out among them. These theories explain how organisations, particularly those in the oil marketing sector, can leverage essential traits of ethical leaders to exploit employees' hidden behaviours and creativity for the sector's sustainability.

Therefore, this study draws all the necessary conclusions and concepts from these theories to support the development of strong arguments supporting the study's objective.

Social Learning Theory (SLT)

The social learning theory emerged as early as 1940 when B.F Skinner delivered an apparent series of lectures on verbal behaviour but gained prominence in the 1970s, led by Albert Bandura. The latter tried to learn about learning processes in an interpersonal context.

The social learning theory is increasingly acknowledged as a crucial element for extended-term resource management support and desired behavioural change (Muro & Jeffrey, 2008). This idea argues that we learn new things through our encounters with others in social contexts. Separate individuals develop comparable habits through observing other people's behaviour. After observing another person's behaviour, people tend to imitate if the incentives associated with the observed behaviour or favourable observing experiences reinforce it. Bandura (1977) described imitation as the reproduction of observed motor activities.

According to Bandura (1977), not all types of learning can be accounted for through direct reinforcement. As a result, Bandura (1977) added a social component to his theory since humans may learn new ideas and behaviours by seeing others. According to the proponent, there are three main guidelines for understanding this theory: observation, imitation, and modelling (Bandura, 1977).

Thus, the SLT assumes that social interaction and the learning process contend that learning new behaviours can occur through observing and imitating others. The theory guides followers and their managers in decision-making and helps solve problems since learning can occur by observing rewards and punishments (reinforcement).

According to Bandura's (1977) SLT, managers may impact their staff through modelling processes that entail changing values, attitudes, and behaviours. According to Boekhorst (2015), when followers watch a credible role model's good behaviour, they discover that these are necessary social behaviours and instinctively try to imitate them. Due to their standing and authority over followers, leaders are viewed as an essential source of role models in the workplace, especially if they have been acknowledged as trustworthy role models (Hunter et al., 2013).

Leaders have a tremendous impact on the attitudes and behaviours of followers by communicating to subordinates what sort of behaviour is required and organising rewards to promote it (Newman et al.,2015). Because of a leader's rank or because they observe the leader as an admirable role model, they will want to emulate the actions of their leaders. This is buttressed by Liden, Wayne, Liao, and Meuser (2014), who opined that when followers feel the leader has favourable and appealing characteristics, they will want to emulate their behaviour. Employees will be motivated to follow suit. For instance, if the boss worries about their safety and health, they will adhere to preventive measures.

Social learning theory appears appropriate for this study to explain relationships. When ethical leaders model behaviours and attitudes like trust, honesty, integrity, transparency, and general well-being, employees will learn from their leaders to act similarly over time. As a result, it will build peaceful cohesiveness and relationships among co-workers and increase employee health and safety (Schwartz et al., 2016). The ethical behaviour of an ethical leader might make it easier to develop a solid safety climate and culture, which could enhance employee health and safety.

Social Exchange Theory (SET)

Emerson and Ekeh (1974) proposed the social exchange theory, which states that employees respond to their peers' behaviour through coordinated activities on shared correspondence. The social exchange theory is appropriate for understanding how moral leaders impact hierarchical outcomes (Musyimi, 2016). Similarly, social exchange ties between peers and representatives generate cooperation motivated by the mutual benefits hypotheses. Ethical leaders form bonds with their employees, characterised by high levels of trust, low degrees of control, and long-term commitments.

According to the SET, interactions between individuals create a norm of reciprocity and, presumably, quid quo reciprocity in a system of interdependent relationships (Cropanano & Mitchell, 2005; Uhl-Bienn & Maslyn, 2003). Haar and Brougham (2021) specify that receiving favourable treatment makes one person obligated to give back favourable treatment. The receiving party is therefore required to reciprocate when one party offers a benefit. Conversely, when the leader exhibits negative treatment, the employees will show poor behaviour in return (Aryee et al., 2002). Blau

(1964), indicated that social ties are formed due to deliberate behaviours motivated by the benefits of maintaining interactions with others. A psychological imbalance might result from one being kindly toward the other and the other feeling compelled to reciprocate (Madison & Eva, 2019). According to Santangelo (2020), unless the social exchange process is psychologically balanced, the obligations placed on the other party in the created exchange link would result in favours not being returned.

The premise of the SET is that a connection between two people develops due to a cost-benefit analysis. In other words, it serves as a gauge for gauging how much effort someone expends during a one-on-one conversation. Analysing the positives and negatives of a relationship might provide information on how much effort is being put into it.

It can be reasoned that based on the tenets of SET, employees in an organization will repay their ethical supervisors by displaying good actions and beliefs that support their health and safety, adding to the overall success of the company (Choi, Kim, Ullah & Kang, 2016; & Xerri & Brunetto, 2013). Hence, ethical leaders who care for their followers' needs and treat them fairly by promoting a safe culture and climate can build a strong social exchange connection with them. When there are strong social exchange links, the reciprocity rule supposedly causes both parties to anticipate and have faith that their good deeds will be rewarded (Pless & Maak, 2012). In this regard, ethical leaders who show a high interest in safety climate and safe culture are likely to attract and retain healthy employees, ultimately enhancing the organisation's prosperity and success.

Conceptual Review

This review will contribute to understanding the study's constructs, including ethical leadership, Safety Climate, Safety Culture, and employee health and safety. The literature's definitions of ethical leadership will be discussed first, and then a conversation about its application.The research discusses the significance of safety climate and culture in the downstream petroleum sector and several approaches offered in the literature for defining and quantifying it. Finally, the construct of EHS in the downstream petroleum sector will be examined. Different approaches to defining and assessing ideas proposed in the literature will be discussed. The review will address all of the difficulties mentioned above with the definition and measurement of the constructions, clearing up any potential misunderstandings for the readers.

Ethical leadership (ETL)

According to the literature (Bass and Steidlmeier,1999; Brown et al., 2005; Ciulla, 2014; Trevio et al., 2000, 2003), the original study on ETL was focused on comprehending and identifying the idea of business ethics using normative and descriptive methodologies. Although ETL is a relatively new concept, research on it is expanding (Bedi et al., 2015; Brown et al., 2005; Kalshoven et al., 2011; Yukl et al., 2003). This prominence is due to several business scandals involving Enron, Nortel, and AIG.

Brown et al. (2005) explained that ethical leadership involves modelling normatively acceptable behaviour through one's behaviour, relationships with others, and encouraging followers through two-way communication, reinforcement, and decision-making. According to Brown and Trevino (2006), these leaders are honourable and just people who use various

forms ofcommunication, rewards, and punishments to influence the behaviour of their followers.

Brown and Mitchell (2010) assert that ethical leadership uses the normative approach to define the optimal workplace conduct for a worker. As a result, using a particular philosophical framework is necessary for assessing decision-making and investigating the morality of confident leaders, including their leadership styles or influence techniques. Cumbo (2009) defines ethical leadership in stark contrast, focusing on the leader. He stated that a person is a good leader when their inner or personal qualities guide their decision-making. In this situation, a leader who lives a moral life will immediately benefit greatly.

According to Byun et al. (2018), academics have focused on figuring out how ethical leadership influences high-employee health and safety outcomes without necessarily delving deep into employee health and safety, which this study sought to investigate. Therefore, a moral manager and a moral person are the traits most accurately describe an ethical leader (Brown & Trivino 2003; 2000). They held it is connected to the leader's behaviour, and using their status to promote fairness and openness are examples of ethical behaviour at work. In contrast, the former is tied to the leader's behaviour and ETL traits like integrity, reliability, and honesty.

King (2008), however, disagrees with Brown and his counterparts. He argues that ethical principles are based on religious faith. Upon observing several managers in different organisations, he identified eight universals values. King discovered that qualities of ethical leadership include integrity, dedication to duty, compassion, social justice, moral fortitude, patience, and

humility. Even while these ideas may be acquired, he thinks they have a spiritual or religious underpinning.

Being a leader with morals has several benefits. According to research, ETL is linked to favourable employee outcomes, including ethical employee attitudes. Ethical leadership is a procedure of affectingor inculcating some positivism, characteristics, principles, and convictions that are demonstrated via personal actions and interpersonal relationships and are based on the appropriate measurements in traditional methods (Knights & O'Leary, 2006). According to Brown and Trevio (2006), the outcomes that ETL is thought to influence it essential. Given that leaders are viewed as appealing and credible examples of normative and right behaviour, followers frequently copy a leader's behaviour, which is consistent with social learning theories. Additionally, ethical leaders implement policies that hold employees accountable for their behaviour and stress the value of ethical standards in the company. According to the social learning theory, employees who have not had any first-hand experience with incentives and punishment can learn about them by observing how other people behave (Brown & Trevino, 2006; Brown, Trevino & Harrison, 2005) Consequently, ethical leadership as an independent theory was first developed based on Brown et al. (2005). In several studies, ethical leadership has been conceptualized as linking positive employee outcomes and organisational objectives. Thus, on this basis, a group of researchers professes that growing research across varied cultures and traditions indicates that ethical leadership effectively encourages employees and possibly creates advantageous outcomes. Thus, different behaviours and attitudes are found to be unfavourable results, such as deviation and outflow

intentions (Bedi, Alpaslan, & Green,2006; Chen & Hou, 2016; Chughtai, Byrne, & Flood, 2015; Demirtas &Akdogan, 2015; Ng & Feldman, 2015).

Brown and Trevino (2006) focus on ethical standards through communication and responsibility. But Yang and Wei (2017) posit that ETL is a complicated idea with specific characteristics, including fairness, people-orientedness, accountability, moderation, and integrity.

According to Oates and Dalmau (2013), ethical leadership entails acting in a way that will have long-term benefits for all stakeholders. According to Brown et al. (2005), the pillars of ETL are honesty, ethical standards, and treating employees fairly. According to their definition, ETL involves modelling normatively appropriate conduct through one's behaviours and interpersonal communication and encouraging followers to follow suit through two-way interaction, reinforcement, and decision-making. According to the definition, a leader should be a moral individual and a moral manager.

However, according to Brown and Trevino (2006), ethical leaders would largely influence ethics-related behaviour using processes like employee decision-making, pro-social conduct, and counterproductive.

According to Trevino et al. (2003: 2000), ethical leadership was characterised by leaders' actions that demonstrated concern for others and fair treatment of workers. However, Avolio (1999) professes that ETL goes beyond just treatment, which includes morally sound judgment.

Yukl, Mahshud, Hassan, and Prussia (2019) posit that the cornerstones of ETL include a mix of honesty, fairness, altruism, consistency of behaviour with professed principles, communication of moral ideals, and offering ethical advice. The morality and fairness scale created by De Hoogh et al. (2008), and

the ethical aspects developed by Brown et al. (2005) were all taken into consideration when Yukl et al. (2019) developed their 15-item ethical leadership questionnaire.

Besides, the research sought to employ the dimensions Yukl et al. (2019) enumerated due to their broad perspective of ETL and meeting the modern standard. The survey item was intended to encompass ethical leadership, including formal and informal leaders (as long as the perceiver or respondent identifies the leader) and leaders at all levels of an organisation. However, this study focused on direct supervisors, who are in charge of setting expectations, modelling conduct, and managing employees' daily health and safety needs, as in the oil marketing firms and their filling stations. The ethical leadership scale has been discovered to have high dependability and stable construct validity in previous empirical studies (Beeri et al., 2013; Jordan, Brown, Trevino, & Finkelstein, 2013).

Other Leadership Behaviours Alongside Ethical Leadership

Many scholars have attempted to differentiate between ethical leadership and other leadership behaviours. Scholars have also studied the key components of leadership and described relevant approaches for influencing leadership performance and reducing unethical conduct in an organization (Brown and Trevino, 2006; Dinh et al., 2014; Walumbwa et al., 2008). This study focuses on how ETL differs from authentic, transformational, responsible, and servant leadership because people have always confused the constructs owing to their semblance.

Authentic leadership is knowing oneself and acting by one's genuine self (Sparrowe, 2005). Conversely, other researchers disagree that ethics is essential to authentic leadership (Sparrowe, 2005). According to Hinojosa et al. (2014), authentic leadership has a good relationship with ethical leadership but differs from it scientifically. Using transactional and genuine leadership styles is a crucial distinction between ethical and authentic leaders (Kalshoven et al., 2011). This is because ethical leaders employ methods for punishment and reward instead of real leaders.

Transformational leaders are moral and focused on the organization's needs. As a result, transformational leaders who abuse their position of authority may act unethically (McClelland, 1975). But at all times, ethical leaders must exhibit ethical qualities and must not be seen perpetrating unethical behaviours (McClelland, 1975). Furthermore, unlike transformational leadership, ethical leaders use reward and punishment mechanisms. Besides, other leadership behaviour, like having a singular and clear focus on the ethical side of leadership, distinguishes ethical leadership from transformative leadership behaviour (Mayer, Kuenzi, Greenbaum, Bardes,& Salvador, 2009).

Ethical leadership involves participation in decision-making, demonstrating concern for employees' well-being, and developing a rapport with staff members (Brown and Trevino, 2006). It can be justified from the researchers mentioned above reasoning that even though most leadership behaviours emphasize ethics, that cannot be a justification to conclude that they are the same. Scholars like Yukl, Greenbaum, and others distinguish ethical leadership from other leadership behaviours.

Servant leadership is also noted for emphasizing the need for ethics for a business leader. "Service to followers is the fundamental obligation of leaders and the core of ethical leadership" (Greenleaf,48 1977). Yukl (2010) noted the distinctions between servant leadership and ethical leadership. The author claims the goal of servant leaders is to develop, enable, and protect their followers. In contrast, the primary purpose of ethical leaders is to act and make decisions ethically, which includes rewarding moral behaviour and punishing or criticizing immoral behaviour. Servant leadership puts followers' development and empowerment ahead of the organization's goals (Graham, 1991). On the other hand, ethical leadership encourages an understanding that focuses on ethical awareness in interactions with followers and organisational objectives and strategies (De Hoogh & Den Hartog, 2008).

Similarly, Maak (2007) intimated that a responsible leader creates and nurtures long-lasting connections with stakeholders to accomplish goals that all parties agree with the organisation's vision. Responsible leadership goes beyond ethical leadership from a relationship perspective. For instance, whereas ethical leadership concentrates on the usual leader-subordinate relationship, responsible leadership emphasises the need for a comprehensive perspective of interactions between leaders and stakeholders. Furthermore, whereas ethical leadership concentrates on leader effectiveness, employee dedication, and job happiness, responsible leadership goes beyond the micro-level to multi-level results.

Finally, responsible leadership extends farther and examines cultural traits like the power gap and compassionate attitude (Trevino 1990). In contrast, ethical leadership theory encompasses internal organizational

contextual aspects like an ethical culture (Pless & Maak, 2012).

Safety Climate (SCM)

In occupational safety, the topic of safety climate is gaining popularity. According to Zohar (2002), a safety climate is when managers' policies, procedures, and behaviours are seen as showing care for the safety of their employees. The literature on SCM focuses on two main areas: The SCM construct's structure (Hayes, Peranda, Smecko & Trask, 1998; Zohar, 1980) and the connection between SCM and organisation results like safety knowledge and motivation (Griffin & Neal, 2000), safety behaviour (Hofmann & Stetzer, 1996), and workplace accidents (Hofmann & Stetzer, 1996; Zohar, 2000).

The conception and evaluation of SCM have been plagued by a lack of clarity, despite the practical significance of safety climate and its rising importance in the eyes of researchers and practitioners. Additionally, there is a general incapacity to comprehend the multidimensional nature of the concept (Beus, Payne, Bergman, & Arthur, 2010; Shannon & Norman, 2009). Since it is not apparent whether different SCM specialists are looking at the same issue and, as a consequence, whether they can draw comparable conclusions from their findings, this stymies scientific advancement.

Despite several safety climate measures (Dedobbeleer & Beland, 1991; Williamson, Feyer, Cairns, & Biancotti, 1997; Zohar, 1980), many of these measurements either have limited application beyond the samples that were evaluated or a combination of contamination and content deficiencies (Beus et al., 2010). Although they are connected to workplace safety, many safety climate metrics include components that do not fit the safety climate

concept. For instance, several SCM measures (Flin, Mearns, O'Connor, & Bryden, 2000; Guldenmund, 2000) incorporate perceptions of employment danger, with higher job risk suggesting less hospitable safety climates. But whether a job will have a favourable or unfavourable safety climate depends less on how dangerous it is.

Researchers looked at the determinants of safety climate and found that leaders who commit to a company's internal regulations and safe practices produce a favourable safety climate (DeJoy, 2005; Zohar, 2000). SCM perceptions are common about management procedures, processes, and conventions relating to safety (Zohar, 2002). According to Hofmann and Stetzer (1996), these standard views impact EHS in the workplace. According to Barling et al. (2002), SCM moderated a connection between transformational leadership and safety- related occurrences, which foretold work-related accidents.

In contrast to organisation rules and procedures addressing safety, Zohar (2000) offered evidence supporting the injury prediction and group-level safety climate model. Neal and Griffin (2006) investigated the influence of employee perceptions of SCM and safety motivation on employee safety behaviour and accidents using a sample of 208 hospital personnel. The study's findings revealed that views of SCM were generally steady over two years, implying that consistency in various safety outcomes in businesses may be expected.

As previously stated, a survey on safety climate is inevitably measured across various dimensions, including management's emphasis on safety, first-line leaders' responsibilities for safety, and employee safety participation and

training. As a result, the safety climate evaluation has a structure with several factors (Guldenmund, 2000). Data from each component are combined to describe an organisation's overall safety environment. Everyone agrees that employees' health and safety perceptions should be measured quantitatively (Wu, Kinnunen, Evans, Yamagishi, Hanilçi, Sahidullah, & Sizov, 2015). However, experts disagree about the basic features of safety climate, and a consensus on a set of climatic dimensions has yet to emerge. Guldenmund (2000), Flin et al. (2000), and Schwatka, Hecker, and Goldenhar (2016), for example, conducted three evaluations of SCM dimensions, each of which presents a unique collection of standard dimensions like management commitment, training, communication, rules, and procedures, supportive environment, and personal accountability. Following a literature review from 2000 to 2016, 14 standard safety climate parameters were discovered across 107 types of research.

The most prevalent characteristic in literature is management and commitment to safety, seen in 63 research (59%). Several academics have used this dimension to quantify how well senior management prioritises organisational safety (Flin et al., 2000). Since they feel it is a powerful predictor of work-related injuries (Beus et al., 2010). On the other hand, items that define organisational commitment to safety vary substantially between researchers. Mohamed (2002), for example, used seven criteria to assess management commitment to safety, whereas Tholén, Pousette, and Törner (2013) used sixteen.

The communication dimension refers to official and informal safety interaction organisations. Questions used to measure the dimension differed from study to study. Patel and Jha (2016), for example, utilised seven items, but Wu et al. (2016) used only two, and Probst et al. (2008) used eight. The top management communicates safety problems within the business, and upper administration acknowledges and responds to the onsite workers' comments (Mohamed, 2002).

Employee engagement was also mentioned in 25 types of research (23%), and it relates to how much top management encourages employees to take part in safety measures. The quantity and kind of questions used to evaluate this dimension differ between researchers. The following four items were used by Fang et al., 2015 and Wu et al., 2016 assess employees' self-reported participation in the following areas: accident reporting (for example, everyone actively reports safety accidents and potentially dangerous situations), safety planning participation (for example, everyone is willing to participate in safety planning if asked), safety analysis (for example, everyone contributes to job safety analysis), and sharing safety concerns (for example, everyone strives for high levels of safety performance). Even though Zhou et al. (2008), Prasad and Reghunath (2010), and Hon et al. (2012) all used three questions, they were all different.

Twenty-one studies made use of training (20 per cent). Safety program training and safety regulation training are two different organisational methods. The questions used to evaluate this dimension were impacted by the availability of enough time and resources for training and worker access to safety training and information. Wu et al. (2016) used rule training and safety

program training to measure safety training. Marin, Miguélez, Villar, and Lombó (2015) and Shin et al. (2015) utilised four items to measure training, which was identical to Wu et al. (2016) but written differently.

Risk-taking behaviour assesses workers' understanding of the risks connected with critical job tasks. To measure this dimension, Patel and Jha (2016) utilised seven questions, Fang et al. (2006) used nine, and Teo and Feng (2011) adopted four. Personal risk-taking anticipated the possibility of harm, and the significance of following safety rules and procedures were among the questions used to measure risk-taking behaviour. Even though the main purpose of analysing this dimension is generally agreed upon, the questions utilised to measure this dimension vary.

However, pressure from workload was mentioned in 20 of the studies (19%). The questions generally measured how much pressure employees feel to perform rapidly. The questions used to evaluate this dimension were again inconsistent among the research. For instance, McCabe et al. (2016) used an item from Glendon and Litherland (2001) to assess how much pressured people felt about working rapidly. On the other hand, Teo and Feng (2011) added four elements to assess pressure from workload.

Moreover, Brown (2017) opined that safety climate comprises four dimensions: co-worker behaviour norms, safety feedback, management commitment, and worker engagement. In recent years, improving the safety climate has shown to be a viable option (Zohar, 2010). The safety climate describes people's attitudes toward safety and is produced by interactions with the environment, particularly the workplace's safety- specific features (Weyman, Clarke & Cox, 2003). This dynamic process creates a safe

atmosphere where individuals build perceptions, attitudes, and ideas regarding corporate safety.

Beus et al. (2019) introduced some consistency to a divided field. This metric identified major climatic parameters and the variables that influence their composition. Individuals' impressions of the safety climate will also improve when leaders promote the significance of safety via their commitment and set an example for safety. Leaders may improve workers' impressions of the safety climate inside firms by demonstrating active and genuine concern for their safety and well-being. Leaders who inspire workers to advance new methods to enhance recent safety procedures and challenge people to face their ideas about safe methods, increasing theperception of SCM. Therefore, based on the aforementioned, this research willemploy Beus et al. (2019) measuring dimensions which include safety communication, safety training, coworker safety practices, safety equipment and housekeeping, leader safety commitments, safety involvement, and safety reward.

Safety Culture (SAC)

According to Yorio, Edwards and Hoeneveld (2019), the concept of safety culture was raised following the 1986 Chornobyl disaster. According to Yorio et al. (2019), there is no universally acknowledged definition of safety culture because various studies have attributed different interpretations to it since its evolution. Regardless, safety culture includes shared values that prioritise organisational policies, processes, and practices related to improving safeguards against potential dangers and threats and members' views, attitudes, and behaviour about safety in the workplace. By including the group's collective attitudes, perceptions, and beliefs about the workplace in the interest

of safety. Cox and Cox (2005) built on the idea of safety culture. Since then, several fresh definitions of safety culture have been developed across numerous sectors.

According to Turner, Pidgeon, Blockley, and Toft (1989), SAC is regarded as a group of values, conventions, attitudes, roles, and social-technical practices targeted at lowering the danger of exposure to potentially harmful substances for workers, management, clients, and members of the public against dangerous or damaging situations. Moreover, safety culture, according to Lee and Harrison (2000), safety culture is defined as the values, attitudes, beliefs, risk perceptions, and actions that pertain to employee safety. According to Guldenmund (2000), safety culture is an aspect of the organisational culture that impacts attitudes and behaviour about raising or lowering risk.

Hence, safety culture dimensions, such as management commitment, work environment, and involvement, will aid employees' health and safety. In any organisation, management dedication improves staff abilities, which helps to save lives, decrease stress, and prevent injuries. Workers' involvement or work expectations connected with restricted management and work-life balance activities have been observed to increase stress levels. Consequently, this research effort emphasises the knowledge and development of safety attitudes that would prevent accidents at the workplace and, by so doing, improve employee health and safety since stress produces melancholy, worry, and rage, which can result in high costs that would be a burden to the company. (Naji., Isha., Mohyaldinn, Leka., Saleem, Rahman. & Alzoraiki, 2021).

Commitment to management entails acting in a manner that aids other employees in achieving the set objectives. Generally, the metrics can be assessed in two ways: managers can ask direct questions or watch their commitment actions. When asked, some managers admit that they are not devoted to safety rules, according to Joung et al. (2013), even though such behaviour necessitates obvious proof of safety commitment.

To ensure the health and safety of employees in the workplace, processes and rules must be implemented. The main policy is to identify dangers and controls based on regulatory regulations, as well as to provide staff with safety training and instruction. Furthermore, a healthy and safe work environment includes professional and legal obligations to provide employees with a workplace free of hazards that could result in significant physical harm or death, as well as to maintain safe and healthy working conditions for its employees (Naji et al., 2021)

Work involvement refers to encouraging and promoting employees to participate in and be consulted on workplace health and safety issues. Setting a goal like this is crucial since involving employees can improve health and safety performance. Furthermore, work involvement in inspections, investigations, and risk assessments brings together management and health and safety representatives (Naji et al., 2021).

Significant aspects in this definition: personal commitment, accountability and safety reporting, communication and consultation, training and learning, with a substantial effect on leaders' commitment. The difference between safety culture and safety climate is that the former is an organisation's permanent and stable feature. At the same time, the latter is a transient

characteristic that might vary owing to operational and economic factors (Von Thaden & Gibbons, 2008). According to previous research, leaders of all stripes are critical in improving an organisation's SAC and employee health and safety (Zohar, 2010). The leaders' dedication, active participation, employee trust and monitoring, and offering appropriate incentives are considered leading indicators of safety culture (De Ceiri, Shea, Pettit, & Clarke, 2012). This suggests leaders will make effective health and safety procedures and processes that are executed through employee commitment, active involvement, and trust and by monitoring and offering appropriate incentives.

As indicated, the creation of proper health and safety policies and procedures will be overseen by moral leaders, who will also communicate requirements for health and safety and offer the required instruction on these guidelines and foster a safety culture because of their emphasis on ethical and moral components (Cooper, 2000). According to the Social Learning Theory (SLT) by Albert Bandura (1986), by actively engaging in the implementation of health and safety procedures, ethical leaders will foster a relationship of trust with their team members and serve as role models for health and safety laws and regulations (De Ceiri et al., 2012).

Ethical leaders would consistently enhance SAC as a top prime issue to enhance employee health and safety by using encouragement, communication, training, incentive, reward, and punishment (Brown & Trevio, 2006). Employees will recognise and learn critical behaviours from these role models while watching the relevant daily safety operations inside the company and then reproduce comparable actions in anticipation of compensation (Chughtai,

2015; Kapp, 2012). Workers will refrain from doing things their bosses forbid since they harm their health and safety, resulting in disciplinary action (Flin, Mearns, Gordon, & Fleming, 1996). Therefore, based on the broad definition and dimensions of Wiegmann, Zhang, von Thaden, Sharma, and Mitchell (2002), the author will adopt the three dimensions from the definition: personal commitment, work involvement, and training.

Employee Health and Safety (EHS)

Employee health and safety are considered physically and psychologically (Kapur, 2018).Employees must maintain their physical as well as psychological health and safety. As a result, generating information and formulating measures are critical for these goals. They will promote good health and safety after the appropriate procedures are implemented. According to Kapur (2018), the relevance of safety and health measures in enhancing the well-being of employers and employees is well acknowledged. For workers worldwide today, one must cope with various issues and difficulties when going about their professional responsibilities.

These might happen when carrying out duties and promoting EHS. Because of the work environment implementation of safety and health measures, employee diseases and health problems have decreased. These practices can help staff members identify potential risks at work. Training is seen as important and advantageous. The fundamental goal of training is to inform employees about workplace regulations, procedures, and conduct that can prevent illnesses and accidents. Paying for work-related illnesses and injuries might harm companies' financial bottom line, which is why health and safety legislation needs to be implemented. (Weakley, 2019).

Employees in excellent health will do their work obligations well and undertake analyses of numerous components that need improvement. They would also provide suggestions to their supervisors and managers, enhancing the organisational structure substantially. As a result, it can be claimed that employee and employer health and safety are critical issues that must be well addressed.

Despite this, Kapur indicated that leaders or managers of companies are responsible for promoting employee health and safety. Employees are considered one of the most valuable assets in businesses.Employee health and safety are critical to the company's effective growth, evolution, and targeted goals and objectives. The organisation's members must concentrate on providing sufficient health conditions for personnel. The following actions are being taken to promote excellent health and safety among employees.

It is said that prevention is preferable to treatment. Raising employee knowledge of variables that may impact their health is vital. Individuals in leadership positions inside organisations must put in place specific preventative initiatives. The physician must visit the company and speak with the personnel about common health concerns. The variables that may hurt an individual's health should be avoided inside the company. When personnel are working with chemicals or other dangerous materials, they must exercise caution. Offering health insurance discounts and incentives are also advantageous to employees. As a result, it can be claimed that putting measures that focus on prevention will help promote employee health and safety.

It is well-accepted that eating a nutritious diet is critical to maintaining excellent health. Consumption of a healthy diet may aid in the avoidance of diseases and health issues and the provision of nutrients essential for proper growth. People must acquire vital nutrients in their diet. Individuals' diets must include carbs, proteins, vitamins, minerals, and a little fat. Meals must be consumed regularly, and no meals should be skipped. People must eat a balanced and nutritious diet when expected to work long hours. According to research, managers and supervisors communicate with their employees about eating a healthy diet to focus on their jobs. Apart from communication, seminars are organized, emphasising the importance of a balanced and nutritious diet (Kapur, 2018).

It is widely acknowledged that smoking is harmful to one's health. Reducing employees' smoking consequences is critical to improve employee health and safety. Specific steps must be taken to build a smoke-free workplace. These include ensuring smoking is not permitted in any business buildings or vehicles. Developing a smoke-free company events policy, encouraging employees to join a "quit smoking program" and considering subsidising these programs; and, when workers engage in smoking-related conduct, consulting with their doctors about quitting this habit should be prioritised (Kapur, 2018).

Managers and supervisors must encourage employees to participate in physical exercise. Even though employees have hectic schedules, they must physically exercise for at least 20 minutes three times a week. Employees can even join fitness clubs and gymnasiums at some of the companies. Employees usually go for morning or evening walks if they have time throughout the

working day. On the other hand, they can dedicate more time to physical activity when they are free on weekends.

One view is that effective communication is a lifeline for firms seeking operational development and growth while ensuring employee safety. When communication occurs in an organization, whether verbal, written, vertical, or horizontal, it must be done courteously, respectfully, and decently. Some people in the company, particularly supervisors, are sometimes demanding and challenging to get along with. Employees may feel vulnerable and fearful, and they could even be hesitant to communicate with their supervisors. As a result, managers, supervisors, and other professionals in leadership roles must have an easy going and friendly demeanour. They must speak nicely with their staff, maintain a calm demeanour, and provide adequate time to complete their obligations. Therefore, it is natural to infer that efficient communication is critical to improving safety. Kapur noted the creation of policies and programs, the implementation of safety protocols from the beginning, the rewarding of employees for safe behaviour, collaboration with occupational clinics, tool and machine inspections, and continual improvement.

Empirical Review and Development of Hypotheses

The empirical aspect is created in accordance with the specific objectives of the investigation. The review will highlight areas of agreement and disagreement. It will tamper with the presentation of preceding researchers' arguments and conclusions, assisting in avoiding earlier mistakes made by the earlier scholar. The review will aid in developing hypotheses and improving the problem description.

Ethical Leadership and Employee Health and Safety (EHS)

Owing to their deep care for employees' physical and psychological well-being, ethical leaders will make and sustain the highest standards of EHS and occupational safety (Okpozo et al., 2017). According to Vlachos et al. (2013), employees' attitudes and views are formed by leaders. As a result, employees must proudly manage their conduct to meet safety and health requirements.

Furthermore, ethical leaders will use their influence to honestly and fairly monitor and assess employees' health and safety-related behaviour and views with the right rewards and provide reinforcement for subpar workers with punishment. Because of concerns about employee well-being, maintaining the highest standards for health and safety will take precedence, and moral leaders will strongly direct their staff in that direction (Mo & Shi, 2018). Moreover, ethical managers display inspiring enthusiasm by encouraging employees to go above and beyond their needs for the greater good, achieving safety outcomes that exceed minimal safety norms or were previously thought impossible (Barling et al., 2002).

Shafique et al. (2020) reviewed the impact of ETL on employee safety and task performance in Pakistan. High safety severity is a feature of data gathered in the chemical industry. The respondents were chosen through the convenience sampling technique. 441 of the 1000 distributed surveys were returned. Social science deemed the response rate of 41.1% satisfactory (Shafique, Kalyar, & Rani, 2020). Statistical methods utilised in data analysis were correlation and regression. The research findings indicated that a supervisor's ethical leadership positively correlated with employee health,

safety, and safety attitudes. Their conclusion indicatedthat ethical leaders are a significant source of employee motivation since it ensures that they will take voluntary actions to encourage workplace security.

Nusrat et al. (2018) investigated the effects of ethical leadership on organization safety records. They found a beneficial impact of ETL on employee health and safety, confirming the first stated hypothesis. This suggested that managers and supervisors demonstrating ethical leadership will improve organisational safety performance. It is important to note that the researchers used a quantitative approach. A total of 253 questionnaires were returned out of 500 disseminated after the corporation approved, and 230 were chosen for analysis, with a favourable outcome.

Khan, Ahmad, and Ilyas (2018) also conducted a study which revealed a clear link between ETL and organisational safety outcomes and was shown to be favourable, implying managers and supervisors who demonstrate ethical leadership will improve organisational safety outcomes. Their results are in line with past studies on ETL, which showed the beneficial effects of this style on a range of different behavioural outcomes (Ahmad & Zafar, 2018; Arain et al., 2016; Brown & Trevio, 2006; Walumbwa et al., 2011).

O'Leary and McGarry (2016) spotted a significant positive association between ETL and employee health and safety after a study on the effect of SAC and ethical leadership on safety records. Data used in the study was sourced from online answers received by pilots who volunteered to fill out the survey. The frame for sampling adopted was a minimum of 3,460 fractional pilots. Some people think management is ethically committed to maintaining

safety (Erikson, 1997). Employees' safety performance is improved if they believe management supports safety (Erikson, 1997). Another study found that the ethical context has a major impact on safety-related behaviour (Kapp & Parboteeah, 2008). Given the forgone discussion, the following hypothesis was put forth.;

H1: Ethical leadership has a significant positive effect on EHS

Ethical Leadership and Safety Climate

According to Zohar (2002), safety climate is a mutual understanding that managerial procedures, methods, and policies demonstrate a concern for worker safety. These common assumptions affect how employees behave regarding safety at work and how they act (Hofmann & Stetzer, 1996). For instance, leaders that practice safety-specific transformational leadership, like ethical leadership, communicate high safety expectations and focus on employees' efforts to reach those objectives (Bass, 1990). Such measures also help to create a safer environment.

Ethical leaders may improve employees' impressions of the safety climate within firms by demonstrating active and genuine care for their safety and health. Leaders significantly affect how a company's safety climate is perceived (DeJoy, 2005; Hofmann & Morgeson, 1999; Zohar, 2010). Safety climate expectations are "shared perceptions of managerial policies, procedures, and practices" linked to safety, as stated above (Zohar, 2002, p. 75). These common assumptions affect how employees behave regarding safety at work and how they act (Hofmann & Stetzer, 1996).

People's conceptions of the safety climate will improve when ethical leaders promote significant health and safety via their dedication and become role models of safety. Leaders may improve employees' impressions of the safe atmosphere within firms by demonstrating active and genuine concern for their safety and well-being. Lastly, managers encouraging staff to grow new methods to enhance current safety procedures and challenge people to face their ideas about safe practices increase the perception of a working atmosphere. Participation in leaders' occupational health and safety, safety instruction, and ergonomics evaluations can demonstrate management's dedication to safety, enhancing an organisation's safety climate (Zohar & Luria 2005). As a result, the following hypothesis is developed;

H2: *Ethical leadership has a significant positive relationship with the safety climate in Ghana's downstream oil marketing companies.*

Safety Climate and Employee Health and Safety

Working in a good climate may inspire employees' potential. On the other hand, if employees are forced to work in a bad environment, their motivations may be muted. Because of the interdependence between an organisation and its members, group behavioural norms significantly influence how workplace safety climate affects members' attitudes. Given this, Diaz and Cabrera (1997) postulated that combining organizational elements and individual factors results in an organizational safety environmental characteristic.

Several studies have found that the greater the SCM score, the better the safety of employees (Coyle, Sleeman, & Adams, 1995; Diaz & Cabrera, 1997). Zohar (1980) revealed a clear link between organisational safety

records and safety climate. Workplace safety attitudes among employees are linked to statistics on industrial accident rates. According to Hayes, Perander, Smecko, and Trask (1998), employees who believed their employment to be tended to experience fewer accidents than workers who believed their professions to be risky.

Qamar (2000) argues that a safety climate improves individual safety knowledge, motivation, and employee health and safety. Three recent meta-analyses show a constant link between safety knowledge, commitment, compliance, and involvement and employee safety, which are the results of studies on the relationship between SCM and employee safety outcomes (Beuset al., 2010; Christian et al., 2009; Clarke, 2006). Initial studies by Probst and Estrada (2010) imply that SCM is a predictor of underreporting employee accidents. As a result, Griffin and Neal's (2000) Conceptual model of safety atmosphere and employee safety attitudes, behaviours, and outcomes is gaining traction (Christian et al., 2009). Cooper and Phillips (2004) studied the safety climate before and after implementing a behavioural safety program, the results revealed that although the link between safety behaviour and accidents was not as significant as in previous research, however, safety climate and safety behaviour are related. Even though the researcher concluded that there was no direct or meaningful statistical link between SCM and accidents, the study indicated that assessing the efficiency of how safety is operationalized inside an organization may be helped by safety climate metrics (Cooper & Phillips, 2004).

Clarke (2006) analysed criterion-based research through a meta-analysis on the link between SCM, outcomes, and disasters. The results showed that the relationship between SCM and disaster was positive in all investigations but weak and with a wide standard deviation; thus, SCM's relationship with disasters is incompatible (Clarke, 2006). Safety climate and accidentcorrelation have been demonstrated to be robust and generalizable in prospective research designs where the safety climate is measured before the safety data is gathered (Clarke, 2006). Thus, the study found a positive link between SCM and safety performance, and the results supported the idea that increasing safety climate will increase safety records (compliance and participation) and aid in preventing accidents (Clarke, 2006). In this regard, the following hypotheses were developed;

H3: Safety climate has a significant positive influence on EHS in Ghana's downstream oil marketing companies.

Mediating Role of Safety Climate on Ethical Leadership and Employee Health and Safety Nexus

Ethical leaders may improve employees' impressions of the safety climate within organizations by demonstrating active and genuine concern for their safety and well-being (Piccolo, Greenbaum, & Eissa, 2012). Ethical leaders who create the atmosphere inspire employees to grow new methods to enhance safety methods and challenge employees to face their ideas about safe practices increasing the perception of the safety climate. Increasing the number of people who become aware of safety policies and programs boosts management's image of providing more employee support (Piccolo et al., 2012).

According to Langlois et al. (2014), an ethical leader creates a positive working environment for their colleagues. Employees in this environment believe that ethical rewards and punishments will be transparent and free of bias (Kapp, 2012). As a result, the safety climate produced by ethical leaders minimizes employee stress and offers them more freedom to work (Laschinger et al., 2015). Employees are motivated to improve their safety performance in an environment consistent with their personal and corporate values (Freiwald, 2013).

Previous research (Eisenberger et al., 1990) has supported the adoption of the SET and reciprocity standard for organisations. Employees, for example, are obligated to provide favourable treatment to the organisation in exchange for their impressions of organizational support and interest in them. (Dejoy et al., 2004). Put another way, employees respond to how they perceive their bosses are treating them (Mearns et al., 2010). In the context of workplace safety climate, Dejoy et al. (2010) found evidence in favour of the application of social exchange theory, concluding that management commitment to workplace safety acts as part of the SET, with workers reacting more pleasantly when people judge that workplace safety is at higher levels.

Moreover, Berhn (2020) argues that a safe climate improves employee health and safety because it propels organizations to maintain a safe atmosphere regularly. Choudhry, Fang, and Lingard (2009) postulated that a safety climate promotes employee health and safety by educating them on the attitudes and perspectives that can lead to improved EHS. Therefore, the following hypotheses are developed;

H4: Safety climate mediates the nexus between ethical leadership and EHS in Ghana's downstream oil marketing companies.

Ethical Leadership (ETL) and Safety Culture (SAC)

Langlois et al. (2014), advanced that an ethical leader cultivates an atmosphere where all team members know the factors that influence ethical incentives and punishment. On the other hand, employees in such an environment are sure ethical leaders will reward and penalize with fairness and impartiality. As a result, the employees' work-related stress is reduced in this atmosphere (Laschinger et al., 2015).

Ethical leaders will oversee the design of adequate health and safety rules and procedures, transmit performance standards, offer required instruction on these guidelines and procedures, and foster a SAC because of their attention to ethical and moral components (Cooper, 2002). SLT (Bandura, 1986) states moral leaders would foster a culture of trust among their workforce by actively participating in implementing health and safety procedures, thereby enhancing the safety culture of their organisations (De Ceiri et al., 2012). Moreover, they will use encouragement, communication, training, motivation, reward, and punishment to consistently create safety as a high-priority area to enhance safety performance (Brown & Trevio, 2006).

These role models will help employees recognize and learn from critical behaviours while watching the relevance of safety in the company's daily activity and reproduce comparable actions in anticipation of compensation (Chughtai, 2015; Kapp, 2012). Additionally, staff members shall refrain from behaviours forbidden by management as it poses a risk to

their health and safety., resulting in disciplinary action from their supervisors (Flin, Mearns, Gordon, & Fleming, 1996). As a result, the following hypothesis is examined;

H5: Ethical Leadership has a significant positive relationship with safety culture in the downstream oil marketing companies

Safety Culture and Employee Health and Safety

Safety culture is a subdimension of corporate culture that impacts organizational members' attitudes and behaviours in relation to occupational health and safety performance (Donald, 1998 & Cooper, 2000). Lee et al. (2000) define safety culture as the result of various communications between persons (psychological), functions (behavioural), and organizations (contextual). SAC is more than a collection of safety norms promulgated by a group of people; it is a team of people who act following their mutual appreciation of the value of safety (Helmreich & Merritt, 1998,).

In their study, Smith and Wadsworth (2009) indicated that SAC is consistently and independently linked to employee safety. Their findings demonstrate how significant it is to implement a strong SAC in the workplace, particularly for employees who face high work risk. Consequently, safety culture is critical since it influences employee health and safety record. This is most likely due to employee safety, which causes them to feel comfortable and cautious while performing their duties, as safety is critical for both individuals and companies.

Besides, Naji, Isha, Mohyaldinn, Leka, Saleem, Rahman, & Alzoraiki (2021) also conducted research in Malaysia's upstream oil and gas sector due to its high injuries on the effect of safety culture on safety record. Their results

concluded that there are strong relationships between SAC and safety performance which is subservient to safety outcomes. On this notion and the above discussions, one can postulate that a safety culture will impact employee's health and safety positively, and as a result, the following hypotheses are developed;

H6: Safety Culture has a significant positive influence on EHS in the downstream oil marketing companies in Ghana

Mediating Role of Safety Culture on Ethical Leadership and Employee Health and Safety

Brown and Trevino (2006) posit that EHS will increase as a result of ethical leaders encouraging employee engagement, caring for their needs while developing a trusting connection with them, and fostering a safe culture (Ko et al., 2017). Due to their emphasis on moral and ethical elements, ethical leaders guarantee that effective health and safety rules and procedures are developed, that essential training is provided on performance expectations based on such policies and procedures, and have the effect of fostering a safety culture (Cooper, 2000). According to Bandura's social learning theory from 1986, moral leaders may set an example for health and safety rules and regulations by actively participating in implementing health and safety procedures and fostering a trusting relationship among their team members (De Ceiri et al., 2012). Additionally, they would logically enhance SAC as a high-priority area to enhance employee health and safety through encouragement, communication, training, incentive, reward, and punishment (Brown & Trevio, 2006).

Employees will recognise and learn critical behaviours from these role models while watching the relevance of safety in the company's daily activity and reproduce comparable actions in anticipation of compensation (Chughtai, 2015; Kapp, 2012). Additionally, workers would refrain from behaviours that their bosses forbid since they pose a danger to their well-being and health and might lead to disciplinary action from their superiors (Flin, Mearns, Gordon & Fleming, 1996). According to research, fostering a culture of safety is essential to enhancing worker health and safety (Mearns, Whitaker, & Flin, 2003; Wadsworth & Smith, 2009).

H7: Safety culture mediates the nexus between ethical leadership and EHS in Ghana's downstream oil marketing companies.

Responsible leadership and Employee Health and Safety

According to Kapur (2018), It is acknowledged that taking health and safety precautions is essential for enhancing the wellbeing of employees and employers. Responsible leadership (RL) refers to the capacity to create, cultivate, and nurture trustful relationships with an organisation's internal and external stakeholders and to facilitate prudent conduct to accomplish meaningful, often-held organisational objectives (Maak, 2007).

Responsible leadership ensures that employees are supported, coached, and encouraged daily, resulting in mutually beneficial interactions between leaders and members that affect employee health and safety (HeJ., Morrison., & Zhang, 2019). Responsible leadership has the potential to improve employee happiness because the ethic of "doing good" and "caring as a priority" may improve employee health and safety (HeJ., Morrison., & Zhang, 2019).

Haque, Fernando and Caputi (2021) conducted a study on responsible leadership and safety outcomes, and their findings suggest a significant positive correlation exists between the two variables. Considering the discussion, one can hypothesise that responsible leadership will enhance employee health and safety in an organisation, particularly in the oil and gas downstream sector. Hence, this research accounts for the impacts of responsible leadership on the nexus between ETL and employee health and safety.

Safety Behaviour and Employee Health and Safety

Leaders that care deeply about safety behaviours like compliance, participation, trust, confidence, recognition, and feedback are said to improve workplace safety and employee well-being (Clarke, 2013; Mullen et al., 2017; Sheehan et al., 2016; Smith et al., 2016). In light of this, Christian et al. (2009) posit that safety behaviours are measured two-fold, safety compliance and participation. They argue that when safety behaviours such as wearing the proper personal protection gear and adhering to standard operating procedures are adopted, it will help improve employee health and safety (Christian et al. 2009).

Meyer, Kirk, Arch, Kelly, and Deacon (2019) posit there is a relationship between safety behaviour and employee safety outcome. They conducted a study on assumptions about safety behaviours and the application of safety behaviour prediction where their interest much dwelled on employee safety outcomes. Their findings suggest a positive link between safety behaviours and safety outcomes.

There has been limited study on the link between safety behaviours and injury outcomes (Kendrick, Watson, Mulvaney, & Burton, 2005). After researching how well can home safety practices help anticipate childhood injuries, Kendrick et al. (2005) indicate that their findings suggest a positive relationship between safety behaviours and home injury. One can infer from the above that safety behaviours are much more likely to predict employee health and safety outcomes in a high-risk work environment, like the oil and gas environment.

Conceptual Framework

How to effectively draw concepts for reader understanding is one of the most crucial components of the study. According to Adom et al. (2016), the conceptual framework is the foundation for all research studies. Grant and Osanloo (2014) stressed the significance of a conceptual basis claiming that it serves as the basis for all subsequent research. Figure 1 shows this study's conceptual structure, depending on the investigation's main purpose and subsidiary objectives.

Independent Variable **Mediators** **Dependent Variable** **Control variables**

ETL: Ethical Leadership **SCM: Safety Climate** **EHS: Employee Health and Health** **REL: Responsible Leadership**

SAC: Safety Culture **SAB: Safety Behaviour**

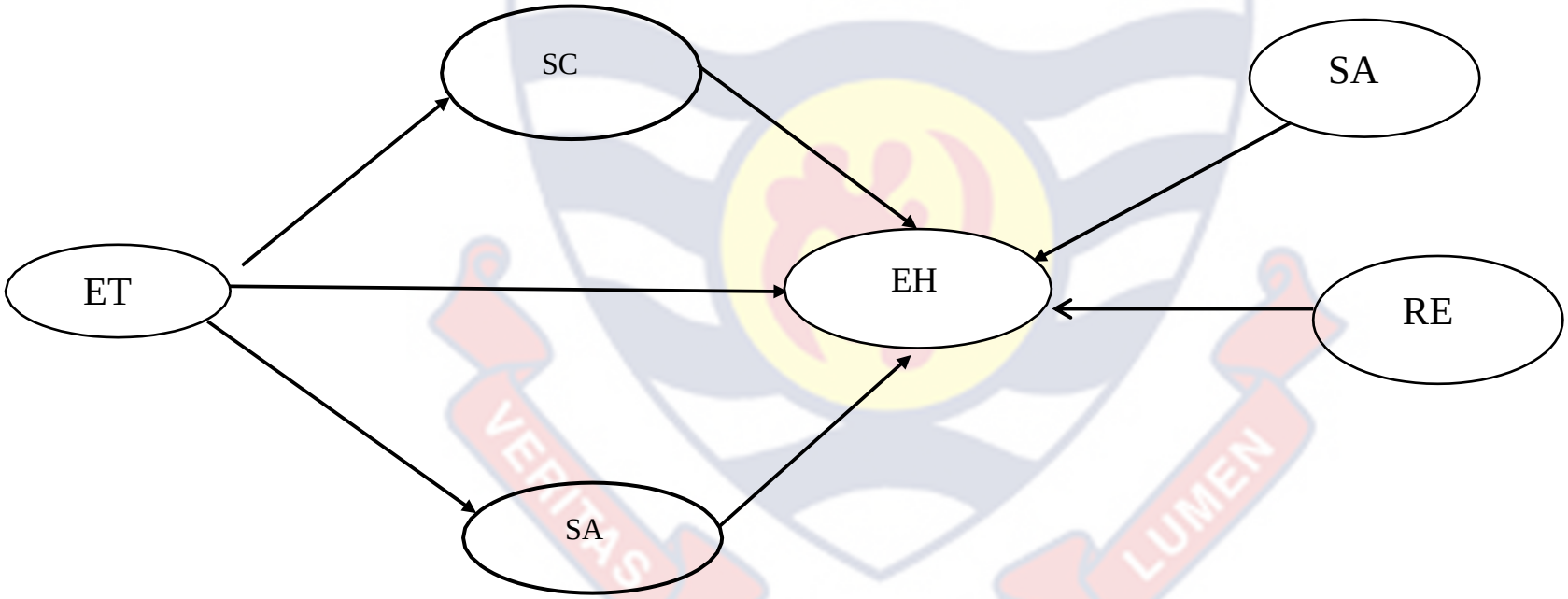

Figure 1: Conceptual Framework
Source: Authors Construct, Amadu (2022)

According to the conceptual framework, the researcher suggests that ethical leadership (ETL) influences employee health and safety (EHS) directly and indirectly. At the same time, there is a direct connection between ethical ETL and employee health and safety. There is indirect communication when safety climate (SCM) and safety culture (SAC) are introduced. SCM and SAC function as mediating variables in the framework as a result. The study also suggests a clear connection between ethical leadership, SCM, and SAC. Thus, the study considered safety climate and safety culture as mediating variables in the framework. Based on the grounds mentioned above, making a case for the role of safety behaviour and responsibility from employees and leadership, respectively. Safety behaviour and responsible leadership are introduced into the framework to check the extent (direction and strength) of influence ethical leadership has on employee health and safety.

Chapter Summary

The chapter conducted a research review on ethical leadership, safety climate, safety culture, and employee health and safety face on a theoretical, conceptual, and empirical level. Significant concerns and lessons from the review informed conceptual structure. The review will also be useful for research methodology, analysis, findings presentation, debates, conclusions, and suggestions. The next chapter outlines the research methods used in the study.

CHAPTER THREE

RESEARCH METHODOLOGY

Introduction

This chapter will outline the research techniques used in the study. According to Bell, Bryman, and Harley (2018) and Williams et al. (2017), research techniques aid in gathering data or understanding about companies, economies, or other areas of uncertainty. They indicate that applying appropriate research techniques aids in making wisemanagerial decisions. As a result, this chapter investigates how ethical leadership affects employee health and safety in Ghana's downstream petroleum company and the mediating effects of safety climate and culture. The study will thus present the research philosophy, approach, design, study area, population, sampling procedures, data collection instruments, data collection procedure, and data processing and analysis, validity and reliability, and ethical considerations.

Research Philosophy

A philosophical assumption about human nature influences every research issue (Denzin, 2017). Many investigations have identified a variety of research philosophies (Hughes & Sharrock, 2016). Saunders, Lewis, and Thornhill (2016), posit five primary ideologies that have influenced social science research over time: positivism, critical realism, interpretivism, postmodernism, and pragmatism.

As stated by the writers, each research philosophy has something distinctive to offer and important to provide to the study researchers do. Consequently, each researcher's philosophy will frequently result in their adoption of a solid blend of qualitative, quantitative, and approaches in their

study (Creswell, 2014). The research centred on the positivist tenet. This translates to positivists emphasizing methods that produce facts free from interpretation by humans (Saunders, 2016). The research positivists hold that using a scientific approach, researchers may discover the universally applicable objective truth. Additionally, Sekaran and Bougie (2016) emphasised that positivists often have that research is complete and explicable, that observations are reliable, and that research observation may be generalised. Regarding the aforementioned, positivists frequently use sizable samples and quantitative methods for data analysis.

According to Sekaran and Bougie (2016), the proponent of positivism relies on employing logical reasoning to create theories that can be investigated using a predetermined, strict research plan and impartial measurements. Thus, Saunders (2016) advanced that the positivist paradigm supports quantitative studies. Therefore, the positivist paradigm assumes that there is an objective reality that can be measured and scientifically described. Beyond this, the researcher adopted the positivism philosophy in oder to it will enable the researcher to understand the study patterns well and the relationship between social factors, which would help the researcher to make accurate predictions about the society and in particular the petroleum downstream sector.

Research Approach

Neuman (2014), Creswell (2014), and Saunders, Lewis, and Thornhill (2016) showed three types of study approaches. They include mixed method techniques, qualitative methods, and quantitative approaches. While the qualitative technique deals with minute details of social reality, the

quantitative approach allows the researcher to explore connections between variables (Ofori & Dampson, 2011). According to Saunders (2016), the type of data utilised for the study impacts the differences between quantitative and quantitative research methodologies. In this way, non-numeric data is related to qualitative research, whereas numerical data is employed in quantitative research.

To obtain an understanding of a particular phenomenon of interest, Gay, Mills, and Airasian (2009) describe qualitative research as gathering, interpreting, and analysis of extensive narrative and visual (non-numerical) data. According to Neuman (2014), data gathering and analysis techniques can separate the two approaches. For example, although researchers typically use a questionnaire for data collection and quantitative data analysis in quantitative research, qualitative researchers typically utilise an interview for gathering data and qualitative data analysis. Despite this, Sekaran and Bougie (2016) and Saunders (2016), the third mixed-method strategy, is just a mixture of the first two strategies.

The quantitative research methodology was used for this study because of the purpose and nature of the study. The researcher gather numerical data for the present study so that it may be quantitatively analysed. Additionally, the current study requires that the findings be extrapolated to the entire population. According to Tashakkori and Teddlie (2010), quantitative approaches are frequently seen as deductive since broad conclusions about the features of a population may be drawn from the testing of statistical hypotheses. According to Lincoln, Lynham, and Guba (2011), a quantitative approach aims to provide generalisable ideas and hypotheses that can be tested

in many contexts. The arguments for selecting the quantitative research technique over the qualitative include those already mentioned.

Research Design

The research approach influences this study's choice of research design (Creswell & Creswell 2017). According to Sekaran and Bougie (2016), research design aims to gather, quantify, and examine information relevant to a specific study. According to Kothari (2004), study design is concerned with making judgments on methods used to collect data, the kinds of tactics and tools used for sampling, and how the time and financial constraints may be handled.

Organising data collection, analysis, and measurement concerning the research questions creates a study design (Sekaran & Bougie 2013). The study design has been divided into exploratory, descriptive, and explanatory designs (Sekaran & Bougie 2016; Saunders, Lewis, & Thornhill 2016). Thus, in the authors' opinion, researchers use exploratory design when there is limited knowledge of exploring factors that prior researchers have addressed. When researchers wish to define and comprehend the properties of the study variables, they adopt a descriptive design. Last but not least, a researcher uses an explanatory design to find out how one variable affects the change in another.

Therefore, this study employed an explanatory design because the main purpose is to analyse circumstances or specific issues to describe the links between different variables' patterns (Creswell, 2014). The claim that information is quantitative and nearly demands the application of statistics to demonstrate the validity of the connections informs the choice to choose this

method.

Table 1: Research Techniques Employed

Research Technique	Name
Research philosophy	Positivism
Research approach	Quantitative
Study Area	Accra Metropolis
Population	550
Sample Size Sampling Technique	226(Krejcie & Morgan 1970)Convenience
Data Collection Instrument	Questionnaire
Research Design	Explanatory

Source: Author's Construct, Amadu (2022)

Study Area

A study area refers to the location or scope within which the research will be conducted. The study was carried out in the downstream petroleum sector of the Ghanaian economy, particularly in Accra Metropolis. A local government jurisdiction with a minimum population of 250,000 is considered a metropolis (Local Government Act 936, 2016). Ghana's oil and the gas downstream sector is complex, mostly operated by private individuals with some government participation.

The downstream industry is responsible for refining petroleum products,transportation, marketing, and distribution. The downstream sector in Ghana indicates how the final products get to the consumer. It comprises oil marketing companies, bulk distribution companies, liquefied gas marking companies, and refinery with their respective service stations. It is worth noting that each plays a significant role in improving organizational

productivity and its contribution to the Gross Domestic Product (GDP) and subsequent employment creation. The sector forms a significant revenue generation avenue for the government. Multinational companies dominate the oil marketing industry. However, small to medium-sized oil marketing enterprises have increased dramatically during the past 20 years. For example, Oil Marketing companies (OMCs) are now about one hundred and sixteen. The sector is supervised by National Petroleum Authority (NPA) Act 2005, Act 691.

According to association of oil marketing companies (OMCs) in Ghana, the downstream oil and gas sector consists of one hundred and sixteenoil marketing companies, thirty-seven bulk distribution companies, and forty- two liquefied petroleum gas marketing registered companies as of the 2021 annual report. Furthermore, the National petroleum authority also indicated that the downstream sector comprises two thousand nine hundred (2,900) fuel filling stations constituting 82.9 percent, and six hundred liquefied petroleum gas product dispensing centres across the country, constituting 17.1 percent.

Thus, a filling service station is a facility that sells fuel, gas, and engine lubricants for motor vehicles, and for industrial and domestic use. Given the above, Accra Metropolis, situated in the national capital, is a cosmopolitan area of different ethnic groups, with indigenes being Ga's. Over the years, the metropolis has seen an astronomical increase in population. For instance, the 2020 Population Census and Housing show that the urban population ofAccra had increased to 4.2 million from the 2010 population of 2.6 million. Theincrease in population contributed to the proliferation of filling

stations across the city because the demand and consumption of petroleum products hadincreased.

The Resource Management Department of the National Petroleum Authority indicates that about 273 filling stations in the metropolis are higher than any other region in Ghana. A field survey (Census) conducted in the metropolis, to ascertain the number of pump attendants revealed that thereare 550 employees (pump attendants) in all 273 filling stations across the Metropolitan city as of March 2022. In this regard, Krejcie and Morgan's (1970) sample size of 226 pump attendants will be adopted for this study. It is worth noting that the Accra metropolis is appropriate for this study since the pump attendants there are symbolic of the whole country.

The metropolis has the highest number of filling stations and, by extension, has many pump attendants in the country. Thus, for economic reasons, every investor will want to maximise profit on their investment and not ignore the capital city where economic activities keep growing due to the population. Aside, consideration is also given to the fact that most of the head offices of filling stations are located in the metropolis where decisions of safety rules of companies are mostly codified for implementation by the various branches across the country. The sector comprises sophisticated machines vulnerable to explosions and, therefore, will need an ethical leader to manage employee health and safety concerns. It is for the above-stated reasons and others that gave credence to Accra metropolitan city to be selectedfor the research.

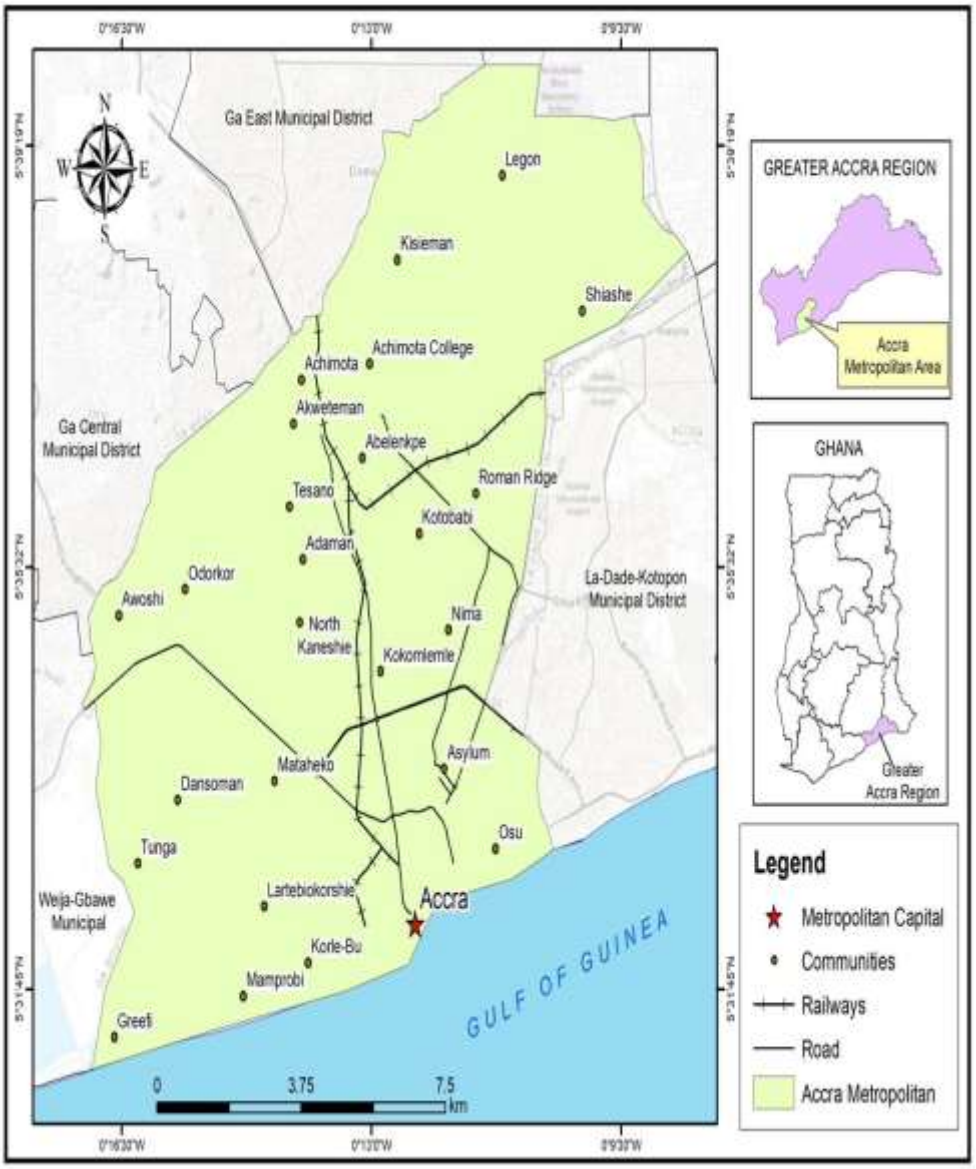

Figure 2: Map Showing Areas within Accra Metropolis
Source: Author's construction (2022)

Population

According to Saunders et al. (2020), the population of a study is a collection of people who share the same or comparable characteristics across time. The population is a whole set of instances that adhere to a particular criteria requirement (Graneheim & Lundman, 2004). The target population in whom the researcher is particularly interested in learning more and developing conclusions may be considered the population (Leed and Ormrod

2010). All pump attendants at oil and gas stations in Ghana's Greater Accra region made up the population of the study. The Target population consists of employees (pump attendants) in all 273 branches of the filling station in the Accra metropolis (National petroleum authority, 2021). The study population consists of 273 and 550 filling stations and pump attendants, respectively, as shown in Table 2 and Table 3.

Table 2: Number of Filling Stations in the Accra Metropolitan City

Name of Sector	Number of Filling Stations
Government	54
Private	219
Total	273

Source: National Petroleum Authority (2021)

A visibility study was conducted in all 273 filling stations in Accra Metropolis to ascertain the number of pump attendants. Table 2 shows 206 pump attendants in the government's filling stations (GOIL), whereas the private filling stations have 344 pump attendants.

Table 3: Number of Pump Attendants in Accra Metropolitan City

Name of Sector	Number of Pump Attendants
Government	206
Private	344
Total	550

Source: Field Survey (2022)

Sample Selection and Sampling Procedure

Ofori, Dampson, Sekaran, and Bougie (2016), posit that sample accurately depicts the study's target population. According to Saunders et al. (2016), sample surveys are preferred by academics over censuses since it is

impossible to cover the entire population when dealing with a considerable population. This means that when a significant population is involved, sample surveys assist researchers in conducting studies most effectively. A suitable sample size of 226 filling station attendants was be selected for the research adopting the standards based on the 550-person known population sample determination table developed by Krejcie and Morgan in 1970.

Additionally, Sekaran and Bougie (2016) argued that probability sampling and non-probability sampling are the two main types of sampling. In contrast to the non-probability sampling design, which does not allow this, the authors claim that by using a probability sampling strategy, each component of the population have a known, non-zero chance of being selected for the sample.

Furthermore, since probability sampling designs are impartial in the sample selection process and allow for the generalisation of study outcomes, they are frequently used in rigorous quantitative investigations. In contrast, non-probability sampling designs are typically used in qualitative investigations due to the subjectivity in choosing the sampling units for research (Saunders et al., 2016).

Considering the objective of the investigation, the investigator employed both probability sampling and non-probability sampling design. Additionally, stratified random sampling from the probability approaches was used. This methodology was judged suitable since it enables the researcher to collect a sample group that accurately reflects the total workforce of pump attendants inGhana's Accra metropolitan area, regardless of whether they work for the public or private sector. Ordinarily, the stratified technique was chosen

for the research since Saunders et al. (2016) acknowledged it is reasonable to utilise different target groups with distinct characteristics when utilizing a stratified technique. Hence, given that filling stations in the Accra metropolis are either owned by the government or private business individuals, it explains why the researcher adopting stratified technique is significant. Convenience sampling was also adopted from the non-probability method. This strategy is suitable due tothe nature of business in the oil downstream sector, where most workers are casual.

Table 4: Sample and Sampling Technique

Name of Sector	Population	Sample Size
Government	206	85
Private	344	141
Total	550	226

Source: Author Computation (2022)

Data Collection Instrument

Utilising specific research tools and techniques is necessary while gathering data for a project. A questionnaire will be utilised in this study to gather data from respondents on their understanding of ETL, safety climate, and culture, as well as how each of these factors affects employee health and safety. In survey research, a questionnaire, which is a written document with questions provided to participants, is used by interviewers to record and ask questions (Neuman & Kreuger, 2003). As a result, either the subject of the inquiry or an interpreter may respond. Neelankavil (2015) asserts that a questionnaire provides the best consistency, impartiality, and homogeneity in the data gathered. While ensuring more anonymity, they also provide

respondents with privacy and ease during completion (Neelankavil, 2007). According to Grove, Fowler, Couper, Lepkowski, Singer, and Tourangeau (2011), adopting questionnaires rather than an interviewing approach has several clear benefits. One benefit of using questionnaires is they are more affordable and easier to use than in-person interviews.

The questionnaire includes some open-ended and closed-ended questions that only allow specific replies, such as "yes" or "no," fill-ins, or the Likert scale to select from pre-populated answers. Seven components, numbered A through G, made up the questionnaire. Open-ended and closed-ended questions made up the majority of Section A. According to Becker and Watts (1999), answers to closed-ended questions are sure to be precise, one-dimensional, comprehensive, and mutually exclusive. They also reduce the time needed to complete, code, and analyse surveys (Becker & Watts, 1999). The personal demographics, including age, sex, level of education, downstream firm, job experience, and the length of time each respondent worked for their supervisor, were the subject of Section A.

Using the 15-item ETL measure created by Yukl et al. (2019), Section B gathered data on ethical leadership in the downstream sector within Accra Metropolitan Area. The variables were measured using Likert-scale questions between 1 and 7, with 1 representing the least agreement and 7 representing the highest agreement. Yates (2004) defined a scale as a measurement tool that relates qualitative concepts to quantitative metric units. The most accurate and popular measure for gauging people's attitudes, views, and beliefs is the Likert scale (Yates, 2004). Scaling is accomplished by ensuring that responses to each thing selected for the index vary between high-scoring and low-scoring

people (Scheuren, 2004).

Section C gathered data on respondents' safety climate, which was measured using Beus et al. (2019) measurement scale based on seven dimensions which include leader safety commitment, safety communication, safety training, coworker safety practices, safety equipment and housekeeping, safety involvement, and safety rewards with 26-items. The response options are listed on a seven-point Likert scale, where 1 indicates a small extent, and 7 indicates a high extent. The Naji et al. (2021) 16-item safety culture test was used in Section D to measure three safety culture dimensions. They include Safety training, personal commitment, and work involvement. Section E gathered employee health and safety data, drawing from Kapur's (2018) 12-item measurement.

Control Variables

The study also controlled for the impact of safety behaviour and responsible leadership on employee health and safety. Studies have shown that they could also influence employee health and safety. Hence this study controlled for them. A control variable in a research project is anything constant or limited. It is a variable irrelevant to the study's goals but is tracked since it might affect the outcomes. Variables can be controlled directly by maintaining them constantly during a study or indirectly by employing techniques like randomization and statistical control (Bernerth & Aguinis, 2016). The control variables, responsible leadership and safety behaviour were measured using Agarwal and Bhal's (2020) 20-item responsible leadership scale and Christian et al. (2009) 6-item measure validated constructs, respectively. On a seven-point Likert scale, with one denoting "all" and seven

denoting "to a large extent," participants are asked to indicate (see Appendix A).

Pre- Testing

Pallant (2016) and Saunders et al. (2016) posit that pre-testing is essential before a significant survey. First, they ensure that directions, inquiries, and scale items are all written. They also assist potential responders in comprehending the questions and providing proper responses. Finally, they assist researchers in eliminating any queries that may be offensive to possible responders. Following this, the researcher conducted pre-testing on ten filling station attendants in the Accra metropolis after receiving permission from the supervisor. Because of its accessibility to the researcher, the location was chosen for the pre-test. This sample size was selected because it meets Saunders et al. (2016). minimum requirement of ten for students' pilot studies. The pre-testing revealed that responders understood the instructions and scale items. As a result, all scale items were maintained.

Reliability and Validity

Reliability is a vital feature to consider while selecting a specific instrument. According to Bless, Higson-Smith, and Kagee (2006),reliability is apprehensive about the instrument's consistency. When the device can be relied upon to accurately measure a constant value, it is said to have high dependability. Reliability is the quality of being dependable or consistent (Neuman & Kreuger, 2003; Creswell, 2014).

This study suggests a possibility that a measurement method will constantly yield the same account of occurrences. Reducing errors and biases in research is the aim of dependability (Saunders et al., 2016). The pre-test

data were usedto generate Cronbach's Alpha coefficient, displayed in Table 5, to verify the internal consistency of the individual components. According to earlier research, scales with a Cronbach's Alpha of 0.70 or above are dependable (Pallant, 2016). According to this standard, all of the study's constructs show strong internal consistency.

Table 5: Reliability Coefficient (Pre-Test Data Collected)

Variables	No. items	Cronbach Alpha	Decision
Ethical Leadership	15	0.92	Excellent
Safety Climate	25	0.94	Excellent
Safety Culture	17	0.96	Excellent
Employee Health and Safety	12	0.82	Satisfactory

Source: Field Data Amadu (2022)

In addition, an instrument's validity as a tool relates to how well it measures the specific notion it intends to assess (Bryman, 2016). Theysay that an instrument must be consistently repeatable to be trustworthy before being considered genuine. Once this has been accomplished, the tool may be examined to determine if it is what it claims to be.

As Bryman (2016) recommended, the researcher studied pertinent literature to find out how prior researchers measured the study's constructs to ensure the questionnaires' validity. Additionally, to test the criterion validity of the instrument, the effects of ethical leadership, safety climate, and safety culture were also regressed on employee health and safety (Ofori & Dampson, 2011). Finally, construct validity is assessed by evaluating the measurement model as described in chapter four. It reflects the strength of the association between related measures.

Ethical Issues

Brei and Böhm (2011) posit that ethics is primarily linked to moral situations and concerns good and bad individuals, organizations, societies,or communities. Consequently, almost everyone conducting research must understand the ethical aspect (Rubin & Babbie, 2016). The researcher always made every effort to uphold the right ethical standard. According to Edginton et al. (2012), fundamental ethical requirements for research are that participants give voluntary permission, are thoroughly knowledgeable about the study's objectives, procedures, and advantages, and are given the option to withdraw at any time.

With this assertion, the participants were informed of the research's purpose, anonymity guarantee, and their ability to withdraw. Respondents who wished to confirm the validity of the survey were given this information.

Babbie and Mouton (2012) assert that by ethical guidelines, researchers must avoid subjecting respondents to circumstances that might put them at risk of injury in light of their involvement when evaluating the reliability of quantitative research, it is crucial to consider the researcher's adherence to ethical guidelines and norms for proper conduct (Rossman & Rallis, 2003). Consequently, the researcher planned and considered ethical issues when developing the study, ensuring that good ethical practice was incorporated. Kara (2015) stressed the need to ensure that the research design is methodologically sound and ethically justifiable to all parties involved. To be sure of this, the researcher first requested permission from University of Cape Coast Ethical Review Board. The researcher also received an introduction letter from the head offices of the filling stationsunder study.

Upon arriving at the station, the researcher consistently introduced himself to the branch manager as a postgraduate student at the University of Cape Coast, studying Master of Philosophy oil and gas and conducting research on the subject “Effect of Ethical leadership on EHS in the downstream sector in Ghana: the role of safety climate and safety culture”. Managers and respondents received assurances from the researcher that the research was conducted only for academic reasons and partially satisfied the prerequisites for a master's degree in oil and gas resource management.

Respondents were reminded of their responsibility for giving useful information and the researcher's intended use of the material. The researcher guaranteed the respondents' privacy, anonymity, and secrecy, and their participation was voluntary. The questionnaire's content did not need personal identification to guarantee anonymity, secrecy, and privacy. Thestudy's results were then processed impartially and published as such in the final report, with no individual replies from the researcher.

Data Collection Procedures

Primary data were considered in this investigation. Principal information was derived from new first-time data sources and was, as a result, considered to be original. The survey approach was used to gather the main data. This involved handing out surveys and gathering information from responders. Closed-ended questions on well-crafted surveys were employed to accomplish the study's goals. The investigator and a member of his qualified team each received a questionnaire. The researcher and the respondents agreed on the best time to collect the surveys. Thetight adherence to the time frame set out resulted in the effective completion of data collection. The data was

gathered during May and June 2022. 215 out of the 226 respondents intended to participate in the survey, with a response rate of 95.1%. The response rate was not 100% due to incomplete data, as 4.9% of respondents did not reply to the items on the questionnaire. This was coupled with some respondents' unwillingness to return the instrument. Despite this, researchers like Mugenda and Mugenda (2003) have argued that the rate is ideal for use in the study analysis of social sciences.

Data Processing and Analysis

The information obtained from respondents was filtered to exclude any extraneous responses in order to make sure responses were what the researcher wanted and this action taken was part of the study's guiding principles. To perform the analysis, the data were imputed into the Statistical Package for the Social Sciences (SPSS) V 26 computer program. Using the assumptions from the structural equation modelling (SEM), the variables were then examined to extract or eliminate any further abnormalities.

Partial Least Square using Structural Equation Modelling (PLS-SEM) method was used to analyze the gathered data. The tools were chosen based on how well they examined the links between the study's set variables. In particular, although percentages were employed to report on the demographic parameters, inferential statistics using PLS were utilised to analyse the objectives. The The researcher used SPSS software to help with data coding, input, and cleaning to ensure no missing numbers and to check the data for outliers.

The questionnaire items were coded by designating certain special codes to multiple structure components in the SPSS file. The 15 components for ethical leadership (ETL) were listed as ETL1, ETL2, ETL3…, and ETL15; the26 items of safety climate construct were noted as SCM1, SCM2, SCM3, SCM4, SCM5, SCM6…, SCM26; the 16 items of safety culture were noted as SAC1, SAC2, SAC3, SAC4, SAC5, SAC6…, SAC16; and the 12 items of employee health and safety were noted as EHS1, EHS2, EHS3, EHS4, EHS5, EHS6…, EHS12.

Partial Least Square using Structural Equation Modelling (PLS-SEM)

An updated statistical method called PLS-SEM enables researchers to quantify unobservable factors using indicator variables. Given its capability to construct factor loadings, account for many types of estimation errors, and evaluate full hypotheses, all of which are helpful for a range of research challenges, it is a collection of statistical methods that have gained favour in the business and social sciences (Henseler, Hubona & Ray, 2016). The objectives were examined using the structural equation modelling with the partial least squares method with WarpPLS Version 7.0 (Kock, 2017).

PLS-SEM uses the supplied data to determine the model's nexuses for reducing the endogenous structures' residual variance. Two sets of linear equations in PLS route models serve as the formal specifications for the structural model, also known as the inner model, and the measurement model, commonly known as the outer model. The structural model defines the links between the study's constructs. The measuring model, however, provides the relationships between the variable and its observable clues (Henseler et al., 2016; Hair, Risher, Sarstedt & Ringle 2019).

The first step in reviewing PLS-SEM data is to look at measuring techniques (Hair, Hult, Ringle, & Sarstedt 2017). If measuring techniques satisfy requirements, the structural model must next be evaluated by investigators. Like other statistical procedures, PLS-SEM offers a set of general guidelines which may be used to assess model outcomes (Roldan & Sanchez- Franco, 2012; Hair et al., 2017). By definition, general principles are suggestions that explain how to approach facts and often vary based on the circumstance.

Measurement Model

Examining the indicator loadings is the first step in evaluating a model for reflective measuring. An indicator in research measures or summarizes the overview of a specific concept. Loadings over 0.78 are advised since they demonstrate more than half of the indicator's variance is explained by the idea, indicating appropriate item dependability. As a result, indicators with loadings less than 0.78 were eliminated from the model unless their inclusion did not affect the constructs' overall reliability. The second step is to assess the dependability of internal consistency, which is often done with Joreskog's (1971) composite dependability. The greater value corresponds to higher degrees of trustworthiness.

In explanatory research, for instance, dependability scores between 0.60 and 0.70 are deemed reasonable, whereas the range of values ranging from 0.70 to 0.90 is adequate to exceptional (Hair et al., 2017). In addition to using the same standards as composite reliability, Cronbach's alpha is a measure of internal consistency dependability that provides less accurate findings (Diamantopoulos, Sarstedt, Fuchs, Wilczynski & Kaise, 2012;

Sarstedt, Ringle & Hair, 2017). Because the items are unweighted, Cronbach's alpha provides a less exact reliability indicator. Composite reliability, onthe other hand, weights the items depending on the construct indicators' separate loadings, making it more reliable than Cronbach alpha. While Cronbach's alpha may be overly conservative, composite reliability may be very liberal, and genuine dependability often falls between these extremes (Hair et al., 2017).

Dijkstra & Henseler (2015) presented rho-A as an alternative to Cronbachalpha and composite reliability as an approximately perfect measure of construct reliability. Consequently, rho-A could be a suitable compromise, provided one accepts the validity of the factor model. All internal consistency measure results in this study reached the required threshold of 0.70. Hence the researcher was allowed to rely on them.

The convergent validity of each concept measure is discussed in the third phase of the reflective measurement model assessment. The degree to which a construct converges to explain the variance of its parts is known as convergent validity (Hair et al., 2019). The statistic used to assess the convergent validity of a concept is the total item variation on each item's average component by squaring loadings of each indication on a variable and calculating the mean value and the Average Variance Extracted (AVE). The concept should account for at least 50% of the variation across its components if the acceptable AVE is 0.50 or higher (Henseler et al., 2016). However, AVE less than 0.5 is also acceptable (Fornell & Larker, 1981) Determining discriminant validity was equally looked at. This describes how distinct or distinctive a construct is from other constructs in experiments in thestructural

model. The traditional metric was proposed by Fornell and Larcker (1981), who indicated that the squared inter-construct correlation of the same constructs and all other reflectively assessed constructs in the structural model should be compared to each construct's AVE. All model constructs should have a common variance that is not more than their AVE. The Fornell-Larker criteria perform poorly, as Henseler et al. (2015) demonstrated, especially when a construct's indication loadings just marginally alter.

Structural Equation Model

For a structural model, a t-statistic of at least 1.96 or a significant 5% or less level is suitable. The hypotheses were tested using the partial least squares structural equation modelling (SEM) approach. Covariance-based SEM is a multivariate analytic methodology similar to variation-based SEM but varies from it in that itis built on methods like resampling that do not need the fulfillment of assumptions (Kock, 2017; Moqbel, Nevo & Kock, 2013). As a result, variance-based SEM is better suited when the criteria of multivariate normality are not satisfied in a data set, which is the situation in this study (Chin, 1998; Kock, 2017). The structural model also considered the coefficient of determination R squared, particularly adjusted R squared. Thus, an R squared measures the variance explained in each of the endogenous constructs and is,therefore a measure of explanatory power (Hair et al., 2019).

Mediation in PLS-SEM

The existence of a mediating construct to a result is considered (Aguinis, Edwards & Brandley, 2016; Carrion, Nitzl & Roldan, 2017). As a result, the mediation model aims to pinpoint and clarify the process that connects the independent and dependent variables. In the partial least square

path model, the mediator variable absorbs how an external and an endogenous entity are connected. The approach devised by Nitzl et al. (2016) to examine the mediation effect of PLS-SEM was used to test the mediation effect in this investigation.

According to Carrion et al. (2017), complete mediation occurs when a direct influence is little but indirect effect is large—demonstrating that the mediating variable adequately reflects the effect of the external variable on the endogenous variable. Direct and indirect effects reflect the same (negative or positive) direction in complementary partial mediation (Baron & Kenny, 1986). The direct and indirect effects move in separate directions when there is a strong mediating impact (Zhao, Lynch & Chen, 2010).

Mediation does not exist if the indirect impact is not considerable. Furthermore, Hair et al. (2017) proposed that researchers can interpret data using the VAF (Value of Variance Accounted For), defined as total indirect effect/total effect* 100. Intuitively, if VAF is less than 20%, it is safe to assume there will be little or no mediation. When the VAF is greater than 20% but less than 80%, it indicates that the mediation is complete (Hair et al., 2017). The approach described above was followed by the researcher who conducted the study's mediation analysis.

Scale Validity and Reliability

Confirmatory factor analysis (CFA) was performed to assess the reliability and validity of the items used to measure the study's variables through WarpPLS version 6.0 (Kock, 2017). Testing done to assess the validity of convergent, reliable, and discriminant variables. Table 6 displays the findings of the CA, CR, and AVE.

Convergent Validity and Reliability

Bagozzi and Yi (1988) analysed three crucial internal consistency indicators. According to Table 6's findings, all composite reliability coefficients and Cronbach's alpha coefficients are above 0.7. Kock (2011), posits that average R2 (ARS) and average path coefficient are two fit indices that have significance in the context of variance-based SEM.

Their results strongly agree with the data, showing statistically significant APC and ARS and minimal overall collinearity (AVIF 5). Table 6 displays the cross-loadings and loadings produced by the CFA for the hidden elements utilized for investigation. The findings show the elements had strong loadings (more than 0.5) on theirseparate constructs and were significant at a p0.001 level, showing the tools convergent validity and reliability are satisfactory (Hair, Black, Balin, & Anderson 2010).

Table 6: Scale Validity and Reliability

Construct	Item	Loadings
Ethical leadership Cronbach alpha(α) = 0.92; Composite Reliability (CR) = 0.93; Average variance extracted(AVE) = 0.48	Shows a strong concern for ethical and moral values	0.64
	Communicates clear ethical standards for members	0.75
	Sets an example of ethical behavior in his/her decisions and actions.	0.77
	Is honest and can be trusted to tell the truth	0.78
	Keeps his/her actions consistent with his/her stated values ("walks the talk").	0.71
	Is a fair and unbiased when assigning task to members.	0.63
	Can be trusted to carry out promises and commitments	0.76
	Insists on doing what is fair and ethical even when it is not easy	0.74
	Acknowledges mistakes and takes responsibility for them	0.58
	Regards honesty and integrity as important personal values	0.72
	Sets an example of dedication and self-sacrifice for the organization	0.75
	Opposes the use of unethical practices to increase performance.	0.71
	Is fair and objective when evaluating member performance and providing rewards.	0.67
	Puts the needs of others above his/her own self-interest.	0.66
	Holds members accountable for using ethical practices in their work.	0.67
	My supervisor strictly enforces safe working procedures	0.61
Safety climate α = 0.94; CR = 0.95; AVE =0.44		
	My manager encourages me to practice health and safety	0.68
	My supervisor demonstrates leadership by keeping people focused on safety	0.76
	My supervisor takes the lead on safety issues.	0.74
	My supervisor is committed to improving safety.	0.75
	My supervisor places a strong emphasis on workplace safety.	0.82
	Safety issues are openly discussed between my supervisor and my workgroup.	0.73

Table 6: Cont.

	My workgroup receives timely feedback on safety issues we have raised with our supervisor.	0.77
	My supervisor keeps my workgroup informed of safety rules.	0.74
	Employees receive safety training when they change work tasks.	0.79
	My manager set aside enough time for employee safety training.	0.53
	My manager ensures employees have adequate safety training	0.70
	My co-workers always follow safety procedures.	0.63
	My co-workers are quick to point out unsafe conditions	0.68
	My co-workers take safety very seriously	0.61
	Employees in my workgroup are given sufficient safety equipment.	0.69
	Efforts are made in my workgroup to provide safe working conditions.	0.80
	Equipment in my work area is checked to make sure it is free of faults.	0.73
	Unsafe conditions are promptly corrected in my work area	0.70
	My supervisor consults with employees regularly about workplace safety issues.	0.68
	My manager promotes employees' involvement in safety-related matters	0.64
	My manager values employees' ideas about improving safety.	0.69
	My supervisor encourages employees to become involved in safety matters	0.64
	My supervisor rewards safe behaviours.	0.67
	My supervisor praises safe work behaviour	0.57
	In my workgroup, employees who work safely get recognition	0.54
Safety Culture $\alpha = 0.96$; CR = 0.96; AVE =0.61	New employees receive employee orientation training before they begin their job.	0.49
	Employees are trained in safe work procedures or Job Hazards Analyses (JHAs) for their job.	0.71
	Manager/supervisor make sure that employees can do their job safely.	0.78
	Manager/supervisor make sure that employees are aware of safety issues.	0.79
	Employees are involved in safety matters	0.81
	Manager/Supervisor takes notice of what employees say about safety	0.77
	Employees receive feedback regarding safety issues in a timely manner	0.74
	I am recognized by my manager/supervisor for working safely.	0.80

Table 6: Cont.

	Employees are encouraged to report all safety incidents.	0.83
	My manager/supervisor follows up on safety incident reports	0.84
	Safe work procedures are reviewed or updated if there is a safety incident report.	0.82
	Safety practices are reviewed or updated if there is a safety incident report	0.82
	Managers/supervisors understand what employees should do regarding safety.	0.79
	Managers/supervisors understand what they should do regarding safety.	0.80
	My manager/supervisor communicates clearly on safety issues.	0.83
	My manager/supervisor uses the proper procedures regarding safety matters	0.78
	I feel my safety is a priority to my manager	0.67
Employee Health and Safety α = 0.82; CR = 0.86; AVE =0.36		
	I have up to date training on how to handle emergency situations at work	0.68
	I know the location of the company's fire extinguisher	0.56
	My manager has ensured there is effective security personnel	0.81
	I'm regularly reminded to practice safe work habits by my manager.	0.79
	I'm aware of safety laws and regulations surrounding my line of work.	0.63
	My manager provides a nutritionally balanced diet.	0.61
	I have illness, impairment, or disability that may have been caused as a result of the nature of work.	0.74
	My manager provides and insist on the use of protective gears.	0.69
	My manager ensures equipment or machines are inspected daily before use.	0.69
	Our facility is having first aid.	0.67
	My manager gives me enough time to rest.	0.55
Responsible Leadership α = 0.95; CR =0.96; AVE =0.53	Makes fair and balanced decisions	0.66
	Takes ownership for own actions	0.66
	When making decisions, asks "what is the right thing to do?"	0.79
	Shows consistency in words and actions	0.79
	Does not blame others for own mistakes	0.79

Table 6: Cont.

	Has subordinates' best interests in mind	0.73
	Makes fair and balanced decisions	0.81
	Takes ownership for own actions	0.73
	When making decisions, asks "what is the right thing to do?"	0.84
	Shows consistency in words and actions	0.82
	Does not blame others for own mistakes	0.82
	Makes fair and balanced decisions	0.77
	Takes ownership for own actions	0.76
	When making decisions, asks "what is the right thing to do?"	0.74
	Shows consistency in words and actions	0.70
	Does not blame others for own mistakes	0.74
	Shows concern for availability or conservation of resources (e.g., natural resources) when planning for future business demands	0.75
	Links present business tasks with long-term organizational goals	0.70
	Communicates a vision of long-term growth for the organization	0.74
	Encourages business activities beneficial for team/organization in long term	0.70
Safety Behaviour α = 0.95; CR =0.96; AVE =0.79	I use all the necessary safety equipment to do my job	0.78
	I use the correct safety procedures for carrying out my job	0.93
	I ensure the highest levels of safety when I carry out my job	0.94
	I promote the safety program within the organization	0.92
	I put in extra effort to improve the safety of the workplace	0.95
	I voluntarily carry out tasks or activities that help to improve workplace safety	0.82

Source: Field Data, Amadu (2022)

Chapter Summary

This chapter explained how the study's primary data was gathered, arranged, analysed, and presented understandably. The chapter also included details on the study's design and the scientific methods regarding data needs, statistical tools, and systematic research into the discussed topic.

CHAPTER FOUR

RESULTS AND DISCUSSION

Introduction

Chapter four is organized into three parts to reflect the study's objectives: to explore the effect of ETL on employee health and safety through intermediary roles of safety climate and safety culture. The chapter began with descriptions of the respondents' backgrounds in the Accra metropolitan area, then evaluated the measurement and structural WarpPLS- SEM models created to address the various study objectives, and concluded with an explanation of the objectives' results.

Background Features of Respondents

To completely comprehend the nature and characteristics of survey participants, the study considered several crucial respondent-related information. These participant characteristics are listed in Table 7 and include the respondents' gender, age, educational attainment, industry of employment, number of years spent working for the firm, and length of time spent working for the current manager.

Table 7: Socio-demographic characteristics of Pump Attendants

Socio-economic Demographics	Items	Frequency	Percent
Gender	Male	137	63.7
	Female	78	36.3
Age	15 – 20.	9	4.2
	21– 25.	95	44.2
	26 – 30.	58	27.0
	31 – 40	45	20.9
	Above 40	8	3.7
Educational Level	Post Graduate Degree	12	5.6
	First Degree	21	9.8
	HND	15	7.0
	SHS	148	68.8
	Professional Certificates	10	4.7
	Other	9	4.2
Sector of work	Government	80	37.2
	Private	135	62.8
Number of years working within the company	Less than 1 year	54	25.1
	1- 5 years	108	50.2
	6- 10 years	39	18.1
	11 – 15 years	9	4.2
	Above 16	5	2.3
		Mean	Standard Deviation
Number of years working with current manager		3.14	3. 252

Source: Author's construction (2022)

From table 7, is evident various socio-economic demographic characteristics of pump attendants in the metropolis. Regarding the gender of the recent scents, about 63.7 percent was made up of male sales. In comparison, 37.3 percent constitute females showing a dominant male sector owing to the volatile nature of the petroleum sector. The age structure shows a youthful labour force as they would exhibit exuberance in their field of work. It is manifested in Table 6 that 44.2 percent of pump attendants fall within the age bracket between 21-25, followed by 27.0 percent within the range between 26-30. The third age bracket is between 31- 40, with 20.9 percent. The table

also shows the lowered age brackets of pump attendants employed downstream as 15-20 and above 40 years, constituting 4.2 percent and 3.7 percent, respectively.

Regarding pump attendants' highest level of education, table 7 shows that 68.8 percent of employed pump attendants attained secondary qualifications while 9.8 percent had first-degree certificate qualifications. 7.0 percent had a higher national diploma. 4.7 percent of respondents had a professional certificate, and 4.2 percent stated another. It is also evident from Table 6 that the private sector dominates the downstream sector, particularly oil marketing companies, as it employs about 62.8 percent while the government sector employs 37.2 percent of pump attendants. Finally, information was also gathered about the respondent's number of years they worked with the current manager of their organisation. Because respondents provided their actual age, mean, and standard deviation were adopted. According to Table 7, each person served under their immediate supervisors or managers for an average of 3.14 years (SD = 3.252).

Results and Discussion

The finding that ethical leadership affects employee health and safety was the impetus for this investigation. Additionally, the relationship between ETL and employee health and safety could be mediated by safety climate and safety culture. Similarly, it was suggested that a good safety climate might enhance the positive effect of ETL on employee health and safety. Safety culture may also strengthen the effect of ETL on employee health and safety. There were some interesting results.

Table 8 and Figure 3 present the results of the path of coefficients, t-values, and construct relationships. The results indicate a positive and significant relationship between ethical leadership and employee health and safety (R= 0.29, p= 0.01 < 0.05), supporting hypothesis 1 that says ethical leadership has a significantly positive influence on employee health and safety. The study's first objective was to determine how ethical leadership affected employee safety and health in Ghana's downstream petroleum sector.

The results demonstrated a link between ethical leadership and employee safety and health. This means that leaders must place much emphasis or leverage on ethics, doing what is right and avoiding what is terrible according to the safety laws andregulations to ensure employee health and safety. Thus, all things being equal, a unit increase in ethical leadership will lead to a 29% significant improvement in employee health and safety in the Ghanaian petroleum downstream sector. This is because the p-value determining the significance of changes in a variable is within the acceptable criteria.

Besides, the results of the coefficient of determination (R^2 adjusted= 0.650) show about changes in ethical leadership accounted for 65 percent of changes in EHS. Thus, the remaining 35% could be errors from other factors not captured in this study. This supports previous studies and findings that link ethical leadership and employee health and safety (O'Leary and McGarry, 2016, Okpozo et al., 2017, Khan, Ahmad, and Ilyas, 2018 & Shafique et al., 2020). The results indicated that ethical leadership, which includes integrity, honesty, justice, and altruism, as well as behaviour congruence with professed beliefs, communication of ethical principles, and provision of ethical advice,

had a favourable effect on EHS. This idea connects to the social learning theory, which asserts that people learn through social interactions. Separately, people develop comparable habits through observing other people's behaviour. After witnessing another person's conduct, people frequently copy it, especially if their observations were fulfilling or resulted in rewards. In this case, when a leader practices the dimensions of ethics such as integrity, honesty, fairness, etc., employees are much more likely to observe and practice the same.

The link between ethical leadership and safety climate was also positive and significant (βeta R= 0.59, p=0.01 < 0.05). Therefore, H2 was supported. That says ethical leadership has a significantly positive influence on safety climate the Ghana's downstream petroleum sector. The second objective looked into how ethical leadership affected the safety climate in Ghana's downstream petroleum sector. Similarly, it was established that ethical leadership significantly improves the safety atmosphere.

Thus, all things being equal, a unit increase in ethical leadership will lead to a 59% significant improvement in the safety climate in the Ghanaian petroleum downstream sector. This is because the P-value, which determines the significance of changes in a variable, is within the acceptable criteria. Besides, the results of the coefficient of determination (R^2 adjusted= 0.348) show about Changes in ethical leadership accounted for 35% of changes in SCM. Thus, the remaining 65% could be errors from other factors not captured in this.

This validates previous studies by Zohar and Luria (2005), who indicated that Leaders might improve employees' impressions of the safety atmosphere within firms by demonstrating active and genuine concern for their safety and well-being.

Last but not least, managers who encourage staff to develop new approaches to improving current safety procedures and push individuals to engage their preconceived notions about safety measures boost the perception of a work environment. Leaders may commit to safety by participating in ergonomic assessments, safety training, and occupational health and safety committees. This will improve the environment for safety in the workplace.

Besides, the study also confirmed a study by DeJoy, (2005), who stated that Ethical leaders might improve employees' impressions of the safety climate within firms by demonstrating active and genuine interest in their safety and well-being. Leaders significantly influence how a company's safety climate is perceived. Therefore, consistent with the literature, as stated by Zohar (2010), Ethical leaders may improve employees' impressions of the safety climate within firms by demonstrating active and genuine concern for their safety and well-being.

The result also shows a positive and significant relationship between safety climate and employee health and safety ($R= 0.22$, $p=0.01 < 0.05$). Therefore, H3 is supported in this study. The third objective of the investigation was to determine how Ghana's petroleum downstream industry's safety climate affects EHS. Consequently,the hypothesis that a safety climate would affect EHS was confirmed. The safety climate's impact was significantly positive and validated other research studies on the subject

matter. Thus, all things being equal, a unit increase in safety climate led to a 22% significant improvement in employee health and safety in the Ghanaian petroleum downstream sector. This is because the p-value determining the significance of changes in a variable is within the acceptable criteria. Besides, the results of the coefficient of determination (R^2 adjusted= 0.484) show about 48% of changes in EHS were accounted for by changes in safety climate. Thus, the remaining 52% could be errors from other factors not captured in this study.

According to empirical research (Chan, Woon, & Kankanhalli, 2005; Choudhry, Fang, & Lingard, 2009), a positive relationship exists between SCM and employee health and safety. For instance, Choudhry, Fang, & Lingard (2009) postulated that a safety climate promotes employee health and safety by educating them about the attitudes and beliefs that might aid in greater performance.

For instance, Qamar (2000) argues that a safety climate improves individual safety knowledge, motivation, and employee health and safety. In three recent meta-analyses, research has been done on the connection between SCM and employee safety outcomes (Beuset al., 2010; Christian et al., 2009; Clarke, 2006). This is consistent with the view of Bigelow (2007) that safety climate improves employee health and safety if an organization examines its safe atmosphere regularly and makes efforts to enhance it, it may lead to long-term sustainable employee health and safety improvements

Furthermore, including SCM as a mediation construct between ethical leadership and employee and safety showed a positive and significant effect. Thus, it revealed a significant positive effect of ethical leadership (direct: R=

0.22, p=0.01 < 0.05) and SCM (indirect: R=0.59, P=0.01 <0.05) on employee health and safety. The study's fourth objective was to examine how the safety climate affected ethical leadership and employee health and safety in Ghana's downstream petroleum sector. These results further indicated that ethical leadership and SCM accounted for 35% (R^2: Figure 2) of the variation on employee health and safety in Accra Metropolis's downstream sector. This endorses H4 in the study. Thus, the VAF for the mediation of SCM is 36% which is satisfactory and shows full mediation occurred. It could be concluded that ethical leadership's extra influence in improving EHS in the downstream petroleum sector in Accra Metropolis in Ghana could be improved through SCM.

The results indicated a strong beneficial effect and contributed around 35% to ensuring ethical leadership improves employee health and safety when considering the mediating function of a safe atmosphere on the link between ETL and employee health and safety. This role of safety climate is confirmed by other studies like Langlois et al. (2014), who indicated an ethical leader creates a positive working environment for his or her colleagues. Employees in this environment believe that ethical rewards and punishments will be transparent and free of bias (Kapp, 2012). As a result, the safety climate produced by ethical leaders minimizes employee stress and offers them more freedom to work (Laschinger et al., 2015). Employees are motivated to improve their safety performance in an environment consistent with their personal and corporate values.

Previous research (Eisenberger et al., 1990) has supported the adoption of the SLT and the reciprocity standard for organizations. Employees, for example, are obligated to provide favourable treatment to the organization in exchange for their impressions of organizational support and interest in them (Dejoy et al., 2004). Put another way, employees respond to how they perceive their bosses to be treating them (Mearns et al., 2010). According to Dejoy et al. (2010), evidence supports the application of the social exchange theory to workplace safety climate. They found that the dynamics of social interaction between management's commitment to workplace safety and workers reacting more favourably when they perceive higher levels ofworkplace safety.

Moreover, Berhan (2020) argues that a safe climate improves employee health and safety because it propels organisations to maintain a safe atmosphere regularly. According to Choudhry, Fang, and Lingard (2009), a safety climate fosters employee health and safety by empowering workers with an understanding about attitudes and beliefs that might improve EHS.

Thus, it is sufficient to conclude from this study that managers in the petroleum downstream sector who demonstrate ethical leadership traits will boost SCM, eventually leading to safeguarding employee health and safety. This is because employees look up to their leaders as their role models from whom they mimic their behaviour, reminding them of their sense of duty in ensuring their safety (Bandura, 1977). The implication is that leaders can utilise safety climate measures to improve employees' health and safety in the workplace.

Also, the relationship between ethical leadership and SAC was positive and significant (R= 0.59, p=0.01 < 0.05), providing support for H5 in this study. The study's fifth objective was to find out how SAC in Ghana's downstream petroleum industry is impacted by ethical leadership. Thus, all things being equal, a unit increase in ethical leadership will accordingly lead to 0.59 significant improvement in safety culture in the Ghanaian petroleum downstream sector. This is because the P-value determining the significance of changes in a variable is within the acceptable criteria. Besides, the results of the coefficient of determination (R^2 adjusted= 0.3481) show about 35% of changes in SAC were accounted for by differences in ethical leadership. Thus, the remaining 65% could be errors from other factors not captured in this study The findings indicated a considerable positive association between safety culture and ethical leadership. This suggests that ethical leaders who exhibit honesty, fairness, trust, and integrity will likely improve the organizational safety culture. This result confirms a previous study that indicated that ethical leadership enhances a safety culture. For instance, Langlois et al. (2014), argued that an ethical leader creates an environment where all employees know the factors that influence ethical incentives and punishment. Employees in such a setting, on the contrary hand, feel confident that moral leaders would make rewards and punishments in a fair and unbiased manner.

Cooper (2002) also stated that because they pay attention to leadership's ethical and moral aspects, ethical leaders will supervise the design of adequate policies and procedures for health and safety, essential instruction onsuch policies and procedures, communication of performance standards, and

promotion of a SAC. By actively engaging in the execution of health and safety measures, ethical leaders will foster a trusting connection among their workforce, improving their organisations' safety culture, claims the social learning theory (Bandura, 1986). (De Ceiri et al., 2012). Additionally, as a top goal to enhance safety performance, they will systematically develop a safety culture through communication, encouragement, training, motivation, reward, and discipline (Brown & Trevio, 2006).

The results show that safety culture positively and significantly affected employee health and safety (R= 0.15, p =0.01< 0.05), endorsing H6 in this study. The sixth objective of the study sought to examine the effect of safety culture on employee health and safety in the downstream petroleum sector in Ghana. The results showed a significant positive effect regarding the relationship between safety culture and employee health and safety. Thus, all things being equal, a unit increase in safety culture will accordingly lead to 0.15 significantly improved employee health and safety in the Ghanaian petroleum downstream sector. This is because the P-value determining the significance of changes in a variable is within the acceptable criteria. Besides, the coefficient of determination (R^2 adjusted= 0.225) results show about 23% of changes in EHS were accounted for by changes in safety culture. Thus, the remaining 77% could be errors from other factors not captured in this study.

It is obvious, that the current study results confirmed previous studies like Smith and Wadsworth (2009), who indicated in their research that SAC is consistently and independently linked to employee safety. Their findings demonstrate how significant it became to implement a strong safety culture in the workplace, particularly for employees who face high work risk.

Consequently, safety culture is critical to employee health and safety performance.

Besides, Naji, Isha, Mohyaldinn, Leka, Saleem, Rahman, & Alzoraiki (2021) also researched Malaysia's upstream oil and gas sector due to its high injuries on the impact of safety culture on safety performance. Their results concluded that there are strong relationships between SAC and safety performance which is subservient to safety outcomes.

Finally, the inclusion of safety culture as a mediation construct between the relationship between ETL and employee health and safety showed a significant positive effect (R= 0.35, p < 0.01). This endorses H7 in this study. the study's objective is to assess the mediating function of SAC between ETL and employee health and safety in Ghana's oil and gas downstream sector. The inclusion of SAC as a mediation construct between ethical leadership and employee health and safety showed a positive and significant effect. Thus, it revealed a significant positive effect of ethical leadership (direct: R= 0.15, p=0.01 < 0.05) and SCM (indirect: R=0.59, P=0.01 <0.05) on employee health and safety. These results further indicated that ethical leadership and SAC accounted for 35 percent (R^2: Figure 3) of the variation on employee health and safety in Accra Metropolis's downstream sector. This endorses H7 in the study. Thus, the VAF for the mediation of SAC is 36% which is satisfactory and shows full mediation occurred. It could be concluded that ethical leadership's extra influence in improving EHS in the downstream petroleum sector in Accra Metropolis in Ghana could be improved through SAC's existence.

Thus, it is accurate to conclude from this study that managers in the petroleum downstream sector who exhibit demonstrate ethical leadership traits will boost SAC, eventually leading to safeguarding employee health and safety. This is because employees look up to their leaders as their role models (Bandura, 1977) from whom they mimic their behaviour, reminding them of their sense of duty in ensuring their safety. This means that the leader's ability to utilise ethics to ensure employee health and safety is highly contingent on safety culture.

Considering how safety culture influences the interaction between ethical leadership and employee health and safety, the results indicate a significant and positive effect and contribute about 35% to ensuring ethical leadership enhances employee health and safety. The result confirms other previous like Chughtai (2015), who indicatedthat Employees would recognize and learn critical behaviours from role models while watching the relevance of safety in the organization's day-to-day activity and would reproduce comparable actions with the expectation of a reward. Therefore, he intimated from the study that safety culture mediates between ethical leadership and employee health and safety.

Table 8: Summary of results

Variables	Coefficient	p-value
Control variables		
Safety behaviour	0.03	0.35
Responsible leadership → Employee Health and Safety	0.28	0.01**
Direct Effect		
Ethical leadership → Employee Health and Safety	0.29	0.01**
Ethical leadership → Safety Climate	0.59	0.01**
Safety Climate → Employee Health and Safety	0.22	0.01**
Ethical leadership → Safety Culture	0.59	0.01**
Safety Culture → Employee Health and Safety	0.15	0.01**
Mediating Effect		
Ethical leadership → Safety Climate → Employee Health and Safety EHS	0.59	0.01**
Ethical leadership → Safety Culture → Employee Health and Safety EHS	0.59	0.01**

*Significance at 0.10, **significance at 0.05, ***significance at 0.01.

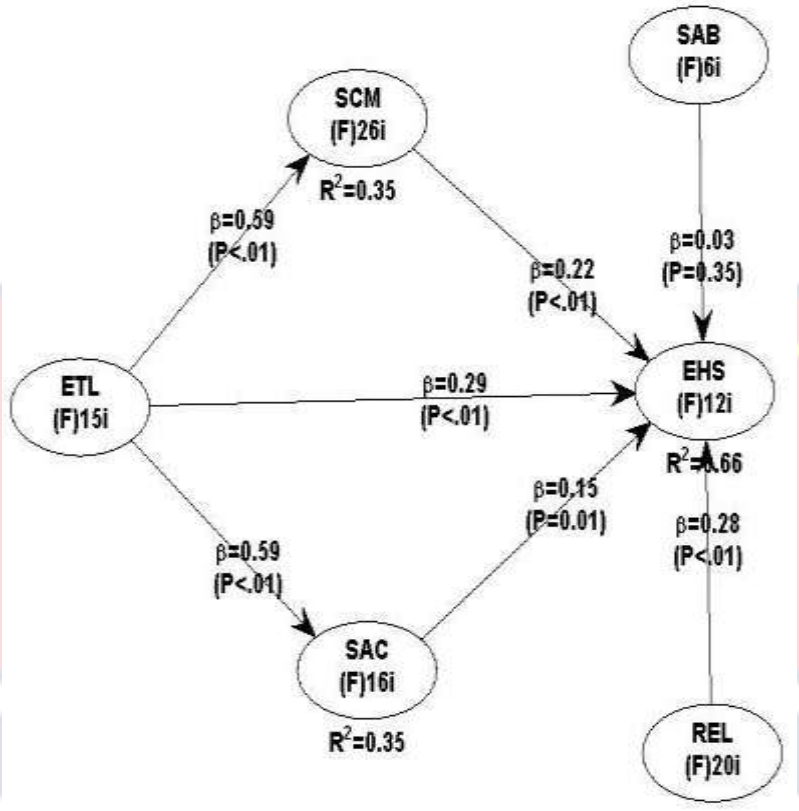

Figure 3: Mediating effects of safety climate and safety culture on the impact of ethical leadership on employee health and safety.
Source: Authors Construct, Amadu (2022)

Chapter Summary

The chapter was written to meet the study's goals specifically. The background characteristics of research's respondents were presented by analyzing the various objectives using SPSS v26 and WarpPLS v7.0. The study's objectives were all analysed, and the results were presented and backed by empirical research. The study's results and suggestions are presented in the next chapter.

CHAPTER FIVE

SUMMARY, CONCLUSIONS, AND RECOMMENDATIONS

Introduction

This chapter particularly focused on the study's summary, conclusions, recommendations, and future study areas. They were examined in light of the findings and results, including the ramification for policy-making and further study in the area deduced from the findings.

Overview

The study's primary goal was to study the interplay between safety climate and safety culture and ethical leadership on EHS in Ghana's downstream petroleum industry. Seven particular objectives related to the study's prime objective were explicitly examined. Specifically, the study:

1. analysed the effect of ethical leadership on employee health and safetyin the downstream oil marketing companies in Ghana
2. examined the effect of ethical leadership on safety climate in the downstream oil marketing companies in Ghana
3. examined the effect of safety climate on employee health and safety in Ghana's downstream oil marketing companies.
4. assessed the mediating role of safety climate on ETL and employee's health and safety nexus in the downstream oil marketing companies in Ghana
5. examined the effect of ethical leadership on safety culture in downstream oil marketing companies in Ghana.
6. examined the effect of safety culture on employee health and safety in the downstream oil marketing companies in Ghana'

7. assessed the mediating role of safety culture on ethical leadership and employee health and safety nexus in the downstream oil marketing companies in Ghana

The researcher used the Warp partial least squares seven to test the related hypotheses that resulted from the study's objectives to investigate these unstated objectives. From the 550 pump attendants in Ghana's Accra metropolitan area, 226 sample size was used according to Krejcie and Morgan from 1970 sample determination. Out of the sample, 215 respondents successfully participated in the study. A stratified technique was adopted to separate pump attendants based on the sector they worked in, whether government owns company or private. 85 samples for government and 141 for private.

A pretest was conducted with ten pump attendants in the city before the main research to determine the validity and application of the scales in Ghanaian contexts. After obtaining ethical approval from the institutional review board of the University of cape coast, questionnaires were administered after achieving good and adequate reliability. WarpPLS (version 7.0) and IBM SPSS Statistics (version 26) were applied to the data.

Key Findings

Regarding the first objective, which examines the impact of ethical leadership on employee health and safety (EHS), It was found that ETL has a significant and positive impact on EHS. According to the study, EHS will improve when leaders or managers of the downstream sector, particularly filling stations, are fair, honest, and set a good example. This supports previous studies and findings that link ethical leadership and employee health

and safety (O'Leary, 2016, Okpozo et al., 2017, Khan, Ahmad, and Ilyas, 2018 & Shafique et al., 2020). The results indicated that ethical leadership, which includes integrity, honesty, justice, and altruism, as well as behaviour congruence with professed beliefs, communication of ethical principles, and provision of ethical advice, had a favourable effect on EHS. This idea connects to the social learning theory, which asserts that people learn through social interactions.

There was another intriguing conclusion regarding the study's second objective, which mainly looked at how ethical leadership affected SCM in Accra metropolis. The study reported that ethical leaders' traits like honesty, integrity, and fairness enhanced safety climate. Consequently, the findings indicated a strong positive relationship between ETL and safety climate. This validates previous studies by Zohar and Luria (2005), who indicated that Leaders might improve employees' impressions of the safety atmosphere within firms by demonstrating active and genuine concern fortheir safety and well-being. Thus, managers who encourage staff to develop new approaches to improving current safety procedures and push individuals to engage their preconceived notions about safety measures boost the perception of a work environment.

The third objective analyzed how SCM affected EHS in Ghana's downstream petroleum sector. The results supported earlier research's conclusions that SCM significantly improves EHS. The results indicate that employees' health and safety would be protected or enhanced if safety atmosphere dimensions like training, effective communication, and rules and regulations were taken seriously and implemented. For instance, Qamar (2000)

argues that a safety climate improves individual safety knowledge, motivation, and employee health and safety. In three recent meta-analyses, research has been done on the connection between SCM and employee safety outcomes (Beuset al., 2010; Christian et al., 2009; Clarke, 2006). This is consistent with the view of Bigelow (2007) that safety climate improves employee health and safety if an organization examines its safe atmosphere regularly and makes efforts to enhance it, it may lead to long-term sustainable employee health and safety improvements.

The fourth aim was hypothesised as "safety climate mediates the relationship between ethical leadership and EHS." Study results endorse the hypothesis by indicating that in Ghana, the SCM certainly mediates the connection between ETL and EHS. The study's findings suggested ETL effect on employees' health and safety could be enhanced when a safe environment is conditioned. That is when safety communication, safety training, coworker safety practices, safety equipment and housekeeping, leader safety commitments, safety involvement, and safety reward are practised in the work environment, as Beus et al. 2019 opined. This role of safety climate is confirmed by other studies like Langlois et al. (2014), who indicated an ethical leader creates a positive working environment for his or her colleagues. Employees in this environment believe that ethical rewards and punishments will be transparent and free of bias (Kapp, 2012). As a result, the safety climate produced by ethical leaders minimizes employee stress and offers them more freedom to work (Laschinger et al., 2015).

The fifth objective examined the impact of ETL on safety culture and was further supported by the premise that ethical leadership significantly improves SAC. The study's findings did, in fact, back up the hypothesis. The results were in line with other research on comparable investigations. This implied that when leaders exhibit ethical traits such as honesty, fairness, trust, and integrity, it would enhance the organisation's safety culture, such as management commitment, work environment, and involvement. Cooper (2002) also stated that because they pay attention to leadership's ethical and moral aspects, ethical leaders will supervise the design of adequate policies and procedures for health and safety, essential instruction onsuch policies and procedures, communication of performance standards, and promotion of a SAC. By actively engaging in the execution of health andsafety measures, ethical leaders will foster a trusting connection among their workforce, improving their organisations' safety culture, claims thesocial learning theory (Bandura, 1986). (De Ceiri et al., 2012). Additionally, as a top goal to enhance safety performance, they will systematically developa safety culture through communication, encouragement, training, motivation, reward, and discipline (Brown & Trevio, 2006).

The researcher also examined the sixth objective by investigating how safety culture affected EHS. The results demonstrated that a safety culture significantly improves EHS. This result was in line with earlier research. This research suggested that improving workplace safety culture, including management commitment and employee engagement, will benefit employees' health and safety. This is especially true for oil and gas organizations. It is obvious, that the current study results confirmed previous studies like Smith

and Wadsworth (2009), who indicated in their research that SAC is consistently and independently linked to employee safety. Their findings demonstrate how significant it became to implement a strong safety culture in the workplace, particularly for employees who face high work risk. Consequently, safety culture is critical to employee health and safety performance. Besides, Naji, Isha, Mohyaldinn, Leka, Saleem, Rahman, & Alzoraiki (2021) also researched Malaysia's upstream oil and gas sector due to its high injuries on the impact of safety culture on safety performance. Their results concluded that there are strong relationships between SAC and safety performance which is subservient to safety outcomes.

The ultimate objective evaluated how ethical leadership and EHS interacted when a safety culture acted as an intermediary. The results demonstrated that safety culture factors, including management commitment, a productive workplace, and employee participation, mediate the link between ETL and EHS. The findings suggest that employee health and safety would be encouraged when leaders demonstrate ethical features by assuring managerial commitment, a productive workplace, and employee participation in decision-making. The result confirms other previous like Chughtai (2015), who indicated that Employees would recognize and learn critical behaviours from role models while watching the relevance of safety in the organization's day-to-day activity and would reproduce comparable actions with the expectation of a reward. Therefore, he intimated from the study that safety culture mediates between ethical leadership and employee health and safety.

Conclusions

The research examined the effect of ethical leadership on employee health and safety in petroleum downstream marketing companies in Ghana. The study's findings revealed that ethical leadership significantly enhances EHS. Thus, the study concludes that based on the first objective, employee health and safety will improve when managers at the downstream sector, particularly fuel stations, fully adopt ethical leadership. For example, leaders must be honest, truthful, consistent, fair, involve workers in decision-making, etc.

Again, the study also concludes that ethical leadership promotes safety climate. Therefore, it is essential for ethical leaders to improve the employees' impressions of safety climate dimensions like personal commitment, communication, safety rewards, safety equipment, coworker safety practices, and training within the firms by demonstrating active and genuine concern for the employees' health, safety, and wellbeing.

Besides, the study concludes that safety climate indeed promotes employee health and safety in the downstream oil and gas sector. Thus, the study shows that if an organisation, particularly the fuel stations, regularly examine its safe atmosphere and enhances it, it may lead to long-term sustainable employee health and safety improvement.

Moreover, the study concludes that managers in the downstream petroleum sector who demonstrate ethical leadership traits will boost safety climate, eventually safeguarding employee health and safety. Thus, ethical leaders can utilise safety climate measures to improve employee health and safety.

However, the study also concludes that managers who exhibit ETL can improve the workplace's safety culture by ensuring permanent values, attitudes, and conventions are established. Thus, ethical leaders must demonstrate traits that will cement the company's positive culture.

Again, the study concludes that when safety culture is established, it turns to improve employee health and safety. Finally, the study concludes that even though ETL can enhance EHS indownstream petroleum sector, it must be cemented by SCM and safety culture dimensions. In other words, a safe work environment devoid of hazards or injuries necessitates employee health and safety.

Finally, it is accurate to conclude from this study that managers in the downstream petroleum sector who exhibit ethical leadership traits will boost safety culture, eventually leading to safeguarding employee health and safety.

Recommendation

The following suggestions are made in light of the study's results and conclusions. Following the study, important players in the energy sector, including the Ministry of Energy, petroleum commission, National Petroleum Authority, and managing directors of oil marketing companies, should emphasize hiring and promoting leaders who are committed to upholding ethical standards before they are made to hold positions in the petroleum industry, particularly at filling stations where employee health and safety is crucial. This may be accomplished by putting nominees through rigorous procedures and probing questions that reflect the qualities of moral leaders.

Stakeholders like the national petroleum authority, the Ministry of Energy, and chief executive officers should emphasize ethical managers who

promote safety climate at their workplace. Thus. Leaders who demonstrate an active concern for the safety and well-being of their employees. Thus, managers of fuel stations should be given adequate training on safety so they are equipped with the necessary skills to protect the wages, well-being, and safety of pump attendants and other workers in general.

The study also recommends that managers in the petroleum downstream should examine its safe atmosphere regularly and try to enhance which will lead to long-term sustainable employee health and safety improvements. Thus, managers must be encouraged to communicate clearly on safety issues to pump attendants and to involve them in decision-making. By doing this, safety climate will enhance employee health and safety.

The study recommends that management of oil marking companies should emphasize managers in the downstream petroleum sector who demonstrate ethical leadership traits that have the capacity to boost SCM and eventually lead to safeguarding employee health and safety. By this, the study encouraged managers with ethical traits must adopt safety climate dimensions like safety rewards, safety equipment, coworker practice etc. to enhance employee health and safety. Employees must be made to use safe protective equipment and be rewarded if they practice safe safety measures by ethical leaders.

The study also recommends that managers exhibit ethical leadership to improve the workplace's safety culture by ensuring permanent values, attitudes, and conventions are established. This means that ethical leaders in oil marketing companies must protect employees' security.

Again, management of oil marketing companies should ensure that

managers at the fuel stations should promote and practice safety culture dimensions like training, work involvement of employees, and personal commitment to improving employee health and safety.

Finally, the study recommends that management of oil marketing companies and national petroleum authority should ensure ethical managers prioritise safety culture like training, personal commitment and safety, and work involvement to improve employee health and safety.

Suggestions for Future Studies

The study examined how ethical leadership and several natural features interact. Like safety climate and safety culture conspire to influence employee health and safety in the downstream petroleum sector in Ghana. Even though Accra Metropolis was used for this study because almost all oil marketing companies' headquarters are sighted in Accra Metropolis, and therefore the findings can be generalised to the entire country can be somewhat misleading.

The study, therefore, advocates for further research to cover other metropolis in the country. Other research projects could examine ethical leadership and employee health and safety using other natural factors like safety behaviour to further analyse the ETL- EHS nexus. This would help the management of oil marketing companies to draw up a comprehensive plan for appointing people into managerial positions that reflects the company's goal and objectives of ensuring employees' health and safety.

Finally, since the data collected was primarily from one sector, the oil and gas downstream sector, the findings may not apply to other sectors due to the dynamics in different sectors. Therefore, it is prudent for further studies to be carried out to reflect different sectors like agriculture, mining, transport, etc.

REFERENCES

Aguinis, H., Edwards, J. R., & Bradley, K. J. (2017). Improving our understanding of moderation and mediation in strategic management research. *Organizational Research Methods*, *20*(4), 665-685.

Ahmad, I., & Zafar, M. A. (2018). Impact of psychological contract fulfillment on organizational citizenship behaviour: Mediating role of perceived organizational support. *International Journal of Contemporary Hospitality Management*.

Ampofo, J. A. (2020). Contributions of The hospitality industry (Hotels) in the development of Wa municipality in Ghana. *International Journal of Advanced Economics*, *2*(2), 21-38.

Ansah, E. (2017). *Psychosocial safety climate as a predictor of occupational health and safety of fuel station attendants in Accra, Ghana* (Doctoral dissertation, University of Cape Coast).

Ansah, E. W., & Mintah, J. K. (2012). Safety management practices at fuel service stations in Central and Western Regions of Ghana. *Nigerian Journal of Health Education*, *16*(1), 78-89.

Asumeng, M., Asamani, L., Afful, J., & Agyemang, C. B. (2015). Occupational safety and health issues in Ghana: strategies for improving employee safety and health at the workplace. *International Journal of Business and Management Review*, *3*(9), 60-79.

Attfield, M. D., Schleiff, P. L., Lubin, J. H., Blair, A., Stewart, P. A., Vermeulen, R., ... & Silverman, D. T. (2012). The diesel exhaust in miners study: a cohort mortality study with emphasis on lung cancer. *Journal of the National Cancer Institute*, *104*(11), 869-883.

Avolio, B. J., & Bass, B. M. (2004). Multifactor leadership questionnaire (TM). *Mind Garden, Inc. Menlo Park, CA*.

Bandura, A. (1977). Self-efficacy: toward a unifying theory of behavioural change. *Psychological Review*, *84*(2), 191.

Bandura, A. (1986). The explanatory and predictive scope of self-efficacy theory. Journal of social and clinical psychology, 4(3), 35373.

Barling, J., Loughlin, c., & Kelloway, E.K. (2002). Development and test of a model linking safety – specific transfor,ational lradership and occupational safety. *Journal of applied psychology*, 87(3), 488.

Baron, R. M., & Kenny, D. A. (1986). The moderator-mediator variable distinction in social psychological research: Conceptual, strategic, and statistical considerations. *Journal of personality and social psychology*, *51*(6), 1173.

Bass, B. M., & Steidlmeier, P. (1999). Ethics, character, and authentic transformational leadership behaviour. *The leadership quarterly*, *10*(2), 181-217.

Bavik, A., Bavik, Y. L., & Tang, P. M. (2017). Servant leadership, employee job crafting, and citizenship behaviours: A cross-level investigation. *Cornell Hospitality Quarterly*, *58*(4), 364-373.

Bedi, A., Alpaslan, C. M., & Green, S. (2016). A meta-analytic review of ethical leadership outcomes and moderators. *Journal of Business Ethics*, *139*(3), 517-536.

Bedingfield, S. (2015). Culture, Power, and Political Change: Skeptics and the Civil Sphere. *Journal of Communication Inquiry*, *39*(2), 158-169.

Beeri, I., Dayan, R., Vigoda-Gadot, E., & Werner, S. B. (2013). Advancing ethics in public organizations: The impact of an ethics program on employees' perceptions and behaviours in a regional council. *Journal of business ethics*, *112*(1), 59-78.

Bell, E., Bryman, A., & Harley, B. (2018). *Business research methods*. Oxford university press.

Berhan, E. (2020). Management commitment and its impact on occupational health and safety improvement: a case of iron, steel and metal manufacturing industries. *International Journal of Workplace Health Management*.

Beus, J. M., Payne, S. C., Arthur Jr, W., & Muñoz, G. J. (2019). The development and validation of a cross-industry safety climate measure: resolving conceptual and operational issues. *Journal of Management*, *45*(5), 1987-2013.

Beus, J. M., Payne, S. C., Bergman, M. E., & Arthur Jr, W. (2010). Safety climate and injuries: an examination of theoretical and empirical relationships. *Journal of applied psychology*, *95*(4), 713.

Bigelow, J.H. (2007). Using linear programming to design samples for complex survey. (Vol. 441). Rand Corporation.

Blau, P. M. (1964). Justice in social exchange. *Sociological Inquiry*, *34*(2), 193-206.

Boekhorst, J. A. (2015). The role of authentic leadership in fostering workplace inclusion: A social information processing perspective. *Human Resource Management*, *54*(2), 241-264.

Brei, V., & Böhm, S. (2011). Corporate social responsibility as cultural meaning management: a critique of the marketing of 'ethical bottled water. *Business Ethics: A European Review*, *20*(3), 233-252.

Brown, A. D. (2017). Identity work and organizational identification. *International journal of management reviews*, *19*(3), 296-317.

Brown, M. E., & Mitchell, M. S. (2010). Ethical and unethical leadership: Exploring new avenues for future research. *Business Ethics Quarterly*, *20*(4), 583-616.

Brown, M. E., & Treviño, L. K. (2006). Ethical leadership: A review and future directions. *The leadership quarterly*, *17*(6), 595-616.

Brown, M. E., & Trivino, L. K. (2003). Is values- based leadership ethical leadership. *Emerging perspertives on values in organisations*, 151- 173

Brown, M. E., Treviño, L. K., & Harrison, D. A. (2005). Ethical leadership: A social learning perspective for construct development and testing. *Organizational behaviour and human decision processes*, *97*(2), 117-134.

Bryman, A. (2016). *Social research methods*. Oxford university press.

Byun, C. G., Sung, C. S., Park, J. Y., & Choi, D. S. (2018). A study on the effectiveness of entrepreneurship education programs in higher education institutions: A case study of Korean graduate programs. *Journal of Open Innovation: Technology, Market, and Complexity*, *4*(3), 26.

Calabrese, R. L., & Roberts, B. (2001). The promise forsook: Neglecting the ethical implications of leadership. *International Journal of Educational Management*.

Carder, B., & Ragan, P. W. (2003). A survey-based system for safety measurement and improvement. *Journal of safety research*, *34*(2), 157-165.

Carey, S. (1992). Becoming a face expert. *Philosophical Transactions of the Royal Society of London. Series B: Biological Sciences*, *335*(1273), 95-103.

Carrión, G. C., Nitzl, C., & Roldán, J. L. (2017). Mediation analyses in partial least squares structural equation modelling: Guidelines and empirical examples. In *Partial least squares path modelling* (pp. 173-195). Springer, Cham.

Chan, C. S. C., & Yao, Z. (2018). A market of distrust: toward cultural sociology of unofficial exchanges between patients and doctors in China. *Theory and Society*, *47*(6), 737-772.

Chan, M., Woon, I., & Kankanhalli, A. (2005). Perceptions of information security in the workplace: linking information security climate to compliant behaviour. *Journal of information privacy and security*, *1*(3), 18-41.

Chau, K. T., Chan, C. C., & Liu, C. (2008). Overview of permanent-magnet brushless drives for electric and hybrid electric vehicles. *IEEE Transactions on industrial electronics*, *55*(6), 2246-2257.

Chau, K. T., Chan, C. C., & Liu, C. (2008). Overview of permanent-magnet brushless drives for electric and hybrid electric vehicles. *IEEE Transactions on industrial electronics*, *55*(6), 2246-2257.

Chen, H. T., Taylor, A. J., & Yu, N. (2016). A review of metasurfaces: physics and applications. *Reports on progress in physics*, *79*(7), 076401.

Choi, S. B., Kim, K., Ullah, S. E., & Kang, S. W. (2016). How transformational leadership facilitates innovative behaviour of Korean workers: Examining mediating and moderating processes. *Personnel Review*.

Choudhry, R. M., Fang, D., & Lingard, H. (2009). Measuring the safety climate of a construction company. *Journal of Construction Engineering and Management*, *135*(9), 890-899.

Christian, H., Zubrick, S. R., Foster, S., Giles-Corti, B., Bull, F., Wood, L., ... & Boruff, B. (2015). The influence of the neighborhood physical environment on early child health and development: A review and call for research. *Health & place*, *33*, 25-36.

Christian, M. S., Bradley, J. C., Wallace, J. C., & Burke, M. J. (2009). Workplace safety: a meta-analysis of the roles of person and situation factors. *Journal of applied psychology*, *94*(5), 1103.

Chughtai, A., Byrne, M., & Flood, B. (2015). Linking ethical leadership to employee well-being: The role of trust in supervisor. *Journal of Business Ethics*, *128*(3), 653-663.

Ciulla, J. B. (Ed.). (2014). *Ethics is the heart of leadership*. ABC-CLIO.

Clark Cline, K. M. (2010). Psychological effects of dog ownership: Role strain, role enhancement, and depression. *The Journal of social psychology*, *150*(2), 117-131.

Clarke, S. (2013). Safety leadership: A meta-analytic review of transformational and transactional leadership styles as antecedents of safety behaviours. *Journal of occupational and organizational psychology*, *86*(1), 22-49.

Clarke, S., & Ward, K. (2006). The role of the leader influences tactics and safety climate in engaging employees' safety participation. *Risk analysis*, *26*(5), 1175-1185.

Clarke, V., & Braun, V. (2013). Teaching thematic analysis: Overcoming challenges and developing strategies for effective learning. *The psychologist*, *26*(2).

Concha-Barrientos, M., Steenland, K., Prüss-Üstün, A., Campbell-Lendrum, D. H., Corvalán, C. F., Woodward, A., & World Health Organization. (2004). *Occupational noise: assessing the burden of disease from work-related hearing impairment at national and local levels*. World Health Organization.

Cooper, A. M., Segal, B. H., Frank, A. A., Holland, S. M., & Orme, I. M. (2000). Transient loss of resistance to pulmonary tuberculosis in p47 phox mice. *Infection and immunity*, *68*(3), 1231-1234.

Cooper, D. (2015). Effective safety leadership: Understanding types & styles that improve safety performance. *Professional Safety*, *60*(02), 49-53.

Cooper, M. D. (2000). Towards a model of safety culture. *Safety Science*, *36*(2), 111-136.

Cooper, M. D., & Phillips, R. A. (2004). Exploratory analysis of the safety climate and safety behaviour relationship. *Journal of safety research*, *35*(5), 497-512.

Cooper, M. L. (2002). Alcohol use and risky sexual behavior among college students and youth: evaluating the evidence. *Journal of Studies on Alcohol, supplement*, (14), 101-117.

Cox, S., & Flin, R. (1998). Safety culture: philosopher's stone or man of straw? *Work & Stress*, *12*(3), 189-201.

Cox, T. F., & Cox, M. A. (1991). Multidimensional scaling on a sphere. *Communications in Statistics-Theory and Methods*, *20*(9), 2943-2953.

Coyle, I. R., Sleeman, S. D., & Adams, N. (1995). Safety climate. *Journal of Safety Research*, *26*(4), 247-254.

Craig, S.B., & Gustafson, S. B. (1998). Perceived leader integrity scale: An instrument for assessing employee perceptions of leader integrity. *The leadership Quarterly*, 9(2), 127-145.

Creswell, J. W. (2014). Qualitative, quantitative and mixed methods approaches.

Creswell, J. W., & Creswell, J. D. (2017). *Research design: Qualitative, quantitative, and mixed methods approach*. Sage publications.

Cropanzano, R., & Mitchell, M. S. (2005). Social exchange theory: An interdisciplinary review. *Journal of Management*, *31*(6), 874-900.

Cumbo, L. J. (2009). Ethical leadership: The quest for character, civility, and community. *Current Reviews for Academic Libraries*, 47(4), 726-726.

Dasborough, M. T., & Ashkanasy, N. M. (2002). Emotion and attribution of intentionality in leader-member relationships. *The Leadership Quarterly*, *13*(5), 615-634.

De Cieri, H., Shea, T., Pettit, T., & Clarke, M. (2012). Measuring the leading indicators of occupational health and safety: A snapshot review. *Institute of Safety, Compensation and Recovery Research*.

De Hoogh, A. H., & Den Hartog, D. N. (2008). Ethical and despotic leadership, relationships with leader's social responsibility, top management team effectiveness and subordinates' optimism: A multi-method study. *The leadership quarterly*, *19*(3), 297-311.

Dedobbeleer, N., & Béland, F. (1991). A safety climate measure for construction sites. *Journal of safety research*, *22*(2), 97-103.

DeJoy, D. M. (1985). Attributional processes and hazard control management in the industry. *Journal of Safety Research*, *16*(2), 61-71.

DeJoy, D. M. (2005). Behaviour change versus culture change: Divergent approaches to managing workplace safety. *Safety Science*, *43*(2), 105-129.

DeJoy, D. M., Wilson, M. G., Vandenberg, R. J., McGrath-Higgins, A. L., & Griffin-Blake, C. S. (2010). Assessing the impact of healthy work organization intervention. *Journal of Occupational and Organizational Psychology*, *83*(1), 139-165.

DeJoy, S. A., Sankey, H. Z., Dickerson, A. E., Psaltis, A., Galli, A., & Burkman, R. T. (2015). The evolving role of midwives as laborists. *Journal of Midwifery & Women's Health*, *60*(6), 674-681.

Demirtas, O., & Akdogan, A. A. (2015). The effect of ethical leadership behaviour on ethical climate, turnover intention, and affective commitment. *Journal of Business Ethics*, *130*(1), 59-67.

Den Hartog, D. N. (2015). Ethical leadership. *Annu. Rev. Organ. Psychol. Organ. Behav.*, *2*(1), 409-434.

Denzin, N. K. (2017). Critical qualitative inquiry. *Qualitative inquiry*, *23*(1), 8-16.

Díaz, R. I., & Cabrera, D. D. (1997). Safety climate and attitude as evaluation measures of organizational safety. *Accident Analysis & Prevention*, *29*(5), 643-650.

Dijkstra, T. K., & Henseler, J. (2015). Consistent partial least squares path modelling. *MIS Quarterly*, *39*(2), 297-316.

Dinh, J. E., Lord, R. G., Gardner, W. L., Meuser, J. D., Liden, R. C., & Hu, J. (2014). Leadership theory and research in the new millennium: Current theoretical trends and changing perspectives. *The Leadership Quarterly*, *25*(1), 36-62.

Dollard, M. F., & Bakker, A. B. (2010). Psychosocial safety climate as a precursor to conducive work environments, psychological health problems, and employee engagement. *Journal of Occupational and Organizational Psychology*, *83*(3), 579-599.

Donald, R. J. (1998). Efficient Global Optimization Design with Black-Box Function. *J. Global Optim.*, *13*, 455-492.

Edginton, M., Enarson, D., Zachariah, R., Reid, T., Satyanarayana, S., Bissell, K., ... & Harries, A. D. (2012). Why ethics is indispensable for good-quality operational research. *Public Health Action*, *2*(1), 21-22.

Edwards, G., & Turnbull, S. (2013). A cultural approach to evaluating leadership development. *Advances in Developing Human Resources*, *15*(1), 46-60.

Eisenberger, R., Fasolo, P., & Davis-LaMastro, V. (1990). Perceived organizational support and employee diligence, commitment, and innovation. *Journal of applied psychology*, *75*(1), 51.

Eisenberger, R., Fasolo, P., & Davis-LaMastro, V. (1990). Perceived organizational support and employee diligence, commitment, and innovation. *Journal of applied psychology*, *75*(1), 51.

Erikson, K. (Ed.). (1997). *Sociological visions*. Rowman & Littlefield.

Eva, N., Robin, M., Sendjaya, S., van Dierendonck, D., & Liden, R. C. (2019). Servant leadership: A systematic review and call for future research. *The leadership quarterly*, *30*(1), 111-132.

Eva, N., Robin, M., Sendjaya, S., Van Dierendonck, D., & Liden, R. C. (2019). Servant leadership: A systematic review and call for future research. *The leadership quarterly*, *30*(1), 111-132.

Fang, D., Wu, C., & Wu, H. (2015). Impact of the supervisor on worker safety behaviour in construction projects. *Journal of management in engineering*, *31*(6), 04015001.

Fang, H., Wu, Y., Zhao, J., & Zhu, J. (2006). Silver catalysis in the fabrication of silicon nanowire arrays. *Nanotechnology*, 17(15), 3768.

Fernandez-Muniz, B., Montes-Peon, J. M., & Vazquez-Ordos, C. J. (2009). Core elements of safety culture and safety performance: literature review and exploratory results. *International journal of social systems science*, *1*(3), 227-259.

Fernandez-Muniz, B., Montes-Peon, J. M., & Vazquez-Ordos, C. j. (2017). The role of safety leadership and working conditions in safety performance in process industries. *Journal of loss prevention in*

process industries. *50*.403-415

Flin, R., Mearns, K., Gordon, R., & Fleming, M. (1996). Risk perception by offshore workers on UK oil and gas platforms. *Safety Science*, *22*(1-3), 131-145.

Flin, R., Mearns, K., O'Connor, P., & Bryden, R. (2000). Measuring safety climate: identifying the common features. *Safety Science*, *34*(1-3), 177-192.

Fornell, C., & Larcker, D. F. (1981). Structural equation models with unobservable variables and measurement error: Algebra and statistics.

Freiwald, D., Lenz-Anderson, C., & Baker, E. (2013). Assessing safety culture within a flight training organization. *Journal of Aviation/Aerospace Education and Research*, *22*(2), 41.

Gay, L. R., Mills, G. E., & Airasian, P. W. (2009). *Educational research competencies for analysis and applications*. Merrill/Pearson

Gay, L. R., Mills, G., & Airasian, P. W. (2009). Educational research: Competencies for analysis and interpretation. *Upper Saddle Back, NJ: Merrill Prentice-Hall*.

Geller, E. S. (2005). Behaviour-based safety and occupational risk management. Behaviour *modification*, *29*(3), 539-561.

Gini, A. (1998). Work, identity, and self: How we are formed by the work we do. *Journal of business ethics*, *17*(7), 707-714.

Glendon, A. I., & Litherland, D. K. (2001). Safety climate factors, group differences, and safety behaviour in road construction. *Safety Science*, *39*(3), 157-188.

Graham, J. W. (1991). An essay on organizational citizenship behaviour. *Employee responsibilities and rights journal*, *4*(4), 249-270.

Graneheim, U. H., & Lundman, B. (2004). Qualitative content analysis in nursing research: concepts, procedures, and measures to achieve trustworthiness. *Nurse education today*, *24*(2), 105-112.

Grayson, D., & Hodges, A. (2001). Minding other people's business. *director-London-director publications-*, *55*(4), 88-106.

Greenhead, L. W. (1977). Evaluation and measurement: some dilemmas for health education. *American Journal of public Health*, 67(2), 155-161.

Griffin, M. A., & Curcuruto, M. (2016). Safety climate in organizations. *Annual Review of Organizational Psychology and Organizational Behavior*, *3*, 191-212.

Griffin, M. A., & Neal, A. (2000). Perceptions of safety at work: a framework for linking safety climate to safety performance, knowledge, and motivation. *Journal of occupational health psychology*, *5*(3), 347.

Grojean, M. W., Resick, C. J., Dickson, M. W., & Smith, D. B. (2004). Leaders, values, and organizational climate: Examining leadership strategies for establishing an organizational climate regarding ethics. *Journal of business ethics*, *55*(3), 223-241.

Guéniat, F., Mathelin, L., & Hussaini, M. Y. (2016). A statistical learning strategy for closed-loop control of fluid flows. *Theoretical and Computational Fluid Dynamics*, *30*(6), 497-510.

Guldenmund, F. W. (2000). The nature of safety culture: a review of theory and research. *Safety Science*, *34*(1-3), 215-257.

Haar, J., & Brougham, D. (2021). Ethical leadership, perceived cultural inclusion, and job behaviours: A two-sample study of mediation and moderation effects. *International Journal of Selection and Assessment*.

Hair, J. F., Hult, G. T. M., Ringle, C. M., Sarstedt, M., & Thiele, K. O. (2017). Mirror, mirror on the wall: a comparative evaluation of composite-based structural equation modelling methods. *Journal of the academy of marketing science*, *45*(5), 616-632.

Hair, J. F., Risher, J. J., Sarstedt, M., & Ringle, C. M. (2019). When to use and how to report the results of PLS-SEM. *European business review*.

Haque, A., Fernando, M., & Caputi, P. (2021). Responsible leadership and employee outcomes: a systematic literature review, integration and propositions. *Asia-Pacific Journal of Business Administration*, *13*(3), 383-408.

Haque, A., Fernando, M., & Caputi, P. (2021). Responsible leadership and employee outcomes: a systematic literature review, integration and propositions. *Asia-Pacific Journal of Business Administration*.

Hayes, B. E., Perander, J., Smecko, T., & Trask, J. (1998). Measuring perceptions of workplace safety: Development and validation of the work safety scale. *Journal of Safety Research*, *29*(3), 145-161.

Hayes, N. (2021). *Doing Psychological Research, 2e*. McGraw-Hill Education (UK).

He, J., Morrison, A. M., & Zhang, H. (2019). Improving millennial employee well-being and task performance in the hospitality industry: *The interactive effects of HRM and responsible leadership. Sustainability, 11(16), 4410.*

Helmreich, R. L., & Merritt, A. C. (2017). *Culture at work in aviation and medicine: National, organizational and professional influences*. Routledge.

Helmreich, R. L., & Merritt, A. C. (2017). Safety and error management: The role of crew resource management. In *Aviation resource management* (pp. 107-119). Routledge.

Helmreich, R. L., & Wilhelm, J. A. (1997). CRM and culture- National, professional, organizational, safety. In *International Symposium on Aviation Psychology, 9 th, Columbus, OH* (pp. 635-640).

Henseler, J., Hubona, G., & Ray, P. A. (2016). Using PLS path modelling in new technology research: updated guidelines. *Industrial management & data systems*.

Henseler, J., Ringle, C. M., & Sarstedt, M. (2015). A new criterion for assessing discriminant validity in variance-based structural equation modelling. *Journal of the academy of marketing science*, *43*(1), 115-135.

Hiller, N. J., DeChurch, L. A., Murase, T., & Doty, D. (2011). Searching for outcomes of leadership: A 25-year review. *Journal of Management*, *37*(4), 1137-1177.

Hinojosa, A. S., McCauley, K.D., Randolph- Seng, B., & Garner, W. L. (2014). Leader and follower attachment styles: Implications for Authentic leader – follower relationships. *The leadership Quarterly*, 25(3), 595- 610.

Hoch, J. E., Bommer, W.H., Dulebohn, J.H., & Wu, D. (2018). Do ethical, authentic, and servant leadership explain variance above and beyond transformational leadership? A meta- analysis. *Journal of management*, 44(2), 501- 529.

Hofmann, C., Sandig, V., Jennings, G., Rudolph, M., Schlag, P., & Strauss, M. (1995). Efficient gene transfer into human hepatocytes by baculovirus vectors. *Proceedings of the National Academy of Sciences*, *92*(22), 10099-10103.

Hofmann, D. A., & Morgeson, F. P. (1999). Safety-related behaviour as a social exchange: The role of perceived organizational support and leader-member exchange. *Journal of applied psychology*, *84*(2), 286.

Hofmann, D. A., & Stetzer, A. (1996). A cross-level investigation of factors influencing unsafe behaviours and accidents. *Personnel Psychology*, *49*(2), 307-339.

Hofmann, D. A., Morgeson, F. P., & Gerras, S. J. (2003). Climate as a moderator of the relationship between leader-member exchange and content-specific citizenship: safety climate as an exemplar. *Journal of applied psychology*, *88*(1), 170.

Hon, W. K., Millard, C., & Walden, I. (2012). Negotiating cloud contracts: Looking at clouds from both sides now. *Stan. Tech. L. Rev.*, *16*, 79.

Hood, H. K., Antony, M. M., Koerner, N., & Monson, C. M. (2010). Effects of safety behaviours on fear reduction during exposure. *Behaviour research and therapy*, *48*(12), 1161-1169.

Hughes, J. A., & Sharrock, W. W. (2016). *The philosophy of social research*. Routledge.

Hunter, E. M., Neubert, M. J., Perry, S. J., Witt, L. A., Penney, L. M., & Weinberger, E. (2013). Servant leaders inspire servant followers: Antecedents and outcomes for employees and the organization. *The Leadership Quarterly*, *24*(2), 316-331.

Jefreda, R., & Brown, (2022). The percentage of oil and gas sector to the global economy. *Investopedia.*

Jordan, J., Brown, M. E., Treviño, L. K., & Finkelstein, S. (2013). Someone to look up to Executive–follower ethical reasoning and perceptions of ethical leadership. *Journal of Management*, *39*(3), 660-683.

Jöreskog, K. G. (1971). Simultaneous factor analysis in several populations. *Psychometrika*, *36*(4), 409-426.

Joung, C.I., Lee, H.S., Lee, S.W., Kim, C.G., Song, Y.H., Jun, J.B., Chung, W.T., Choe, J.Y., Kim, T.G. & Yoo, D.H., (2003). Association between HLA-DR B1 and clinical features of adult onset Still's disease in Korea. *Clinical and experimental rheumatology*, *21*(4), pp.489-492.

Kalshoven, K., Den Hartog, D. N., & De Hoogh, A. H. (2011). Ethical leadership at work questionnaire (ELW): Development and validation of a multidimensional measure. *The leadership quarterly*, *22*(1), 51-69.

Kapp, K. M. (2012). *The gamification of learning and instruction: game-based methods and strategies for training and education*. John Wiley & Sons.

Kapur, R. (2018). Factors influencing the students' academic performance in secondary schools in India. The *University of Delhi*.

Kelloway, E. K., Weigand, H., McKee, M. C., & Das, H. (2013). Positive leadership and employee well-being. *Journal of Leadership & Organizational Studies*, *20*(1), 107-117.

Kendrick, D., Watson, M., Mulvaney, C., & Burton, P. (2005). How useful are home safety behaviours for predicting childhood injury? A cohort study. *Health education research*, *20*(6), 709-718.

Khan, N., Ahmad, I., & Ilyas, M. (2018). Impact of ethical leadership on organizational safety performance: the mediating role of safety culture and safety consciousness. *Ethics & Behavior*, *28*(8), 628-643.

Khanin, D. (2007). Contrasting Burns and Bass: Does the transactional-transformational paradigm live up to Burns' philosophy of transforming leadership? *Journal of Leadership Studies*, *1*(3), 7-25.

Khattak, M. N., & O'Connor, P. (2020). The interplay between servant leadership and organizational politics. *Personnel Review*.

Kift, S., Nelson, K., & Clarke, J. (2010). Transition pedagogy: A third-generation Approach to FYE-A case study of policy and practice for the higher education sector. *Student Success*, *1*(1), 1-20.

King, A. (2000). Uterine leukocytes and decidualization. Human reproductive update, 6(1), 28-36.

King, J.D. (2008). Candor, Zeal, and the Substitution of judgement: Ethics and the Mentally lll Criminal Defendant. *Am. UL Rev.* 58, 207.

Knights, D., & O'Leary, M. (2006). Leadership, ethics and responsibility to the other. *Journal of Business Ethics*, *67*, 125-137.

Ko, C., Ma, J., Bartnik, R., Haney, M. H., & Kang, M. (2018). Ethical leadership: An integrative review and future research agenda. *Ethics & Behavior*, *28*(2), 104-132.

Ko, J. H., Müller, M. A., Seok, H., Park, G. E., Lee, J. Y., Cho, S. Y., ... & Peck, K. R. (2017). Serologic responses of 42 MERS-coronavirus-infected patients according to the disease severity. *Diagnostic microbiology and infectious disease*, *89*(2), 106-111.

Kodish, S. (2006). The paradoxes of leadership: The contribution of Aristotle. *Leadership*, *2*(4), 451-468.

Kothari, C. R. (2004). *Research methodology: Methods and techniques*. New Age International.

Krejcie, R. V., & Morgan, D. W. (1970). Determining sample size for research activities. *Educational and psychological measurement*, *30*(3), 607-610.

Kumar, P., Wu, H., McBride, J. L., Jung, K. E., Kim, M. H., Davidson, B. L., ... & Manjunath, N. (2007). Transvascular delivery of small interfering RNA to the central nervous system. *Nature*, *448*(7149), 39-43.

Lanciano, T., & Zammuner, V. L. (2014). Individual differences in work-related well-being: The role of attachment style.

Langlois, L., Lapointe, C., Valois, P., & de Leeuw, A. (2014). Development and validity of the ethical leadership questionnaire. *Journal of Educational Administration*.

Laschinger, H. K. S., Borgogni, L., Consiglio, C., & Read, E. (2015). The effects of authentic leadership, six areas of worklife, and occupational coping self-efficacy on new graduate nurses' burnout and mental

health: A cross-sectional study. *International journal of nursing studies*, *52*(6), 1080-1089.

Lee, T., & Harrison, K. (2000). Assessing safety culture in nuclear power stations. *Safety Science*, *34*(1-3), 61-97.

Leedy, P. D. en JE Ormrod. (2010). *Practical research: Planning and design*.

Liden, R. C., Wayne, S. J., Liao, C., & Meuser, J. D. (2014). Servant leadership and serving culture: Influence on individual and unit performance. *Academy of management journal*, *57*(5), 1434-1452.

Lievens, I., & Vlerick, P. (2014). Transformational leadership and safety performance among nurses: the mediating role of knowledge – related job characteristics. *Journal of Advanced Nursing*, 70(3), 651-661.

Lincoln, Y. S., Lynham, S. A., & Guba, E. G. (2011). Paradigmatic controversies, contradictions, and emerging confluences revisited. *The Sage handbook of qualitative research*, *4*(2), 97-128.

Maak, T. (2007). Responsible leadership, stakeholder engagement, and ther emergence of social capital. *Journal of business ethics*, 74, 329-343.

Madison, K., & Eva, N. (2019). Social exchange or social learning: a theoretical fork in the road for servant leadership researchers. In *Leading for high performance in Asia* (pp. 133-158). Springer, Singapore.

Mahsud, R., Yukl, G., & Prussia, G. (2010). Leader empathy, ethical leadership, and relations-oriented behaviours as antecedents of leader-member exchange quality. *Journal of Managerial Psychology*.

Marín, L., Miguélez, E. M., Villar, C. J., & Lombó, F. (2015). Bioavailability of dietary polyphenols and gut microbiota metabolism: antimicrobial properties. *BioMed research international*, *2015*.

Mark, J. E. (Ed.). (2007). *Physical properties of polymers handbook* (Vol. 1072, p. 825). New York: Springer.

Martínez-Córcoles, M., Gracia, F., Tomás, I., & Peiró, J. M. (2011). Leadership and employees' perceived safety behaviours in a nuclear power plant: A structural equation model. *Safety Science*, *49*(8-9), 1118-1129.

May, D. R., Gilson, R. L., & Harter, L.M. (2004). The psychological conditions of meaningfulness, safety and availability and the engagement of the human spirit at work. *Journal of occupational and organizational psychology*, 77(1), 11- 37.

Mayer, D. M., Aquino, K., Greenbaum, R. L., & Kuenzi, M. (2012). Who displays ethical leadership, and why does it matter? An examination of antecedents and consequences of ethical leadership. *Academy of management journal*, *55*(1), 151-171.

Mayer, D. M., Kuenzi, M., Greenbaum, R., Bardes, M., & Salvador, R. B. (2009). How low does ethical leadership flow? Test of a trickle-down model. *Organizational behaviour and human decision processes*, *108*(1), 1-13.

McCabe, R. M., Hickey, B. M., Kudela, R. M., Lefebvre, K. A., Adams, N. G., Bill, B. D., ... & Trainer, V. L. (2016). An unprecedented coastwide toxic algal bloom was linked to anomalous ocean conditions. *Geophysical Research Letters*, *43*(19), 10-366.

McClelland, D. C. (1975). *Power: The inner experience*. Irvington.

Mearns, K., Whitaker, S. M., & Flin, R. (2003). Safety climate, safety management practice and safety performance in offshore environments. *Safety science*, *41*(8), 641-680.

Mearns, K., Whittaker, S.M., & Flin, R. (2003). Safety climate, safety management practice and safety performance in offshore environments. *Safety science*, 41(8), 641-680.

Mendonca, A. M., & Campilho, A. (2006). Segmentation of retinal blood vessels by combining the detection of centerlines and morphological reconstruction. *IEEE transactions on medical imaging*, *25*(9), 1200-1213.

Meyer, J. M., Kirk, A., Arch, J. J., Kelly, P. J., & Deacon, B. J. (2019). Beliefs about safety behaviours in the prediction of safety behaviour use. *Behavioural and Cognitive Psychotherapy*, *47*(6), 631-644.

Miller, P., & Haslam, C. (2009). Why employers spend money on employee health: Interviews with occupational health and safety professionals from British Industry. *Safety Science*, *47*(2), 163-169.

Miranda-Trevino, J. C., & Coles, C. A. (2003). Kaolinite properties, structure and influence of metal retention on pH. *Applied Clay Science*, *23*(1-4), 133-139.

Misnan, M. S., & Mohammed, A. H. (2007, September). Development of safety culture in the construction industry: a conceptual framework. In *Procs 23rd Annual ARCOM Conference* (pp. 3-5). Belfast, UK: Association of Researchers in Construction Management.

Mo, S., & Shi, J. (2018). The voice link: A moderated mediation model of how ethical leadership affects individual task performance. *Journal of Business Ethics*, *152*, 91-101.

Mohamed, S. (2002). Safety climate in construction site environments. *Journal of construction engineering and management*, *128*(5), 375-384.

Morgeson, F. P., & Hofmann, D. A. (1999). The structure and function of collective constructs: Implications for multilevel research and theory development. *Academy of management review*, *24*(2), 249-265.

Mullen, B. V. (2004). *Afro Orientalism*. University of Minnesota Press.

Mullen, J., Kelloway, E. K., & Teed, M. (2017). Employer safety obligations, transformational leadership and their interactive effects on employee safety performance. *Safety science*, *91*, 405-412.

Mullen, J., Kelloway, E.K., & Teed, M. (2017). Employer safety obligations, transformational leadership and their interactive effect on employee safety performance. *Safety science*, 91, 404-412.

Musyimi, S. (2016). *Perceived effect of ethical leadership on employee performance among Commercial Banks in Kenya* (Doctoral dissertation, University of Nairobi).

Nahrgang, J. D., Morgeson, F. P., & Hofmann, D. A. (2011). Safety at work: a meta-analytic investigation of the link between job demands, job resources, burnout, engagement, and safety outcomes. *Journal of applied psychology*, *96*(1), 71.

Nahrgang, J.D., Morgeson, F.P., & Hofmann, D.A. (2011). Safety at work: a meta- analytic investigation link between job demands, job resources, burnout, engagement, and safety outcomes. Journal of applied psychology, 96(1), 71.

Naji, A., Azadkhah, S., Farahani, H., Uddin, S., & Khan, F. R. (2021). Microplastics in wastewater outlets of Bandar Abbas city (Iran): A potential point source of microplastics in the Persian Gulf. *Chemosphere*, *262*, 128039

Naji, G. M. A., Isha, A. S. N., Mohyaldinn, M. E., Leka, S., Saleem, M. S., Rahman, S. M. N. B. S. A., & Alzoraiki, M. (2021). Impact of safety culture on safety performance; the mediating role of a psychosocial hazard: an integrated modelling approach. *International journal of environmental research and public health*, *18*(16), 8568.

Naseem Siddiqui, B., Zakaria Yousuf Hassan, M., Asif, F., Iqbal, S., Shahbaz Bajwa, M., & Ashraf Mali, N. (2003). Awareness, Adoption and Reasons for Non-Adoption of Apple Growers about Recommended Horticultural Practices. *Journal of Applied Sciences*, *3*(3), 182-184.

Neal, A., & Griffin, M. A. (2002). Safety climate and safetybehaviour. *Australian Journal of Management*, *27*(1_suppl), 67-75.

Neal, A., & Griffin, M. A. (2004). Safety climate and safety at work.

Neal, A., & Griffin, M. A. (2006). A study of the lagged relationships among safety climate, safety motivation, safety behaviour, and accidents at the individual and group levels. *Journal of applied psychology*, *91*(4), 946.

Neal, A., & Griffin, M. A. (2006). A study of the lagged relationships among safety climate, safety motivation, safety behaviour, and accidents at the individual and group levels. *Journal of applied psychology*, *91*(4), 946.

Neelankavil, J. P. (2015). *International business research*. Routledge

Nelson, D. L., & Burke, R. J. (2002). *Gender, work stress, and health* (pp. xii-260). American Psychological Association.

Neuman, D. (2014). Qualitative research in educational communications and technology: A brief introduction to principles and procedures. *Journal of Computing in Higher Education*, *26*(1), 69-86

Neuman, W. L., & Kreuger, L. (2003). *Social work research methods: Qualitative and quantitative approaches*. Allyn and Bacon.

Newman, L., Rowley, J., Vander Hoorn, S., Wijesooriya, N. S., Unemo, M., Low, N., ... & Temmerman, M. (2015). Global estimates of the prevalence and incidence of four curable sexually transmitted infections in 2012 based on systematic review and global reporting. *PloS one*, *10*(12), e0143304.

Ng, T. W., & Feldman, D. C. (2015). Ethical leadership: meta-analytic evidence of criterion-related and incremental validity. *Journal of Applied Psychology*, *100*(3), 948.

Ngechu, M. (2004). Understanding the research process and methods. An introduction to research methods. *Unpublished MBA Thesis, School of Business: University of Nairobi*.

Nitzl, C., Roldan, J. L., & Cepeda, G. (2016). Mediation analysis in partial least squares path modelling: Helping researchers discuss more sophisticated models. *Industrial management & data systems*.

Northouse, L. L., Katapodi, M. C., Song, L., Zhang, L., & Mood, D. W. (2010). Interventions with family caregivers of cancer patients: a meta-analysis of randomized trials. *CA: a cancer journal for clinicians*, *60*(5), 317-339.

Nusrat, S., Masroor, A., Zaman, M., Siddiqi, M. K., Ajmal, M. R., Zaidi, N., ... & Khan, R. H. (2018). Interaction of catecholamine precursor l-Dopa with lysozyme: a biophysical insight. *International journal of biological macromolecules*, *109*, 1132-1139.

Oates, V., & Dalmau, T. (2013). Ethical leadership: A legacy for a longer future. In *Performance* (Vol. 5, No. 2, pp. 20-27).

Ofori, R., & Dampson, D. G. (2011). Research methods and statistics using SPSS. *Amakom-Kumasi: Payless Publication Limited*.

Okorie, V. N. (2014). *Behaviour-based health and safety management in construction: A leadership-focused approach* (Doctoral dissertation, Nelson Mandela Metropolitan University).

Okpozo, A. Z., Gong, T., Ennis, M. C., & Adenuga, B. (2017). Investigating the impact of ethical leadership on aspects of burnout. *Leadership & Organization Development Journal*.

Olaotse, J. K. (2010). An examination of security measures for the protection of petrol stations: An analysis of case studies in Gauteng. *Unpublished dissertation submitted in fulfilment of the requirements for the Magistrate Technologize, Security Management. The University of South Africa*.

Olatunji, B. O., Etzel, E. N., Tomarken, A. J., Ciesielski, B. G., & Deacon, B. (2011). The effects of safety behaviours on health anxiety: An experimental investigation. *Behaviour research and therapy*, *49*(11), 719-728.

O'Leary, B., & McGarry, J. (2016). *The politics of antagonism: understanding Northern Ireland*. Bloomsbury Publishing.

Olsen, L., & Kemter, D. (2012). The International Labour Organization and the environment: the way to a socially just transition for workers. In *Trade unions in the green economy* (pp. 57-73).

O'Rourke, D., & Connolly, S. (2003). Just oil? The distribution of environmental and social impacts of oil production and consumption. *Annual Review of Environment and Resources*, *28*(1), 587-617.

Piccolo, R. F., Greenbaum, R. L., & Eissa, G. (2012). Ethical leadership and core job characteristics: Designing jobs for employee well-being. In *Work and quality of life* (pp. 291-305). Springer, Dordrecht.

Pidgeon, N. F. (1991). Safety culture and risk management in organizations. *Journal of cross-cultural psychology*, *22*(1), 129-140.

Pilbeam, C., Doherty, N., Davidson, R., & Denyer, D. (2016). Safety leadership practices for organizational safety compliance: Developing a research agenda from a review of the literature. *Safety Science*, *86*, 110-121.

Pless, N. M., & Maak, T. (2012). Responsible leadership: Pathways to the future. *Responsible leadership*, 3-13.

Prasad, S. V. S. R., & Reghunath, K. P. (2010). Empirical analysis of construction safety climate–a study. *International Journal of Engineering Science and Technology*, *2*(6), 1699-1707.

Probst, G., & Borzillo, S. (2008). Why communities of practice succeed and why they fail. *European management journal*, *26*(5), 335-347.

Purdon, C. (1999). Thought suppression and psychopathology. *Behaviour research and therapy*, *37*(11), 1029-1054.

Qamar, M. (2000). Evaluation of some natural products for controlling mites of Varroa sp. parasitizing honeybees in Sokoto. *Shashpa*, *7*(1), 49-52.

relationship between safety climate and safety behaviour: a study of the Jeddah constructionindustry (Doctoraldissertation,University Utara Malaysia).

Rubin, A., & Babbie, E. R. (2016). *Empowerment Series: Research methods for social work*. Cengage Learning.

S. J. (2008). Authentic leadership: Development and validation of a theory-based measure. *Journal of Management*, *34*(1), 89-126.

Salkovskis, P. M. (1991). The importance of behaviour in the maintenance of anxiety and panic: A cognitive account. *Behavioural and Cognitive Psychotherapy*, *19*(1), 6-19.

Santangelo, P. (2023). 74 The role and symbolic meanings of emotion. *Language and Emotion. Volume 3*, *3*, 1558.

Sarwar, M. H., Raees, A. R., Rauf, A., & Sarwar, M. (2019). Great Ways to Encourage Better Health Habits and their Preferment in the Community. *Specialty Journal of Medical Research and Health Science*, *4*(2), 60-69.

Saunders, D. H., Sanderson, M., Hayes, S., Johnson, L., Kramer, S., Carter, D. D., ... & Mead, G. E. (2020). Physical fitness training for stroke patients. *Cochrane Database of systematic reviews*, (3).

Saunders, D. H., Sanderson, M., Hayes, S., Johnson, L., Kramer, S., Carter, D. D., ... & Mead, G. E. (2020). Physical fitness training for stroke patients. *Cochrane Database of systematic reviews*, (3).

Saunders, M. N., & Townsend, K. (2016). Reporting and justifying the number of interview participants in organization and workplace research. *British Journal of Management*, *27*(4), 836-852.

Saunders, M., Lewis, P. H. I. L. I. P., & Thornhill, A. D. R. I. A. N. (2007). Research methods. *Business Students 4th edition Pearson Education Limited, England*.

Saunders, M., Lewis, P., & Thornhill, A. (2016). Research methods for business students (Seventh). *Nueva York: Pearson Education*.

Schein, E. H. (1990). *Organizational culture* (Vol. 45, No. 2, p. 109). American Psychological Association.

Schwarz, D. J., Copi, C. J., Huterer, D., & Starkman, G. D. (2016). CMB anomalies after Planck. *Classical and Quantum Gravity*, *33*(18).

Schwatka, N. V., Hecker, S., & Goldenhar, L. M. (2016). Defining and measuring safety climate: a review of the construction industry literature. *Annals of occupational hygiene*, *60*(5), 537-550.

Sekaran, U., & Bougie, R. (2013). Edisi 6. *Research Methods for Business*

Sekaran, U., & Bougie, R. (2013). Edisi 6. *Research Methods for Business*.

Sekaran, U., & Bougie, R. (2016). *Research methods for business: A skill building approach*. john wiley & sons.

Shafique, I., Kalyar, M. N., & Rani, T. (2020). Examining the impact of ethical leadership on safety and task performance: a safety-critical context. *Leadership & Organization Development Journal*, *41*(7), 909-926.

Shafique, I., Kalyar, M. N., & Rani, T. (2020). Examining the impact of ethical leadership on safety and task performance: a safety-critical context. *Leadership & Organization Development Journal*.

Shannon, H. S., & Norman, G. R. (2009). Deriving the factor structure of safety climate scales. *Safety Science*, *47*(3), 327-329.

Shin, K., Kim, H., & Chang, S. (2015). Transition-metal-catalyzed C–N bond forming reactions using organic azides as the nitrogen source: a journey for the mild and versatile C–H amination. *Accounts of chemical research*, *48*(4), 1040-1052.

Shuck, B., & Herd, A. M. (2012). Employee engagement and leadership: Exploring the convergence of two frameworks and implications for leadership development in HRD. *Human resource development review*, *11*(2), 156-181.

Shuck, B., & Herd, A. M. (2012). Employee engagement and leadership: Exploring the convergence of two frameworks and implications for leadership development in HRD. *Human resource development review*, *11*(2), 156-181.

Sikanku, E. G. (2011). Intermedia influences among Ghanaian online and print news media: Explicating salience transfer of media agendas. *Journal of Black Studies*, *42*(8), 1320-1335.

Skeepers, N. C., & Mbohwa, C. (2015). A study on the leadership behaviour, safety leadership and safety performance in the construction industry in South Africa. *Procedia Manufacturing*, *4*, 10-16.

Smith, A. P., & Wadsworth, E. J. K. (2009). Safety culture, advice and performance: The associations between safety culture and safety performance, health and wellbeing at an individual level, and safety culture, competent occupational safety and health advice, and safety performance at a corporate level-Report submitted to the IOSH Research Committee.

Sparrowe, R. T. (2005). Authentic leadership and the narrative self. *The leadership quarterly*, 16(3), 419-439.

Sunindijo, R. Y., & Zou, P. X. (2011). CHPT construct essential skills for construction project managers. *International Journal of Project Organisation and Management*, *3*(2), 139-163.

Tappura, S., Sievänen, M., Heikkilä, J., Jussila, A., & Nenonen, N. (2015). A management accounting perspective on safety. *Safety Science*, *71*, 151-159.

Tashakkori, A., & Teddlie, C. (2010). Putting the human back in ‘‘human research methodology’’: The researcher in mixed methods research.

Telch, M. J., & Lancaster, C. L. (2012). Is there room for safety behaviours in exposure therapy for anxiety disorders? In *Exposure therapy* (pp. 313-334). Springer, New York, NY.

Teo, E. A. L., & Feng, Y. (2011). The indirect effect of safety investment on safety performance for building projects. *Architectural Science Review*, *54*(1), 65-80.

Tholén, S. L., Pousette, A., & Törner, M. (2013). Causal relations between psychosocial conditions, safety climate and safety behaviour–A multi-level investigation. *Safety Science, 55*, 62-69.

Thomas, E., Peat, G., Harris, L., Wilkie, R., & Croft, P. R. (2004). The prevalence of pain and pain interference in a general population of older adults: *cross-sectional findings from the North Staffordshire Osteoarthritis Project* (NorStOP). *Pain, 110*(1-2), 361-368.

Thwaites, R., & Freeston, M. H. (2005). Safety-seeking behaviours: fact or function? How can we clinically differentiate between safety behaviours and adaptive coping strategies across anxiety disorders? *Behavioural and Cognitive Psychotherapy*, *33*(2), 177-188.

Toor, S. U. R., & Ofori, G. (2009). Ethical leadership: Examining the relationships with full range leadership model, employee outcomes, and organizational culture. *Journal of Business Ethics*, *90*(4), 533-547.

Treviño, L. K., Brown, M., & Hartman, L. P. (2003). A qualitative investigation of perceived executive ethical leadership: Perceptions from inside and outside the executive suite. *Human Relations*, *56*(1), 5-37.

Trevino, L. K., Hartman, L. P., & Brown, M. (2000). Moral person and moral manager: How executives develop a reputation for ethical leadership. *California management review*, *42*(4), 128-142.

Trevor Thrall, A. (2006). The myth of the outside strategy: Mass media news coverage of interest groups. *Political Communication*, 23(4), 407-420

Turner, B. A., Pidgeon, N., Blockley, D., & Toft, B. (1989, November). Safety culture: its importance in future risk management. In *Position paper for the second World Bank workshop on safety control and risk management, Karlstad, Sweden* (pp. 6-9).

Van Prooijen, A. M., & Ellemers, N. (2015). Does it pay to be moral? How indicators of morality and competence enhance organizationally and work team attractiveness. *British Journal of Management*, *26*(2), 225-236.

Vlachos, P. A., Panagopoulos, N. G., & Rapp, A. A. (2013). Feeling good by doing good: Employee CSR-induced attributions, job satisfaction, and the role of charismatic leadership. *Journal of business ethics*, *118*(3), 577-588.

Von Thaden, T. L., & Gibbons, A. M. (2008). The safety culture indicator scale measurement system (SCISMS). *National Technical Information Service Final Report*, 1-57.

Vredenburgh, A. G. (2002). Organizational safety: which management practices are most effective in reducing employee injury rates. *Journal of Safety Research*, *33*(2), 259-276.

Vredenburgh, A. G. (2002). Organizational safety: which management practices are most effective in reducing employee injury rates? *Journal of Safety Research*, *33*(2), 259-276.

Wadsworth, E., & Smith, A. (2009). Safety culture, advice and performance. *Policy and practice in Health and safety*, 7(1), 5-31

Wadsworth, E., & Smith, A. (2009). Safety culture, advice and performance. *Policy and Practice in Health and Safety*, *7*(1), 5-31.

Walumbwa, F. O., Avolio, B. J., Gardner, W. L., Wernsing, T. S., & Peterson,

Walumbwa, F. O., Mayer, D. M., Wang, P., Wang, H., Workman, K., & Christensen, A. L. (2011). Linking ethical leadership to employee performance: The roles of leader-member exchange, self-efficacy, and organizational identification. *Organizational behaviour and human decision processes*, *115*(2), 204-213.

Wang, Z., Lee, Y. H., Wu, B., Horst, A., Kang, Y., Tang, Y. J., & Chen, D. R. (2010). Anti-microbial activities of aerosolized transition metal oxide nanoparticles. *Chemosphere*, *80*(5), 525-529.

Weakley, J. J., Till, K., Darrall-Jones, J., Roe, G. A., Phibbs, P. J., Read, D. B., & Jones, B. L. (2019). Strength and conditioning practices in adolescent rugby players: Relationship with changes in physical qualities. *The Journal of Strength & Conditioning Research*, *33*(9), 2361-2369.

Wells, A. (1995). Meta-cognition and worry: A cognitive model of generalized anxiety disorder. *Behavioural and cognitive psychotherapy*, *23*(3), 301-320.

Weyman, J. (2003). *Cohomology of vector bundles and syzygies* (No. 149). Cambridge University Press.

Williams, T. A., Gruber, D. A., Sutcliffe, K. M., Shepherd, D. A., & Zhao, E. Y. (2017). Organizational response to adversity: Fusing crisis management and resilience research streams. *Academy of Management Annals*, *11*(2), 733-769.

Williamson, A. M., Feyer, A. M., Cairns, D., & Biancotti, D. (1997). The development of a measure of safety climate: The role of safety perceptions and attitudes. *Safety Science*, *25*(1-3), 15-27.

Winwood, P. C., Colon, R., & McEwen, K. (2013). A practical measure of workplace resilience: Developing the resilience at work scale. *Journal of occupational and environmental medicine*, *55*(10), 1205-1212.

Wong, J., Ozbilir, T., & Mullen, J. (2017). Developing safety leadership. *Leading to Occupational Health and Safety: How Leadership Behaviours Impact Organizational Safety and Well-Being*, *49*.

World Bank. (2011). *World development report 2012: Gender equality and development*. The World Bank.

World Health Organization. (2004). *The International Statistical Classification of Diseases and Health Related Problems ICD-10: Tenth Revision. Volume 1: Tabular List* (Vol. 1). World Health Organization.

World Health Organization. (2015). *World health statistics 2015*. World Health Organization.

Wu, C. W. (2005). Synchronization in networks of nonlinear dynamical systems coupled via a directed graph. *Nonlinearity*, *18*(3), 1057.

Wu, J., Zhang, C., Xue, T., Freeman, B., & Tenenbaum, J. (2016). Learning probabilistic latent space of object shapes via 3d generative - adversarial modeling. *Adavances in neural information processing systems*, 29.

Wu, S., Mickley, L. J., Jacob, D. J., Rind, D., & Streets, D. G. (2008). Effects of 2000–2050 changes in climate and emissions on global tropospheric ozone and the policy-relevant background surface ozone in the United States. *Journal of Geophysical Research: Atmospheres*, *113*(D18).

Wu, Z., Kinnunen, T., Evans, N., Yamagishi, J., Hanilçi, C., Sahidullah, M., & Sizov, A. (2015). ASVspoof 2015: the first automatic speaker verification spoofing and countermeasures challenge. At the *Sixteenth annual conference of the international speech communication association*.

Xerri, M. J., & Brunetto, Y. (2013). Fostering innovative behaviour: The importance of employee commitment and organisational citizenship behaviour. *The International Journal of Human Resource Management*, *24*(16), 3163-3177.

Yang, Q., & Wei, H. (2017). Ethical leadership and employee task performance: Examining moderated mediation process. *Management Decision*.

Yasir, M., & Mohamad, N. A. (2016). Ethics and morality: Comparing ethical leadership with servant, authentic and transformational leadership styles. *International Review of Management and Marketing*, *6*(4), 310-316.

Yukl, G. (2010). Leadership in organizations, *global edition*. Pearson.

Yukl, G., Mahsud, R., Haasan, S., & Prussia, G. E. (2013). An improved measure of ethical leadership. *Journal of leadership & organisational studies*, 2091), 38-48.

Yukl, G., Mahsud, R., Prussia, G., & Hassan, S. (2019). Effectiveness of broad and specific leadership behaviors. *Personnel Review.*

Yukl, G., Gordon, A., & Taber, T. (2002). A hierarchical taxonomy of leadership behaviour: Integrating a half-century of behaviour research. *Journal of leadership & organizational studies*, *9*(1), 15-32.

Zhang, H., Wiegmann, D. A., Von Thaden, T. L., Sharma, G., & Mitchell, A. A. (2002, September). Safety culture: a concept in chaos? In Proceedings *of the human factors and ergonomics society annual meeting* (Vol. 46, No. 15, pp. 1404-1408). Sage CA: Los Angeles, CA: SAGE Publications.

Zhao, X., Lynch Jr, J. G., & Chen, Q. (2010). Reconsidering Baron and Kenny: Myths and truths about mediation analysis. *Journal of consumer research*, *37*(2), 197-206.

Zhou, T., Jiang, L. L., Su, R. Q., & Zhang, Y. C. (2008). Effect of initial configuration on the network-based recommendation. *EPL (Europhysics Letters)*, *81*(5), 58004.

Zhu, Y., Chen, P. Y., & Zhao, W. (2014). Injured workers in China: injustice, conflict and social unrest. *International Labour Review*, *153*(4), 635-647.

Zohar, D. (1980). Safety climate in industrial organizations: theoretical and applied implications. *Journal of applied psychology*, *65*(1), 96.

Zohar, D. (2000). A group-level model of safety climate: testing the effect of group climate on micro accidents in manufacturing jobs. *Journal of applied psychology*, *85*(4), 587.

Zohar, D. (2002). The effects of leadership dimensions, safety climate, and assigned priorities on minor injuries in work groups. *Journal of organizational behaviour*, *23*(1), 75-92.

Zohar, D. (2010). Thirty years of safety climate research: Reflections and future directions. *Accident analysis & prevention*, *42*(5), 1517-1522.

Zohar, D., & Luria, G. (2005). A multilevel model of safety climate: cross-level relationships between an organization and group-level climates. *Journal of applied psychology*, *90*(4), 616.

APPENDICES

APPENDIX A: QUESTIONNAIREUNIVERSITY OF CAPE COAST

COLLEGE OF HUMANITIES AND LEGAL STUDIES FACULTY OF SOCIAL SCIENCE

INSTITUTE OF OIL AND GAS QUESTIONNAIRE ON ETHICAL LEADERSHIP

Dear Sir/Madam

This research instrument is designed to assess the effects of Ethical Leadership on Employee Health and Safety. Any information provided would be treated with the utmost confidentiality. Please select the appropriate options for the questions by checking their corresponding boxes.

SECTION A: BACKGROUND OF RESPONDENTS

Please tick (√) in the appropriate column.

1. Sex of respondent

   [ ] Male [ ] Female

2. Age (years) of respondent:

   [ ] 15 – 20. [ ] 21– 25. [ ] 26 – 30. [ ] 31 - 40. [ ] Above 40

3. Educational Level:

   [ ] Post Graduate Degree[ ] First Degree [ ] HND [ ] SHS [ ] Professional Certificates [ ] Other

4. Which sector do you work?

   [ ] Government [ ] Private

5. Number of years working within the company?

   [ ] Less than 1 year [ ] 1- 5 years [ ] 6- 10 years [ ] 11 – 15 years[ ] Above 16 years

6. How long have you worked with your current manager/boss?…….

SECTION B: ETHICAL LEADERSHIP

Please indicate the extent to which you agree with the following statements on a 7-point scale, where 1 = least form of agreement a 7= highest form of agreement. Please tick (√ or X) your answer.

My boss:

S/N	Items	Level of Agreement						
1	Shows a strong concern for ethical and moral values	1	2	3	4	5	6	7
2	Communicates clear ethical standards for members	1	2	3	4	5	6	7
3	Sets an example of ethical behavior in his/her decisions and actions.	1	2	3	4	5	6	7
4	Is honest and can be trusted to tell the truth	1	2	3	4	5	6	7
5	Keeps his/her actions consistent with his/her stated values (“walks the talk”).	1	2	3	4	5	6	7
6	Is fair and unbiased when assigning tasks to members.	1	2	3	4	5	6	7
7	Can be trusted to carry out promises and commitments	1	2	3	4	5	6	7
8	Insists on doing what is fair and ethical even when it is not easy	1	2	3	4	5	6	7
9	Acknowledges mistakes and takes responsibility for them	1	2	3	4	5	6	7
10	Regards honesty and integrity as important personal values	1	2	3	4	5	6	7
11	Sets an example of dedication and self-sacrifice for the organization	1	2	3	4	5	6	7
12	Opposes the use of unethical practices to increase performance.	1	2	3	4	5	6	7
13	Is fair and objective when evaluating member performance and providingrewards.	1	2	3	4	5	6	7
14	Puts the needs of others above his/her own self-interest.	1	2	3	4	5	6	7
15	Holds members accountable for using ethical practices in their work.	1	2	3	4	5	6	7

SECTION C: SAFETY CLIMATE

Please indicate the extent to which you agree with the following statements on a 7-point scale, where 1 = least form of agreement a 7= highest form of agreement. Please tick (√ or x) your answer

Beus, Payne, Arthur Jr & Muñoz, 2019).

S/N	Items	Level of Agreement						
	Leader Safety Commitment							
1	My supervisor strictly enforces safe working procedures.	1	2	3	4	5	6	7
2	My manager encourages me to practice health and safety	1	2	3	4	5	6	7
3	My supervisor demonstrates leadership by keeping people focused on safety	1	2	3	4	5	6	7
4	My supervisor takes the lead onsafety issues.	1	2	3	4	5	6	7
5	My supervisor is committed to improving safety.	1	2	3	4	5	6	7
6	My supervisor places a strong emphasis on workplace safety.	1	2	3	4	5	6	7
	Safety Communication							
7	Safety issues are openly discussed between my supervisor and my workgroup.	1	2	3	4	5	6	7
8	My workgroup receives timely feedback on safety issues we have raised with our supervisor.	1	2	3	4	5	6	7
9	My supervisor keeps my workgroup informed of safety rules.	1	2	3	4	5	6	7
	Safety Training							
10	Employees receive safety training when they change work tasks.	1	2	3	4	5	6	7
11	My manager set aside enough time for employee safety training.	1	2	3	4	5	6	7
12	My manager ensures employees have adequate safety training	1	2	3	4	5	6	7
	Coworker Safety practices							
13	My co-workers always follow safety	1	2	3	4	5	6	7
	procedures.							

14	My co-workers are quick to point out unsafe conditions .	1	2	3	4	5	6	7
15	My co-workers take safety very seriously	1	2	3	4	5	6	7
	Safety equipment and housekeeping							
16	Employees in my workgroup are given sufficient safety equipment.	1	2	3	4	5	6	7
17	Efforts are made in my workgroup to provide safe working conditions.	1	2	3	4	5	6	7
18	Equipment in my work area is checked to make sure it is free of faults.	1	2	3	4	5	6	7
19	Unsafe conditions are promptly corrected in my work area	1	2	3	4	5	6	7
	Safety Involvement							
20	My supervisor consults with employees regularly about workplace safety issues.	1	2	3	4	5	6	7
21	My manager promotes employees' involvement in safety-related matters	1	2	3	4	5	6	7
22	My manager values employees' ideas about improving safety.	1	2	3	4	5	6	7
23	My supervisor encourages employees to become involved in safety matters	1	2	3	4	5	6	7
	Safety rewards.							
24	My supervisor rewards safe behaviours.	1	2	3	4	5	6	7
25	My supervisor praises safe workbehaviour	1	2	3	4	5	6	7
26	In my workgroup, employees who work safely get recognition	1	2	3	4	5	6	7

SECTION D: SAFETY CULTURE

Please indicate the extent to which you agree with the following statements on a 7-point scale, where 1 = least form of agreement a 7= highest form of agreement. Please tick (√ or X) your answer

S/N	ITEMS	Level of Agreement						
	Training	1	2	3	4	5	6	7
1	New employees receive employee orientation training before they begin their job.	1	2	3	4	5	6	7
2	Employees are trained in safe work procedures or Job Hazards Analyses (JHAs) for their job.	1	2	3	4	5	6	7
3	Manager/supervisor make sure that employees can do their job safely.	1	2	3	4	5	6	7
4	Manager/supervisor make sure that employees are aware of safety issues.	1	2	3	4	5	6	7
	Work involvement							
5	Employees are involved in safety matters	1	2	3	4	5	6	7
6	Manager/Supervisor takes notice of what employees say about safety	1	2	3	4	5	6	7
7	Employees receive feedback regarding safety issues in a timely manner	1	2	3	4	5	6	7
8	I am recognized by my manager/supervisor for working safely.	1	2	3	4	5	6	7
9	Employees are encouraged to report all safety incidents.	1	2	3	4	5	6	7
10	My manager/supervisor follows up on safety incident reports	1	2	3	4	5	6	7
11	Safe work procedures are reviewed or updated if there is a safety incident report.	1	2	3	4	5	6	7
12	Safety practices are reviewed or updated if there is a safety incident report	1	2	3	4	5	6	7
	Personal Commitment							
13	Managers/supervisors understand what employees should do regarding safety.	1	2	3	4	5	6	7
14	Managers/supervisors understand what they should do regarding safety.	1	2	3	4	5	6	7
15	My manager/supervisor communicates clearly on safety issues.	1	2	3	4	5	6	7
16	My manager/supervisor uses the proper procedures regarding safety matters	1	2	3	4	5	6	7

SECTION E: EMPLOYEE HEALTH AND SAFETY

Please indicate the extent to which you agree with the following statements on a 7-point scale, where 1 = least form of agreement a 7= highest form of agreement. Please tick (√ or X) your answer

S/N	Items	Level of Agreement						
1	I feel my safety is a priority to my manager	1	2	3	4	5	6	7
2	I have up to date training on how to handle emergency situations at work	1	2	3	4	5	6	7
3	I know the location of the company's fire extinguisher	1	2	3	4	5	6	7
4	My manager has ensured there is effective security personnel	1	2	3	4	5	6	7
5	I'm regularly reminded to practice safe work habits by my manager.	1	2	3	4	5	6	7
6	I'm aware of safety laws and regulations surrounding my line of work.	1	2	3	4	5	6	7
7	My manager provides a nutritionally balanced diet.	1	2	3	4	5	6	7
8	I have illness, impairment, or disability that may have been caused as a result of the nature of work.	1	2	3	4	5	6	7
9	My manager provides and insist on the use of protective gears.	1	2	3	4	5	6	7
10	My manager ensures equipment or machines are inspected daily before use.	1	2	3	4	5	6	7
11	Our facility is having first aid.	1	2	3	4	5	6	7
12	My manager gives me enough time to rest.	1	2	3	4	5	6	7

SECTION F: RESPONSIBLE LEADERSHIP

Please indicate the extent to which you agree with the following statements on a 7-point scale, where 1 = least form of agreement a 7= highest form of agreement. Please tick (√ or X) your answer

My boss:

S/N	Items	Level of Agreement						
	Moral person							
1	Makes fair and balanced decisions	1	2	3	4	5	6	7
2	Takes ownership for own actions	1	2	3	4	5	6	7
3	When making decisions, asks "what is the right thing to do?"	1	2	3	4	5	6	7
74	Shows consistency in words and actions	1	2	3	4	5	6	7
75	Does not blame others for own mistakes	1	2	3	4	5	6	7
76	Has subordinates' best interests in mind	1	2	3	4	5	6	7
6	**Moral manager**							
7	Explains what comprises of ethical and unethical behaviors	1	2	3	4	5	6	7
8	Disciplines followers who violate organization's ethical standards	1	2	3	4	5	6	7
9	Sets an example of achieving results ethically	1	2	3	4	5	6	7
10	Defines success not by results but the way they are obtained	1	2	3	4	5	6	7
11	Listens to what subordinates have to say	1	2	3	4	5	6	7
	Multistakeholder consideration							
12	Considers stakeholder well-being as important business outcome	1	2	3	4	5	6	7
13	Tries to assess impact on stakeholders before making business decisions	1	2	3	4	5	6	7
14	Makes sure that stakeholders are treated with dignity and respect by all subordinates	1	2	3	4	5	6	7
15	Ensures that stakeholders receive relevant,	1	2	3	4	5	6	7
	correct, and timely information							
16	Promotes personal connections with stakeholders for better business development	1	2	3	4	5	6	7
	Sustainable growth focus							
17	Shows concern for availability or conservation of resources (e.g., natural resources) when planning for future business demands	1	2	3	4	5	6	7
18	Links present business tasks with long-term organizational goals	1	2	3	4	5	6	7
19	Communicates a vision of long-term growth for the organization	1	2	3	4	5	6	7
20	Encourages business activities beneficial for team/organization in long term	1	2	3	4	5	6	7

SECTION G: SAFETY BEHAVIOUR

Please indicate the extent to which you agree with the following statements on a 7-point scale, where 1 = least form of agreement a 7= highest form of agreement. Please tick (√ or X) your answer

S//N	Items	Level of Agreement						
	Safety compliance							
1	I use all the necessary safety equipment to domy job	1	2	3	4	5	6	7
2	I use the correct safety procedures for carrying out my job	1	2	3	4	5	6	7
3	I ensure the highest levels of safety when Icarry out my job	1	2	3	4	5	6	7
	Safety participation							
4	I promote the safety program within the organization	1	2	3	4	5	6	7
5	I put in extra effort to improve the safety of the workplace	1	2	3	4	5	6	7
6	I voluntarily carry out tasks or activities that help to improve workplace safety	1	2	3	4	5	6	7

THANK YOU

APPENDIX B

ETHICAL CLEARANCE

UNIVERSITY OF CAPE COAST

INSTITUTIONAL REVIEW BOARD SECRETARIAT

TEL: 0558093143 / 0508878309
E-MAIL: irb@ucc.edu.gh
OUR REF: UCCIRB/A/2016/1661
YOUR REF:
OMB NO: 0990-0279
IORG #: IORG0011497

21ST DECEMBER 2022

Mr Sharif Shani Amaduh
Institute of Oil and Gas Studies
University of Cape Coast

Dear Mr Amaduh,

ETHICAL CLEARANCE – ID (UCCIRB/CHLS/2022/60)

The University of Cape Coast Institutional Review Board (UCCIRB) has granted Provisional Approval for the implementation of your research on **Effect of Ethical Leadership on Employee Health and Safety in the Oil and Gas Downstream Sector in Ghana: The Mediating Role of Safety Climate and Safety Culture.** This approval is valid from 21st December 2022 to 20th December 2023. You may apply for a renewal subject to the submission of all the required documents that will be prescribed by the UCCIRB.

Please note that any modification to the project must be submitted to the UCCIRB for review and approval before its implementation. You are required to submit a periodic review of the protocol to the Board and a final full review to the UCCIRB on completion of the research. The UCCIRB may observe or cause to be observed procedures and records of the research during and after implementation.

You are also required to report all serious adverse events related to this study to the UCCIRB within seven days verbally and fourteen days in writing.

Always quote the protocol identification number in all future correspondence with us in relation to this protocol.

Yours faithfully,

Kofi F. Amuquandoh

Ag. UCCIRB Administrator

ADMINISTRATOR
INSTITUTIONAL REVIEW BOARD
UNIVERSITY OF CAPE COAST

APPENDIX C

Table 3.1

Table for Determining Sample Size of a Known Population

N	S	N	S	N	S	N	S	N	S
10	10	100	80	280	162	800	260	2800	338
15	14	110	86	290	165	850	265	3000	341
20	19	120	92	300	169	900	269	3500	346
25	24	130	97	320	175	950	274	4000	351
30	28	140	103	340	181	1000	278	4500	354
35	32	150	108	360	186	1100	285	5000	357
40	36	160	113	380	191	1200	291	6000	361
45	40	170	118	400	196	1300	297	7000	364
50	44	180	123	420	201	1400	302	8000	367
55	48	190	127	440	205	1500	306	9000	368
60	52	200	132	460	210	1600	310	10000	370
65	56	210	136	480	214	1700	313	15000	375
70	59	220	140	500	217	1800	317	20000	377
75	63	230	144	550	226	1900	320	30000	379
80	66	240	148	600	234	2000	322	40000	380
85	70	250	152	650	242	2200	327	50000	381
90	73	260	155	700	248	2400	331	75000	382
95	76	270	159	750	254	2600	335	1000000	384

Note: N is Population Size; S is Sample Size *Source: Krejcie & Morgan, 1970*