

THE EFFECTS OF ETHICAL WORKPLACE CLIMATE,  
SAFETY CULTURE, AND SAFETY  
MANAGEMENT PRACTICES ON  
SAFETY PERFORMANCE  
IN ADNOC

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SULTAN IDRIS EDUCATION UNIVERSITY

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**THE EFFECTS OF ETHICAL WORKPLACE CLIMATE, SAFETY CULTURE, AND  
SAFETY MANAGEMENT PRACTICES ON SAFETY PERFORMANCE IN ADNOC**

**RAHMA ATEEQ AL YAQOUBI**

**THESIS PRESENTED TO QUALIFY FOR A DOCTOR OF PHILOSOPHY**

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## DEDICATION

Dedicated to my dear parents, whose words of encouragement have been a constant source of strength. To my beloved husband and children, for their patience and love. I extend my deepest gratitude to supervisor and friends for their continuous support and guidance throughout this journey.

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## ABSTRACT

This study investigates the effect of safety management practices on safety performance in ADNOC in the United Arab Emirates, focusing on the mediating effects of ethical workplace climate and safety culture. Using a quantitative survey research design, a 48-item closed-ended questionnaire with proven reliability and validity was employed. A sample of 357 individuals was selected through simple random sampling participants from the ADNOC employee population. The data were analyzed using Partial Least Squares Structural Equation Modeling. Findings revealed that ethical leadership significantly affects ethical workplace climate ( $\beta = 0.266, p < 0.001$ ), safety culture ( $\beta = 0.359, p < 0.001$ ), and safety performance ( $\beta = 0.124, p < 0.001$ ). Employee engagement significantly impacts ethical workplace climate ( $\beta = 0.357, p < 0.01$ ), safety culture ( $\beta = 0.226, p < 0.01$ ), and safety performance ( $\beta = 0.132, p < 0.05$ ). Effective communication influences ethical workplace climate ( $\beta = 0.132, p < 0.05$ ) and safety performance ( $\beta = 0.143, p < 0.001$ ). However, the effect of employee engagement on safety culture was unsupported. Ethical workplace climate significantly impacts safety performance ( $\beta = 0.399, p < 0.001$ ), and safety culture also influences safety performance ( $\beta = 0.154, p < 0.001$ ). Mediation analysis showed that ethical workplace climate mediates the impact of ethical leadership, employee engagement, and effective communication on safety performance, with coefficients of ( $\beta = 0.106, p < 0.001$ ), ( $\beta = 0.142, p < 0.001$ ), and ( $\beta = 0.053, p < 0.05$ ), respectively. Safety culture mediates the impact of ethical leadership on safety performance ( $\beta = 0.055, p < 0.05$ ) and employee engagement on safety performance ( $\beta = 0.035, p < 0.05$ ), but not effective communication ( $\beta = 0.051, p < 0.001$ ). This study enhances understanding of safety management practices in the oil and gas industry, offering insights for improving safety performance and fostering a robust safety culture within organizations. The findings underscore the importance of ethical leadership and employee engagement in cultivating a positive safety culture.

## KESAN IKLIM TEMPAT KERJA BERETIKA, BUDAYA KESELAMATAN, DAN AMALAN PENGURUSAN KESELAMATAN TERHADAP PRESTASI KESELAMATAN DI ADNOC

### ABSTRAK

Kajian ini menyiasat kesan amalan pengurusan keselamatan terhadap prestasi keselamatan di ADNOC, Emiriah Arab Bersatu, dengan memberi tumpuan kepada kesan perantaraan iklim tempat kerja beretika dan budaya keselamatan. Menggunakan reka bentuk penyelidikan tinjauan kuantitatif, soal selidik tertutup 48 item yang terbukti kebolehpercayaan dan kesahihannya telah digunakan. Sebanyak 357 individu telah dipilih secara persampelan rawak mudah daripada populasi pekerja ADNOC. Data dianalisis menggunakan Pemodelan Persamaan Struktur Kaedah Kuasa Dua Terkecil Separa (PLS-SEM). Dapatan menunjukkan bahawa kepimpinan beretika secara signifikan mempengaruhi iklim tempat kerja beretika ( $\beta = 0.266$ ,  $p < 0.001$ ), budaya keselamatan ( $\beta = 0.359$ ,  $p < 0.001$ ), dan prestasi keselamatan ( $\beta = 0.124$ ,  $p < 0.001$ ). Penglibatan pekerja secara signifikan memberi kesan kepada iklim tempat kerja beretika ( $\beta = 0.357$ ,  $p < 0.01$ ), budaya keselamatan ( $\beta = 0.226$ ,  $p < 0.01$ ), dan prestasi keselamatan ( $\beta = 0.132$ ,  $p < 0.05$ ). Komunikasi yang berkesan mempengaruhi iklim tempat kerja beretika ( $\beta = 0.132$ ,  $p < 0.05$ ) dan prestasi keselamatan ( $\beta = 0.143$ ,  $p < 0.001$ ). Walau bagaimanapun, kesan penglibatan pekerja terhadap budaya keselamatan tidak disokong. Iklim tempat kerja beretika secara signifikan mempengaruhi prestasi keselamatan ( $\beta = 0.399$ ,  $p < 0.001$ ), dan budaya keselamatan juga mempengaruhi prestasi keselamatan ( $\beta = 0.154$ ,  $p < 0.001$ ). Analisis perantaraan menunjukkan bahawa iklim tempat kerja beretika memediasi kesan kepimpinan beretika, penglibatan pekerja, dan komunikasi yang berkesan terhadap prestasi keselamatan, dengan pekali masing-masing ( $\beta = 0.106$ ,  $p < 0.001$ ), ( $\beta = 0.142$ ,  $p < 0.001$ ), dan ( $\beta = 0.053$ ,  $p < 0.05$ ). Budaya keselamatan memediasi kesan kepimpinan beretika terhadap prestasi keselamatan ( $\beta = 0.055$ ,  $p < 0.05$ ) dan penglibatan pekerja terhadap prestasi keselamatan ( $\beta = 0.035$ ,  $p < 0.05$ ), tetapi tidak untuk komunikasi yang berkesan ( $\beta = 0.051$ ,  $p < 0.001$ ). Kajian ini meningkatkan pemahaman tentang amalan pengurusan keselamatan dalam industri minyak dan gas, serta memberikan pandangan untuk memperbaiki prestasi keselamatan dan memupuk budaya keselamatan yang kukuh dalam organisasi. Dapatan ini menekankan kepentingan kepimpinan beretika dan penglibatan pekerja dalam membentuk budaya keselamatan yang positif.

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### A Survey Questionnaire

## CHAPTER 1

### INTRODUCTION

#### 1.1 Introduction

This chapter explores the relationship between safety management practices, safety performance, ethical workplace climate, and safety culture at ADNOC. It underscores the critical importance of safety in the oil and gas industry and the need for effective safety management to mitigate risks. The objectives include exploring these mediation effects and identifying the impact of various safety management practices on safety performance. A conceptual framework outlines the key variables and their relationships, while the scope of the research and operational definitions are provided to ensure clarity and consistency. This structured approach sets the stage for a thorough investigation into the factors influencing safety performance at ADNOC.



## 1.2 Background of the Study

In the high-stakes environment of the oil and gas industry, where every decision can mean the difference between safety and disaster, understanding the intricate dynamics of safety culture and management practices is paramount. The United of Arab Emirates (UAE) has an open economy with a high income per capita and a substantial annual trade surplus. Positive efforts at economic diversification have reduced the contribution of oil and gas sector to 30% of GDP. Furthermore, UAE has a GDP of \$507.53 billion and a real growth of 7.4% in 2022. The UAE GDP per capita is 53,757.9 USD, which makes the UAE one of the rival countries in the region and among Arab and gulf countries. Qatar comes first among the Arab countries, while the UAE comes second that precedes the kingdom of Saudi Arabia, the world's biggest oil producer and exporter. GDP per capita of Saudi Arabia is almost half of what the UAE people get (Al-Mekhlafi et al., 2021).



Moreover, all seven federation of the seven emirates states, consisting of Abu Dhabi, Ajman, Al Fujairah, Dubai, Ras al-Khaymah, Sharjah, and Umm al-Qaywayn, have been largely relying on oil sector to support their economic since the independence from the United Kingdom in December 1971 (ADNOC, 2020; Chen et al., 2021). According to Fund, (2022), UAE is among the top ten largest petroleum producers in the world. In fact, as a country that makes notable progress in diversifying its economy and in addition to the importance of the oil sector, the UAE is also becoming an important financial and trading centre in its region, and in the world government portal, (2018). The country has made several investments to develop non-oil sectors, such as infrastructure, technology, tourism,





and real estate sector, though oil and related industries are expected to move to economic activity in the near term in this country (Fund, 2022; Naji et al., 2021).

The Abu Dhabi National Oil Company (ADNOC) was established in 1971 and has since evolved into a pivotal player in the global energy sector. As a cornerstone of the United Arab Emirates' (UAE) economy, ADNOC significantly contributes to the nation's GDP and underpins its energy security. The company's operations span the entire hydrocarbon value chain, from exploration and production to refining and distribution, thereby supporting the UAE's economic diversification efforts. A critical aspect of ADNOC's operations is its focus on safety performance and safety management practices. This emphasis is particularly relevant given the high-risk nature of the oil and gas industry.

ADNOC's response to the COVID-19 pandemic underscored its commitment to employee health and safety, while also ensuring business continuity. The company maintained efforts to promote inclusivity and continuous learning, highlighting its strategic initiatives to enhance Emiratization and leadership training (ADNOC, 2020).

ADNOC (2020) has always placed great importance on fostering a thriving and secure work environment, with the aim of maintaining optimal productivity. However, the company has recently encountered obstacles concerning its corporate health, safety, and environment (HSE) track record. Since 2011, there has been an average annual increase of nine percent (9%) in the Total Recordable Injury Rate (TRIR), resulting in a total of ninety-five (95) documented incidents. Furthermore, in their 2021 Sustainability Report, ADNOC emphasised the utmost significance of identifying and mitigating HSE risks at every stage





of their operations. The overarching goal was to pinpoint hazards and reduce associated risks to the most reasonably feasible level. Hence, this proactive approach ensures that ADNOC places the well-being and safety of its employees and stakeholders as a top priority. To further ensure uniform and successful implementation of health, safety, and environmental management practices throughout the oil and gas sector in Abu Dhabi, ADNOC established a centralised framework of operational standards. In fact, compliance to these standards is obligatory for all organisations operating within the sector. Moreover, these operational standards encompass various activities within the petroleum industry, each carrying its own unique set of HSE risks or impacts. Furthermore, these standards align with the laws and regulations set forth by the UAE Federal Government.



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Collectively known as the ADNOC Codes of Practice, these operational standards form a comprehensive guideline for organisations within the sector to adhere to. The Codes of Practice cover a wide range of aspects, ensuring that potential HSE risks are identified and appropriately managed. By establishing this centralised framework, ADNOC aims to foster a culture of safety and environmental responsibility throughout the industry, promoting consistency and best practices (Ahmad, 2019). Furthermore, the Codes of Practice consists of multiple areas of operation, including drilling, well integrity, production facilities, process safety, occupational health, and environmental management. Each area is subject to specific standards and guidelines tailored to address the associated risks and impacts.





It is evident that by adhering to these standards, organisations operating in the Abu Dhabi oil and gas sector can enhance their HSE performances and contribute to the overall safety and sustainability goals of the industry (ADNOC, 2021). The commitment of ADNOC to HSE excellence extended beyond the implementation of operational standards. Moreover, the company invests in training programs and initiatives to enhance the HSE competencies of its employees and contractors. By equipping individuals with the necessary knowledge and skills, ADNOC aims to foster a safety-conscious workforce that actively participates in identifying and mitigating risks (N. Ahmad, 2019). Furthermore, ADNOC actively engages with stakeholders and industry partners to share best practices and promote collaboration in addressing HSE challenges. The company understands the importance of collective effort in achieving industry-wide improvements in HSE performance.



The concept of safety performance refers to the measures and outcomes related to maintaining a safe working environment and minimizing risks and accidents in the workplace. The term has been utilized in various industries since the early 20th century when industrial safety regulations and standards began to take shape. Safety performance encompasses a range of indicators, including incident rates, compliance with safety regulations, and the effectiveness of safety management systems (Neal & Griffin, 2017). The importance of safety performance lies in its direct impact on the well-being of employees, the protection of assets, and the overall operational efficiency of an organization. High safety performance is crucial for preventing workplace injuries, fatalities, and environmental damage. It also contributes to the financial health of a





company by reducing costs associated with accidents, such as medical expenses, legal fees, and downtime. Furthermore, strong safety performance enhances an organization's reputation and fosters a culture of trust and responsibility among employees (Zohar, 2002).

In the context of the oil and gas industry, safety performance is of paramount importance due to the inherently high-risk nature of the sector. The industry involves handling hazardous materials, operating complex machinery, and working in challenging environments, all of which pose significant safety risks. Effective safety performance management in this industry is vital to prevent catastrophic incidents that could result in severe environmental and human consequences (Khalid et al., 2021).

For ADNOC, safety performance is a cornerstone of its operational strategy and corporate responsibility. Established in 1971, ADNOC has grown to become a leading energy producer and a critical component of the UAE's economy. The company has consistently prioritized safety, recognizing that maintaining high safety standards is essential for protecting its workforce and ensuring sustainable operations. ADNOC's commitment to safety is evident through its comprehensive safety management practices and continuous efforts to enhance safety culture. The company implements rigorous safety protocols, conducts regular safety audits, and provides extensive training programs to equip employees with the knowledge and skills needed to manage potential hazards effectively. These initiatives have led to significant improvements in safety performance metrics, such as reduced lost-time injury rates and increased safety training hours per employee (ADNOC, 2020).



The relationship between safety performance and safety management is intrinsically linked, as effective safety management practices are fundamental to achieving high safety performance standards within any organization. Safety management involves the systematic processes, policies, and practices designed to identify, assess, and control risks to ensure a safe working environment. Safety management as a formal discipline has evolved significantly over the past century, particularly as industrialization has increased workplace complexity and associated risks. The need to protect workers and mitigate risks led to the development of structured safety management systems (SMS), which provide a framework for organizations to manage health and safety systematically (Khalid et al., 2021).

Safety management encompasses various activities, including risk assessment, incident investigation, safety training, and the implementation of safety policies and procedures. These activities are designed to prevent accidents and incidents, promote a safety culture, and ensure compliance with regulatory requirements. A robust SMS typically includes elements such as leadership commitment, employee involvement, continuous improvement, and effective communication (Mahmmud et al., 2023). The importance of safety management cannot be overstated, as it directly impacts an organization's ability to maintain a safe working environment. Effective safety management leads to the reduction of workplace injuries, illnesses, and fatalities, thereby protecting employees and minimizing operational disruptions. Additionally, a strong safety management system enhances the organization's reputation, increases employee morale,



and can lead to financial savings by reducing costs associated with accidents and regulatory fines (Ayuni et al., 2019).

Safety management practices significantly affect safety performance by establishing a proactive approach to hazard identification and risk control. When safety management is implemented effectively, it creates a foundation for continuous monitoring and improvement of safety standards. This proactive stance helps in the early detection of potential hazards and the implementation of preventive measures, which are crucial for maintaining high levels of safety performance (Abedsoltan et al., 2024). In the context of ADNOC, the integration of comprehensive safety management practices has been essential in enhancing its safety performance. The company's commitment to safety management is demonstrated through its rigorous safety protocols, regular safety audits, and extensive training programs, all designed to equip employees with the necessary skills and knowledge to manage risks effectively. These practices have led to significant improvements in safety metrics, reflecting ADNOC's dedication to fostering a robust safety culture (ADNOC, 2020).

Building on the foundation of safety performance and safety management practices, it is crucial to explore the role of an ethical workplace in further enhancing Safety performance within an organization. Ethical workplace has gained significant attention in recent years, driven by the recognition of its importance in fostering a positive organizational culture and enhancing overall performance. Scholars and researchers have emphasized the necessity of integrating ethics into the business landscape, leading to the



emergence of the ethical leadership concept, which places ethical principles at the core of leadership practices (Dey et al., 2022).

Ethical leaders operate based on their personal ethical convictions, using these beliefs as guiding principles in their interactions with followers. Trust, a fundamental component of ethical leadership, is essential for creating a positive work environment. When leaders demonstrate trustworthiness, they foster an atmosphere of psychological safety, encouraging open communication and collaboration (Saleem et al., 2020). Furthermore, ethical leaders exhibit honesty and transparency, ensuring that information is shared openly and fairly.

Consideration and empathy are also vital aspects of ethical leadership. Leaders who show genuine care for the well-being and development of their followers create opportunities for growth and provide support. By fostering an environment that values individuals, ethical leaders nurture a culture of respect and fairness, where diverse perspectives are appreciated and differences are embraced (Sikorsky, 2018). Additionally, ethical leaders possess charismatic qualities that inspire and motivate their followers, promoting a sense of collective purpose and shared values within an organization. Ethical leadership extends beyond the workplace, significantly influencing employee behavior. The ethical stance of leaders sets a benchmark for acceptable behaviors and provides guidance for the actions of followers. By consistently witnessing their leaders upholding ethical principles, employees are inclined to internalize these values and integrate them into their decision-making processes. This alignment between leaders and followers



cultivates an ethical organizational culture where integrity and ethical conduct become deeply embedded in daily operations (Freire & Pinto, 2022).

Ethical leadership has been widely recognized for its significant impact on various aspects of the workplace, including safety performance. Ethical leaders prioritize the well-being and safety of their employees, setting an example for others to follow (Geordy et al., 2021). They promote a culture of trust, transparency, and accountability that encourages open communication and a willingness to address safety concerns. This environment facilitates the flow of information necessary for identifying and addressing safety risks promptly (Nwaghodoh & Chiedu, 2022). Research has demonstrated a positive association between ethical leadership and workers' safety performance, safety attitude, and task performance. Ethical leaders not only communicate effectively but also create an environment where employees feel comfortable reporting safety issues without fear of retribution (Shafique et al., 2020).

In the context of ADNOC, ethical leadership plays a crucial role in shaping the company's safety culture. Despite its success in the UAE, ADNOC has faced challenges related to ethical leadership, particularly in addressing the needs of remote staff members and effectively managing innovative projects. These gaps have impacted the organization's safety culture and overall efficiency. Therefore, fostering an environment conducive to ethical leadership is imperative for large corporations like ADNOC to manage innovative projects effectively and ensure organizational success (ADNOC, 2021).





As stated by Ayuni et al., (2019), the essence of an organization's safety culture is a harmonious blend of personal and collective values, attitudes, perceptions, skills, and behavioral patterns. These factors shape the overall efficiency and dedication of the organization. Simply put, safety culture relates to how safety is perceived, valued, and integrated into everyday operations, serving as a foundational pillar for the holistic health and safety of an organization. Gaining insights into organizational culture significantly influences employee attitudes and behaviors concerning workplace health and safety. A study by Chen et al., (2021) corroborated the profound connection between safety culture and safety performance in organizations, which is manifested through compliance, behaviors, and commitments to safety.



Safety culture, a subset of organizational culture, exerts a considerable influence on an organization's health and safety performance via the attitudes and behaviors demonstrated by its members (Bortey et al., 2022). Kashwani, (2021) highlighted the significance of various elements in promoting a favorable safety culture, encompassing leadership, safety management systems, safety behaviors, and safety climate. The efficacy of leadership holds considerable importance in safety management, as it directly affects operations, productivity, and the quality of products and services within a company. Two key facets of effective leadership are caring and controlling behaviors (Freire & Pinto, 2022).

A considerable body of literature has delved into the exploration of the correlation between leadership, safety climate, safety behaviors, and accidents arising from the





absence of health and safety protocols. Neal et al., (2020) emphasized the pivotal roles of leadership in enhancing safety within organizations. Additionally, Syed-Yahya et al., (2022) highlighted the impact of ethical leadership on the promotion of safety. Conchie et al., (2013) noted that an ethical leader with a clear managerial vision, credibility, and a deep commitment to safety significantly influences how safety leadership is perceived within an organization.

Furthermore, Kim et al., (2019) asserted that safety leaders engage with their followers to collectively pursue safety goals aligned with the organization's objectives. The significance of safety climates in cultivating safety behaviors has also been explored in the field of occupational safety (Syed-Yahya et al., 2022). Shafique et al., (2020) suggested that ethical leadership is a vital tool for improving the occupational safety and well-being of workers, thus enhancing their overall health and well-being.

Considering these circumstances, the primary objective of this study is to examine the intermediary role played by ethical workplace climate and safety culture in the relationship between safety management practices, ethical leadership, employee engagement, effective communication, and safety performance within ADNOC, situated in the United Arab Emirates. To understand how ethical workplace climate and safety culture function as mediators between various factors, such as safety management practices, ethical leadership, employee engagement, effective communication, and safety performance, an investigation was conducted within the context of ADNOC, located in the United Arab Emirates. The selection of this research topic can be attributed to the aftermath





of the economic downturn experienced by the oil and gas market and the organization's desire to implement an effective methodology in recent years (ADNOC, 2020).

Employee engagement, another key variable in this study, refers to the emotional commitments and involvement of employees in their work. Engaged employees are more likely to be proactive in adopting safe behaviors and promoting a positive safety climate within their organizations. Additionally, effective communication entails the successful exchange of information, ideas, and feedback within the workplace (Freire & Pinto, 2022). Open and transparent communication channels facilitate the dissemination of safety-related information, which influences safety behaviors and contributes to a favorable safety culture.



### **1.3 Research Problem**

Globally, there has been a significant rise in industrial accidents, as exemplified by the Social Security Organization of Malaysia. The escalating number of accidents within the oil and gas industry has emerged as a prominent concern for ADNOC (ADNOC, 2020). Currently, a survey conducted has highlighted various factor including fatigue, inadequate technical design and safety planning, deficient leadership, insufficient identification of worksite hazards, inadequate facility maintenance, and stress-related issues and behavioural lifestyles, as significant contributors to the compromised safety performance within ADNOC (ADNOC, 2020). In fact, safety management practices (ethical leadership,





employee engagement, and effective communication) are deserting due to all the reasons listed above. Despite this, ethical leadership (EL) can significantly influence the practices of safety performance (SP) in ADNOC UAE (N. Ahmad, 2019). The preceding 100 years have publicised occupational safety at work where thousands of lives have been saved by ethical leadership practices (Naji et al., 2021).

Ethical leadership encourages safety leader practices especially in decision making (Aryati et al., 2018). This study was based on previous studies that focused on explaining variables; ethical leadership, employee engagement, effective communication, safety culture, ethical workplace climate and their potential influence on safety performance (Enwereuzor et al., 2020). To enhance the level of safety performance within an organisation, it is imperative to establish employee engagement and effective communication (Geordy et al., 2021). Evidently, the mediation effect of safety culture on ethical leadership and safety performance has been endorsed by Aryati et al., (2018), and Khan et al., (2018). Consequently, safety culture exerts a favourable influence on the safety performance of employees by mitigating the exposure to psychosocial hazards. Unfortunately, the concurrent measurement of the mediation effect of ethical workplace climate and safety culture on the independent variable of ‘safety performance’ has not been conducted specifically in the context of ADNOC (O’Leary, 2018).

Consequently, researchers and practitioners have dedicated considerable attention to the examination of factors influencing safety performance as a distinct field of study (Caesens & Brison, 2023). However, it is worth noting that the existing body of research





on safety performance is characterised by limitations and inadequacies (Abbas & Saad, 2020). Furthermore, the available literature review reveals a scarcity of comprehensive investigations particularly concerning the mediating effects of ethical workplace climate and safety culture on the relationship between the independent variables (ethical leadership, employee engagement, and effective communication) and the dependent variable (safety performance), despite the pivotal role played by these factors.

Given these observations, there is a pressing need for further scholarly inquiry to address existing research gaps. Empirical studies on ADNOC's safety performance are particularly scarce, as information regarding workplace climate, safety culture, and safety performance remains unpublished (Antonsen, 2009). Most previous research has been conducted through exploratory case studies and cross-sectional studies, which did not consider the mediation effects of ethical workplace climate and safety culture within ADNOC. The lack of empirical studies that thoroughly explore the mediating roles of ethical workplace climate and safety culture underscores the importance of comprehensive investigations in this area. Therefore, there is a critical need to develop a reliable model that incorporates these mediating variables to enhance our understanding of safety performance in this context (Kim et al., 2019; Neal et al., 2020; Oswald et al., 2019).

It is undeniable that accidents in organisations can be effectively prevented and reduced through proficient communication, employee engagement, and ethical leadership (Malik et al., 2020). However, contemporary safety risk models and theories often neglect the significance of safety culture and ethical workplace climate, resulting in limited

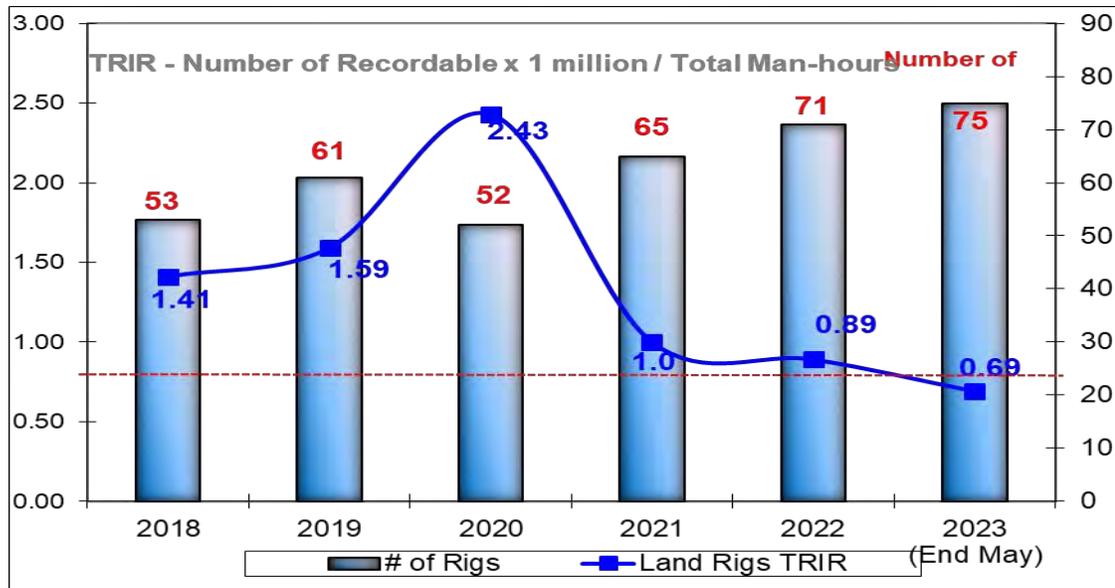


examination of comprehensive risk prevention models in this domain (Bortey et al., 2022). In fact, the responsibility of ethical leaders lies in fostering the safety culture of an organisation by articulating its objectives and vision, delineating safety expectations, and outlining the desired state. A truly effective leader firmly believes that all incidents can be prevented (Saleem et al., 2020). Ethical leadership, characterised by leader-follower interactions grounded in shared values in which a leader influences the attainment of safety goals, should adhere to all the principles. However, as indicated in Table 1.1, many sad incidents happened in ADNOC because of many reasons such as procedures, employees' behaviours and the toxic environment as illustrated in *Figure 1.1*.

**Table 1.1**

*Table of Total Recordable Incident Rate (TRIR) in ADNOC*

	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023
<b>Land Rigs TRIR</b>	1.6	1.4	1.3	1.3	1.4	1.41	1.59	2.43	1.00	0.89	0.69
<b># Of Rigs</b>	26	33	41	44	53	53	61	52	65	71	75
<b>No of Incidents</b>	10	11	12	13	16	15	18	18	17	16	16

**Figure 1.1***Graph of Total Recordable Incident Rate (TRIR)***ADNOC Distribution, 2023**

In Table 1.1 and Figure 1.1, it is evident that the increasing number of incidents in the last seven years existed. In addition, the different reasons behind these incidents were also noticed. This data confirms that there are still many issues in ADNOC safety, notwithstanding that they do implement and perform many protective procedures. In fact, the outcome of the root cause analysis revealed many factors that have direct and indirect relationship with ethical workplace and ethical leadership of the employees, including line managers and supervisors, though ADNOC has a comprehensive HSE management system that has been established to prevent HSE incidents (ADNOC, 2020).

As far as standard is concerned, ISO 45001: 2018 & ISO 14001: 2015 standards defined that to implement and maintain the HSE requirements, management should have



leadership and commitment with respect to the HSE management system by leading and promoting a culture in an organisation that supports the intended outcomes including prevention of HSE incidents. In order to achieve the desired outcomes, it is imperative for an organisation to possess robust ethical leadership and foster an ethical workplace climate (Aryati et al., 2018). Consequently, this study aimed to propose the effects of ethical leadership and an ethical workplace within ADNOC, hence aiding in the reduction of incidents and the establishment of an effective and efficient safety system. To underscore this, it is crucial to note that safety cultures have the ability to transform employees with negative or indifferent attitudes towards safety into actively engaged individuals concerned with safety matters (Saleem et al., 2020). As highlighted by Naji et al., (2021), the intensification of psychosocial hazards and risks necessitates organisational policies and structures to safeguard workers from these hazards, or at the very least, minimise their impact. In fact, multiple dimensions of safety culture can be implemented to enhance employee well-being and safety performance, including management commitment, work environment, and involvement.



Industries characterised by high-risk environments have explored how safety culture can enhance an organisation's safety performance (Naji et al., 2020). Furthermore, Ahmad, (2019) acknowledged that while the ADNOC has been renowned for its exceptional performances, recent workforce reductions indicate a need for the company's HR managers to re-evaluate their current talent management approach. It is crucial for the organisation to introduce a series of measures that aim to elevate job motivation levels



among its employees and cultivate enthusiasm and initiative as essential qualities Bhatti et al., (2018).

In a study by Dey et al., (2022), it was posited that the presence of ethical leadership within a workplace directly influences employee engagement, effective communication, and safety performance. Furthermore, it was suggested that the impact of ethical leadership on these aspects is mediated by the ethical climate prevailing in an organisation. In other words, the ethical climate within an organisation serves as an intermediary between ethical leadership and employee engagement, communication, and safety performance, ultimately leading to positive outcomes in these domains. Consequently, the researcher advocates for ethical leaders to eradicate unethical practices in order to establish a secure work environment that optimises safety performance for organisations.

Additionally, Freire & Pinto (2022) supported the notion of the mediating role of the ethical workplace climate (EWC) in the relationships and urged ethical leaders to minimise instances of bullying. It should be noted that all the studies mentioned above primarily focused on experiences within the construction industry and health work environments, to the extent that even Freiwald's empirical model of ethical leadership, ethical workplace climate, safety climate, safety participation, safety compliance, safety-related events, and occupational injuries was based on a sample of aviation and healthcare workers (Khan et al., 2018). This necessitates an investigation into the experience of ADNOC in relation to the study variables.

## 1.4 Research Objectives

The main objective of this research is to explore how ethical workplace climate and safety culture mediated the connection between safety management and safety performance in ADNOC. Specifically, the objectives of this study are:

1. To Examine the Effect of Safety Management Practices on Safety Performance within ADNOC.
2. To Examine the Effect of Safety Management Practices on Developing an Ethical Workplace Climate within ADNOC.
3. To Examine the Effect of Safety Management Practices on Establishing a Safety Culture within ADNOC.
4. To Investigate the Mediating Role of Ethical Workplace Climate and Safety Culture in the Relationship between Safety Management Practices and Safety Performance within ADNOC.

## 1.5 Research Questions

To successfully investigate the research problem and to answer the research objectives, this study was guided by the following research questions:

1. Do safety management practices affect safety performance within ADNOC?
2. Do safety management practices affect the development of an ethical workplace climate within ADNOC?

3. Do safety management practices affect the establishment of a safety culture within ADNOC?
4. Do ethical workplace climate and safety culture mediate the effect of safety management practices on safety performance within ADNOC?

## 1.6 Research Hypotheses

The hypothesis of the study which are stated as follows:

1. Hypothesis 1: Safety Management Practices effect Safety Performance.

H1a: Ethical leadership positively affects safety performance within ADNOC.

H1b: Employee engagement positively affects safety performance within ADNOC.

H1c: Effective communication positively affects safety performance within ADNOC.

2. Hypothesis 2: Safety Management Practices Effect Ethical Workplace Climate.

H2a: Ethical leadership positively affects the development of an ethical workplace climate within ADNOC.

H2b: Employee engagement positively affects the development of an ethical workplace climate within ADNOC.

H2c: Effective communication positively affects the development of an ethical workplace climate within ADNOC.

3. Hypothesis 3: Safety Management Practices effect Safety Culture.

H3a: Ethical leadership positively affects the establishment of a safety culture within ADNOC.



H3b: Employee engagement positively affects the establishment of a safety culture within ADNOC.

H3c: Effective communication positively affects the establishment of a safety culture within ADNOC.

4. Hypothesis 4: Ethical Workplace Climate and Safety Culture effect Safety Performance.

H4a: Ethical workplace climate positively affects safety performance within ADNOC.

H4b: Safety culture positively affects safety performance within ADNOC.

5. Hypothesis 5: Mediating Role of Ethical Workplace Climate.

H5a: Ethical workplace climate mediates the relationship between ethical leadership and safety performance within ADNOC.

H5b: Ethical workplace climate mediates the relationship between employee engagement and safety performance within ADNOC.

H5c: Ethical workplace climate mediates the relationship between effective communication and safety performance within ADNOC.

6. Hypothesis 6: Mediating Role of Safety Culture.

H6a: Safety culture mediates the relationship between ethical leadership and safety performance within ADNOC.

H6b: Safety culture mediates the relationship between employee engagement and safety performance within ADNOC.

H6c: Safety culture mediates the relationship between effective communication and safety performance within ADNOC.



## 7. Hypothesis 7: There are Indirect Effects of Safety Management Practices on Safety Performance

H7a: Ethical leadership positively affects safety performance within ADNOC.

H7b: Employee engagement positively affects safety performance within ADNOC.

H7c: Effective communication positively affects safety performance within ADNOC.

### 1.7 Conceptual Framework

This section discusses the conceptual framework developed for this study as presented in *Figure 1.2* that represents the interconnections between various important concepts. Ethical leadership, employee engagement, and effective communication are believed to directly influence safety performance. However, the proposed framework suggests that ethical workplace climate and safety culture likely serve as mediators in this relationship. This proposition aligns with the safety culture theory, as well as models proposed by researchers like (Guerin & Sleet, 2020). These theories imply that ethical workplace climate and safety culture play significant roles in shaping the impact of ethical leadership, employee engagement, and effective communication on safety performance.

The safety culture theory posits that the collective values, attitudes, perceptions, and patterns of behavior concerning safety within an organization form the foundation of its safety culture. This culture influences how safety is managed and perceived, thereby impacting safety performance. A positive safety culture, characterized by shared



commitment to safety, open communication, and proactive engagement in safety practices, can significantly reduce workplace accidents and enhance safety performance (Guldenmund, 2010; Reason, 2016). Leadership plays a pivotal role in establishing and maintaining a strong safety culture. Leaders set the tone for safety by their actions and behaviors, which are observed and emulated by employees. When leaders prioritize safety and demonstrate a genuine commitment to it, employees are more likely to adopt safe practices and attitudes, contributing to a positive safety culture (Guldenmund, 2010).

According to social exchange theory, employees perform a cost-benefit analysis to balance the advantages and disadvantages of their participation in various social contexts, including the workplace. This theory emphasizes the psychological risks associated with partnerships where negatives outweigh positives. In the context of safety culture, employees are more likely to change or improve their behaviors and participate in safety-related activities when they perceive these activities as beneficial to their health and indicative of their support for safety (Bautista-Bernal et al., 2024).

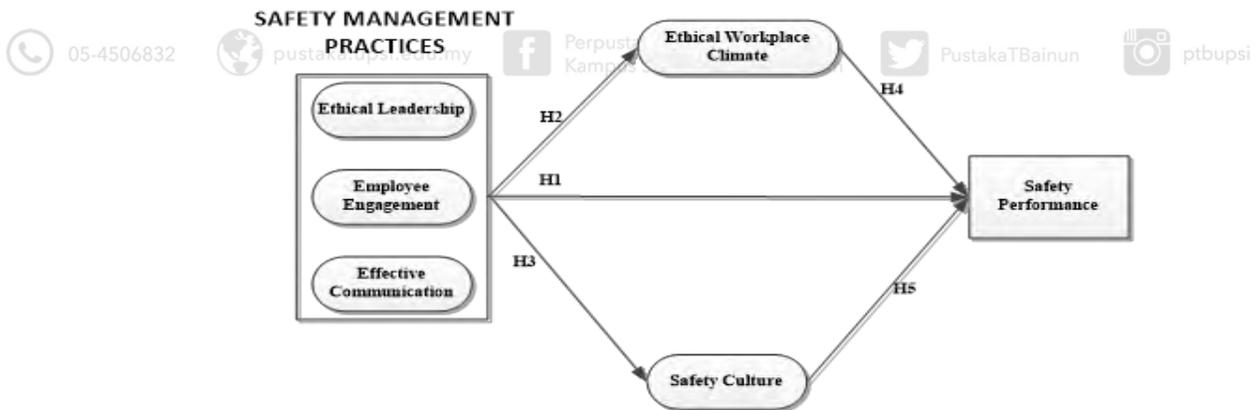
Employees are more likely to change or improve their behaviours and participate in activities related to safety because it is beneficial to their health and demonstrate that they support safety. Employees do a cost-benefit analysis to balance the advantages and disadvantages of the activities they choose to participate in various social contexts. Therefore, according to the social exchange theory, situations could get tense when there are more negatives associated with a partnership than positives. It can be seen how safety culture influences the actual behaviours of its adherents in this area because of the stress



that this theory places on psychological risk. As a result, the conceptual framework was proposed as illustrated in *Figure 1.2*. It is believed that ethical leadership is not only helpful to improve efficiency of an organisation, but also toward an organisation that is more ethical and has a safer culture (Mantik & Mukhtar, 2023). A person who possesses ethical qualities demonstrates consistent characteristics such as integrity, honesty, and trustworthiness. They also exhibit behaviours that reflect a genuine care for others and uphold personal moral principles. In addition, ethical individuals make impartial and fair judgments by drawing upon their values, considering the well-being of others, and adhering to ethical principles (Khan et al., 2018).

**Figure 1.2**

*Proposed Conceptual Framework*



**Mediation Effect**

- H6a: Effective Leadership —> Ethical Workplace Climate —> Safety performance
- H6b: Employee Engagement —> Ethical Workplace Climate —> Safety performance
- H6c: Effective Communication —> Ethical Workplace Climate —> Safety performance
- H7a: Effective Leadership —> Safety Culture —> Safety performance
- H7b: Employee Engagement —> Safety Culture —> Safety performance
- H7c: Effective Communication —> Safety Culture —> Safety performance

*Note*, EL=Ethical Leadership; EE= Employee Engagement; EC=Effective Communication



Previous studies have extensively explored the impact of leadership, employee engagement, and communication on safety performance and organizational culture. Ethical leadership has been shown to improve organizational efficiency and foster a more ethical and safer culture. Ethical leaders exhibit consistent characteristics such as integrity, honesty, and trustworthiness, demonstrating genuine care for others while upholding personal moral principles. They make impartial and fair judgments by drawing upon their values, considering the well-being of others, and adhering to ethical principles (Khan et al., 2018; Mantik & Muktamar, 2023).

Research indicates that employees are more likely to engage in safety-related behaviors when they feel supported and valued by their organization. Engaged employees are proactive in adopting safe practices, which contributes to overall safety performance. The social exchange theory supports this by suggesting that employees who perceive a positive return on their investment in the organization are more likely to engage in behaviors that benefit the organization, including safety practices (Von Thaden et al., 2003).

Effective communication is essential for shaping safety culture and improving safety performance. Clear and transparent communication from leadership ensures that safety protocols are understood and followed, reducing the likelihood of accidents and enhancing overall safety performance. (Mayfield & Mayfield, 2016) found that leader communication significantly influences employee engagement and adherence to safety protocols.





The mediating roles of ethical workplace climate and safety culture are critical in understanding how safety management practices influence safety performance. Ethical workplace climate refers to the shared perceptions of what is ethically correct behavior and how ethical issues should be handled in the workplace. It fosters an environment where ethical behaviors and decision-making are valued and encouraged. This climate is crucial for enhancing safety performance as it promotes integrity, fairness, and accountability, which are essential for maintaining safety standards. When employees perceive their workplace as ethical, they are more likely to engage in behaviors that support safety protocols and report unsafe conditions without fear of retribution (Treviño et al., 2000; Victor & Cullen, 1988). An ethical workplace climate also strengthens the impact of ethical leadership, as leaders who demonstrate ethical behavior reinforce the importance of safety and ethical conduct. This alignment between leadership and workplace climate creates a cohesive environment where safety practices are integrated into everyday operations, leading to improved safety performance (Mayer et al., 2009).



Safety culture encompasses the collective attitudes, perceptions, and actions concerning safety that prevail within an organization. A strong safety culture is characterized by a shared dedication to safety, transparent communication regarding safety concerns, and active engagement in safety initiatives. This culture is essential for maintaining high safety standards as it fosters a proactive approach to identifying and mitigating safety risks. Safety culture mediates the relationship between safety management practices and safety performance by translating management's commitment to safety into actual safety behaviors among employees. When an organization has a robust





safety culture, employees are more likely to adhere to safety protocols, participate in safety training, and communicate openly about safety issues. This collective commitment to safety enhances overall safety performance and reduces the likelihood of accidents and injuries (Cooper & Shumate, 2012; Zohar, 2002). The mediating role of safety culture is supported by the work of (Griffin & Neal, 2000), who found that safety culture positively influences safety compliance and participation. Additionally, a study by (Christian et al., 2009) demonstrated that a positive safety culture leads to better Safety performance by fostering an environment where employees feel responsible for their safety and the safety of others.

Empirical studies specific to the oil and gas industry, such as those involving ADNOC, are limited. Information regarding workplace climate, safety culture, and safety performance within this sector remains largely unpublished (Antonsen, 2009). Most previous research has been conducted through exploratory case studies and cross-sectional studies, which did not consider the mediation effects of ethical workplace climate and safety culture within ADNOC. Therefore, there is a critical need to develop a reliable model that incorporates these mediating variables to enhance our understanding of safety performance in this context (Kim et al., 2019; Neal et al., 2020; Oswald et al., 2019).

This study aims to fill the research gaps by investigating the relationships among ethical leadership, employee engagement, effective communication, ethical workplace climate, safety culture, and safety performance within the context of the oil and gas industry. By understanding these dynamics, organizations like ADNOC can implement





more effective strategies to enhance safety performance and foster a culture of safety and ethics.

## 1.8 Significance of the Research

This study holds significant theoretical, methodological, and practical implications, particularly within the context of ADNOC and the broader oil and gas industry.

### Theoretical Significance

This research is the first of its kind within ADNOC to analyse the relationships among safety management practices, the mediating effects of ethical workplace climate and safety culture, and safety performance outcomes. By integrating these elements, the study provides a robust theoretical framework for mitigating workplace hazards in high-risk environments. As international safety standards gain prominence in the oil and gas sector, addressing health, safety, and environmental (HSE) policy gaps is crucial. This study contributes to the theoretical understanding of how safety management practices and organizational culture interact to enhance safety performance.

### Methodological Significance

Methodologically, this study employs structural equation modelling (SEM) to illustrate the most applicable model for ADNOC. SEM provides a comprehensive approach to examining complex relationships between multiple variables, ensuring a reliable and valid





analysis of the proposed hypotheses. This methodological approach sets a baseline for future scholars who aim to investigate organizational safety culture and its impact on safety performance.

### **Practical Significance**

Practically, this study offers valuable insights for policy formulation and implementation within ADNOC and similar organizations. By identifying the critical roles of ethical leadership, employee engagement, effective communication, ethical workplace climate, and safety culture, the study provides a framework for enhancing organizational safety. The findings can guide ADNOC's leadership in addressing policy and management gaps to reduce the rate of incidents and improve overall safety performance. Moreover, the study offers systematic approaches and strategies for further improving the safety culture of ADNOC and its subsidiaries, contributing to a safer workplace Climate with fewer casualties.

The recommendations derived from this study can serve as a foundation for ADNOC to enhance its HSE standards, aligning with international safety benchmarks. Additionally, the insights gained from this research can inform future studies and provide a basis for comparative analyses across different sectors within the oil and gas industry. Overall, this study not only addresses immediate safety concerns within ADNOC but also sets a precedent for ongoing improvements in organizational safety culture and performance.



## 1.9 Operational Definition

### 1.9.1 Safety Management Practices

Safety management practices encompass a range of organizational actions and policies aimed at ensuring the safety of employees and the workplace. These practices involve strategies and interventions designed to promote safety awareness, compliance with safety regulations, and proactive risk management (Cooper & Shumate, 2012; Reason, 2016). Safety management practices in this study are operationally defined based on the employees' perceptions about the presence of ethical leadership, high levels of employee engagement, and effective communication within ADNOC. These perceptions will be reflected in the results of the survey to determine whether ADNOC's safety management practices meet the desired criteria for effectiveness.

### 1.9.2 Ethical Leadership

Ethical leadership refers to the demonstration of normatively appropriate conduct through personal actions and interpersonal relationships, and the promotion of such conduct to followers. It involves fairness, integrity, trustworthiness, and the active promotion of ethical behavior within the organization (Brown & Treviño, 2006). Ethical leadership in this study is operationally defined based on employees' perceptions of their direct managers' behaviors, focusing on fair and balanced decision-making, ethical conduct,



trustworthiness, and effective communication of ethical values. These perceptions will be reflected in the survey results to determine whether the managers at ADNOC meet the established standards for ethical leadership.

### 1.9.3 Employee Engagement

Employee engagement is the level of an employee's emotional and cognitive commitment to their organization. It includes the extent to which employees are involved in, enthusiastic about, and dedicated to their work (Kahn, 1990). Employee engagement in this study is operationally defined based on employees' emotional and cognitive involvement with their job and organization. These perceptions will be reflected in the survey results to determine whether the engagement levels at ADNOC meet the criteria for a highly engaged workforce.

### 1.9.4 Effective Communication

Effective communication within an organization involves the clear and timely exchange of information, ensuring that messages are accurately understood by all parties involved. It includes active listening, feedback mechanisms, and transparent information sharing (Mayfield & Mayfield, 2016). Effective communication in this study is operationally defined based on employees' perceptions of the clarity, timeliness, and effectiveness of





communication channels within ADNOC. These perceptions will be reflected in the survey results to determine whether the communication practices at ADNOC meet the desired criteria for effective communication.

### **1.9.5 Ethical Workplace Climate**

Ethical workplace climate refers to the collective understanding within an organization regarding what constitutes ethically appropriate behavior and how ethical issues should be managed. It reflects the ethical standards and policies that guide employees' behavior (Treviño et al., 2000; Victor & Cullen, 1988). Ethical workplace climate in this study is operationally defined based on employees' perceptions of the presence and enforcement of ethical codes, policies, and top management's stance on ethical behavior. These perceptions will be reflected in the survey results to determine whether the ethical climate at ADNOC meets the standards of an ethically robust workplace.

### **1.9.6 Safety Culture**

Safety culture is the set of shared beliefs, practices, and attitudes that exist within an organization concerning safety. It reflects the commitment of the organization and its members to prioritize safety above other competing goals (Guldenmund, 2010; Pidgeon, 2001). Safety culture in this study is operationally defined based on employees' perceptions of the organization's commitment to safety, the priority given to safety issues, and the





promotion of safety practices. These perceptions will be reflected in the survey results to determine whether the safety culture at ADNOC meets the criteria for a high-performing safety culture.

### **1.9.7 Safety Performance**

Safety performance refers to the outcomes of an organization's safety efforts, including the effectiveness of safety measures in preventing accidents and injuries. It is a reflection of how well safety policies and practices are implemented and adhered to (Flin et al., 2000; Griffin & Neal, 2000). Safety performance in this study is operationally defined based on employees' perceptions of compliance with safety procedures, use of safety equipment, promotion of safety programs, and efforts to improve workplace safety. These perceptions will be reflected in the survey results to determine whether the safety performance at ADNOC meets the criteria for effective safety management.

### **1.10 Scope of the Study (Delimitations)**

The scope and applicability of this study related to only ADNOC employees exclusively. By adhering to its designated methodology, the study exclusively focused on the perceptions of the employees pertaining to the variables investigated. While this study was based on previous studies, its significance was on the novel application of the study to the





Oil and Gas sector in Abu Dhabi. Furthermore, due to the limited number of employees within the company, this study has selected a smaller sample size compared to other studies. In terms of its methodology, the quantitative research approach was employed to address the research questions and accomplish the research objectives developed.

In the context of the conceptual framework, the study investigated multiple variables: Safety Management Practices (SMPs) and its constituent components, Ethical Leadership, Employee Engagement, and Effective Communication (as independent variables). These variables were examined in relation to Ethical Workplace Climate (EWC) and Safety Culture (SC) that acted as mediating variables with the Safety Performance as the dependent variable. As mentioned before, the focus of this study on ADNOC employees is essential to ensure the study is relevant and practical within the specific context of the organization. In fact, with the target population of ADNOC employees, the study can provide practical insights and recommendations tailored to the unique challenges and dynamics present in the Oil and Gas sector in Abu Dhabi. Hence, this enhances the applicability of this study and its potential to drive positive changes within the organization.

The research methodology employed in this study was carefully chosen to align with the research objectives. The quantitative research methods were utilized to collect the data and analyse the relationships between the identified variables. Hence, this allows for the collection of numerical data that was analysed statistically to draw meaningful conclusions. Furthermore, it also provided a structured and systematic way to address the research





questions and test the hypotheses derived from the conceptual framework. Another element of research methodology is the sample selected as the participants in this study. Regarding the smaller sample size chosen for this study, it's important to note that this decision was made considering the practical constraints within ADNOC. As a company operating in a niche sector, the number of eligible employees may be limited compared to larger organizations. However, this limitation didn't diminish the validity or reliability of this study. In fact, a well-designed study with a smaller sample size can still yield valuable insights, especially when it aligns with specific needs of the organization.

Moving on to the conceptual framework, the inclusion of multiple variables such as Safety Management Practices, Ethical Leadership, Employee Engagement, and Effective Communication demonstrates the comprehensive nature of the study. These variables were carefully selected based on their relevance to the Oil and Gas sector and their potential impact on safety performance. By examining these independent variables, the study seeks to uncover the key drivers that influence the Ethical Workplace Climate and Safety Culture within ADNOC. The inclusion of Ethical Workplace Climate and Safety Culture as mediating variables is a critical aspect of this study. These mediating variables helped to provide a more nuanced understanding of how the independent variables affect safety performance. Evidently, they acted as intermediary factors that can amplify or attenuate the impact of the independent variables on the dependent variable, Safety Performance. The analysis of this mediation would enable a deeper exploration of the mechanisms through which these variables influence each other and ultimately contribute to the overall safety performance within ADNOC.



## 1.11 Organization of the Thesis

This introductory chapter has established the background, scope, and structure of the study. Moreover, the ensuing chapters will provide answers to the research questions and bring about the overarching purpose of the study if they thoroughly address each of the predefined goals. For the following chapters, the structure as explained has been devised as a plan:

### Chapter 2: Literature review analysis of the related studies

Researchers always conduct in-depth literature reviews before beginning work on position papers. The purpose of this article is to present a critical examination of a variety of studies that make use of information system (is) success frameworks, with a particular emphasis on those that pertain to the UAE and ADNOC. Apart from this, the conceptual framework presents the conceptual model along with all the variables linked to it. The provided conceptual framework shall serve as a guiding principle for the collection and analysis of empirical data, aiming to offer a comprehensive portrayal of the ongoing transformation within the oil and gas sector in the UAE.

### Chapter 3: Methodology

As part of the empirical research approach, both the process of acquiring data as well as the process of data analysis are presented in detail. In the section on data collection, topics such as (a) data collection, (b) sample selection and participation, (c) developing the survey questionnaire, (d) measurement scales, and (e) pilot research are discussed. Following this,



the data will be justified by a discussion of the reliability and validity of the study. The chapter also dives into the kind of information that is required in order to conduct an exhaustive investigation. This is then followed by selecting an appropriate procedure for data analysis as well as a statistical approach. In the conclusion, methodologies for data analysis are presented, as well as a description of the study's desired population and the sampling methodology at each stage of the process. The chapter ends with a review of the ethical considerations involved in the investigation.

#### **Chapter 4: Research Findings**

The findings and analysis of the survey are discussed in this section. The results of the questionnaires are analysed statistically using SPSS version 26, and the results are presented. This chapter focuses mostly on data preparation and screening, demographics, factor loading, exploratory factor analysis, and model fit. Additionally, the chapter discusses factor loading. At the end of the chapter, a presentation of the results of the hypotheses that were tested will be made. Apart from this, this section also provides an explanation of the most significant findings that were made in light of the sources that were covered in chapters 2 and 3. In this section, the focus is on how these results address the difficulties that were brought up in the first chapter and how they meet the objectives of the study.

#### **Chapter 5: Conclusions, Discussions and Recommendations**

The research findings are employed in the concluding section in which the limitations of the study are deliberated upon, the theoretical and managerial implications of the research





are presented, and the research's contribution to the current knowledge base is highlighted. Furthermore, the concluding chapter offers recommendations to policymakers and managers on optimal use of technology. Furthermore, the concluding portion also presents several suggestions for future research.

## 1.12 Chapter Summary

The first chapter of this thesis introduces the research, establishing context with crucial background information. It begins with a problem statement that clearly articulates the specific issue addressed by the study, guiding the focus towards a clear objective. This chapter also outlines the study's objectives, shaping the research process and providing a framework for data collection, analysis, and interpretation. Additionally, research questions are formulated to guide the investigation systematically. The chapter then explains the significance and scope of the research, highlighting its potential impact and contributions to the field and outlining the study's boundaries. The chapter concludes with definitions of key terms used throughout the research, ensuring clarity and precision in communication and enabling readers to navigate the subsequent chapters with a solid grasp of the terminology employed

